Organisation for Economic Co-operation and Development

EDU/TALIS/GB(2025)8/REV1

Unclassified

English - Or. English

19 August 2026

DIRECTORATE FOR EDUCATION AND SKILLS
PROGRAMME FOR TEACHING AND LEARNING INTERNATIONAL SURVEY

Cancels & replaces the same document of 19 August 2026

Governing Board

Teaching and Learning International Survey (TALIS) 2024 Technical Report: Version 3

The complete document is only available in PDF format.

This cancel and replace is to correct line 2 in Table 10.2.

The previous cancel and replace (12 June 2026) was to update the notes regarding the United States for Tables 10.3 and 10.13 in order to provide clarification.

We are pleased to share Version 3 of the *Teaching and Learning International Survey (TALIS) 2024 Technical Report*. This now includes content covering the Teacher Knowledge Survey. A final version of the technical report will be published as an official OECD publication later this year.

Ms Anja Waschk, International Association for the Evaluation of Educational Achievement (IEA), IEA Co-Study Director TALIS 2024, anja.waschk@iea-hamburg.de
Mr Steffen Knoll, International Association for the Evaluation of Educational Achievement (IEA), IEA Co-Study Director TALIS 2024, steffen.knoll@iea-hamburg.de
Mr Gabor Fülöp, TALIS Analyst, Directorate for Education and Skills, gabor.fulop@oecd.org

JT03591480

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

TALIS

Teaching and Learning International Survey (TALIS) 2024 Technical Report

Version 3



This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Note by the Republic of Türkiye

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Türkiye recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Türkiye shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Please cite this publication as follows until publication of the final version:

OECD (forthcoming), *Teaching and Learning International Survey (TALIS) 2024 Technical Report*, OECD Publishing, Paris.

Acknowledgements

The OECD Teaching and Learning International Survey (TALIS) is the outcome of collaboration among the participating countries and territories, the OECD Secretariat, the European Commission and an international consortium led by the International Association for the Evaluation of Educational Achievement (IEA).

The OECD recognises the significant contributions of key staff members of IEA Hamburg, Germany, IEA Amsterdam, the Netherlands, the Australian Council for Educational Research (ACER), Melbourne and Perth, Australia, RAND Europe, Cambridge, United Kingdom, as well as cApStAn, Brussels, Belgium, who authored this report.

The principal authors of the respective chapters were as follows:

- **Chapter 1**: Steffen Knoll (IEA) and Anja Waschk (IEA)
- **Chapter 2**: Ralph Carstens (IEA), Wolfram Schulz (ACER), John Ainley (ACER), Jonathan Heard (ACER), Miguel Subosa (RAND Europe) and Merrilyn Groom (RAND Europe)
- **Chapter 3**: Ralph Carstens (IEA), Heather Price (Questionnaire Expert Group Chair), Jonathan Heard (ACER), Miguel Subosa (RAND Europe) and Merrilyn Groom (RAND Europe)
- **Chapter 4**: David Ebbs (IEA), Anja Waschk (IEA) and Josiane Tyburn (cApStAn)
- **Chapter 5**: Karsten Penon (IEA), Pablo Torres Irribarra (IEA) and Sabine Meinck (IEA)
- **Chapter 6:** Anja Waschk (IEA) and Steffen Knoll (IEA)
- **Chapter 7**: Marta Moreno Hidalgo (IEA), Lauren Musu (IEA), Anja Waschk (IEA) and Steffen Knoll (IEA)
- **Chapter 8**: Adriana Viteri (IEA), Ralph Carstens (IEA), Kamil Kowolik (IEA) and Renato Alves Coppi (IEA)
- **Chapter 9**: Karsten Penon (IEA), Pablo Torres Irribarra (IEA) and Sabine Meinck (IEA)
- **Chapter 10**: Karsten Penon (IEA), Adriana Viteri (IEA), David Ebbs (IEA), Anja Waschk (IEA) and Ralph Carstens (IEA)
- **Chapter 11**: Mojca Rožman (IEA), Ana María Mejía Rodríguez (IEA), Andrés Christiansen (IEA), Yuan-Ling Liaw (IEA), Minge Chen (IEA), Pablo Torres Irribarra (IEA) and Rolf Strietholt (IEA)
- **Chapter 12**: Wolfram Schulz (ACER) and Jonathan Heard (ACER).

The OECD Secretariat's Directorate for Education and Skills in Paris, France, was responsible for the overall supervision of the project across the participating countries/territories and governing bodies. The Secretariat's TALIS team was led by Ruochen Li (Senior Project Lead), Gabor Fülöp (Analyst, TALIS core survey), Stéphanie Jamet (Senior Analyst, TALIS Starting Strong), Elizabeth Shuey (Analyst, TALIS Starting Strong), Marco Paccagnella (Analyst, Teacher Knowledge Survey), Heewoon Bae (Analyst), Alison Burke (Analyst), Rodrigo Castaneda Valle (Analyst), Sophie Vayssettes (Analyst), Rodolfo Ilizaliturri (Data Scientist), Judit Pál (Statistician) and Miguel Ángel Quintero López (Analyst).

Unclassified - Non classifié

Emily Groves (Project Assistant) provided administrative assistance, additional proofreading and managed the layout process. Eleonore Morena provided copy-editing and formatting support.

The Technical Advisory Group, chaired by Timothy L. Kennel (United States Census Bureau, Washington, DC, United States), with members Michael Couper (University of Michigan, Ann Arbor, Michigan, United States), Bart Meuleman (KU Leuven, Leuven, Belgium), Paul Leseman (Utrecht University, Utrecht, Netherlands), and Christian Monseur (University Liège, Liège, Belgium) provided valuable comments during the development of the project and some chapters.

The consortium would like to thank Jean Dumais (former chief statistician at Statistics Canada, Ottawa, Canada) who supported the project in his advisory role as sampling referee and provided input and feedback to sampling, weighting and adjudication related questions.

Special thanks are extended to Michèle Ernst Stähli (head of International Surveys at FORS, Lausanne, Switzerland) for serving as translation referee and providing expert guidance on translation-related questions for the TALIS questionnaires.

Unclassified - Non classifié

Table of contents

Acknowledgements 3

Abbreviations and acronyms 27

Executive summary 32

1 Introduction 42
1.1. TALIS, TALIS Starting Strong and Teacher Knowledge Survey in brief 43
1.2. Participating countries and territories 45
1.3. Managing the survey internationally 46
1.4. Working with national project managers 48
1.5. Standardised procedures 50
1.6. Key survey phases 51
References 53
Notes 54

2 Development of the conceptual frameworks 55
2.1. Introduction 56
2.2. Concept paper 56
2.3. Conceptual framework for the TALIS 2024 core survey 57
2.4. Conceptual framework development for TALIS Starting Strong 60
2.5. Conceptual framework development for the Teacher Knowledge Survey 63
References 66
Note 66

3 Instrument development 67
3.1. Questionnaire development for the TALIS core survey 68
3.2. Questionnaire development for TALIS Starting Strong 73
3.3. Assessment and contextual questionnaire development for the Teacher Knowledge Survey 78
References 84

4 Preparation of national survey instruments 85
4.1. Introduction 86
4.2. Overview of adaptation and translation verification 86
4.3. Instruments requiring adaptation and translation 87
4.4. Identifying the target language(s) 88
4.5. Adaptations 90
4.6. Documentation of national instrument preparation 91

Unclassified - Non classifié

4.7. Hierarchy of international components during instrument preparation 91
4.8. Engaging translators 93
4.9. Producing translations 94
4.10. Trend translations 95
4.11. International translation verification 95
4.12. Feedback from NPMs on translation and international translation verification 97
4.13. Layout verification: Online and paper administration 98
References 98

5 Sampling design 100
5.1. Overview 101
5.2. ISCED levels 1, 2 and 3 101
5.3. The Teacher Knowledge Survey (TKS) 106
5.4. TALIS Starting Strong (ISCED level 02 and U3) 107
5.5. Sample characteristics by participating country/territory 108
References 108

6 Field operations 109
6.1. Overview 110
6.2. Technical standards, manuals, videos and software 110
6.3. Administering TALIS 2024 112
6.4. Contacting schools/ECEC settings and within-school/ECEC setting sampling 113
6.5. Administering the questionnaires and conducting national quality observations 116
6.6. Monitoring the online questionnaires 118
6.7. Preparing for data entry 118
References 119
Notes 119

7 Quality control: International and national quality observations 120
7.1. General overview 121
7.2. Quality control in survey administration 121
7.3. International quality observation programme 122
7.4. Extra quality control questions 138
7.5. The survey activities questionnaire 141
7.6. National quality observation programme 143
Note 145

8 Creating and checking the international databases 146
8.1. Overview 147
8.2. Online data collection and verification 148
8.3. Data entry and verification of paper questionnaires and tracking information 149
8.4. Data integration, checking, editing and quality control at the ISC 150
8.5. Interim data products 162
8.6. Building the restricted and public-use international databases 163
References 165
Notes 166

9 Estimation weights, participation rates and sampling error 167
9.1. Overview 168
9.2. Estimation weights 168

Unclassified - Non classifié

9.3. Weights for school/setting and principal/leader data 169
9.4. Weights for teacher/staff data 171
9.5. Participation rates 174
9.6. Estimating sampling error with balanced repeated replication 176
References 187

10 Data adjudication 188
10.1. The general adjudication process in TALIS 189
10.2. What was adjudicated in TALIS? 189
10.3. The process and criteria for assessment 190
10.4. Adjudication ratings for participants 191
10.5. Ratings by countries/territories 192
References 200

11 Construction and validation of questionnaire scales 201
11.1. Overview 202
11.2. Simple indices 202
11.3. Scaling procedures of questionnaire items 221
11.4. Results from scales evaluation 235
References 557
Notes 559

12 Scaling analysis of items measuring general pedagogical knowledge 560
12.1. Overview 561
12.2. Scaling model 561
12.3. Targeting and test reliability 562
12.4. Review of missing data 563
12.5. Review of psychometric item properties 566
12.6. Review of item dimensionality 568
12.7. Review of differential item functioning by country 569
12.8. Scaling of GPK items 578
12.9. Using plausible values to estimate standard errors for GPK scores 579
12.10. The development of a described scale 580
References 581
Notes 582

Annex A. Consortium and experts 583

Annex B. Sampling forms 589

Annex C. Target and survey populations 596

Annex D. Characteristics of national samples 620
Characteristics of national samples, ISCED level 1 708
Characteristics of national samples, ISCED level 3 737
Characteristics of national samples, ISCED level 02 752
Characteristics of national samples, children under three years of age (U3) 781
References 793

Unclassified - Non classifié

Annex E. Listing and tracking forms 794

Annex F. Unweighted and weighted participation rates 799

Annex G. Construction and validation of scales 813

Annex H. Coding for conditioning 817

FIGURES

Figure 6.1. Responsibilities of national centres and school/ECEC setting co-ordinators 115
Figure 8.1. Data processing at IEA Hamburg 151
Figure 11.1. Illustration of the mid-point of a scale's items 230
Figure 12.1. Wright map of GPK assessment items 563
Figure 12.2. Example of graph for review of item-by-country interaction (KTF4G54H1) 570
Figure 12.3. Example of graph for review of item-by-country interaction (KTF4G301) 570
Figure 12.4. Example item plot for identifying item misfit at the national level 573
Figure 12.5. Scatterplot showing GPK scale cut points of item-step thresholds and rank order 581

Figure A B.1. Sampling form 1 589
Figure A B.2. Sampling form 2 590
Figure A B.3. Sampling form 3 591
Figure A B.4. Sampling form 4 592
Figure A B.5. Sampling form 5 593
Figure A B.6. Sampling form 6 594
Figure A B.7. Sampling form 7 595
Figure A C.1. Exclusion rates, ISCED level 2 schools 597
Figure A C.2. Exclusion rates, ISCED level 2 teachers 598
Figure A C.3. Exclusion rates, ISCED level 1 schools 606
Figure A C.4. Exclusion rates, ISCED level 1 teachers 607
Figure A C.5. Exclusion rates, ISCED level 3 schools 610
Figure A C.6. Exclusion rates, ISCED level 3 teachers 611
Figure A C.7. Exclusion rates, ISCED level 02 settings 613
Figure A C.8. Exclusion rates, ISCED level 02 staff 614
Figure A C.9. Exclusion rates, U3 settings 617
Figure A C.10. Exclusion rates, U3 staff 618
Figure A E.1. Listing form for ISCED levels 1, 2 and 3 795
Figure A E.2. Tracking form for ISCED levels 1, 2 and 3 796
Figure A E.3. Listing form for ISCED level 02 and U3 797
Figure A E.4. Tracking form for ISCED level 02 and U3 798

TABLES

Table 1.1. TALIS 2024 participants at ISCED level 2, ISCED levels 1 and 3, the TKS and TALIS Starting Strong ISCED 02 and U3 45
Table 1.2. Questionnaires prepared for TALIS core survey, TALIS Starting Strong and the TKS 51
Table 3.1. Item development phases 69
Table 3.2. Configuration of main survey teacher questionnaire sections across forms 73
Table 4.1. Languages used in TALIS 2024 88
Table 4.2. List of target populations administered in TALIS 2024 by country/territory 92
Table 5.1. TALIS 2024 target and survey populations 102
Table 5.2. Establishing the sample size for TALIS 2024 (core survey) 103
Table 5.3. Illustration of systematic random sampling with PPS 105
Table 5.4. Establishing the sample size for TALIS 2024 (TALIS Starting Strong) 108

Unclassified - Non classifié

Table 6.1. Preparation time for main survey instruments 113
Table 6.2. Originally planned and actual data collection windows 116
Table 7.1. Perceptions of TALIS 2024 125
Table 7.2. Definition of the target population and applicability 125
Table 7.3. NPM perception of the co-ordinator manual 126
Table 7.4. Manuals to be reviewed by the IQOs 127
Table 7.5. Manuals to be reviewed 128
Table 7.6. Format of manuals 128
Table 7.7. Number of schools and ECEC settings selected for interview per component and ISCED level 130
Table 7.8. Co-ordinators' initial preparation responses 132
Table 7.9. Correct receipt of needed items 132
Table 7.10. Communication with NPMs 133
Table 7.11. Co-ordinators' difficulties understanding the listing form 133
Table 7.12. Teachers/staff sampled for the survey 134
Table 7.13. Co-ordinator reports of questions/concerns from TALIS respondents 135
Table 7.14. Co-ordinators' report of TALIS respondents' co-operation 136
Table 7.15. IQOs' perceptions 137
Table 7.16. TKS survey perceptions 137
Table 7.17. Respondent reports of selection for TALIS 139
Table 7.18. Respondent reports of time allotted for survey completion 139
Table 7.19. Respondent reports of security of login details 139
Table 7.20. Respondent reports of confidence in confidentiality 140
Table 7.21. Respondent reports of problems encountered 140
Table 7.22. Respondent reports of overall experience 141
Table 8.1. Combined Questionnaire Main (CQ-M) mapping to Leader (LQ) and/or Staff (SQ) Questionnaire 153
Table 8.2. Combined Questionnaire Short (CQ-S mapping to Leader (LQ) and/or Staff (SQ) Questionnaire 155
Table 9.1. Conventional notations used in this chapter 169
Table 9.2. Example of "BRR-ready" sample design and random assignment of pseudo-PSUs 177
Table 9.3. Example of which pseudo-PSU to select per zone 178
Table 9.4. Example of BRR factors 178
Table 9.5. Estimated design effects for selected variables, ISCED level 2, principal data 181
Table 9.6. Estimated design effects for selected variables, ISCED level 1, principal data 182
Table 9.7. Estimated design effects for selected variables, ISCED level 3, principal data 182
Table 9.8. Estimated design effects for selected variables, ISCED level 02, leader data 183
Table 9.9. Estimated design effects for selected variables, U3, leader data 183
Table 9.10. Estimated design effects for selected variables, ISCED level 2, teacher data 183
Table 9.11. Estimated design effects for selected variables, ISCED level 1, teacher data 185
Table 9.12. Estimated design effects for selected variables, ISCED level 3, teacher data 185
Table 9.13. Estimated design effects for selected variables, ISCED level 02, staff data 185
Table 9.14. Estimated design effects for selected variables, U3, staff data 186
Table 9.15. Estimated design effects for selected variables, TKS, teacher data 186
Table 10.1. Adjudication rules for school/setting or principal/leader data 191
Table 10.2. Adjudication rules for teacher/staff data 191
Table 10.3. ISCED level 2: Principal participation and recommended ratings 192
Table 10.4. ISCED level 2: Teacher participation and recommended ratings 194
Table 10.5. ISCED level 1: Principal participation and recommended ratings 195
Table 10.6. ISCED level 1: Teacher participation and recommended ratings 196
Table 10.7. ISCED level 3: Principal participation and recommended ratings 196
Table 10.8. ISCED level 3: Teacher participation and recommended ratings 197
Table 10.9. ISCED level 02: Leader participation and recommended ratings 197
Table 10.10. ISCED level 02: Staff participation and recommended ratings 198
Table 10.11. U3: Leader participation and recommended ratings 198
Table 10.12. U3: Staff participation and recommended ratings 199
Table 10.13. TKS: Teacher participation and recommended ratings 200
Table 11.1. Items included in school autonomy simple indices (T4PAUTS, T4PAUTB, T4PAUTP, T4PAUTI, T4PAUTC, T4PAUTD) 205
Table 11.2. Items included in school resources simple indices (T4PLACP, T4PLACSNP, T4PLACMR) 207
Table 11.3. Included and excluded countries/territories from the international pooled data 224
Table 11.4. Countries/territories without scale scores 229
Table 11.5. Item mean-scale score equivalence table for the scale *Joy of teaching* (T4JOYTCH) 230

Unclassified - Non classifié

Table 11.6. Composite scale scores across components 231
Table 11.7. International mean, standard deviation and scale score corresponding to the IMV for the calibration sample for the TALIS core survey and TKS 231
Table 11.8. International mean, standard deviation and scale score corresponding to the IMV for the calibration sample for TALIS Starting Strong 233
Table 11.9. Specifics of scales across components 234
Table 11.10. Overview of TALIS core survey and TKS scales 237
Table 11.11. Overview of TALIS Starting Strong scales 240
Table 11.12. Items and response categories used in the construction of scale T4PDSUBMP 244
Table 11.13. Reliability coefficient alpha for single countries and pooled model for scale T4PDSUBMP 244
Table 11.14. Measurement invariance results from MGCFA for scale T4PDSUBMP with differences in model fits across models for ISCED level 2 246
Table 11.15. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDSUBMP 246
Table 11.16 Items and response categories used in the construction of scale T4PDGENP 247
Table 11.17. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PDGENP 248
Table 11.18. Measurement invariance results from MGCFA for scale T4PDGENP with differences in model fits across models for ISCED level 2 250
Table 11.19. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDGENP 250
Table 11.20. Items and response categories used in the construction of scale T4PDIV 251
Table 11.21. Reliability coefficient alpha for single countries and pooled model for scale T4PDIV 251
Table 11.22. Measurement invariance results from MGCFA for scale T4PDIV with differences in model fits across models for ISCED level 2 253
Table 11.23. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDIV 254
Table 11.24. Items and response categories used in the construction of scale T4PDBR 254
Table 11.25. Reliability coefficient alpha for single countries and pooled model for scale T4PDBR 255
Table 11.26. Measurement invariance results from MGCFA for scale T4PDBR with differences in model fits across models for ISCED level 2 257
Table 11.27. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDBR 257
Table 11.28. Items and response categories used in the construction of scale T4EXINF 258
Table 11.29. Reliability coefficient alpha for single countries and pooled model for scale T4EXINF 258
Table 11.30. Measurement invariance results from MGCFA for scale T4EXINF with differences in model fits across models for ISCED level 2 260
Table 11.31. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4EXINF 260
Table 11.32. Items and response categories used in the construction of scale T4COLES 261
Table 11.33. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4COLES 262
Table 11.34. Measurement invariance results from MGCFA for scale T4COLES with differences in model fits across models for ISCED level 2 264
Table 11.35. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4COLES 264
Table 11.36. Items and response categories used in the construction of scale T4SECLS 265
Table 11.37. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SECLS 265
Table 11.38. Measurement invariance results from MGCFA for scale T4SECLS with differences in model fits across models for ISCED level 2 267
Table 11.39. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SECLS 268
Table 11.40. Items and response categories used in the construction of scale T4SEINS 268
Table 11.41. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEINS 269
Table 11.42. Measurement invariance results from MGCFA for scale T4SEINS with differences in model fits across models for ISCED level 2 271
Table 11.43. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SEINS 271
Table 11.44. Items and response categories used in the construction of scale T4SEENG 272
Table 11.45. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEENG 272
Table 11.46. Measurement invariance results from MGCFA for scale T4SEENG with differences in model fits across models for ISCED level 2 274
Table 11.47. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SEENG 275
Table 11.48. Items and response categories used in the construction of scale T4SEMUL 275

Unclassified - Non classifié

Table 11.49. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEMUL 276
Table 11.50. Measurement invariance results from MGCFA for scale T4SEMUL with differences in model fits across models for ISCED level 2 278
Table 11.51. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SEMUL 278
Table 11.52. Items and response categories used in the construction of scale T4GROMST 279
Table 11.53. Reliability coefficient alpha for single countries and pooled model for scale T4GROMST 279
Table 11.54. Measurement invariance results from MGCFA for scale T4GROMST with differences in model fits across models for ISCED level 2 281
Table 11.55. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4GROMST 282
Table 11.56. Items and response categories used in the construction of scale T4SESEN 282
Table 11.57. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SESEN 283
Table 11.58. Measurement invariance results from MGCFA for scale T4SESEN with differences in model fits across models for ISCED level 2 285
Table 11.59. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SESEN 285
Table 11.60. Items and response categories used in the construction of scale T4COMSEL 286
Table 11.61. Reliability coefficient alpha for single countries and pooled model for scale T4COMSEL 286
Table 11.62. Measurement invariance results from MGCFA for scale T4COMSEL with differences in model fits across models for ISCED level 2 288
Table 11.63. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4COMSEL 289
Table 11.64. Items and response categories used in the construction of scale T4SEDRT 289
Table 11.65. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEDRT 290
Table 11.66. Measurement invariance results from MGCFA for scale T4SEDRT with differences in model fits across models for ISCED level 2 292
Table 11.67. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SEDRT 292
Table 11.68. Items and response categories used in the construction of scale T4BLFDRT 293
Table 11.69. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4BLFDRT 293
Table 11.70. Measurement invariance results from MGCFA for scale T4BLFDRT with differences in model fits across models for ISCED level 2 295
Table 11.71. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4BLFDRT 296
Table 11.72. Items and response categories used in the construction of scale T4ADVDRT 296
Table 11.73. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4ADVDRT 297
Table 11.74. Measurement invariance results from MGCFA for scale T4ADVDRT with differences in model fits across models for ISCED level 2 299
Table 11.75. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4ADVDRT 299
Table 11.76. Items and response categories used in the construction of scale T4STESE 300
Table 11.77. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4STESE 300
Table 11.78. Measurement invariance results from MGCFA for scale T4STESE with differences in model fits across models for ISCED level 2 302
Table 11.79. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4STESE 303
Table 11.80. Items and response categories used in the construction of scale T4TCHCLC 303
Table 11.81. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4TCHCLC 304
Table 11.82. Measurement invariance results from MGCFA for scale T4TCHCLC with differences in model fits across models for ISCED level 2 306
Table 11.83. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4TCHCLC 306
Table 11.84. Items and response categories used in the construction of scale T4CLAIN 307
Table 11.85. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLAIN 307
Table 11.86. Measurement invariance results from MGCFA for scale T4CLAIN with differences in model fits across models for ISCED level 2 309
Table 11.87. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CLAIN 310
Table 11.88. Items and response categories used in the construction of scale T4COGAC 311
Table 11.89. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4COGAC 311

Unclassified - Non classifié

Table 11.90. Measurement invariance results from MGCFA for scale T4COGAC with differences in model fits across models for ISCED level 2 313
Table 11.91. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4COGAC 313
Table 11.92. Items and response categories used in the construction of scale T4CLASM 314
Table 11.93. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLASM 314
Table 11.94. Measurement invariance results from MGCFA for scale T4CLASM with differences in model fits across models for ISCED level 2 317
Table 11.95. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CLASM 317
Table 11.96. Items and response categories used in the construction of scale T4DRTWCI 318
Table 11.97. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4DRTWCI 318
Table 11.98. Measurement invariance results from MGCFA for scale T4DRTWCI with differences in model fits across models for ISCED level 2 320
Table 11.99. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4DRTWCI 320
Table 11.100. Items and response categories used in the construction of scale T4DRTIIA 321
Table 11.101. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4DRTIIA 321
Table 11.102. Measurement invariance results from MGCFA for scale T4DRTIIA with differences in model fits across models for ISCED level 2 324
Table 11.103. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4DRTIIA 324
Table 11.104. Items and response categories used in the construction of scale T4SECLS 325
Table 11.105. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLSDIS 325
Table 11.106. Measurement invariance results from MGCFA for scale T4CLSDIS with differences in model fits across models for ISCED level 2 327
Table 11.107. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CLSDIS 327
Table 11.108. Items and response categories used in the construction of scale T4ADLE 328
Table 11.109. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4ADLE 328
Table 11.110. Measurement invariance results from MGCFA for scale T4ADLE with differences in model fits across models for ISCED level 2 331
Table 11.111. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4ADLE 331
Table 11.112. Items and response categories used in the construction of scale T4PBLE 332
Table 11.113. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PBLE 332
Table 11.114. Measurement invariance results from MGCFA for scale T4PBLE with differences in model fits across models for ISCED level 2 334
Table 11.115. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PBLE 334
Table 11.116. Items and response categories used in the construction of scale T4AUTCH 335
Table 11.117. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4AUTCH 335
Table 11.118. Measurement invariance results from MGCFA for scale T4AUTCH with differences in model fits across models for ISCED level 2 338
Table 11.119. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4AUTCH 338
Table 11.120. Items and response categories used in the construction of scale T4FULFIL 339
Table 11.121. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4FULFIL 339
Table 11.122. Measurement invariance results from MGCFA for scale T4FULFIL with differences in model fits across models for ISCED level 2 341
Table 11.123. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4FULFIL 341
Table 11.124. Items and response categories used in the construction of scale T4EMPS 342
Table 11.125. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4EMPS 342
Table 11.126. Measurement invariance results from MGCFA for scale T4EMPS with differences in model fits across models for ISCED level 2 344
Table 11.127. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4EMPS 345
Table 11.128. Items and response categories used in the construction of scale T4SESDEV 345
Table 11.129. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SESDEV 346

Unclassified - Non classifié

Table 11.130. Measurement invariance results from MGCFA for scale T4SESDEV with differences in model fits across models for ISCED level 2 348
Table 11.131. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SESDEV 348
Table 11.132. Items and response categories used in the construction of scale T4OPPART 349
Table 11.133. Reliability coefficient alpha for single countries and pooled model for scale T4OPPART 349
Table 11.134. Measurement invariance results from MGCFA for scale T4OPPART with differences in model fits across models for ISCED level 2 351
Table 11.135. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4OPPART 351
Table 11.136. Items and response categories used in the construction of scale T4TLEAD 352
Table 11.137. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4TLEAD 352
Table 11.138. Measurement invariance results from MGCFA for scale T4TLEAD with differences in model fits across models for ISCED level 2 354
Table 11.139. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4TLEAD 355
Table 11.140. Items and response categories used in the construction of scale T4STUD 355
Table 11.141. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4STUD 356
Table 11.142. Measurement invariance results from MGCFA for scale T4STUD with differences in model fits across models for ISCED level 2 357
Table 11.143. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4STUD 358
Table 11.144. Items and response categories used in the construction of scale T4RELEAD 358
Table 11.145. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4RELEAD 359
Table 11.146. Measurement invariance results from MGCFA for scale T4RELEAD with differences in model fits across models for ISCED level 2 361
Table 11.147. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4RELEAD 361
Table 11.148. Items and response categories used in the construction of scale T4INSTLE 362
Table 11.149. Reliability coefficient alpha for single countries and pooled model for scale T4INSTLE 362
Table 11.150. Measurement invariance results from MGCFA for scale T4INSTLE with differences in model fits across models for ISCED level 2 364
Table 11.151. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4INSTLE 365
Table 11.152. Items and response categories used in the construction of scale T4CLIBUL 365
Table 11.153. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLIBUL 366
Table 11.154. Measurement invariance results from MGCFA for scale T4CLIBUL with differences in model fits across models for ISCED level 2 368
Table 11.155. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CLIBUL 368
Table 11.156. Items and response categories used in the construction of scale T4STUHAR 369
Table 11.157. Reliability coefficient alpha for single countries and pooled model for scale T4STUHAR 369
Table 11.158. Measurement invariance results from MGCFA for scale T4STUHAR with differences in model fits across models for ISCED level 2 371
Table 11.159. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4STUHAR 372
Table 11.160. Items and response categories used in the construction of scale T4CHFAT 372
Table 11.161. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CHFAT 373
Table 11.162. Measurement invariance results from MGCFA for scale T4CHFAT with differences in model fits across models for ISCED level 2 375
Table 11.163. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CHFAT 375
Table 11.164. Items and response categories used in the construction of scale T4MOPU 376
Table 11.165. Reliability coefficient alpha for single countries and pooled model for scale T4MOPU 376
Table 11.166. Measurement invariance results from MGCFA for scale T4MOPU with differences in model fits across models for ISCED level 2 378
Table 11.167. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4MOPU 379
Table 11.168. Items and response categories used in the construction of scale T4MOSU 379
Table 11.169. Reliability coefficient alpha for single countries and pooled model for scale T4MOSU 380
Table 11.170. Measurement invariance results from MGCFA for scale T4MOSU with differences in model fits across models for ISCED level 2 382
Table 11.171. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4MOSU 382
Table 11.172. Items and response categories used in the construction of scale T4WELS 383

Unclassified - Non classifié

Table 11.173. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4WELS 383
Table 11.174. Measurement invariance results from MGCFA for scale T4WELS with differences in model fits across models for ISCED level 2 385
Table 11.175. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4WELS 385
Table 11.176. Items and response categories used in the construction of scale T4WLOADT 386
Table 11.177. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4WLOADT 386
Table 11.178. Measurement invariance results from MGCFA for scale T4WLOADT with differences in model fits across models for ISCED level 2 389
Table 11.179. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4WLOADT 389
Table 11.180. Items and response categories used in the construction of scale T4STBEH 390
Table 11.181. Reliability coefficient alpha for single countries and pooled model for scale T4STBEH 390
Table 11.182. Measurement invariance results from MGCFA for scale T4STBEH with differences in model fits across models for ISCED level 2 392
Table 11.183. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4STBEH 392
Table 11.184. Items and response categories used in the construction of scale T4JSENVT 393
Table 11.185. Reliability coefficient alpha for single countries and pooled model for scale T4JSENVT 393
Table 11.186. Measurement invariance results from MGCFA for scale T4JSENVT with differences in model fits across models for ISCED level 2 395
Table 11.187. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4JSENVT 396
Table 11.188. Items and response categories used in the construction of scale T4JSPROT 397
Table 11.189. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4JSPROT 397
Table 11.190. Measurement invariance results from MGCFA for scale T4JSPROT with differences in model fits across models for ISCED level 2 399
Table 11.191. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4JSPROT 399
Table 11.192. Items and response categories used in the construction of scale T4VALP 400
Table 11.193. Reliability coefficient alpha for single countries and pooled model for scale T4VALP 400
Table 11.194. Measurement invariance results from MGCFA for scale T4VALP with differences in model fits across models for ISCED level 2 403
Table 11.195. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4VALP 403
Table 11.196. Items and response categories used in the construction of scale T4JOYTCH 404
Table 11.197. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4JOYTCH 404
Table 11.198. Measurement invariance results from MGCFA for scale T4JOYTCH with differences in model fits across models for ISCED level 2 406
Table 11.199. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4JOYTCH 406
Table 11.200. Items and response categories used in the construction of scale T4PLEADS 407
Table 11.201. Reliability coefficient alpha for single countries and pooled model for scale T4PLEADS 407
Table 11.202. Measurement invariance results from MGCFA for scale T4PLEADS with differences in model fits across models for ISCED level 2 410
Table 11.203. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PLEADS 410
Table 11.204. Items and response categories used in the construction of scale T4PTLEAD 411
Table 11.205. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PTLEAD 411
Table 11.206. Measurement invariance results from MGCFA for scale T4PTLEAD with differences in model fits across models for ISCED level 2 413
Table 11.207. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PTLEAD 414
Table 11.208. Items and response categories used in the construction of scale T4POPPART 414
Table 11.209. Reliability coefficient alpha for single countries and pooled model for scale T4POPPART 415
Table 11.210. Measurement invariance results from MGCFA for scale T4POPPART with differences in model fits across models for ISCED level 2 417
Table 11.211. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4POPPART 417
Table 11.212. Items and response categories used in the construction of scale T4PACADT 418
Table 11.213. Reliability coefficient alpha for single countries and pooled model for scale T4PACADT 418
Table 11.214. Measurement invariance results from MGCFA for scale T4PACADT with differences in model fits across models for ISCED level 2 420
Table 11.215. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PACADT 421
Table 11.216. Items and response categories used in the construction of scale T4PDELI 421

Unclassified - Non classifié

Table 11.217. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PDELI 422
Table 11.218. Measurement invariance results from MGCFA for scale T4PDELI with differences in model fits across models for ISCED level 2 424
Table 11.219. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDELI 424
Table 11.220. Items and response categories used in the construction of scaleT4PDIVBF 425
Table 11.221. Reliability coefficient alpha for single countries and pooled model for scale T4PDIVBF 425
Table 11.222. Measurement invariance results from MGCFA for scale T4PDIVBF with differences in model fits across models for ISCED level 2 427
Table 11.223. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDIVBF 427
Table 11.224. Items and response categories used in the construction of scale T4PLEADESE 428
Table 11.225. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PLEADESE 428
Table 11.226. Measurement invariance results from MGCFA for scale T4PLEADESE with differences in model fits across models for ISCED level 2 431
Table 11.227. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PLEADESE 431
Table 11.228. Items and response categories used in the construction of scale T4PINBRCC 432
Table 11.229. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PINBRCC 432
Table 11.230. Measurement invariance results from MGCFA for scale T4PINBRCC with differences in model fits across models for ISCED level 2 435
Table 11.231. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PINBRCC 435
Table 11.232. Items and response categories used in the construction of scale T4PATBRCC 436
Table 11.233. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PATBRCC 436
Table 11.234. Measurement invariance results from MGCFA for scale T4PATBRCC with differences in model fits across models for ISCED level 2 438
Table 11.235. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PATBRCC 439
Table 11.236. Items and response categories used in the construction of scale T4PWELS 439
Table 11.237. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PWELS 440
Table 11.238. Measurement invariance results from MGCFA for scale T4PWELS with differences in model fits across models for ISCED level 2 442
Table 11.239. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PWELS 442
Table 11.240. Items and response categories used in the construction of scale T4PWLOAD 443
Table 11.241. Reliability coefficient alpha for single countries and pooled model for scale T4PWLOAD 443
Table 11.242. Measurement invariance results from MGCFA for scale T4PWLOAD with differences in model fits across models for ISCED level 2 446
Table 11.243. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PWLOAD 446
Table 11.244. Items and response categories used in the construction of scale T4PJSENVT 447
Table 11.245. Reliability coefficient alpha for single countries and pooled model for scale T4PJSENVT 447
Table 11.246. Measurement invariance results from MGCFA for scale T4PJSENVT with differences in model fits across models for ISCED level 2 449
Table 11.247. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PJSENVT 449
Table 11.248. Items and response categories used in the construction of scale T4PJSPROT 450
Table 11.249. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PJSPROT 450
Table 11.250. Measurement invariance results from MGCFA for scale T4PJSPROT with differences in model fits across models for ISCED level 2 453
Table 11.251. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PJSPROT 453
Table 11.252. Items and response categories used in the construction of scale S2PDNPED 454
Table 11.253. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PDNPED 454
Table 11.254. Measurement invariance results from MGCFA for scale S2PDNPED with differences in model fits across models 455
Table 11.255. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PDNPED 455
Table 11.256. Items and response categories used in the construction of scale S2PDIVR 456
Table 11.257. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PDIVR 456

Unclassified - Non classifié

Table 11.258. Measurement invariance results from MGCFA for scale S2PDIVR with differences in model fits across models 457
Table 11.259. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PDIVR 458
Table 11.260. Items and response categories used in the construction of scale S2SELF 458
Table 11.261. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2SELF 459
Table 11.262. Measurement invariance results from MGCFA for scale S2SELF with differences in model fits across models 460
Table 11.263. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2SELF 460
Table 11.264. Items and response categories used in the construction of scale S2SELFC 461
Table 11.265. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2SELFC 461
Table 11.266. Measurement invariance results from MGCFA for scale S2SELFC with differences in model fits across models 462
Table 11.267. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2SELFC 462
Table 11.268. Items and response categories used in the construction of S2PRINTR 463
Table 11.269. Reliability coefficient alpha for single countries/territories and pooled model for scale S2PRINTR 463
Table 11.270. Measurement invariance results from MGCFA for scale S2PRINTR with differences in model fits across models 464
Table 11.271. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRINTR 464
Table 11.272. Items and response categories used in the construction of scale S2PRSOC 465
Table 11.273. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PRSOC 465
Table 11.274. Measurement invariance results from MGCFA for scale S2PRSOC with differences in model fits across models 466
Table 11.275. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRSOC 467
Table 11.276. Items and response categories used in the construction of scale S2PREMR 467
Table 11.277. Reliability coefficient alpha for single countries/territories and pooled model for scale S2PREMR 468
Table 11.278. Measurement invariance results from MGCFA for scale S2PREMR with differences in model fits across models 468
Table 11.279. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PREMR 469
Table 11.280. Items and response categories used in the construction of scale S2CCAFL 470
Table 11.281. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2CCAFL 470
Table 11.282. Measurement invariance results from MGCFA for scale S2CCAFL with differences in model fits across models 471
Table 11.283. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2CCAFL 471
Table 11.284. Items and response categories used in the construction of scale S2PRACTR 472
Table 11.285. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PRACTR 472
Table 11.286. Measurement invariance results from MGCFA for scale S2PRACTR with differences in model fits across models 473
Table 11.287. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRACTR 473
Table 11.288. Items and response categories used in the construction of scale S2PRLANR 474
Table 11.289. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PRLANR 474
Table 11.290. Measurement invariance results from MGCFA for scale S2PRLANR with differences in model fits across models 475
Table 11.291. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRLANR 475
Table 11.292. Items and response categories used in the construction of scale S2PROLIR 476
Table 11.293. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PROLIR 477
Table 11.294. Measurement invariance results from MGCFA for scale S2PROLIR with differences in model fits across models 478
Table 11.295. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PROLIR 478
Table 11.296. Items and response categories used in the construction of scale S2PRONUR 479
Table 11.297. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PRONUR 479
Table 11.298. Measurement invariance results from MGCFA for scale S2PRONUR with differences in model fits across models 480

Unclassified - Non classifié

Table 11.299. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRONUR 480
Table 11.300. Items and response categories used in the construction of scale S2SOCIALR 481
Table 11.301. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2SOCIALR 481
Table 11.302. Measurement invariance results from MGCFA for scale S2SOCIALR with differences in model fits across models 482
Table 11.303. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2SOCIALR 482
Table 11.304. Items and response categories used in the construction of scale S2PAAD 483
Table 11.305. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PAAD 484
Table 11.306. Measurement invariance results from MGCFA for scale S2PAAD with differences in model fits across models 484
Table 11.307. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PAAD 485
Table 11.308. Items and response categories used in the construction of scale S2COLLR 486
Table 11.309. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2COLLR 486
Table 11.310. Measurement invariance results from MGCFA for scale S2COLLR with differences in model fits across models 487
Table 11.311. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2COLLR 487
Table 11.312. Items and response categories used in the construction of scale S2PARENR 488
Table 11.313. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PARENR 488
Table 11.314. Measurement invariance results from MGCFA for scale S2PARENR with differences in model fits across models 489
Table 11.315. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PARENR 489
Table 11.316. Items and response categories used in the construction of scale S2SSLEAD 490
Table 11.317. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2SSLEAD 491
Table 11.318. Measurement invariance results from MGCFA for scale S2SSLEAD with differences in model fits across models 491
Table 11.319. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2SSLEAD 492
Table 11.320. Items and response categories used in the construction of scale S2PROSAR 493
Table 11.321. Reliability coefficient alpha for single countries/territories and pooled model for scale S2PROSAR 493
Table 11.322. Measurement invariance results from MGCFA for scale S2PROSAR with differences in model fits across models 494
Table 11.323. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PROSAR 494
Table 11.324. Items and response categories used in the construction of scale S2JOBSAR 495
Table 11.325. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2JOBSAR 495
Table 11.326. Measurement invariance results from MGCFA for scale S2JOBSAR with differences in model fits across models 496
Table 11.327. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2JOBSAR 496
Table 11.328. Items and response categories used in the construction of scale S2STRESC 497
Table 11.329. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2STRESC 498
Table 11.330. Measurement invariance results from MGCFA for scale S2STRESC with differences in model fits across models 498
Table 11.331. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2STRESC 499
Table 11.332. Items and response categories used in the construction of scale S2STRESO 500
Table 11.333. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2STRESO 500
Table 11.334. Measurement invariance results from MGCFA for scale S2STRESO with differences in model fits across models 501
Table 11.335. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2STRESO 501
Table 11.336. Items and response categories used in the construction of scale S2STRESS 502
Table 11.337. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2STRESS 502
Table 11.338. Measurement invariance results from MGCFA for scale S2STRESS with differences in model fits across models 503

Unclassified - Non classifié

Table 11.339. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2STRESS 504
Table 11.340. Items and response categories used in the construction of scale S2LPDEV 505
Table 11.341. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LPDEV 505
Table 11.342. Measurement invariance results from MGCFA for scale S2LPDEV with differences in model fits across models 506
Table 11.343. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LPDEV 506
Table 11.344. Items and response categories used in the construction of scale S2LPDLS 507
Table 11.345. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LPDLS 508
Table 11.346. Measurement invariance results from MGCFA for scale S2LPDLS with differences in model fits across models 508
Table 11.347. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LPDLS 508
Table 11.348. Items and response categories used in the construction of scale S2LPDPL 509
Table 11.349. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LPDPL 510
Table 11.350. Measurement invariance results from MGCFA for scale S2LPDPL with differences in model fits across models 511
Table 11.351. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LPDPL 511
Table 11.352. Items and response categories used in the construction of scale S2LNIGHBR 512
Table 11.353. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LNIGHBR 512
Table 11.354. Measurement invariance results from MGCFA for scale S2LNIGHBR with differences in model fits across models 513
Table 11.355. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LNIGHBR 514
Table 11.356. Items and response categories used in the construction of scale S2LSQSET 514
Table 11.357. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSQSET 515
Table 11.358. Measurement invariance results from MGCFA for scale S2LSQSET with differences in model fits across models 516
Table 11.359. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSQSET 516
Table 11.360. Items and response categories used in the construction of scale S2LSQPRS 517
Table 11.361. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSQPRS 517
Table 11.362. Measurement invariance results from MGCFA for scale S2LSQPRS with differences in model fits across models 518
Table 11.363. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSQPRS 518
Table 11.364. Items and response categories used in the construction of scale S2LSQSTA 519
Table 11.365. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSQSTA 520
Table 11.366. Measurement invariance results from MGCFA for scale S2LSQSTA with differences in model fits across models 520
Table 11.367. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSQSTA 520
Table 11.368. Items and response categories used in the construction of scale S2LEADSPL1 522
Table 11.369. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LEADSPL1 522
Table 11.370. Measurement invariance results from MGCFA for scale S2LEADSPL1 with differences in model fits across models 523
Table 11.371. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LEADSPL1 523
Table 11.372. Items and response categories used in the construction of scale S2LEADSPL2 524
Table 11.373. Reliability coefficient alpha for single countries/territories and pooled model for scale S2LEADSPL2 524
Table 11.374. Measurement invariance results from MGCFA for scale S2LEADSPL2 with differences in model fits across models 525
Table 11.375. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LEADSPL2 525
Table 11.376. Items and response categories used in the construction of scale S2LDLEAD 526
Table 11.377. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LDLEAD 526
Table 11.378. Measurement invariance results from MGCFA for scale S2LDLEAD with differences in model fits across models 527

Unclassified - Non classifié

Table 11.379. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LDLEAD 528
Table 11.380. Items and response categories used in the construction of scale S2LJOBSAR 528
Table 11.381. Reliability coefficient alpha for single countries/territories and pooled model for scale S2LJOBSAR 529
Table 11.382. Measurement invariance results from MGCFA for scale S2LJOBSAR with differences in model fits across models 529
Table 11.383. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LJOBSAR 530
Table 11.384. Items and response categories used in the construction of scale S2LSTRESL 531
Table 11.385. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSTRESL 531
Table 11.386. Measurement invariance results from MGCFA for scale S2LSTRESL with differences in model fits across models 532
Table 11.387. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSTRESL 532
Table 11.388. Items and response categories used in the construction of scale S2LSTRESP 533
Table 11.389. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSTRESP 534
Table 11.390. Measurement invariance results from MGCFA for scale S2LSTRESP with differences in model fits across models 534
Table 11.391. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSTRESP 535
Table 11.392. Items and response categories used in the construction of scale S2LSTRESG 536
Table 11.393. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSTRESG 536
Table 11.394. Measurement invariance results from MGCFA for scale S2LSTRESG with differences in model fits across models 537
Table 11.395. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSTRESG 537
Table 11.396. Reliability coefficient alpha for single countries and pooled model for scale T4EXINF 538
Table 11.397. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4COLES 539
Table 11.398. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SECLS 540
Table 11.399. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEINS 540
Table 11.400. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEENG 541
Table 11.401. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLAIN 542
Table 11.402. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4COGAC 543
Table 11.403. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLASM 543
Table 11.404. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4ADLE 544
Table 11.405. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PBLE 545
Table 11.406. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4FULFIL 546
Table 11.407. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4WLOADT 547
Table 11.408. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4STBEH 547
Table 11.409. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4JOYTCH 548
Table 11.410. Items and response categories used in the construction of scale T4OTLCI 549
Table 11.411. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4OTLCI 550
Table 11.412. Measurement invariance results from MGCFA for scale T4OTLCI with differences in model fits across models for TKS countries/territories 550
Table 11.413. Item loadings and thresholds based on pooled TKS data for scale T4OTLCI 550
Table 11.414. Items and response categories used in the construction of scale T4OTLSL 551

Unclassified - Non classifié

Table 11.415. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4OTLSL 552
Table 11.416. Measurement invariance results from MGCFA for scale T4OTLSL with differences in model fits across models for TKS countries/territories 552
Table 11.417. Item loadings and thresholds based on pooled TKS data for scale T4OTLSL 552
Table 11.418. Items and response categories used in the construction of scale T4OTLAS 553
Table 11.419. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4OTLAS 554
Table 11.420. Measurement invariance results from MGCFA for scale T4OTLAS with differences in model fits across models for TKS countries/territories 554
Table 11.421. Item loadings and thresholds based on pooled TKS data for scale T4OTLAS 554
Table 11.422. Items and response categories used in the construction of scale T4OTLAP 555
Table 11.423. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4OTLAP 556
Table 11.424. Measurement invariance results from MGCFA for scale T4OTLAP with differences in model fits across models for TKS countries/territories 556
Table 11.425. Item loadings and thresholds based on pooled TKS data for scale T4OTLAP 556
Table 12.1. Reliabilities of assessment items 562
Table 12.2. Percentages of not-reached responses 564
Table 12.3. Percentages of omitted responses for individual items 565
Table 12.4. Item facilities, item-rest correlations, weighted item fit and initial parameter estimations for the full set of GPK items 567
Table 12.5. Correlations between latent dimensions of teachers' GPK 569
Table 12.6. Correlations between national and international item parameters 571
Table 12.7. Example of flagged items report 572
Table 12.8. List of items that were excluded or treated as national items 574
Table 12.9. Final item parameters for the scaling of GPK items 574
Table 12.10. Gender DIF estimates for GPK assessment items 577

Table A C.1. Target and survey populations: ISCED level 2 599
Table A C.2. Target and survey populations: ISCED level 1 608
Table A C.3. Target and survey populations: ISCED level 3 612
Table A C.4. Target and survey populations: ISCED level 02 615
Table A C.5. Target and survey populations: U3 619
Table A D.1. School participation status: survey of principals – Albania, ISCED level 2 621
Table A D.2. School participation status: survey of teachers – Albania, ISCED level 2 621
Table A D.3. Teacher participation status – Albania, ISCED level 2 622
Table A D.4. School participation status: survey of principals – Alberta (Canada), ISCED level 2 623
Table A D.5. School participation status: survey of teachers – Alberta (Canada), ISCED level 2 623
Table A D.6. Teacher participation status – Alberta (Canada), ISCED level 2 623
Table A D.7. School participation status: survey of principals – Australia, ISCED level 2 624
Table A D.8. School participation status: survey of teachers – Australia, ISCED level 2 624
Table A D.9. Teacher participation status – Australia, ISCED level 2 624
Table A D.10. School participation status: survey of principals – Austria, ISCED level 2 625
Table A D.11. School participation status: survey of teachers – Austria, ISCED level 2 625
Table A D.12. Teacher participation status – Austria, ISCED level 2 625
Table A D.13. School participation status: survey of principals – Azerbaijan, ISCED level 2 626
Table A D.14. School participation status: survey of teachers – Azerbaijan, ISCED level 2 626
Table A D.15. Teacher participation status – Azerbaijan, ISCED level 2 626
Table A D.16. School participation status: survey of principals – Bahrain, ISCED level 2 627
Table A D.17. School participation status: survey of teachers – Bahrain, ISCED level 2 627
Table A D.18. Teacher participation status – Bahrain, ISCED level 2 627
Table A D.19. School participation status: survey of principals – Belgium, ISCED level 2 628
Table A D.20. School participation status: survey of teachers – Belgium, ISCED level 2 629
Table A D.21. Teacher participation status – Belgium, ISCED level 2 629
Table A D.22. School participation status: survey of principals – Flemish Community (Belgium), ISCED level 2 630
Table A D.23. School participation status: survey of teachers – Flemish Community (Belgium), ISCED level 2 630
Table A D.24. Teacher participation status – Flemish Community (Belgium), ISCED level 2 630
Table A D.25. School participation status: survey of principals – French Community (Belgium), ISCED level 2 631

Unclassified - Non classifié

Table A D.26. School participation status: survey of teachers – French Community (Belgium), ISCED level 2 631
Table A D.27. Teacher participation status – French Community (Belgium), ISCED level 2 631
Table A D.28. School participation status: survey of principals – Brazil, ISCED level 2 632
Table A D.29. School participation status: survey of teachers – Brazil, ISCED level 2 632
Table A D.30. Teacher participation status – Brazil, ISCED level 2 633
Table A D.31. School participation status: survey of principals – Bulgaria, ISCED level 2 634
Table A D.32. School participation status: survey of teachers – Bulgaria, ISCED level 2 634
Table A D.33. Teacher participation status – Bulgaria, ISCED level 2 634
Table A D.34. School participation status: survey of principals – Chile, ISCED level 2 635
Table A D.35. School participation status: survey of teachers – Chile, ISCED level 2 636
Table A D.36. Teacher participation status – Chile, ISCED level 2 636
Table A D.37. School participation status: survey of teachers – Chile, TKS 636
Table A D.38. Teacher participation status – Chile, TKS 637
Table A D.39. School participation status: survey of principals – Colombia, ISCED level 2 638
Table A D.40. School participation status: survey of teachers – Colombia, ISCED level 2 638
Table A D.41. Teacher participation status – Colombia, ISCED level 2 639
Table A D.42. School participation status: survey of principals – Costa Rica, ISCED level 2 640
Table A D.43. School participation status: survey of teachers – Costa Rica, ISCED level 2 640
Table A D.44. Teacher participation status – Costa Rica, ISCED level 2 641
Table A D.45. School participation status: survey of principals – Croatia, ISCED level 2 642
Table A D.46. School participation status: survey of teachers – Croatia, ISCED level 2 642
Table A D.47. Teacher participation status – Croatia, ISCED level 2 643
Table A D.48. School participation status: survey of teachers – Croatia, TKS 643
Table A D.49. Teacher participation status – Croatia, TKS 643
Table A D.50. School participation status: survey of principals – Cyprus, ISCED level 2 644
Table A D.51. School participation status: survey of teachers – Cyprus, ISCED level 2 644
Table A D.52. Teacher participation status – Cyprus, ISCED level 2 644
Table A D.53. School participation status: survey of principals – Czechia, ISCED level 2 645
Table A D.54. School participation status: survey of teachers – Czechia, ISCED level 2 646
Table A D.55. Teacher participation status – Czechia, ISCED level 2 646
Table A D.56. School participation status: survey of principals – Denmark, ISCED level 2 647
Table A D.57. School participation status: survey of teachers – Denmark, ISCED level 2 647
Table A D.58. Teacher participation status – Denmark, ISCED level 2 648
Table A D.59. School participation status: survey of principals – Estonia, ISCED level 2 649
Table A D.60. School participation status: survey of teachers – Estonia, ISCED level 2 649
Table A D.61. Teacher participation status – Estonia, ISCED level 2 649
Table A D.62. School participation status: survey of principals – Finland, ISCED level 2 650
Table A D.63. School participation status: survey of teachers – Finland, ISCED level 2 650
Table A D.64. Teacher participation status – Finland, ISCED level 2 651
Table A D.65. School participation status: survey of principals – France, ISCED level 2 652
Table A D.66. School participation status: survey of teachers – France, ISCED level 2 652
Table A D.67. Teacher participation status – France, ISCED level 2 652
Table A D.68. School participation status: survey of principals – Hungary, ISCED level 2 653
Table A D.69. School participation status: survey of teachers – Hungary, ISCED level 2 654
Table A D.70. Teacher participation status – Hungary, ISCED level 2 654
Table A D.71. School participation status: survey of principals – Iceland, ISCED level 2 655
Table A D.72. School participation status: survey of teachers – Iceland, ISCED level 2 655
Table A D.73. Teacher participation status – Iceland, ISCED level 2 655
Table A D.74. School participation status: survey of principals – Israel, ISCED level 2 656
Table A D.75. School participation status: survey of teachers – Israel, ISCED level 2 657
Table A D.76. Teacher participation status – Israel, ISCED level 2 657
Table A D.77. School participation status: survey of principals – Italy, ISCED level 2 658
Table A D.78. School participation status: survey of teachers – Italy, ISCED level 2 658
Table A D.79. Teacher participation status – Italy, ISCED level 2 658
Table A D.80. School participation status: survey of principals – Japan, ISCED level 2 659
Table A D.81. School participation status: survey of teachers – Japan, ISCED level 2 659
Table A D.82. Teacher participation status – Japan, ISCED level 2 660
Table A D.83. School participation status: survey of principals – Kazakhstan, ISCED level 2 661
Table A D.84. School participation status: survey of teachers – Kazakhstan, ISCED level 2 662
Table A D.85. Teacher participation status – Kazakhstan, ISCED level 2 663

Unclassified - Non classifié

Table A D.86. School participation status: survey of principals – Korea, ISCED level 2 664
Table A D.87. School participation status: survey of teachers – Korea, ISCED level 2 664
Table A D.88. Teacher participation status – Korea, ISCED level 2 664
Table A D.89. School participation status: survey of principals – Kosovo, ISCED level 2 665
Table A D.90. School participation status: survey of teachers – Kosovo, ISCED level 2 665
Table A D.91. Teacher participation status – Kosovo, ISCED level 2 666
Table A D.92. School participation status: survey of principals – Latvia, ISCED level 2 667
Table A D.93. School participation status: survey of teachers – Latvia, ISCED level 2 667
Table A D.94. Teacher participation status – Latvia, ISCED level 2 668
Table A D.95. School participation status: survey of principals – Lithuania, ISCED level 2 669
Table A D.96. School participation status: survey of teachers – Lithuania, ISCED level 2 669
Table A D.97. Teacher participation status – Lithuania, ISCED level 2 669
Table A D.98. School participation status: survey of principals – Malta, ISCED level 2 670
Table A D.99. School participation status: survey of teachers – Malta, ISCED level 2 670
Table A D.100. Teacher participation status – Malta, ISCED level 2 670
Table A D.101. School participation status: survey of principals – Montenegro, ISCED level 2 671
Table A D.102. School participation status: survey of teachers – Montenegro, ISCED level 2 671
Table A D.103. Teacher participation status – Montenegro, ISCED level 2 672
Table A D.104. School participation status: survey of principals – Morocco, ISCED level 2 673
Table A D.105. School participation status: survey of teachers – Morocco, ISCED level 2 673
Table A D.106. Teacher participation status – Morocco, ISCED level 2 674
Table A D.107. School participation status: survey of teachers – Morocco, TKS 674
Table A D.108. Teacher participation status – Morocco, TKS 675
Table A D.109. School participation status: survey of principals – Netherlands, ISCED level 2 676
Table A D.110. School participation status: survey of teachers – Netherlands, ISCED level 2 676
Table A D.111. Teacher participation status – Netherlands, ISCED level 2 676
Table A D.112. School participation status: survey of principals – New Zealand, ISCED level 2 677
Table A D.113. School participation status: survey of teachers – New Zealand, ISCED level 2 677
Table A D.114. Teacher participation status – New Zealand, ISCED level 2 678
Table A D.115. School participation status: survey of principals – North Macedonia, ISCED level 2 679
Table A D.116. School participation status: survey of teachers – North Macedonia, ISCED level 2 679
Table A D.117. Teacher participation status – North Macedonia, ISCED level 2 679
Table A D.118. School participation status: survey of principals – Norway, ISCED level 2 680
Table A D.119. School participation status: survey of teachers – Norway, ISCED level 2 680
Table A D.120. Teacher participation status – Norway, ISCED level 2 680
Table A D.121. School participation status: survey of principals – Poland, ISCED level 2 681
Table A D.122. School participation status: survey of teachers – Poland, ISCED level 2 681
Table A D.123. Teacher participation status – Poland, ISCED level 2 682
Table A D.124. School participation status: survey of teachers – Poland, TKS 682
Table A D.125. Teacher participation status – Poland, TKS 682
Table A D.126. School participation status: survey of principals – Portugal, ISCED level 2 683
Table A D.127. School participation status: survey of teachers – Portugal, ISCED level 2 683
Table A D.128. Teacher participation status – Portugal, ISCED level 2 684
Table A D.129. School participation status: survey of teachers – Portugal, TKS 684
Table A D.130. Teacher participation status – Portugal, TKS 684
Table A D.131. School participation status: survey of principals – Romania, ISCED level 2 685
Table A D.132. School participation status: survey of teachers – Romania, ISCED level 2 685
Table A D.133. Teacher participation status – Romania, ISCED level 2 685
Table A D.134. School participation status: survey of principals – Saudi Arabia, ISCED level 2 686
Table A D.135. School participation status: survey of teachers – Saudi Arabia, ISCED level 2 686
Table A D.136. Teacher participation status – Saudi Arabia, ISCED level 2 687
Table A D.137. School participation status: survey of teachers – Saudi Arabia, TKS 687
Table A D.138. Teacher participation status – Saudi Arabia, TKS 687
Table A D.139. School participation status: survey of principals – Serbia, ISCED level 2 688
Table A D.140. School participation status: survey of teachers – Serbia, ISCED level 2 688
Table A D.141. Teacher participation status – Serbia, ISCED level 2 688
Table A D.142. School participation status: survey of principals – Shanghai (China), ISCED level 2 689
Table A D.143. School participation status: survey of teachers – Shanghai (China), ISCED level 2 689
Table A D.144. Teacher participation status – Shanghai (China), ISCED level 2 689
Table A D.145. School participation status: survey of principals – Singapore, ISCED level 2 690

Unclassified - Non classifié

Table A D.146. School participation status: survey of teachers – Singapore, ISCED level 2 690
Table A D.147. Teacher participation status – Singapore, ISCED level 2 690
Table A D.148. School participation status: survey of principals – Slovak Republic, ISCED level 2 691
Table A D.149. School participation status: survey of teachers – Slovak Republic, ISCED level 2 691
Table A D.150. Teacher participation status – Slovak Republic, ISCED level 2 691
Table A D.151. School participation status: survey of principals – Slovenia, ISCED level 2 692
Table A D.152. School participation status: survey of teachers – Slovenia, ISCED level 2 692
Table A D.153. Teacher participation status – Slovenia, ISCED level 2 693
Table A D.154. School participation status: survey of principals – South Africa, ISCED level 2 694
Table A D.155. School participation status: survey of teachers – South Africa, ISCED level 2 694
Table A D.156. Teacher participation status – South Africa, ISCED level 2 695
Table A D.157. School participation status: survey of teachers – South Africa, TKS 695
Table A D.158. Teacher participation status – South Africa, TKS 695
Table A D.159. School participation status: survey of principals – Spain, ISCED level 2 696
Table A D.160. School participation status: survey of teachers – Spain, ISCED level 2 697
Table A D.161. Teacher participation status – Spain, ISCED level 2 697
Table A D.162. School participation status: survey of principals – Sweden, ISCED level 2 698
Table A D.163. School participation status: survey of teachers – Sweden, ISCED level 2 698
Table A D.164. Teacher participation status – Sweden, ISCED level 2 698
Table A D.165. School participation status: survey of principals – Türkiye, ISCED level 2 699
Table A D.166. School participation status: survey of teachers – Türkiye, ISCED level 2 699
Table A D.167. Teacher participation status – Türkiye, ISCED level 2 700
Table A D.168. School participation status: survey of principals – United Arab Emirates, ISCED level 2 701
Table A D.169. School participation status: survey of teachers – United Arab Emirates, ISCED level 2 701
Table A D.170. Teacher participation status – United Arab Emirates, ISCED level 2 702
Table A D.171. School participation status: survey of principals – United States, ISCED level 2 703
Table A D.172. School participation status: survey of teachers – United States, ISCED level 2 703
Table A D.173. Teacher participation status – United States, ISCED level 2 704
Table A D.174. School participation status: survey of teachers – United States, TKS 704
Table A D.175. Teacher participation status – United States, TKS 704
Table A D.176. School participation status: survey of principals – Uzbekistan, ISCED level 2 705
Table A D.177. School participation status: survey of teachers – Uzbekistan, ISCED level 2 705
Table A D.178. Teacher participation status – Uzbekistan, ISCED level 2 706
Table A D.179. School participation status: survey of principals – Viet Nam, ISCED level 2 707
Table A D.180. School participation status: survey of teachers – Viet Nam, ISCED level 2 707
Table A D.181. Teacher participation status – Viet Nam, ISCED level 2 707
Table A D.182. School participation status: survey of principals – Australia, ISCED level 1 708
Table A D.183. School participation status: survey of teachers – Australia, ISCED level 1 708
Table A D.184. Teacher participation status – Australia, ISCED level 1 709
Table A D.185. School participation status: survey of principals – Belgium, ISCED level 1 710
Table A D.186. School participation status: survey of teachers – Belgium, ISCED level 1 711
Table A D.187. Teacher participation status – Belgium, ISCED level 1 712
Table A D.188. School participation status: survey of principals – Flemish Community (Belgium), ISCED level 1 713
Table A D.189. School participation status: survey of teachers – Flemish Community (Belgium), ISCED level 1 713
Table A D.190. Teacher participation status – Flemish Community (Belgium), ISCED level 1 714
Table A D.191. School participation status: survey of principals – French Community (Belgium), ISCED level 1 715
Table A D.192. School participation status: survey of teachers – French Community (Belgium), ISCED level 1 715
Table A D.193. Teacher participation status – French Community (Belgium), ISCED level 1 716
Table A D.194. School participation status: survey of principals – Brazil, ISCED level 1 717
Table A D.195. School participation status: survey of teachers – Brazil, ISCED level 1 717
Table A D.196. Teacher participation status – Brazil, ISCED level 1 718
Table A D.197. School participation status: survey of principals – France, ISCED level 1 719
Table A D.198. School participation status: survey of teachers – France, ISCED level 1 719
Table A D.199. Teacher participation status – France, ISCED level 1 719
Table A D.200. School participation status: survey of principals – Japan, ISCED level 1 720
Table A D.201. School participation status: survey of teachers – Japan, ISCED level 1 720
Table A D.202. Teacher participation status – Japan, ISCED level 1 720
Table A D.203. School participation status: survey of principals – Korea, ISCED level 1 721
Table A D.204. School participation status: survey of teachers – Korea, ISCED level 1 721

Unclassified - Non classifié

Table A D.205. Teacher participation status – Korea, ISCED level 1 722
Table A D.206. School participation status: survey of principals – Morocco, ISCED level 1 723
Table A D.207. School participation status: survey of teachers – Morocco, ISCED level 1 723
Table A D.208. Teacher participation status – Morocco, ISCED level 1 724
T Table A D.209. School participation status: survey of principals – Netherlands, ISCED level 1 725
Table A D.210. School participation status: survey of teachers – Netherlands, ISCED level 1 725
Table A D.211. Teacher participation status – Netherlands, ISCED level 1 725
Table A D.212. School participation status: survey of principals – New Zealand, ISCED level 1 726
Table A D.213. School participation status: survey of teachers – New Zealand, ISCED level 1 726
Table A D.214. Teacher participation status – New Zealand, ISCED level 1 726
Table A D.215. School participation status: survey of principals – Saudi Arabia, ISCED level 1 727
Table A D.216. School participation status: survey of teachers – Saudi Arabia, ISCED level 1 727
Table A D.217. Teacher participation status – Saudi Arabia, ISCED level 1 728
Table A D.218. School participation status: survey of principals – Slovenia, ISCED level 1 729
Table A D.219. School participation status: survey of teachers – Slovenia, ISCED level 1 729
Table A D.220. Teacher participation status – Slovenia, ISCED level 1 730
Table A D.221. School participation status: survey of principals – Spain, ISCED level 1 731
Table A D.222. School participation status: survey of teachers – Spain, ISCED level 1 732
Table A D.223. Teacher participation status – Spain, ISCED level 1 732
Table A D.224. School participation status: survey of principals – Türkiye, ISCED level 1 733
Table A D.225. School participation status: survey of teachers – Türkiye, ISCED level 1 733
Table A D.226. Teacher participation status – Türkiye, ISCED level 1 734
Table A D.227. School participation status: survey of principals – United Arab Emirates, ISCED level 1 735
Table A D.228. School participation status: survey of teachers – United Arab Emirates, ISCED level 1 735
Table A D.229. Teacher participation status – United Arab Emirates, ISCED level 1 736
Table A D.230. School participation status: survey of principals – Croatia, ISCED level 3 737
Table A D.231. School participation status: survey of teachers – Croatia, ISCED level 3 737
Table A D.232. Teacher participation status – Croatia, ISCED level 3 738
Table A D.233. School participation status: survey of principals – Denmark, ISCED level 3 739
Table A D.234. School participation status: survey of teachers – Denmark, ISCED level 3 740
Table A D.235. Teacher participation status – Denmark, ISCED level 3 740
Table A D.236. School participation status: survey of principals – Flemish Community (Belgium), ISCED level 3 741
Table A D.237. School participation status: survey of teachers – Flemish Community (Belgium), ISCED level 3 742
Table A D.238. Teacher participation status – Flemish Community (Belgium), ISCED level 3 742
Table A D.239. School participation status: survey of principals – Portugal, ISCED level 3 743
Table A D.240. School participation status: survey of teachers – Portugal, ISCED level 3 743
Table A D.241. Teacher participation status – Portugal, ISCED level 3 744
Table A D.242. School participation status: survey of principals – Saudi Arabia, ISCED level 3 745
Table A D.243. School participation status: survey of teachers – Saudi Arabia, ISCED level 3 745
Table A D.244. Teacher participation status – Saudi Arabia, ISCED level 3 745
Table A D.245. School participation status: survey of principals – Slovenia, ISCED level 3 746
Table A D.246. School participation status: survey of teachers – Slovenia, ISCED level 3 746
Table A D.247. Teacher participation status – Slovenia, ISCED level 3 747
Table A D.248. School participation status: survey of principals – Türkiye, ISCED level 3 748
Table A D.249. School participation status: survey of teachers – Türkiye, ISCED level 3 748
Table A D.250. Teacher participation status – Türkiye, ISCED level 3 749
Table A D.251. School participation status: survey of principals – United Arab Emirates, ISCED level 3 750
Table A D.252. School participation status: survey of teachers – United Arab Emirates, ISCED level 3 750
Table A D.253. Teacher participation status – United Arab Emirates, ISCED level 3 751
Table A D.254. Setting participation status: survey of leaders – Chile, ISCED level 02 752
Table A D.255. Setting participation status: survey of staff – Chile, ISCED level 02 753
Table A D.256. Staff participation status – Chile, ISCED level 02 753
Table A D.257. Setting participation status: survey of leaders – Colombia, ISCED level 02 754
Table A D.258. Setting participation status: survey of staff – Colombia, ISCED level 02 754
Table A D.259. Staff participation status – Colombia, ISCED level 02 755
Table A D.260. Setting participation status: survey of leaders – Denmark, ISCED level 02 756
Table A D.261. Setting participation status: survey of staff – Denmark, ISCED level 02 756
Table A D.262. Staff participation status – Denmark, ISCED level 02 756
Table A D.263. Setting participation status: survey of leaders – Finland, ISCED level 02 757

Unclassified - Non classifié

Table A D.264. Setting participation status: survey of staff – Finland, ISCED level 02 758
Table A D.265. Staff participation status – Finland, ISCED level 02 758
Table A D.266. Setting participation status: survey of leaders – Flemish Community (Belgium), ISCED level 02 759
Table A D.267. Setting participation status: survey of staff – Flemish Community (Belgium), ISCED level 02 759
Table A D.268. Staff participation status – Flemish Community (Belgium), ISCED level 02 760
Table A D.269. Setting participation status: survey of leaders – Germany, ISCED level 02 761
Table A D.270. Setting participation status: survey of staff – Germany, ISCED level 02 761
Table A D.271. Staff participation status – Germany, ISCED level 02 762
Table A D.272. Setting participation status: survey of leaders – Ireland, ISCED level 02 763
Table A D.273. Setting participation status: survey of staff – Ireland, ISCED level 02 763
Table A D.274. Staff participation status – Ireland, ISCED level 02 764
Table A D.275. Setting participation status: survey of leaders – Israel, ISCED level 02 765
Table A D.276. Setting participation status: survey of staff – Israel, ISCED level 02 765
Table A D.277. Staff participation status – Israel, ISCED level 02 766
Table A D.278. Setting participation status: survey of leaders – Japan, ISCED level 02 767
Table A D.279. Setting participation status: survey of staff – Japan, ISCED level 02 767
Table A D.280. Staff participation status – Japan, ISCED level 02 768
Table A D.281. Setting participation status: survey of leaders – Morocco, ISCED level 02 769
Table A D.282. Setting participation status: survey of staff – Morocco, ISCED level 02 769
Table A D.283. Staff participation status – Morocco, ISCED level 02 770
Table A D.284. Setting participation status: survey of leaders – New Zealand, ISCED level 02 771
Table A D.285. Setting participation status: survey of staff – New Zealand, ISCED level 02 772
Table A D.286. Staff participation status – New Zealand, ISCED level 02 772
Table A D.287. Setting participation status: survey of leaders – Norway, ISCED level 02 773
Table A D.288. Setting participation status: survey of staff – Norway, ISCED level 02 773
Table A D.289. Staff participation status – Norway, ISCED level 02 774
Table A D.290. Setting participation status: survey of leaders – Spain, ISCED level 02 775
Table A D.291. Setting participation status: survey of staff – Spain, ISCED level 02 776
Table A D.292. Staff participation status – Spain, ISCED level 02 776
Table A D.293. Setting participation status: survey of leaders – Sweden, ISCED level 02 777
Table A D.294. Setting participation status: survey of staff – Sweden, ISCED level 02 777
Table A D.295. Staff participation status – Sweden, ISCED level 02 778
Table A D.296. Setting participation status: survey of leaders – Türkiye, ISCED level 02 779
Table A D.297. Setting participation status: survey of staff – Türkiye, ISCED level 02 780
Table A D.298. Staff participation status – Türkiye, ISCED level 02 780
Table A D.299. Setting participation status: survey of leaders – Flemish Community (Belgium), U3 781
Table A D.300. Setting participation status: survey of staff – Flemish Community (Belgium), U3 781
Table A D.301. Staff participation status – Flemish Community (Belgium), U3 782
Table A D.302. Setting participation status: survey of leaders – Germany, U3 783
Table A D.303. Setting participation status: survey of staff – Germany, U3 783
Table A D.304. Staff participation status – Germany, U3 784
Table A D.305. Setting participation status: survey of leaders – Ireland, U3 785
Table A D.306. Setting participation status: survey of staff – Ireland, U3 785
Table A D.307. Staff participation status – Ireland, U3 785
Table A D.308. Setting participation status: survey of leaders – Israel, U3 786
Table A D.309. Setting participation status: survey of staff – Israel, U3 787
Table A D.310. Staff participation status – Israel, U3 787
Table A D.311. Setting participation status: survey of leaders – New Brunswick (Canada), U3 788
Table A D.312. Setting participation status: survey of staff – New Brunswick (Canada), U3 788
Table A D.313. Staff participation status – New Brunswick (Canada), U3 788
Table A D.314. Setting participation status: survey of leaders – New Zealand, U3 789
Table A D.315. Setting participation status: survey of staff – New Zealand, U3 789
Table A D.316. Staff participation status – New Zealand, U3 790
Table A D.317. Setting participation status: survey of leaders – Norway, U3 791
Table A D.318. Setting participation status: survey of staff – Norway, U3 791
Table A D.319. Staff participation status – Norway, U3 791
Table A D.320. Setting participation status: survey of leaders – Quebec (Canada), U3 792
Table A D.321. Setting participation status: survey of staff – Quebec (Canada), U3 792
Table A D.322. Staff participation status – Quebec (Canada), U3 792
Table A F.1. Participation rates (%) for ISCED level 2 schools and principals 799

Unclassified - Non classifié

Table A F.2. Participation rates (%) for ISCED level 2 teachers 801
Table A F.3. Participation rates (%) for ISCED level 1 schools and principals 804
Table A F.4. Participation rates (%) for ISCED level 1 teachers 805
Table A F.5. Participation rates (%) for ISCED level 3 schools and principals 806
Table A F.6. Participation rates (%) for ISCED level 3 teachers 807
Table A F.7. Participation rates (%) for TKS teachers 808
Table A F.8. Participation rates (%) for ISCED level 02 settings and leaders 809
Table A F.9. Participation rates (%) for ISCED level 02 staff 810
Table A F.10. Participation rates (%) for U3 settings and leaders 811
Table A F.11. Participation rates (%) for U3 staff 812
Table A G.1. Descriptive statistics of the TALIS core survey scale scores for the pooled ISCED level 2 data 813
Table A G.2. Descriptive statistics of the TALIS Starting Strong scale scores for the pooled ISCED level 02 data 815
Table A G.3. Descriptive statistics of the scale scores specific to the TKS for the international pooled data 816

Unclassified - Non classifié

Abbreviations and acronyms

Abbreviation/Acronym	Description	Comment
ACER	Australian Council for Educational Research	Consortium partner for the TALIS core survey and Teacher Knowledge Survey
AV	Adaptation verification	
BRR	Balanced repeated replication	Used with Fay's variation in TALIS
cApStAn	cApStAn Linguistic Quality Control	Consortium partner for all TALIS components
CFA	Confirmatory factor analysis	
CFI	Comparative fit index	
CMC	Two-option complex multiple-choice	
ConQuest	ACER computer programme for fitting unidimensional and multidimensional item response and latent regression models	Software
CQ-S/M	Combined questionnaire short/main, for staff with leader duties	
CSV	Comma-separated value	Data file format
DIF	Differential item functioning	
DME	IEA Data Management Expert	IEA software
DPE	IEA Data Processing Expert	IEA software
EC	European Commission	
ECEC	Early childhood education and care	
EFA	Exploratory factor analysis	
EM	Expectation-maximization	
ESE	Environmental and sustainability education	
EU	European Union	
FSD	Factor score determinacy	
FT	Field trial	
GPCM	Generalised partial credit model	
GPK	General pedagogical knowledge	
ICC	Intraclass correlation coefficient	
ICCS	IEA International Civic and Citizenship Study	
ICILS	IEA International Computer and Information Literacy Study	
ID	Identification number	
IDB	International database	
IDB Analyzer	IEA IDB Analyzer for SPSS, SAS and R	IEA software
IEA	International Association for the Evaluation of Educational Achievement/Foundation IEA Secretariat Netherlands	
IELS	OECD International Early Learning and Child Well-being Study	

Unclassified - Non classifié

Abbreviation/Acronym	Description	Comment
ILSA	International large-scale assessment	
IQO	International quality observer	Contracted by IEA Amsterdam
IRT	Item response theory	
ISC	International study centre	Located at IEA Hamburg, Germany
ISCED	UNESCO International Standard Classification of Education	2011 edition used
ISCED level 02	Early childhood education (pre-primary education)	Part of ISCED level 0
ISCED level 1	Primary school	
ISCED level 2	Lower secondary school	
ISCED level 3	Upper secondary school	
ISO	International Organization for Standardization	
LQ	Leader questionnaire	
MAR	Missing at random	
MCAR	Missing completely at random	
MGCFA	Multiple-group confirmatory factor analysis	
MI	Multiple imputation	
ML	Maximum likelihood	
MLR	Maximum likelihood robust	
MNAR	Missing not at random	
MOS	Measure of size	
Mplus	Flexible statistical analysis software that fits an extensive variety of statistical models using one of many estimators	Software
MS	Main survey	
NA	Not applicable	
NADB	National Adaptations Database	
NAF	National adaptation form	
NDM	National data manager	
NPM	National project manager	
NQO	National quality observer	Contracted by national centre
NRBA	Non-response bias analysis	
NSM	National sampling manager	
ODC	Online data collection	
OECD	Organisation for Economic Co-operation and Development	
OTL	Opportunities to learn	
P&P	Paper and pencil	
PIAAC	OECD Programme for the International Assessment of Adult Competencies	
PIRLS	IEA Progress in International Reading Literacy Study	
PISA	OECD Programme for International Student Assessment	
PQ	Principal questionnaire	
PPS	probability proportional to size	
PUF	Public use file	
PV	Plausible value	
QEG	Questionnaire Expert Group	
R	The R Project for Statistical Computing	Software

Unclassified - Non classifié

Abbreviation/Acronym	Description	Comment
RAND Europe	Research and Development Europe, not for profit research institute	Consortium partner for TALIS Starting Strong, part of RAND Corporation
RandA	Research and Analysis Team	Unit within IEA Hamburg
repest	OECD Stata module to run estimations with weighted replicate samples and plausible values	Software
RMSEA	Root mean square error of approximation	
Rrepest	OECD R library to run estimations with weighted replicate samples and plausible values	Software
RUF	Restricted use file	Data product
S.D.	Standard deviation	
S.E.	Standard error	
SAQ	Survey activities questionnaire	
SAS	Statistical Analysis System	Software
SC	School co-ordinator	
SE	IEA StudyExpert	IEA software
SEM	Structural equation modelling	
SJT	Situational judgement task	
SMC	Four-option simple multiple-choice	
SOP	Survey operations procedure	
SPSS	Statistical Package for the Social Sciences	Software
SQ	Staff questionnaire	
SRMR	Standardized root mean square residual	
Stata	Statistics and Data	Software
StatCan	Statistics Canada	
TAG	Technical Advisory Group	
TALIS	OECD Teaching and Learning International Survey	
TALIS Starting Strong IG	Informal group governing TALIS Starting Strong	Informal group of countries and territories participating in TALIS Starting Strong
TGB	TALIS Governing Board	
TIMSS	IEA Trends in International Mathematics and Science Study	
TKEG	Teacher Knowledge Expert Group	
TKS	TALIS Teacher Knowledge Survey	
TLF	Teacher listing form	Form produced by IEA WinW3S
TLI	Tucker-Lewis Index	
TQ	Teacher questionnaire	
TTF	Teacher tracking form	Form produced by IEA WinW3S
U3/Under 3	Early childhood education accommodating children under the age of three years	Operational definition in TALIS Starting Strong, not formally part of ISCED level 0, yet related to ISCED level 01
UNESCO	United Nations Educational, Scientific and Cultural Organization	
UNESCO-UIS	UNESCO Institute for Statistics	
WinW3S	IEA Within-School Sampling Software	IEA software
WLSMV	Weighted least squares mean variance	
WRMR	Weighted root mean square residual	

Unclassified - Non classifié

Three-digit operational codes of TALIS 2024 participants

Participating country/territory	Code
Albania	ALB
Alberta (Canada)	CAB
Australia	AUS
Austria	AUT
Azerbaijan	AZE
Bahrain	BHR
Belgium	BEL
Flemish Community (Belgium)	BFL
French Community (Belgium)	BFR
Brazil	BRA
Bulgaria	BGR
Chile	CHL
Colombia	COL
Costa Rica	CRI
Croatia	HRV
Cyprus[1]	CYP
Czechia	CZE
Denmark	DNK
Estonia	EST
Finland	FIN
France	FRA
Hungary	HUN
Iceland	ISL
Israel	ISR
Italy	ITA
Japan	JPN
Kazakhstan	KAZ
Korea	KOR
Kosovo*	XKX
Latvia	LVA
Lithuania	LTU
Malta	MLT
Montenegro	MNE
Morocco	MAR
Netherlands	NLD
New Brunswick (Canada)	CNB
New Zealand	NZL
North Macedonia	MKD
Norway	NOR

Unclassified - Non classifié

Participating country/territory	Code
Poland	POL
Portugal	PRT
Quebec (Canada)	CQU
Romania	ROU
Saudi Arabia	SAU
Serbia	SRB
Shanghai (China)	CSH
Singapore	SGP
Slovak Republic	SVK
Slovenia	SVN
South Africa	ZAF
Spain	ESP
Sweden	SWE
Türkiye	TUR
United Arab Emirates	ARE
United States	USA
Uzbekistan	UZB
Viet Nam	VNM

1. Collected data through the IEA International Study Centre.
*This designation is without prejudice to positions on status, and is in line with United Nations Security Council Resolution 1244/99 and the Advisory Opinion of the International Court of Justice on Kosovo's declaration of independence.

Unclassified - Non classifié

Executive summary

Chapter 1. Introduction

Chapter 1 provides an overview of the OECD Teaching and Learning International Survey (TALIS) 2024, including its two complementary components: the Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) and the Teacher Knowledge Survey (TKS). The chapter summarises the survey's purpose, scope, design and governance and introduces the technical standards underpinning its implementation.

TALIS collects internationally comparable data on the learning environment and working conditions of teachers and principals, enabling countries/territories to analyse key aspects of teaching and learning and to inform policy development. Since the first cycle in 2008, the programme has expanded significantly, with 56 countries and territories participating in at least 1 component in 2024. While originally focused on lower secondary education (International Standard Classification of Education [ISCED] level 2), TALIS now also offers coverage of primary (ISCED 1) and upper secondary (ISCED 3) levels.

TALIS Starting Strong, first conducted in 2018, extends the survey to leaders and staff in early childhood education and care (ECEC) settings at ISCED level 02 and, where applicable, for children under three years of age (U3). The TKS, introduced in this TALIS cycle, assessed the general pedagogical knowledge (GPK) of lower secondary teachers across three domains: instruction, learning and assessment.

The 2024 cycle was co-ordinated by the OECD with an international consortium led by the International Association for the Evaluation of Educational Achievement (IEA) and supported by partner organisations. Data collection was conducted primarily on line, with rigorous quality assurance procedures applied throughout to ensure validity, reliability and cross-national comparability.

This chapter also outlines the survey's governance at the international and national levels and introduces the three main phases of implementation, pilot, field trial and main survey.

The present 2024 technical report is based on the technical reports of previous TALIS cycles, especially those of TALIS 2018 and TALIS Starting Strong 2018.

Chapter 2. Conceptual framework development

The TALIS 2024 initiative, co-ordinated by the OECD in collaboration with international research partners, builds upon its earlier cycles to expand the global evidence base on teachers, teaching and learning environments for the TALIS core survey and on leaders and staff in ECEC settings for TALIS Starting Strong. Chapter 2 outlines the conceptual development for three key components: the TALIS 2024 core survey (ISCED levels 1-3), TALIS Starting Strong (focused on ECEC) and the TKS, a new component assessing teachers' GPK.

Unclassified - Non classifié

A strategic concept paper was created collaboratively by the IEA, the Australian Council for Educational Research (ACER) and research institute RAND Europe in consultation with international stakeholders. It identified both enduring domains (e.g. staff development, occupational perceptions, institutional environments) and new priorities (e.g. diversity and equity, educational technology and social-emotional learning). The paper informed the development of individual frameworks and served as a guiding document for aligning TALIS 2024 content foci with policy interests.

The TALIS core survey maintains its focus on instructional conditions, institutional contexts and trends in the teaching profession, while also integrating contemporary themes such as:

- equity and diversity
- technology in education, including artificial intelligence
- social-emotional learning
- environmental and sustainability education.

The Questionnaire Expert Group (QEG) – comprising international experts in education, policy and survey methodology – oversaw the content development. The framework integrates both traditional and emerging domains, balancing policy relevance with longitudinal consistency, and supports cross-national comparability through robust indicators and carefully constructed instruments.

TALIS Starting Strong focussed on ECEC; this component continued from 2018 with a renewed focus on:

- equity and quality in early learning
- workforce motivation and retention
- process and structural quality in ECEC.

The ECEC Questionnaire Expert Group (ECEC QEG) guided the conceptual framework, ensuring alignment with policy needs and emerging themes such as digital technology in practitioner development, inclusive practices and comprehensive child support approaches. Inputs from participating countries/territories helped identify priority areas and retained content from 2018, enabling both innovation and trend analysis.

Introduced in TALIS 2024, the TKS aimed to deepen understanding of teachers' GPK, a cornerstone of professional competence. Key policy interests include:

- teachers' knowledge of instructional strategies and classroom management
- responses to diversity and socio-emotional learning
- preparation for contemporary teaching challenges.

Developed by ACER with input from the Teacher Knowledge Expert Group (TKEG), the framework draws from the OECD Centre for Educational Research and Innovation (CERI) model of teacher competence and links pedagogical knowledge to affective traits and teaching practices. It offers a detailed structure for assessing GPK and aligns with broader TALIS data for enriched analysis.

Chapter 3. Questionnaire development

TALIS 2024 represents the fourth cycle in a long-standing effort to collect internationally comparable data on teachers, principals and their working environments. Building on the experiences of the 2008, 2013 and 2018 cycles, the 2024 survey aimed to reflect contemporary educational issues while retaining core elements necessary for trend analyses. The questionnaire development process was comprehensive and methodologically rigorous, involving multiple stakeholder consultations, pilot studies and field trials across the three main components: the TALIS core survey, TALIS Starting Strong and the TKS.

Unclassified - Non classifié

Targeting ISCED levels 1, 2 and 3, the core survey adopted a rotated questionnaire design aligned with analytical priorities to ensure comprehensive coverage without overburdening participants for the first time. The teacher and principal questionnaires were designed by QEG in consultation with the TALIS Governing Board (TGB) and further international experts. A pilot study was conducted as a paper-based retrospective exercise to evaluate question clarity and cross-cultural applicability. In the field trial, self-administered online questionnaires were used to refine item quality and selection. The three teacher forms were trialled further and allowed statistical evaluation of experimental item variants. The final materials in the main survey included 84 questions distributed across 3 forms.

Aimed at staff and leaders in ECEC settings, TALIS Starting Strong 2024 expanded participation beyond the 2018 cycle. The survey included separate instruments for staff and leaders and combined versions for persons who were staff and leaders at the same time, tailored for ISCED level 02 (pre-primary) and under 3 (U3) levels. Four thematic domains (staff practices, characteristics, setting characteristics and cross-cutting issues) framed the questionnaire development. Initially, stakeholders ranked and rated questions from 2018 by relevance, helping define content for the pilot. Eleven countries/territories tested instruments using paper-based surveys in focus groups. Feedback informed revisions regarding cultural relevance, clarity and response burden. The field trial administration online tested psychometric properties and item variants. Confirmatory and exploratory factor analyses validated item quality across diverse contexts. The main survey used common versions of the questionnaires for both ISCED level 02 and U3, with 49 questions for staff and 45 for leaders.

The TKS – as a new component assessing teachers' GPK – built on the OECD's prior Innovative Teaching for Effective Learning (ITEL) work. The GPK assessment evaluates teachers across three dimensions – instruction, learning and assessment – each subdivided and classified by cognitive demand, knowledge base and thematic relevance. The TKEG assessed 208 legacy items from the earlier ITEL activities, retaining 82 and developing 34 new ones. A pilot was conducted with small convenience samples, using cognitive labs and expert reviews to refine items. The field trial deployed 78 items in 6 balanced clusters along with 2 sets of contextual measures. Rasch modelling and factor analyses confirmed scale validity and unidimensionality. Finally, the main survey item pool included 52 GPK items (34 SMC, 18 CMC) covering all framework categories along with contextual materials based on the core survey and augmented with GPK-specific measures.

Chapter 4. Preparation of national survey instruments

This chapter provides an overview of the procedures implemented for national adaptation verification, international translation verification and layout verification of the TALIS instruments. For each country/territory, all specified instruments in the identified target languages underwent adaptation verification, translation verification and layout verification before the field trial and main data collection of TALIS 2024. The same procedures were applied to all instruments (TALIS core survey, TALIS Starting Strong and the TKS).

The quality control procedures conducted during the production of national instruments helped to ensure the collection of high-quality data that can be compared internationally across countries/territories and over time. During the verification stages, the instruments for each country/territory and survey language were carefully cross-checked against the international source version, that is, the international (English) instruments, the versions for the different target populations and the versions used in the previous TALIS cycle (TALIS 2018). Adaptation verification involved a review and approval process by the international study centre (ISC) of adaptations (structural, non-structural, mandatory and elective) to the national instruments. The international translation verification process, co-ordinated by IEA Amsterdam with support from cApStAn Linguistic Quality Control, involved external language experts checking and comparting the national translations against the international source for errors, equivalency between versions and for longitudinal consistency of reoccurring items comparing the national translations against

Unclassified - Non classifié

the translations used in TALIS 2018. Layout verification, conducted by the ISC, compared the format, numbering, page layout and structure of the national instruments against the internal source version.

After the field trial and main survey, the ISC administered survey activities questionnaires (SAQs) to national project managers (NPMs) for collecting feedback. The majority of the 57 participating NPMs found the ISC's guidance on translation and verification clear and sufficient. Most reported that translation verification improved their instruments and that feedback from verifiers was beneficial. A large proportion made corrections based on verifier input.

Chapter 5. Sampling design

This chapter outlines the sample design for TALIS 2024, including its strategic objectives, international standards and national adaptations. The sampling approach aimed to provide statistically robust and internationally comparable data on teachers, principals, early childhood staff and leaders across different educational levels.

TALIS 2024 focused on teachers and principals in ISCED level 2 (lower secondary education), with optional components for ISCED level 1 (primary) and ISCED level 3 (upper secondary). The international sampling design followed a stratified two-stage cluster sampling approach: schools were selected first, followed by teachers within those schools. Principals of selected schools completed a separate questionnaire.

The survey covered all teachers at the relevant ISCED levels in regular schools. Those teaching exclusively adults or working in schools for special education needs were excluded. A principal was defined as the individual with the highest level of administrative or pedagogical responsibility. National adaptations were permitted within a 5% exclusion threshold to preserve international comparability.

To ensure statistical precision and subgroup reliability, an effective teacher sample size of 400 per country/component was targeted, assuming a design effect of 5.2 due to clustering and other design features. The standard plan involved selecting 200 schools and 20 teachers per school, amounting to 4 000 teachers nominally. If school sizes were smaller than expected, more schools were added to meet participation targets.

NPMs collaborated with the sampling team to customise the international plan where necessary. Countries/territories provided comprehensive school lists (sampling frames), including variables for stratification such as geographic region or school type. Stratification improved sampling efficiency and enabled focused subgroup analysis. Samples were selected using systematic random sampling with probability proportional to size (PPS), including pre-assigned replacement schools to mitigate non-response bias.

Teachers were sampled using the IEA Windows Within-School Sampling Software (WinW3S), ensuring consistency and transparency. The software facilitated within-school teacher selection and supported documentation requirements. Measures were taken to avoid overlap where schools participated in multiple components.

A field trial was conducted ahead of the main survey to test procedures. For each country/territory, 30 schools were sampled, with distinct selections to minimise overlap between field trial and main sample, thereby reducing burden on schools.

This detailed yet flexible sampling strategy ensured reliable, policy-relevant insights while accommodating national contexts, thereby supporting TALIS 2024's objective to inform educational improvement globally.

To establish the sample size for the TALIS Starting Strong component, an effective sample of 400 staff members was targeted, based on a design effect of 2. This resulted in an actual sample size requirement of 1 200 staff in 180 settings. Each selected ECEC setting was expected to provide eight staff members. Minimum expected response rates were 75% on setting and staff levels.

Unclassified - Non classifié

Further information on the sampling implementation is available in Annex D, where detailed documentation for each participating country or territory is provided. This includes the statistical characteristics of the target population, applied exclusions, specifics of the sampling design and data on the realised sample. These reports offer transparency on how the international sampling requirements were applied for each jurisdiction within their national context.

Chapter 6. Field operations

The TALIS 2024 field operations were successfully implemented across all participating countries and territories, with no major disruptions reported. The chapter outlines the comprehensive procedures followed by national centres in administering the survey, including school and ECEC setting contact, within-school/-ECEC setting sampling, data collection monitoring and adherence to international technical standards across multiple ISCED levels (1, 2 and 3), TALIS Starting Strong, and the TKS.

All countries/territories were required to follow stringent procedures set by the ISC, with deviations permitted only by prior agreement with the TALIS consortium and the OECD. National centres operated under a robust framework comprising technical standards, extensive manuals, instructional videos and specialised software (notably IEA StudyExpert, IEA WinW3S and IEA Data Management Expert [DME]). These tools ensured consistency, quality and comparability in data collection and processing.

Survey preparation spanned three to six months, with timelines varying depending on hemisphere and complexity. Countries/territories administering multiple instruments (e.g. Chile and Morocco) or conducting the survey in multiple languages (e.g. Spain) required extended preparation. The TALIS core survey remained the central focus, with national instruments and procedures prioritised accordingly.

National centres managed contacts with a minimum of 200 schools or 180 ECEC settings per target population. Replacement schools/ECEC settings were used to maintain participation rates, with some national centres, such as Ireland, adopting non-standard sampling approaches. Co-ordination within each institution was managed by designated staff, who played a crucial role in listing, sampling and administering instruments. To ensure confidentiality and smooth operations, many national centres used tailored tracking systems, communication tools and dedicated hotlines.

Data collection windows differed between hemispheres (February-April 2024 for the north, June-August 2024 for the south), though many countries/territories extended beyond these periods to optimise response rates. Monitoring of questionnaire completion was performed using various tools and communication channels. All national centres successfully verified participation statuses before data submission.

Finally, national centres implemented their own quality assurance programmes based on templates from the ISC. Observers were often internal staff or qualified external personnel, and their findings were later reported in a dedicated SAQ. The ISC provided continuous training and support throughout the process, ensuring fidelity to international standards and successful survey execution across diverse national contexts.

Chapter 7. Quality control - International and national quality observations

Chapter 7 outlines the comprehensive quality control programme implemented to ensure the consistency, accuracy and comparability of data collected across participating countries and territories. This programme covered all TALIS components, including the TALIS core survey (ISCED levels 1, 2 and 3), TALIS Starting Strong (ISCED level 02 and U3) and the TKS. The quality control efforts, co-ordinated by IEA Amsterdam and the TALIS international consortium, comprised four main pillars: i) the international quality observation programme; ii) the national quality observation programme; iii) additional quality control questions included in the survey instruments; and iv) a follow-up SAQ completed by NPMs.

Unclassified - Non classifié

IEA Amsterdam led the IQO programme by appointing independent observers in each participating country/territory. The observer's tasks included interviewing the NPM about TALIS 2024 activities, collecting and reviewing specific materials needed for national centres to conduct the survey (such as the School/ECEC Setting Co-ordinator Manual) as well as conducting online interviews with co-ordinators from randomly selected schools or ECEC settings. Overall, outcomes of the NPM interview as well as the co-ordinators manual review showed that countries/territories closely followed the international survey procedures. With regards to the co-ordinators interview, IQOs reported that, in close to 90% of cases, the complete list of survey materials was correctly received by the schools, and that their understanding of the survey administration procedures and use of associated materials was as expected. Observers also reported that the sampling procedures were in line with the international guidelines in above 85% of cases.

With regards to the national quality observation programme to be implemented by NPMs, most countries/territories (44 out of 57) conducted structured observations at the national level, though approaches varied. Some employed direct school/ECEC setting visits, while others used digital feedback methods. National observations helped surface common challenges such as overlong questionnaires, difficulties in understanding definitions of target populations, and burdens on schools and ECEC settings.

In addition, extra quality control questions embedded at the end of survey provided direct feedback from TALIS respondents on their experience when completing the questionnaires. Randomly administered to 20% of respondents per component, these questions focused on survey selection, administration conditions and perceptions of confidentiality. Overall, respondents reported that they were selected to participate in TALIS in a way that was consistent with the TALIS technical standards and that they were provided sufficient time to complete the survey. Furthermore, respondents reported that most of the survey questions functioned well, but that some could have been unclear and should be modified for future cycle.

Lastly, the SAQ enabled NPMs to report on all aspects of survey implementation, including instrument translation, school recruitment, online and paper administration and co-ordinator support.

Chapter 8. Creating and checking the international databases

Chapter 8 outlines the processes, standards and quality assurance measures used to construct, verify and finalise the national and international databases for the TALIS 2024 core survey, TALIS Starting Strong and the TKS. The work required close co-ordination between the ISC, national centres, the OECD Secretariat and all consortium partners to ensure accurate, comparable and high-quality datasets. All data processing adhered to OECD Data Protection Rules and, where relevant, national and regional privacy laws (e.g. European Union General Data Protection Regulation).

NPMs and, where designated, national data managers oversaw data collection, entry, verification and submission to the ISC. Both online (default for 2024) and paper modes were supported, with strict protocols to ensure mode comparability in questionnaire content, layout and administration procedures. Data from paper questionnaires were entered "as is" into the IEA DME software, following predefined coding rules and double-entry checks.

The ISC then integrated online and paper data with sampling/tracking information, harmonising structures, codes and formats. Duplicate cases – from a small number of respondents who switched between languages – were systematically resolved. Structural deviations due to national adaptations were documented and harmonised to align with the international codebooks, while retaining original national variables for local reporting.

Identification and linkage variables were cleaned to ensure accurate matching of respondents to schools/settings. Logical, numerical and range checks identified implausible or inconsistent responses, which were either automatically corrected or resolved in consultation with national centres. Special treatments addressed filter-dependent questions, "check-all-that-apply" questions, percentage totals and

Unclassified - Non classifié

implausible numeric values. Missing codes differentiated between “not administered”, “omitted or invalid”, “logically not applicable”, and “not reached” (TKS only) responses, supporting nuanced analysis and accurate handling of non-response patterns.

Database development followed an iterative work and release process. A first data version was identifier/linkage-cleaned for weighting and to conduct non-response bias analyses. The second version was weighted and largely cleaned datasets for OECD and national review, followed by formal data sign-off. The third version included derived variables, scale scores and other post-collection adjustments and corrections before and after the review of draft reporting chapters and tables. Minor data versions addressed per country/territory updates in-between major releases.

Two main data products were produced. The restricted use files (RUF) were comprehensive and confidential datasets for national centres and the OECD, released under embargo to prepare international and national reports. The public use files (PUF) were prepared for wider public dissemination and were subject to general and country/territory-specific suppressions of variables and/or coarsening variables to reduce re-identification risk.

Chapter 9. Estimation weights, participation rates and sampling error

This chapter outlines the methodology underpinning the statistical quality of TALIS 2024 outcomes, focusing on estimation weights, participation rates and the measurement of sampling error. Due to the complex nature of sampling in international large-scale assessments, TALIS implemented robust weighting procedures and adopted balanced repeated replication (BRR) to ensure precision and unbiasedness in its estimates.

TALIS 2024 used stratified multi-stage probability sampling plans tailored to national contexts. Estimation weights were applied to correct for unequal selection probabilities and non-response, thus ensuring national estimates reflect the broader target population.

Separate weights were calculated for each survey component and for each population group (teachers and principals or staff and leaders), with adjustments made at each sampling stage. It is critical to distinguish between weights used for different analyses, especially in multi-level models, where misuse could introduce bias.

High participation rates are essential for the reliability of TALIS estimates. TALIS 2024 established minimum response thresholds, 50% for teachers within schools and 33% for staff within early childhood settings for the institution to be considered participating. Non-response adjustments relied on the assumption that missing data were random within strata.

Participation rates were reported in both weighted and unweighted terms, before and after the inclusion of replacement schools/settings. While replacements helped achieve minimum participation thresholds, excessive use risked compromising the probabilistic nature of the sample. Detailed national participation rates are presented in Annex F.

To measure the precision of estimates, TALIS employed BRR, a replication method suited to complex survey designs. For each estimate, BRR provides replicate estimates based on reweighting subsets of the data, allowing for accurate variance estimation without relying on overly restrictive assumptions.

TALIS used Fay’s variant of BRR to moderate the impact of dropping entire sampling units in replicates. In this method, weights are only partially adjusted (usually 1.5 and 0.5 factors), minimising the risk of eliminating entire subgroups from replicates. Pseudo-strata or “zones” were created by pairing sampled schools/settings within explicit strata to simulate a BRR-ready design.

Unclassified - Non classifié

Sampling errors were computed for various comparisons, within and between countries/territories or across TALIS cycles, using BRR-derived standard errors. These errors enable the calculation of confidence intervals and support hypothesis testing in cross-national comparisons or subgroup analyses.

The design effect (deff) quantifies the efficiency loss due to the complex design relative to simple random sampling. Most deff values in TALIS ranged around or below the assumed thresholds, with values near 1 indicating high efficiency. Effective sample sizes, derived from observed deff values, were often larger than anticipated, supporting robust population estimates and allowing for more detailed subgroup analyses.

Chapter 10. Data adjudication

The adjudication process in TALIS 2024 ensures that the data collected across participating countries and territories meet standards of quality, reliability and international comparability. This process is critical to confirm that the resulting data are “fit for use” and can effectively inform policy.

Adjudication involved evaluating each education system’s implementation of the survey across key phases: questionnaire adaptation, translation, sampling, data collection and data processing. Specific attention was given to issues such as inadequate national questionnaire adaptation, inconsistent translation of trend items, biased or incomplete teacher/staff lists, deviations from sampling procedures, data cleaning issues and low participation rates. Data were judged separately for school/principal and teacher/staff modules.

Each dataset underwent detailed scrutiny during adjudication sessions held in late 2024. Consortium members responsible for each survey component examined unresolved issues and their potential impact on data usability. Particular consideration was given to whether any non-response bias was likely and whether it could compromise national or international comparisons.

Participation thresholds set in the TALIS 2024 Technical Standards played a key role in the rating system. Countries/territories with participation rates below 75% were required to submit a non-response bias analysis (NRBA) to assess potential bias. However, such analyses can only provide indications of closeness to known population values and cannot confirm comparability between countries or subgroups.

Adjudication ratings ranged from “Good” to “Insufficient” based on participation rates before and after replacements, presence of non-response bias and evidence from NRBAs. Ratings were defined as follows:

- Good: full use permitted, including international comparison.
- Fair: generally usable data with caveats about estimate precision or possible data quality concerns.
- Poor: data limitations significant enough to restrict use, particularly for subnational or international comparisons.
- Insufficient: data not suitable for inclusion in international analyses.

These ratings guide data users in understanding the strengths and limitations of each dataset. A full breakdown of adjudication outcomes and participation rates is provided in Annex F.

Chapter 11. Construction and validation of questionnaire scales for TALIS and TALIS Starting Strong

The TALIS 2024 survey instruments collect data on various school, principal, teacher, staff and leader characteristics, including perceptions, attitudes and practices. To capture these dimensions, the TALIS datasets include:

- simple indices: derived from single items or aggregates (e.g. student-teacher ratio), aimed at preserving respondent anonymity and summarising observable traits

Unclassified - Non classifié

- scale scores: constructed from multiple questionnaire items targeting a shared latent construct (e.g. self-efficacy), using confirmatory factor analysis (CFA) to model unobservable traits.

While simple indices summarise tangible data, scale scores delve into underlying attributes not directly measurable, relying on robust psychometric modelling and validation. CFA was employed to evaluate unidimensional latent structures. Ordinal item responses (e.g. Likert scales) were analysed using categorical CFA, allowing appropriate treatment of non-continuous data. Where needed, models were refined through item removal or re-specification, guided by both statistical indicators and conceptual considerations. Evaluation occurred at both country/territory and international levels.

Only scales passing reliability and model fit thresholds were retained, ensuring their robustness across diverse national contexts. Where necessary, exceptions were made for theoretically essential items, even if statistical properties were suboptimal. Scale scores were computed using Empirical Bayes modal estimation based on CFA model parameters from the pooled international datasets consisting of ISCED level 2 countries/territories for the TALIS core survey and the TKS, and ISCED level 02 countries/territories for TALIS Starting Strong. Respondents needed at least two valid responses to receive a score. Scores were standardised so that a score of 10 corresponds to the midpoint of the item response scale. For composite scores, subscale scores were averaged, acknowledging potential measurement limitations (e.g. formative rather than reflective indicators).

TALIS 2024 scale scores support:

- within- and cross-country/territory comparisons, due to consistent international modelling
- regression analyses and group comparisons (provided invariance criteria are met).

However, scores are not directly comparable across different scales or TALIS cycles, as standardisation and modelling are independent per scale and cycle. Additional caution is advised when interpreting composite scales and for selected scales with model fit issues in single country/territory models or in the most constrained multi-group models.

Chapter 12. Construction and validation of questionnaire scales for TKS

The Teacher Knowledge Survey (TKS) assessed the general pedagogical knowledge (GPK) of lower secondary teachers across three domains: instruction, learning, and assessment. This chapter presents the psychometric analyses of the GPK assessment, which informed item selection, scaling, and the development of the final GPK scale. Key areas of focus included item-level performance, dimensionality, reliability, and measurement invariance across national samples and gender. In addition, missing data patterns and test targeting were examined to ensure data quality. The resulting scale enables robust cross-national comparisons and meaningful interpretation of teachers' GPK proficiency.

The GPK assessment items were scaled using item response theory (IRT), applying a two-parameter logistic (2PL) model for dichotomous items and the generalized partial credit model (GPCM) for polytomous items. Test targeting was evaluated by comparing item difficulty distributions with teachers' GPK proficiency levels, indicating generally good alignment, although fewer items covered very low and very high proficiency levels. IRT reliability estimates were satisfactory across both national/territorial and international samples.

Item analyses examined item difficulty (facility), item-rest correlations, discrimination, and model fit statistics, demonstrating overall strong psychometric quality. However, three items showed very low discrimination and were removed from the final scaling. These decisions were supported by consistent findings across both international and national calibrations.

In addition, multidimensional IRT analyses were conducted to explore potential subscales based on content domains and knowledge types. The very high correlations between dimensions indicated that GPK

Unclassified - Non classifié

can be treated as a unidimensional construct. Consequently, a single overall GPK scale was retained for reporting. Differential item functioning (DIF) analyses were also performed to assess measurement invariance across national samples and gender. While some items exhibited country-specific variation, these were either removed or treated as national items. Gender-related DIF was minimal, with only a small number of items exceeding the threshold for notable differences.

For the final scaling, the GPCM was applied, and plausible values (PVs) were generated as estimates of teachers' GPK proficiency. Using item parameters anchored at the internationally calibrated values, PVs were drawn from the posterior distribution for each national sample separately, based on a conditioning model incorporating both item responses and contextual data. Five plausible values were generated for each teacher, providing a robust basis for estimating measurement error and standard errors in subsequent analyses. The plausible values were transformed to an international metric, where the average score was set to 250 and the standard deviation to 50 for the international dataset using senate weights.

Finally, a described scale of GPK was developed to support interpretation and future cross-national comparisons. Three proficiency levels were defined: foundational, established, and advanced. This framework balances interpretability with empirical evidence should additional items be developed in any future cycles.

Unclassified - Non classifié

1 Introduction

This chapter provides an overview of the survey components and the preparation and implementation of the Teaching and Learning International Survey (TALIS) 2024, initiated and co-ordinated by the Organisation for Economic Co-operation and Development (OECD). It introduces the management structure established to administer this fourth cycle of the survey, the target populations and educational levels investigated, the role of the national project managers, the key development phases of the survey and the standardised procedures implemented to allow the collection of high-quality data in 56 countries and territories.

Unclassified - Non classifié

1.1. TALIS, TALIS Starting Strong and Teacher Knowledge Survey in brief

This technical report documents the development and implementation of the OECD Teaching and Learning International Survey (TALIS) 2024. In particular, the report covers: the development of the TALIS questionnaires; sampling operations; data collection, weighting, scaling and analysis. It enables readers to review and understand these procedures and to gain insight into the rigorous quality control programme that encompassed all phases of the survey. In this 4th cycle, the TALIS programme has been extended to also include the Starting Strong Teaching and Learning International Survey (TALIS Starting Strong), collecting data from leaders and staff in early childhood education and care (ECEC) settings. A second and new component under the umbrella of TALIS 2024 was introduced as the Teacher Knowledge Survey (TKS), focused on collecting information on the general pedagogical knowledge (GPK) of teachers in lower secondary schools.

TALIS is the first international series of surveys to focus on the learning environment and the working conditions of teachers in schools, offering teachers and principals the opportunity to provide their perspectives on school contexts. Countries can then use this information to deepen analysis of the questions TALIS examines and to aid the development of policy relating to these matters. TALIS data also allow countries to identify other countries facing similar challenges and learn from their approaches to policy development.

The first TALIS cycle in 2008 included 24 countries/territories and contributed significantly to teacher policy development. Its success led to a second cycle in 2013, with 34 participants. Four additional countries/territories joined on a delayed schedule in 2014, following the same procedures to ensure comparability.

From the start, TALIS focused on teachers in lower secondary schools – level 2 in the International Standard Classification of Education (ISCED) (UNESCO-UIS, 2012[1]). Starting in 2013, the possibility was given to countries to also survey teachers in ISCED levels 1 (primary) and 3 (upper secondary), and participate in the "TALIS-PISA link", using the same schools as the OECD 2012 Programme for International Student Assessment (PISA). In 2013, six countries chose ISCED level 1, ten chose level 3 and eight opted for the TALIS-PISA link.

Following the 2008 and 2013 cycles, the TALIS Board of Participating Countries (BPC) – now the TALIS Governing Board (TGB) – launched a third cycle (TALIS 2018) from 2015 to 2019. Data collection occurred in late 2017 (southern hemisphere) and early 2018 (northern hemisphere).

In total, 48 countries/territories participated in TALIS 2018, again focusing on ISCED level 2 teachers and leaders. Countries could once more elect to include levels 1 and/or 3, and those also in PISA 2018 had the option of the TALIS-PISA link. Fifteen chose ISCED level 1, 11 chose ISCED level 3, and 9 used the link.

The first cycle of TALIS Starting Strong was also conducted in 2018, surveying leaders and staff in ECEC settings in ISCED level 02 (pre-primary education) in nine countries/territories. Four countries/territories conducted the survey in ECEC settings for children under the age of three (U3).

In 2024 TALIS is best understood as an umbrella programme for surveying:

- ISCED level 2 teachers and principals (optionally, ISCED level 1 and 3 teachers and principals), under the so-called TALIS core survey.
- leaders and staff in ECEC settings working with children at ISCED level 02 and leaders and staff working with U3 children, under TALIS Starting Strong.
- ISCED level 2 teachers participating in the TKS.

Unclassified - Non classifié

Following the design of TALIS 2024, three conceptual frameworks have been developed, outlining the concepts and indicators used in the three modules of the TALIS programme (OECD, 2025[2]; 2025[3]). These frameworks:

- The TALIS core conceptual framework (OECD, 2025[4]) covers teachers and principals at ISCED levels 1, 2 and 3 in the following areas:
  - the institutional environment
  - characteristics and qualities of teachers and principals
  - teachers' and principals' beliefs, perceptions and practices
  - the intersection of various themes at both the institutional and teacher levels
  - background information for teachers, principals and schools.
- The TALIS Starting Strong conceptual framework (ISCED level 02 and settings for U3 children) includes the following concepts and indicators:
  - process quality
  - monitoring children's development, well-being and learning
  - professional beliefs about children's development, well-being and learning
  - self-efficacy
  - staff and leader demographic and education background
  - professional development
  - well-being
  - structural quality
  - pedagogical and administrative leadership
  - organisational climate and working conditions
  - stakeholder relations
  - diversity, equity and inclusion in ECEC settings
  - approaches to comprehensive/continuous child supports
  - fostering competent ECEC settings
  - digital technologies.
- The TKS conceptual framework (ISCED level 2) describes the conceptual development of the assessment used to measure teachers' GPK, a construct that can be described across the following three dimensions with sub-dimensions:
  - Instruction
    - teaching methods and lesson planning
    - classroom management.
  - Learning
    - learning and development
    - motivational-affective dispositions.
  - Assessment
    - evaluation and diagnostic procedures
    - data literacy, interpretation and use.

Each TKS item is aligned to a dimension and sub-dimension of the conceptual framework, as well as to one of three cross-cutting categories: cognitive demand (recall, analyse or apply); knowledge base (theoretical/scientific, practice-based); and thematic orientation (core knowledge, emergent priorities for teacher knowledge).

Unclassified - Non classifié

This technical report is complimentary to the three conceptual frameworks, and readers are strongly encouraged to review their key aspects before reading this report.

Online data collection is the default mode for all TALIS 2024 modules. Forty-four of the 56 participating countries/territories[1] decided to collect TALIS data online, 11 participants collected data on line but also prepared paper instruments on request or as a fall-back option in parallel and 1 participant opted for the paper-and-pencil-only data collection mode.

The following sections of this chapter provide an overview of the management structure of TALIS 2024 at the international and national levels and outline the survey's three major phases and milestones.

1.2. Participating countries and territories

The following table (Table 1.1) lists the TALIS 2024 participants for all target populations.

Table 1.1. TALIS 2024 participants at ISCED level 2, ISCED levels 1 and 3, the TKS and TALIS Starting Strong ISCED 02 and U3

Country/territory	ISCED level 2	ISCED level 1	ISCED level 3	TKS	TALIS Starting Strong ISCED level 02	TALIS Starting StrongU3
Albania	●					
Alberta (Canada)	●					
Australia	●	●				
Austria	●					
Azerbaijan	●					
Bahrain	●					
Brazil	●	●				
Bulgaria	●					
Chile	●			●	●	
Colombia	●				●	
Costa Rica	●					
Croatia	●		●	●		
Cyprus	●					
Czechia	●					
Denmark	●		●		●	
Estonia	●					
Finland	●				●	
Flemish Community (Belgium)	●	●	●		●	●
France	●	●				
French Community (Belgium)	●	●				
Germany					●	●
Hungary	●					
Iceland	●					
Ireland					●	●
Israel	●				●	●
Italy	●					

Unclassified - Non classifié

Country/territory	ISCED level 2	ISCED level 1	ISCED level 3	TKS	TALIS Starting Strong ISCED level 02	TALIS Starting StrongU3
Japan	●	●			●	
Kazakhstan	●					
Korea	●	●				
Kosovo	●					
Latvia	●					
Lithuania	●					
Malta	●					
Montenegro	●					
Morocco	●	●		●	●	
Netherlands	●	●				
New Brunswick (Canada)						●
New Zealand	●	●			●	●
North Macedonia	●					
Norway	●				●	●
Poland	●			●		
Portugal*	●		●	●		
Quebec (Canada)						●
Romania	●					
Saudi Arabia	●	●	●	●		
Serbia	●					
Shanghai (China)	●					
Singapore	●					
Slovak Republic	●					
Slovenia	●	●	●			
South Africa	●			●		
Spain	●	●			●	
Sweden	●				●	
Türkiye	●	●	●		●	
United Arab Emirates	●	●	●			
United States	●			●		
Uzbekistan	●					
Viet Nam	●					

1.3. Managing the survey internationally

In June 2021, the OECD established a partnership with the International Association for the Evaluation of Educational Achievement (IEA) and its consortium partners: the Australian Council for Educational Research (ACER, Melbourne, Australia), cApStAn Linguistic Quality Control (Brussels, Belgium) and RAND Europe (Cambridge, United Kingdom). As part of this collaboration, the OECD commissioned the IEA Hamburg office to serve as the international study centre (ISC) for the implementation of TALIS 2024. The consortium comprised staff from both IEA offices in Amsterdam and Hamburg, as well as from ACER, cApStAn and RAND.[2]

Unclassified - Non classifié

The ISC team was led by Steffen Knoll and Anja Waschk (Co-Directors), with Ralph Carstens serving as Senior Strategic Advisor and Lead for Conceptual Development, and Eleonora Kolomiets acting as Study Coordinator since 2022. The role of International Data Manager was held by Adriana Viteri, who assumed the position in 2021.

The IEA sampling team was led by Karsten Penon (Sampling Manager), responsible for the survey's international sample design and its national sampling plans, implementation, weighting and adjudication for all countries/territories and target populations. The analysis team at IEA Hamburg, led by Mojca Rožman since 2022, oversaw data scaling, table review and the review of the international report.

This team developed and implemented validation and scaling procedures, produced the scale scores for the TALIS core survey, including ISCED levels 1 and 3, and TALIS Starting Strong. They also collaborated with the ACER analysis team, which was responsible for the conceptual development of the TKS, as well as the analysis and scaling of TKS data. The IEA StudyExpert team led by Guido Martin was responsible for the development and administration of IEA StudyExpert software used for adaptation, translation and layout implementation and provision of the TALIS questionnaires on line. The development of the IEA's Data Management Expert, its Data Processing Expert, its Windows Within-School Sampling Software (WinW3S) and its International Database Analyzer was overseen and co-ordinated by Meng Xue (Senior Advisor, Unit Head) and Yasin Afana (Research Analyst).

At IEA Amsterdam, IEA financial director Jan-Peter Broek (since 2023) managed the financial and contractual affairs in co-operation with Christian Groth, Deputy Director and Head of Accounting and Controlling at IEA Hamburg.

David Ebbs (Senior Research Officer) led the translation verification of the national questionnaires in 74 language versions. Lauren Musu (Head of Translation Verification and Quality Control) was responsible for managing the international quality observation programme in all participating countries/territories by contracting, training and supervising independent quality observers.

Consortium member cApStAn Linguistic Quality Control, specialising in semantic quality control of translations in a range of international surveys and based in Brussels, Belgium, was responsible for conducting translation verification for all language versions. Josiane Tyburn (Lead Project Manager) co-ordinated the training of translation verifiers, the translation verification process and linguistic quality control. Steve Dept (founding partner, cApStAn) was responsible for the conceptual planning and implementation of the translation verification methodology.

The consortium member and project team at ACER was led by Wolfram Schulz (Framework Lead and Project Lead since 2023) who co-operated with John Ainley (Framework Lead) on framework development for TALIS core survey and the TKS. Pina Tarricone, in collaboration with Jonathan Heard and Wolfram Schulz, co-ordinated the TKS test development and scaling.

Miriam Broeks (Senior Analyst and Project Lead until 2022) followed by Merrilyn Groom (Research Analyst and Project Lead since 2022) at RAND Europe (Cambridge, United Kingdom) co-ordinated the conceptual framework and questionnaire development of TALIS Starting Strong. Merrilyn Groom was supported by Miguel Subosa (Research Analyst, RAND Europe). Lynn Karoly (Senior Economist and Professor of Policy Analysis, RAND School of Public Policy, United States) chaired the TALIS Starting Strong framework and questionnaire development group and filled an advisory role in collaboration with the consortium partners at RAND Europe.

The study's sampling referee, Jean Dumais (previously Statistics Canada, Gatineau, Canada), advised on sampling methodology, adjudication and non-response bias analyses and interpretation of results.

The ISC appointed Michèle Ernst Stähli (Swiss Centre of Expertise in the Social Sciences, Switzerland) as translation referee, who supported the ISC with her linguistic and methodological expertise in decision making related to translation and translation verification disparities.

Unclassified - Non classifié

The OECD Secretariat's Directorate for Education and Skills in Paris, France, responsible for the overall supervision of the project across the participating countries/territories and TALIS governing bodies, was led by Ruochen Li (Senior Project Lead), Gabor Fülöp (Analyst, TALIS core survey), Stéphanie Jamet (Senior Analyst, TALIS Starting Strong), Elizabeth Shuey (Analyst, TALIS Starting Strong), Marco Paccagnella (Analyst, TALIS TKS), Sophie Vayssettes (Analyst), Rodrigo Castaneda Valle (Analyst), Alison Burke (Analyst), Heewoon Bae (Analyst) and Rodolfo Ilizaliturri Lopez (Data Scientist).

The OECD Secretariat appointed Timothy Kennel (Assistant Division Chief United States Census Bureau, Washington, DC, United States) as chair of the TALIS 2024 Technical Advisory Group (TAG). Its task was to provide the OECD, the TALIS consortium and Questionnaire Expert Group with expert advice and guidance on methods, processes and analyses.

1.4. Working with national project managers

In 2021, the TGB initiated the process of establishing national centres in each participating country or territory. Each centre was to be led by an experienced national project manager (NPM), who would be responsible for adhering to the consortium's guidelines regarding the roles and responsibilities of the NPM. The NPM held primary responsibility for preparing and co-ordinating the survey at the national level.

The specific allocation and management of tasks within each national centre were strongly influenced by the experience and expertise of the NPMs and their teams, particularly their involvement in other international large-scale assessments.

The consortium also recommended that each national centre appoint not only a national data manager (NDM) to oversee and implement technical and data-related activities, but also a national sampling manager (NSM) to assist the NPM in cases involving complex sample designs or potential national adaptations and extensions of the survey.

The number of staff members within each centre varied significantly across countries and territories, depending on their size and how they chose to organise the national data collection process. Several new and some late-joining TALIS participants required special attention, onboarding and ongoing support from the ISC.

In some cases, NPMs procured and contracted external survey organisations to support the scientific and/or operational aspects of the survey on behalf of their centres.

The tasks required of the NPMs, data managers and/or sampling managers included the following:

- establishing an overall preparation and administration schedule in co-operation with the ISC and discussing country or territory specific challenges or circumstances of the educational system
- attending NPM meetings in person and webinars hosted by the ISC to become familiar with all instruments, materials and survey procedures
- providing the IEA sampling team with an up-to-date national sampling frame of ISCED level 2 schools and, where applicable, ISCED levels 1 and 3 schools
- providing the IEA sampling team with an up-to-date national sampling frame with staff information of ECEC settings caring for ISCED level 02 children and, where applicable, staff information of settings working with U3 children at the age of under three years
- discussing national design options, such as oversampling, additional samples or sample adjustments for the field trial and main survey with the IEA sampling experts
- performing within-school listing, sampling and tracking of teachers and principals at schools, as well as of staff members and leaders at ECEC settings

Unclassified - Non classifié

- carrying out quality control and plausibility checks on teacher lists and samples to identify, for example, teacher lists that had been abbreviated to include only those teachers who had agreed to participate or lists that were otherwise incomplete/inaccurate; carrying out the same quality checks for ECEC settings, their staff and leaders
- appointing experienced translator(s) and translation reviewer(s) to prepare the national versions of the international instruments
- getting familiar with the adaptation and translation software IEA StudyExpert and documenting required national adaptations to and translations of the instruments using this software tool
- preparing for online data collection (unless opted out of)
- identifying and training school co-ordinators
- appointing and training national quality observers (NQOs)
- nominating possible international quality observers (IQOs) and supporting their work (main survey only)
- monitoring the return status of all questionnaires and projected response rates provided within *IEA StudyExpert* and *IEA's WinW3S software*
- capturing responses on paper manually and performing consistency checks
- completing a survey activities questionnaire (SAQ)
- submitting data and documentation to the consortium and responding to data queries during data processing and analysis.

Regular communication between the NPM and the ISC ensured that survey administration proceeded according to the international schedule. Deviating survey schedules were developed for two participants to accommodate their late joining and changes in the management and to ensure that their data could be included in the international database and reports. With minor exceptions, all participating countries or territories met the international collection milestones and submitted all data and documentation on time.

Countries in both the northern and southern hemispheres collected their TALIS data towards the end of the school year and in line with the TALIS 2024 Technical Standards (OECD, 2025[5]). However, to relax the very tight preparation timeline not only of the ISC but of southern hemisphere participants between the field trial and main survey, the TGB supported the idea to collect first northern hemisphere data between February and April 2024, followed by southern hemisphere data between June and August 2024. Prior to the data collection windows, national centres distributed login details to potential respondents, who then completed the questionnaires online within a defined survey window or, in selected cases, using paper questionnaires.

Experience from previous cycles of TALIS showed that the survey would be implemented on a voluntary basis in most instances. Twelve participating countries/territories made the participation mandatory for either sampled schools and the selected teachers and their principals or the sampled ECEC settings, their staff and leaders. When participation in the survey was voluntary, convincing schools or ECEC settings to participate in the survey proved to be a challenging exercise. Based on experience in previous TALIS cycles, the ISC discussed strategies and shared best practice examples with NPMs to support their efforts to achieve the required participation rates. National centres collaborated closely with teacher unions, principal associations, ECEC providers and organisations and relevant local, regional or national education authorities, including ministries of education where applicable, to gain endorsement for the survey and ensure broad participation. Additionally, participants conducted public relations campaigns to raise awareness among principals and teachers ahead of the main data collection phase. Many centres also developed dedicated TALIS websites to support their outreach and communication efforts.

Unclassified - Non classifié

The working language throughout the project was English, that is, for all international materials, communication and meetings. Email served as the primary mode of communication. For document and data exchange among all parties involved, the consortium employed Microsoft SharePoint as its collaboration platform. All systems were managed by the ISC, with access restricted to authorised personnel to maintain confidentiality and ensure data security.

Over the five-year survey cycle, the consortium organised four meetings for all NPMs and NDMs. Two meetings were held in person and two conducted as webinars. These meetings provided updates on survey progress and facilitated discussions on materials, procedures, technical standards and results. In addition to these gatherings, NPMs had both bilateral and plenary opportunities to share experiences and explore strategies for addressing challenges such as survey fatigue, maintaining confidentiality and managing international components alongside other concurrent surveys.

1.5. Standardised procedures

TALIS 2024 followed rigorous technical standards (OECD, 2025[5]) and procedures documented in five Survey Operations Procedures (SOP) units, the General Guidelines for National Project Managers, the School/Setting Co-ordinator Manual, the IEA StudyExpert Manual, the National Quality Observer Manual and practical guidelines outlining the tasks, procedures and activities for all participating countries/territories to successfully carry out the survey.

The TALIS 2024 Technical Standards, a continuation of the technical standards of three previous TALIS and the 2018 Starting Strong cycles, was developed by the consortium and endorsed by both the TGB and the TALIS Starting Strong Informal Group (IG). This document offered participants comprehensive guidance throughout all phases of survey implementation, from preparation and administration to data processing and analysis. The standards reflected widely recognised best practices in survey methodology – see, for example, Biemer and Lyber (2003[6]); Martin, Rust and Adams (1999[7]); OECD (2013[8]); and Statistics Canada (2009[9]) – and were aligned with the total survey error framework (Biemer and Lyber, 2003[6]). As the TKS was introduced as a new component in 2024, it required the development of dedicated technical standards. These standards were carefully formulated in collaboration with the OECD, participating countries/territories and the TAG, and subsequently implemented. Adherence to these standards was crucial to ensuring the validity, reliability and cross-national comparability of both the survey instruments and the data collected.

TALIS 2024 combined three survey modules under one umbrella: i) TALIS core survey (ISCED level 2) in schools with optional ISCED levels 1 and 3; ii) TALIS Starting Strong in ECEC settings, surveying staff and leaders at ISCED level 02 and for U3 children; and iii) the TKS with ISCED level 2 teachers in lower secondary schools. Table 1.2 provides an overview of the questionnaires prepared for each survey module.

The TALIS core survey administered a principal questionnaire and three versions of a teacher questionnaire at the respective ISCED level opted for by the country/territory. The TKS was conducted in the very same ISCED level 2 schools in which the TALIS core data collection took place. Therefore, the data linked to the same principal questionnaire could also be used as background data alongside TKS teacher data. Applying a rotated design in the TKS, four different booklets were administered, including a start section with questions from the core teacher questionnaire and a section with GPK questions to be completed by teachers within 24 hours.

With the agreement of the TGB and OECD Secretariat, the ISC provided the source versions of the questionnaires in English only, via newly developed software (IEA StudyExpert) designed to support instrument adaptation, translation into local language(s), layout preparation and all related verification processes (see Chapters 4 and 6). In the field trial phase, national centres adapted the instruments to their

Unclassified - Non classifié

specific contexts, following standardised adaptation guidelines. Once these adaptations were verified by the consortium, the national centres proceeded to translate the English source versions of the questionnaires into the respective local language(s).

Table 1.2. Questionnaires prepared for TALIS core survey, TALIS Starting Strong and the TKS

Questionnaire	TALIS core survey (ISCED level 2) (optional ISCED levels 1 and 3)	TKS (ISCED level 2)	TALIS Starting Strong (ISCED level 02 and U3 children)
Teacher	Forms A, B, C (for each ISCED level)	Booklets 1, 2, 3, 4 (including background questions from teacher questionnaire Form A)	
Principal	1 form per ISCED level		
ECEC staff			1 form for both ISCED level 02 and U3 children 1 Combined Questionnaire Main 1 Combined Questionnaire Short
ECEC leader			1 form for both ISCED level 02 and U3 children 1 Combined Questionnaire Main 1 Combined Questionnaire Short

Independent translation verifiers were employed to conduct international translation verification of all translated questionnaires and languages. The TALIS team at IEA Amsterdam, responsible for the overall co-ordination of the translation verification process, collaborated with cApStAn Linguistic Quality Control. cApStAn was in charge of training the translation verifiers and centrally co-ordinating the translation verification activities.

The IEA Hamburg sampling team performed all school- and ECEC-setting-related sampling and weighting procedures in line with established standards and guidelines (more details on the sampling procedures and sampling weights and participation rates appear in Chapters 5 and 9 respectively.) The TALIS NPMs used the IEA WinW3S software to draw the teacher or staff samples for each nationally sampled school or ECEC setting (as applicable) and to estimate participation rates.

IEA Amsterdam oversaw the quality monitoring of data collection at the international level, while NPMs were responsible for this task within their respective country or territory. IQOs participated in an intensive online training programme to prepare for their role (see Chapter 7).

After applying standardised processing and cleaning procedures to the data submitted by all participants, and once the TALIS consortium was satisfied that all data quality standards had been fully met, the data were recommended for inclusion in the TALIS 2024 databases and subsequent analytical reports.

However, if the consortium judged that certain standards had not been adequately met, an adjudication process was initiated in consultation with the OECD Secretariat and the TAG. This process assessed the extent to which data quality had been compromised and determined whether the data could be recommended for unconditional inclusion in the datasets and related reporting.

1.6. Key survey phases

The TALIS design followed three phases: a qualitative pilot, then a field trial and main survey, both involving all participants. Drawing on past cycles, countries were encouraged to form focus groups of teachers and principals (and ECEC staff for TALIS Starting Strong) to review field trial items for clarity and relevance (see Chapter 3). TKS focus groups also collected limited data and involved expert input.

Unclassified - Non classifié

To support preparation, the consortium held an onboarding session in June 2021 and a first NPM meeting in September 2021. This online meeting introduced the draft framework, sampling, timelines, operational procedures and roles. NPMs were also briefed on the overall TALIS 2024 timeline and best practices from previous cycles.

1.6.1. Pilot study

The TALIS 2024 pilot study aimed to refine survey instruments for the field trial through qualitative assessment across ISCED levels 1 to 3 and TALIS Starting Strong. It included new, trend and refined items, focusing on clarity, relevance, feasibility and conceptual coverage. No national additions beyond mandatory adaptations were allowed.

The pilot evaluated how well teachers, principals and ECEC staff understood the items, reviewing aspects such as concept validity, complexity, item organisation, clarity, cultural relevance, translation issues and overall questionnaire flow and feel.

Paper-based surveys and structured feedback forms were used, prioritising qualitative input via focus groups. Translations, limited to mandatory elements, were reviewed internally by qualified translators and independent reviewers for accuracy and cultural fit, following technical guidelines.

NPMs recruited small, diverse focus groups (seven to nine participants) across ISCED levels and education types. Sessions (three to four hours) included individual completion and moderated group discussions. Moderators remained neutral and encouraged broad participation. Forty countries participated between 1 February and 15 March 2022, using in-person, online or hybrid formats. Feedback was submitted in English using structured forms and uploaded to SharePoint for evaluation by the ISC and expert groups.

A variant of the focus group approach was used for the TKS pilot, which focused on GPK among ISCED level 2 teachers. Alongside teacher feedback, an expert review used a National Expert Review Spreadsheet for item-level input. TKS materials were divided into Booklets A and B, including GPK and contextual questions. Unlike the TALIS core survey, TKS responses were entered in a Response Data Spreadsheet for further processing. Seven participants conducted the pilot from 1 to 28 February 2022, ending earlier to allow for timely analysis by ACER and the expert group.

1.6.2. Field trial

The field trial had two goals: collecting large-scale data from all TALIS participants to refine survey instruments and testing operational procedures across countries to prepare for the main survey. These included sampling, instrument production, administration and data processing.

After the pilot, the ISC held online sessions with countries to discuss field trial schedules and participation strategies, while the IEA sampling team consulted on sampling frames and designs. The second NPM meeting took place in Hamburg (29-30 August 2022), followed by three-day data management training. Discussions covered pilot results, instrument changes, sampling plans and survey timelines. NPMs were introduced to the IEA StudyExpert software for instrument adaptation, translation and deployment, and tested its functionalities. Training also addressed data entry using ISC-provided software.

Three webinars supported implementation: one in September 2022 on IEA StudyExpert and two in December 2022 on within-school sampling for teachers and ECEC staff. All countries/territories conducted the field trial between 1 February and 31 March 2023, except two who followed a deferred schedule later in the year.

Unclassified - Non classifié

NPMs oversaw data collection, participation monitoring and, where needed, data entry. Most data were collected on line and stored on a secure German server managed by the ISC. For paper-based responses, countries entered and verified data before submitting to the ISC for final processing.

The IEA analysis team and expert groups (TALIS core survey, TALIS Starting Strong, TKS) analysed the field trial data, incorporating input from TAG, the OECD Secretariat and the TGB to improve the instruments. Revised versions were released for final translation in September 2023 (see Chapter 3).

1.6.3. Main survey

The main survey began with the third NPM meeting in September 2023 in Ljubljana, Slovenia. It aimed to prepare NPMs and NDMs for survey implementation, building on field trial results. Discussions included sampling strategies, survey operations and consultations on field trial data. The meeting also introduced international and national quality control procedures (see Chapter 7), with external observers involved at the international level, unlike the field trial.

Northern hemisphere participants conducted the survey between February and April 2024, with some extending towards the end of the second quarter of the year. The final submission deadline was end of May 2024. Southern hemisphere participants collected data from June to August, with a few continuing into September.

The ISC processed and cleaned the data, while IEA applied weighting, incorporating non-response bias analyses from countries that did not meet minimum participation thresholds. A staggered approach was applied: TALIS core data were processed first, followed by TALIS Starting Strong, then the TKS. An adjudication meeting was held in Hamburg in November 2024 with key stakeholders; a virtual follow-up in December finalised the process.

The fourth NPM meeting took place online in February 2025. It reviewed survey implementation, previewed international reporting tools and gathered feedback to inform future TALIS cycles.

In May 2025, a four-day in-person data analysis workshop in Hamburg trained around 100 representatives from participating countries/territories. It focused on using international databases, applying weights and scales and replicating analyses from the international report to support national-level reporting.

References

Biemer, P. and L. Lyber (2003), *Introduction to Survey Quality*, Wiley, Hoboken, NJ, https://doi.org/10.1002/0471458740. [6]

Martin, M., K. Rust and R. Adams (1999), *Technical Standards for IEA Studies*, International Association for the Evaluation of Educational Achievement, Amsterdam. [7]

OECD (2025), "TALIS 2024 Technical Standards", No. EDU/TALIS/GB(2023)11/REV1, Programme for Teaching and Learning International Survey, Directorate for Education and Skills, OECD, Paris, https://one.oecd.org/document/EDU/TALIS/GB(2023)11/REV1/en/pdf?sessionId=1755520362877. [5]

OECD (2025), *TALIS Starting Strong 2024 Conceptual Framework*, OECD Publishing, Paris, https://doi.org/10.1787/f49228be-en. [2]

OECD (2025), *TALIS Teacher Knowledge Survey 2024 Conceptual and Assessment Framework*, OECD Publishing, Paris, https://doi.org/10.1787/65903902-en. [3]

Unclassified - Non classifié

OECD (2025), *Teaching and Learning International Survey (TALIS) 2024 Conceptual Framework*, OECD Publishing, Paris, https://doi.org/10.1787/7b8f85d4-en. [4]

OECD (2013), *TALIS 2013 Technical Standards*, OECD Publishing, Paris. [8]

Statistics Canada (2009), *Quality Guidelines*, Statistics Canada, Ottawa. [9]

UNESCO-UIS (2012), *International Standard Classification of Education, ISCED 2011*, United Nations Educational, Scientific and Cultural Organization Institute for Statistics, https://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf. [1]

Notes

[1] Throughout the report, we will refer to 56 countries/territories and 1 country that participated through the IEA. The Belgium Flemish and French Communities have been administered as two different territories with two NPMs. Data were collected for Belgium as a whole and can also be analysed for the two territories.

[2] Refer to Annex A of this report for a complete list of previous and current staff that contributed to TALIS 2024.

Unclassified - Non classifié

2 Development of the conceptual frameworks

This chapter outlines the development and refinement of the conceptual frameworks that guided the design of OECD Teaching and Learning International Survey (TALIS) 2024 across its three modules: the TALIS core survey, TALIS Starting Strong and the Teacher Knowledge Survey (TKS). It begins by describing a strategic concept paper that drew upon contemporary research and international policy priorities and introduced both enduring themes and emerging issues. The concept paper constituted the groundwork for subsequent development of the theoretical underpinnings in each framework, developed collaboratively by expert groups with diverse backgrounds and areas of specialisation. Key domains addressed across the modules included diversity and equity, the educational use of technology, and social-emotional learning. The frameworks also incorporate previously established dimensions of educational work such as professional development, occupational perceptions and institutional contexts.

Unclassified - Non classifié

2.1. Introduction

This chapter describes the process of developing the conceptual underpinnings of the OECD Teaching and Learning International Survey (TALIS) 2024, including:

- the conceptual framework for the TALIS 2024 core survey (International Standard Classification of Education [ISCED] levels 1, 2 and 3) (OECD, 2025[1])
- the conceptual framework for the Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) (OECD, 2025[2])
- the conceptual and assessment framework for the Teacher Knowledge Survey (TKS) (OECD, 2025[3]).

The process began with the development of a concept paper that outlined the common and broad directions for the conceptual development of all survey components. This chapter describes, for each of the three frameworks, the general purpose and policy focus, the composition of expert groups and the development process and timelines. Full details on the conceptual orientation of each survey component are described in the respective framework.

2.2. Concept paper

The purpose of the TALIS 2024 concept paper was to explore the domains intended to be the focus of the TALIS core survey and its optional components, focused on early childhood education and care (TALIS Starting Strong), and teachers' general pedagogical knowledge (TKS). The concept paper reflected major concepts from the research literature, as well as policy interests, and was developed by researchers in consultation with international stakeholders and participating countries and territories. Three domains proposed for inclusion or further developed based on the underpinnings from 2018 in the survey reflected contemporary issues:

- diversity and equity
- educational uses of technology
- social-emotional learning.

Four of the domains were enduring teaching and learning issues:

- staffs' learning and development
- work practices
- occupational perceptions
- the institutional environments in which teaching and learning takes place.

The concept paper also identified the professional characteristics of staff who are assumed to be associated with those domains.

The development of the concept paper started in late 2020 and was a collaborative effort involving senior project staff from the International Association for the Evaluation of Educational Achievement (IEA), the Australian Council for Educational Research (ACER) and RAND Europe. It involved discussions with experts from different institutions to help assist with the identification of relevant policy issues and educational foresight.[1] A first draft was presented to the TALIS Governing Board (TGB) in March 2021 and included a preliminary outline of domains for assessment and initial considerations for instrument development.

Unclassified - Non classifié

Following feedback from country/territory representatives and experts, a revised draft was presented to the members of the TGB in September 2021. It was approved as a basis for the further development of the individual conceptual frameworks.

The final concept paper consisted of the following sections:

- relevant policy issues and educational foresight
- the strategic relevance of TALIS as an evolving survey programme
- exploring potential content areas for TALIS 2024
- content issues for the study of early childhood education and care (ECEC)
- developing an assessment of teachers' general pedagogical knowledge (GPK)
- a brief overview of implementation issues relevant to the conceptual framing.

As a scoping and staging document, the concept paper was for official use by the survey's governing bodies and was not made publicly available.

2.3. Conceptual framework for the TALIS 2024 core survey

2.3.1. General purpose of TALIS and its policy focus for 2024

TALIS was initiated with the aim of providing information on specified aspects of teaching and learning at the international and national levels. This is achieved through a series of surveys of teachers and school leaders focused on lower secondary education (ISCED level 2), with options for primary (ISCED level 1) and upper secondary (ISCED level 3) education. The first three cycles of TALIS were conducted in 2008, 2013 and 2018. TALIS 2024 represents the fourth iteration of the survey programme.

The general purpose of TALIS over time is to support participating countries and territories through the provision of robust information on the development of teaching as a profession, the review and development of pedagogical practices and the comparison of educational policies and approaches across contexts. TALIS generates reliable indicators of teachers, school leaders and teaching that allow valid international comparisons and perspectives on changes or consistencies over time. The analyses of these indicators are linked to educational policies and practices and are primarily oriented to the following groups of stakeholders:

- policy makers, to help them review and develop policies that promote the teaching profession and the best conditions for effective teaching and learning
- teachers, school leaders and education practitioners to facilitate reflections on, and discussions of, educational practices and how those practices might be enhanced
- researchers, to build upon past research literature on each content area (as identified in a conceptual framework) and provide bases for further research using TALIS and other data.

Each cycle of TALIS has built on previous cycles with a focus on the variation in instructional and institutional conditions enhancing student learning both within and across countries and territories, as well as over time. However, each new TALIS cycle also considers recent developments and includes new material to remain relevant in the face of emerging policy interests. Consequently, there is a considerable challenge for TALIS to sustain a core focus on enduring constructs (thereby providing a basis for measuring change) while incorporating emerging policy interests.

New material can take the form of new content or new aspects of existing content. For example, in TALIS 2018, content concerned with innovation as well as equity and diversity aspects were introduced. These linked to discussions about the shifting landscape of education from traditional subject matter towards the development of social-emotional and life skills. TALIS 2018 also expanded the topic of job satisfaction to

Unclassified - Non classifié

include teacher well-being through items concerned with workplace stress and retention, and it re-oriented the topic of school leadership to reflect new conceptions of that construct (Ainley and Carstens, 2018).

Content selected for inclusion in TALIS 2024 matched the following criteria (Ainley and Carstens, 2018[4]). It should:

- be policy-relevant in terms of international as well as national perspectives.
- add value for participating countries and territories.
- be possible to derive valid, reliable, comparable, robust and interpretable indicators of conditions for teaching and learning.
- include measurable aspects that can be assessed in a timely and cost-effective way.

2.3.2. The Questionnaire Expert Group: Role, membership and collaboration

As in previous cycles, an expert group was established to assist with the development of the conceptual underpinnings of TALIS questionnaire materials and possible indicators. Membership of the Questionnaire Expert Group for TALIS 2024 is based upon:

- being deeply familiar with two or more key content areas
- ideally having previously published research using TALIS data
- being an expert in survey methodology and especially questionnaire design in a multi-cultural and multi-lingual setting
- coming from geographically diverse regions that match, at least broadly, the diversity of countries and territories participating in the survey.

Each QEG member was assigned to one or more thematic groups where they served as either the lead or the support to the group. Each thematic group drafted proposals, which were then reviewed by all QEG members and especially the chair. When the group met, all QEG members held equal weight in meeting discussions and recommendations. In addition to considering the analytical and policy relevance of the group's proposals, QEG members were asked to consider different educational cultural contexts and applicability across ISCED levels 1, 2 and 3.

Heather Price, Research Manager at the Learning Policy Institute, United States (previously Associate Professor at Loyola University, Chicago, United States) served as QEG Chair. She further elaborated underpinnings and materials in the school leadership and school climate content areas.

The QEG for TALIS 2024 included the following education, policy and survey experts, listed with the thematic groups in which they worked:

- Charalambos Charalambous, Associate Professor, Department of Education, University of Cyprus, Cyprus.
  - Areas of expertise: teachers' work practices, teachers' learning and development.
- Tracy Durksen, Scientia Research Fellow and Senior Lecturer of Educational Psychology, University of New South Wales, Australia.
  - Areas of expertise: occupational perceptions, social and emotional learning.
- Hilary Hollingsworth, Principal Research Fellow, ACER, Australia.
  - Areas of expertise: teachers' learning and development.
- Stefan Johansson, Senior Lecturer and Associate Professor, Department of Education and Special Education, University of Gothenburg, Sweden.
  - Areas of expertise: teachers' learning and development, diversity and equity, contextual factors.

Unclassified - Non classifié

- Ridwan Maulana, Professor of Educational Sciences, University of Groningen, Netherlands.
  - Areas of expertise: occupational perceptions, school climate.
- Lorena Ortega, Assistant Professor, Centre for Advanced Research in Education (CIAE), University of Chile, Chile.
  - Areas of expertise: social and emotional learning, diversity and equity.
- Oren Pizmony-Levy, Associate Professor of International and Comparative Education, Teachers College, United States (from 2022).
  - Areas of expertise: environmental sustainability.
- Ronny Scherer, Professor, Centre for Educational Measurement (CEMO), University of Oslo, Norway.
  - Areas of expertise: teachers' work practices, technology in education.
- Anna Sun, Associate Professor, Department of Educational Leadership, Administration and Research, Rowan University, United States.
  - Areas of expertise: school leadership.
- Kristen Weatherby, Weatherby Education Studies, United Kingdom.
  - Areas of expertise: teachers' work practices, technology in education.

The membership of experts remained stable throughout the years of work.

The QEG included the following *ex officio* members:

- ACER: John Ainley and Wolfram Schulz, as co-leads for the framework development.
- IEA: Ralph Carstens, Steffen Knoll, Mojca Rožman, Megan Sim and Anja Waschk, as directors and co-ordinators at the international study centre.
- RAND Europe: Merrilyn Groom and Lynn Karoly, as liaisons to TALIS Starting Strong.
- OECD Secretariat: Heewoon Bae, Pablo Fraser, Gabor Fülöp and Ruochen Li.

2.3.3. Developing and refining the conceptual framework

After receiving comments from TGB members in March 2021 on the draft concept paper, the international research consortium commenced work on the development of the TALIS 2024 framework in the following stages:

- A first draft document was circulated to the TGB for discussion mid-2021 and underwent further revisions following extensive feedback from stakeholders, including an informal priority rating exercise.
- A revised draft document was presented at TGB meetings in October 2021, which was followed by a further revision phase in light of comments from TGB members and discussions with contributing QEG members and OECD representatives.
- Progress reports and conceptual updates were provided as part of subsequent meetings of the TGB in July 2022 (after the pilot implementation, before the field trial), as well as in May and September of 2023 (after the field trial, prior to the main survey data collection). Additional content sections and descriptions requested, developed and discussed at these stages concerned environmental and sustainability education as well as aspects of artificial intelligence (AI) related to the educational use of technology.
- The final revision was undertaken following the TALIS 2024 field trial and the selection of item material for the main survey data collection, concerning aspects no longer included in the final instruments, harmonising the structure and style of presentation across content areas, literature

Unclassified - Non classifié

updates related to recent reports with TALIS data, and updating the overall description as well as design features to match the final data collection.

The final framework document includes the following sections:

- Section 1: The role and policy relevance of TALIS as an evolving study programme in light of previous cycles and content and indicator priorities for 2024.
- Section 2: Content of TALIS 2024 with descriptions of each enduring as well as contemporary content areas, as well as relevant contextual characteristics of schools and teachers.
- Section 3: The TALIS 2024 study design with brief descriptions of the sampling, instrument and operational design of the survey.

The conceptual framework describes the enduring features of teachers, teaching and learning that have been investigated over previous cycles of TALIS as including teachers' initial training professional learning throughout their careers and the climate of their schools. It further defines the focus on teachers' learning and development, teachers' work practices, occupational perceptions and institutional environments for learning.

The framework then identifies the contemporary issues that are investigated in TALIS 2024, including diversity and equity, the educational use of technology (including indicators on the use and views of AI tools by teachers and students), social and emotional learning of students, and environmental and sustainability education as issues affecting teachers' responsibilities and expectations as well as the work of education systems.

Importantly, the framework describes how TALIS cross-examines contemporary issues from the perspective of enduring features. For example, it raises the question about the impact of growing diversity on initial teacher education, or how school climate interacts with the use of technology.

2.4. Conceptual framework development for TALIS Starting Strong

2.4.1. General purpose of TALIS Starting Strong and policy focus for 2024

TALIS Starting Strong, which was first administered in 2018, represents an effort to expand the evidence base on ECEC. Continuing in 2024, TALIS Starting Strong sought to collect cross-sectional data at different time points regarding the characteristics of the ECEC workforce, the nature of the work performed by ECEC practitioners, and working conditions in ECEC settings across different countries and territories. Broadly speaking, the main policy issues for the 2024 cycle were as follows:

- ensuring quality and equity in learning and well-being for all children
- motivating, developing and retaining staff in the profession.

TALIS Starting Strong also aimed to elucidate factors that influence the quality of ECEC provision, namely: process quality (which includes children's interactions with staff as well as with the physical environment and materials, and with the larger community) and structural quality (which refers to factors such as class/playgroup size and ECEC staff training and qualifications). The 2018 cycle captured information on both process and structural quality, and the 2024 cycle continued to do so and expanded the conceptual breadth.

Like the 2018 cycle, TALIS Starting Strong 2024 also aimed to produce practitioner- and setting-level indicators to monitor ECEC systems. Furthermore, the 2024 cycle sought to compile a reliable, comparative database of within- and between-country data on: i) ECEC staff and leader characteristics; ii) pedagogical practices in ECEC settings; iii) professional practices in other aspects of ECEC practitioners' work; and iv) features of the environments where children are developing and learning.

Unclassified - Non classifié

Analyses aimed to identify associations across these data points, while also taking stock of contextual differences at the country/territory and setting levels. Ensuring that at least some indicators are comparable between time points and across education levels was also a priority for the 2024 cycle.

2.4.2. The ECEC Questionnaire Expert Group: Role, membership and collaboration

The ECEC QEG was established by RAND Europe in January 2021 in collaboration with the IEA and in consultation with the OECD Secretariat. Members provided direct input to and ongoing feedback on the conceptual framework. In addition, they were consulted throughout the development of survey questions and items.

ECEC QEG experts were identified through a multi-stage process, which began with a long list of potential experts identified by RAND Europe, in consultation with the OECD Secretariat and participating countries and territories. Ultimately, nine experts were nominated for the ECEC QEG, one serving as chair, three acting as members of the Core ECEC QEG and the remaining five constituting the Extended ECEC QEG, who would be available for ad hoc support.

Lynn Karoly, Senior Economist at RAND and Professor of Policy Analysis at the Pardee RAND Graduate School, served as the chair of the ECEC QEG.

The Core ECEC QEG included the following experts:

- Alejandra Cortázar, ECEC Researcher and Consultant, Chile.
- Mine Göl Güven, Associate Professor, Faculty of Education, Boğaziçi University, Türkiye.
- Thomas Moser, Professor of ECEC Research, National Centre for Learning Environment and Behavioural Research, University of Stavanger, Norway.

The Extended ECEC QEG consisted of the following experts:

- Rahel Dreyer, Professor of Education and Developmental Psychology of the First Years of Life, Alice Salomon University of Applied Sciences, Berlin, Germany.
- Maelis Karlsson Lohmander, Senior Lecturer, Department of Education, Communication, and Learning, University of Gothenburg, Sweden.
- Yumi Yodogawa, Associate Professor, Faculty of Education, Chiba University, Japan.
- Abbie Raikes, Director of the Center for Global Health and Development and Professor at the Department of Health Promotion, University of Nebraska Medical Center, United States.
- Julie Belanger, Director, Better Purpose, United Kingdom.

Meetings with the ECEC QEG began in January 2021 and were also attended by the following *ex officio* individuals:

- RAND Europe: Miriam Broeks, Merrilyn Groom and Miguel Subosa.
- IEA: Ralph Carstens, Steffen Knoll and Anja Waschk.
- OECD: Stéphanie Jamet and Elizabeth Shuey.

Heather Price, chair of the TALIS core survey QEG, additionally attended meetings and provided liaison to the parallel conceptual and instrument development for the TALIS core survey.

Members of the Core ECEC QEG were assigned to draft specific sections of the TALIS Starting Strong 2024 conceptual framework based on their respective specialities, in collaboration with RAND Europe and the OECD. Subsequent drafts were edited and updated by RAND Europe, with ongoing feedback from the Core and Extended ECEC QEGs, as well as the OECD Secretariat and the IEA.

Unclassified - Non classifié

2.4.3. Developing and refining the conceptual framework

The TALIS Starting Strong 2024 conceptual framework laid out the theoretical and analytical foundation for the staff, leader and combined questionnaires, the latter administered to staff that also hold leadership positions and to single-staffed ECEC settings. As the second cycle of an existing survey, the conceptual framework of TALIS Starting Strong 2024 built on the framework used during the 2018 cycle (Sim et al., 2019[5]). Furthermore, findings from the 2018 cycle informed the selection of content areas that would be covered by the 2024 cycle. The 2018 and 2024 cycles largely addressed the same content areas – albeit with updated labelling in the latter – as well as three additional cross-cutting areas of growing priority: approaches to comprehensive/continuous child support; fostering competent ECEC settings; and digital technologies to support leaders and staff. The priority area diversity, equity and inclusion in ECEC settings carried over from the 2018 to 2024 cycle.

To ensure that TALIS Starting Strong 2024 remained policy-relevant, RAND Europe conducted an initial, targeted literature review spanning evidence that was published after 2018. This literature review sought to update the survey's theoretical underpinnings, as well as identify trends and new developments that needed to be considered in producing the 2024 cycle of the survey, as well as subsequent cycles.

The results of the targeted literature review were discussed in separate consultations with the ECEC QEG and the OECD ECEC Network, both of which were held in January 2021. Feedback obtained through these consultations helped refine the way priority areas were framed in the survey. For instance, these consultations established that participating countries and territories were interested in how ECEC practitioners use digital technology to facilitate their own learning and development, rather than how they use such technology in their interactions with children.

Following these consultations, the areas of growing priority were discussed, finalised and approved during the OECD ECEC Network meeting in March 2021. In these discussions, it was also agreed that the content areas covered in the 2018 cycle remained relevant in the 2024 cycle and, as such, should be measured in TALIS Starting Strong 2024.

Having identified areas of growing priority in previous discussions, participating countries and territories, alongside the OECD ECEC Network, ranked the said areas in order of importance, through a priority rating exercise held in May 2021. During this exercise, members were also asked to identify questions from the 2018 cycle that should be retained to enable trend analyses in the 2024 cycle. This exercise was open to all ECEC Network members and all confirmed participants in the 2024 cycle.

Seventeen stakeholders provided input on the areas of growing priority while 18 stakeholders rated the staff and leader survey questions, indicating whether a question was of high priority and whether a question should be kept the same, kept but modified, kept but considered low priority or dropped from the survey. Over 70% of questions in the staff questionnaire and 80% in the leader questionnaire were preferred by the group to be kept but modified, and 15% of questions from both questionnaires were deemed to be of high priority.

To develop a complete first draft of the framework echoing these priorities and interests, each member of the Core ECEC QEG was assigned specific sections based on their expertise, while RAND Europe wrote the introduction and developed the survey overview, in particular the conceptual mapping of content areas against Bronfenbrenner's ecological systems.

Subsequent drafts of the conceptual framework were iteratively produced, based on feedback from the OECD Secretariat, the ECEC QEG, the ECEC Network, the IEA and participating countries and territories. Consultations with the editors of the TALIS core survey conceptual framework ensured alignment and consistency.

Iterations of the conceptual framework draft were formally presented on the following occasions:

Unclassified - Non classifié

- 28th ECEC Network meeting in October 2021
- 10th TGB meeting in October 2021
- 1st meeting of the TALIS Starting Strong Informal Group (IG)
- 13th TGB meeting in July 2024.

The final TALIS Starting Strong 2024 conceptual framework document includes the following sections:

- Section 1: The role and policy relevance of TALIS Starting Strong as an evolving study.
- Section 2: The focus of TALIS Starting Strong 2024.
- Section 3: A closer look at content areas for TALIS Starting Strong 2024.
- Section 4: Design of TALIS Starting Strong 2024.

Across these sections, the conceptual framework presents the overarching goal of TALIS Starting Strong 2024 to inform policies that can support governments' and education systems' long-term objectives and strategies concerning ECEC. Furthermore, it highlights the central role of ECEC practitioners in children's experiences of ECEC provision. In line with this, the conceptual framework discusses the 2024 survey's underpinning content areas and lays out their theoretical grounding. The aforesaid content areas fall along four distinct themes, namely:

- staff practices with children
- ECEC staff and leader characteristics
- ECEC setting characteristics
- cross-cutting content areas, as follows:
  - diversity, equity and inclusion in ECEC settings
  - approaches to comprehensive/continuous child support
  - fostering competent ECEC settings
  - digital technologies to support leaders and staff.

In discussing these content areas, the conceptual framework also describes how TALIS Starting Strong 2024 builds on the 2018 survey, noting which areas have been retained from the previous cycle and how new areas expand on previous survey implementation. Moreover, the conceptual framework also lays out the survey design and methodology for TALIS Starting Strong 2024, detailing the sampling approach, target population and survey procedures.

2.5. Conceptual framework development for the Teacher Knowledge Survey

2.5.1. General purpose and policy focus of the TKS

General pedagogical knowledge (GPK) is considered a crucial element of teachers' professional competence, supporting the implementation of effective teaching practices to improve student outcomes. Despite its importance, there is limited understanding and indicators of teachers' strengths and weaknesses in terms of their GPK, and little is known on how it can be further developed.

The TKS module, introduced as an optional component in the 2024 cycle of TALIS, seeks to address this gap. It aims to provide a deeper insight into the nature and current levels of teachers' pedagogical knowledge and professional competence. The module, targeted at ISCED level 2 teachers working in schools participating in the TALIS core survey, has the potential to inform teacher policies by providing insights into:

- the breadth of teachers' current pedagogical knowledge base

Unclassified - Non classifié

- what teachers know about dealing with contemporary issues in teaching, such as teaching students with diverse backgrounds, understanding students' social-emotional learning needs or applying modern pedagogical approaches
- strategies for enhancing both initial teacher training and continuing professional development, to ensure teachers have a solid and relevant knowledge base aligned with national policy priorities.

2.5.2. The Teacher Knowledge Expert Group: Role, membership and functioning

To support the development of the conceptual and assessment framework, and review the GPK item development process, the consortium established a Teacher Knowledge Expert Group (TKEG). In consultation with the OECD, ACER selected members of the TKEG among prominent researchers in the field of GPK. The group was established in May 2021 and included the following experts:

- Drew Gitomer, Professor, Rose and Nicholas DeMarzo Chair in Education, Graduate School of Education, Rutgers University, United States.
  - Areas of expertise: teacher knowledge, teaching quality, teacher evaluation.
- Charalambos Charalambous, Associate Professor, Department of Education, University of Cyprus, Cyprus.
  - Areas of expertise: teacher knowledge, teaching quality, educational effectiveness.
- Liina Malva, Lecturer of Special Education and Inclusive Education, School of Educational Sciences, Tallinn University, Estonia.
  - Areas of expertise: GPK, inclusive education, special education.

Meetings of the TKEG were also attended by the following *ex officio* members.

- ACER: Kerry Elliott (TKEG Liaison), Jonathan Heard (Deputy Project Lead since 2023), Hilary Hollingsworth (QEG Liaison), Juliette Mendelovits, Ray Peck (Test Development Lead), Wolfram Schulz (Project Lead since 2023), Pina Tarricone (TKS Project Lead 2021-23) and Adam Wardell (Test Development Team).
- IEA: Ralph Carstens, Steffen Knoll and Anja Waschk (Study Directors).
- OECD: Heewoon Bae (Analyst), Marco Paccagnella (Analyst) and Ruochen Li (TALIS Senior Project Manager).

Nine online meetings of the TKEG were held between June 2021 and December 2024. The TKEG provided expert advice on two complementary strands of the project: the development of the TKS conceptual and assessment framework and the development of the TKS assessment instruments (see Section 3.3).

The TKEG undertook several reviews of drafts of the TKS conceptual framework, providing editorial guidance to ACER, particularly around document structure and construct clarity. At times, individual members of the TKEG were engaged to draft sections of the framework relevant to their particular areas of expertise.

2.5.3. Developing and refining the conceptual and assessment framework

The TKS conceptual and assessment framework formed the foundation for the development of the TKS instrument used in TALIS 2024. It strongly reflected the conceptual framework model of teachers' professional competence (Guerriero, 2017[6]), which was developed by the OECD's Centre for Educational Research and Innovation, and guided the development of the Innovative Teaching for Effective Learning (ITEL) project's piloting of an initial GPK/TKS instrument in 2016.

The document provided the conceptual rationale for the design of the TKS as a whole, encompassing the theoretical and analytical basis for the measurement of GPK as an aspect of teachers' professional

Unclassified - Non classifié

competence, as well as the rationale for the inclusion of relevant contextual questionnaire material relating to:

- teachers' opportunities to learn about pedagogy-related topics
- their affective-motivational characteristics
- their work practices, including their collaborative and teaching practices.

It also provided a structured breakdown of the construct of GPK, and specified the design, structure and methodology for its assessment. Links to existing research in the field and the emerging body of knowledge about the importance of GPK were also articulated, as well as research foci for the survey and assessment instruments and areas of policy interest.

A discussion paper, detailing the conceptual focus of the framework, was initially presented to the TKEG in early 2021 for their feedback and direction. This paper also detailed potential emergent themes for teacher knowledge that might provide some focus for the development of the instrument. These themes, which included technology in the classroom, student diversity and social and emotional learning, were drawn from those that informed the development of the ITEL 2016 pilot instrument as well as the contemporary issues impacting on teachers, teaching and learning being developed as part of the TALIS core survey framework.

An initial draft of the framework was then shared with the OECD mid-2021, reviewed and then presented to TGB representatives of the countries and territories participating in the TKS module for feedback. Members' feedback was collated, analysed and coded by the ACER team to identify key areas of further refinement. The draft framework and a summary of the more complex areas of feedback were then presented at the 3rd TKEG meeting in September 2021, to seek assistance and advice as to how to address these areas. A summary of the key areas of feedback and anticipated revisions was then submitted to countries and territories at a TKS webinar later that month.

Following an iterative process of revision by the ACER team, based on updated information from pilot and field trial and ongoing review of GPK research literature, drafts of the framework were developed in response to feedback from the TKEG, OECD representatives and TGB delegates. Each draft version of the framework was presented at the following occasions:

- 10th TGB meeting in October 2021
- TKS webinar in April 2022
- 11th TGB meeting in July 2022
- 13th TGB meeting in July 2024.

The final framework document includes the following sections:

- Section 1: The role and policy relevance of the TALIS TKS.
- Section 2: Teacher knowledge as an aspect of teacher's professional competence.
- Section 3: Measuring and assessing GPK.
- Section 4: Examining GPK in the context of teachers' professional competence.
- Section 5: The TALIS 2024 TKS design.

The framework describes how the TALIS 2024 TKS measures teachers' GPK within the context of other indicators of teachers' professional competence, such as their opportunities to learn about topics related to general pedagogy. It also explores the relationship between GPK and other aspects measured with the TALIS 2024 core survey instruments, including teachers' affective-motivational characteristics and work practices. The framework also identifies the emergent priorities for teacher knowledge that are investigated in the TKS instrument, including teaching diverse learners, using technology for teaching, supporting the social and emotional learning of students and developing 21st century thinking skills.

Unclassified - Non classifié

References

Ainley, J. and R. Carstens (2018), "Teaching and Learning International Survey (TALIS) 2018 Conceptual Framework", *OECD Education Working Papers*, No. 187, OECD Publishing, Paris, https://doi.org/10.1787/799337c2-en. [4]

Guerriero, S. (ed.) (2017), *Pedagogical Knowledge and the Changing Nature of the Teaching Profession*, Educational Research and Innovation, OECD Publishing, Paris, https://doi.org/10.1787/9789264270695-en. [6]

OECD (2025), *TALIS Starting Strong 2024 Conceptual Framework*, OECD Publishing, Paris, https://doi.org/10.1787/f49228be-en. [2]

OECD (2025), *TALIS Teacher Knowledge Survey 2024 Conceptual and Assessment Framework*, OECD Publishing, Paris, https://doi.org/10.1787/65903902-en. [3]

OECD (2025), *Teaching and Learning International Survey (TALIS) 2024 Conceptual Framework*, OECD Publishing, Paris, https://doi.org/10.1787/7b8f85d4-en. [1]

Sim, M. et al. (2019), "Starting Strong Teaching and Learning International Survey 2018 Conceptual Framework", *OECD Education Working Papers*, No. 197, OECD Publishing, Paris, https://doi.org/10.1787/106b1c42-en. [5]

Note

[1] Educational foresight advice was provided by Amy Bellinger and Katie Godwin (Education Commission), A. Lin Goodwin (University of Hong Kong, China), Jaime Saveedra (World Bank), Ranjitsinh Disale (World Teacher Prize Winner 2021) and Andreas Schleicher (OECD).

Unclassified - Non classifié

3 Instrument development

This chapter outlines the multi-phased process undertaken to develop the instruments for the OECD Teaching and Learning International Survey (TALIS) 2024. All development work followed a theory-driven and collaborative approach to ensure conceptual robustness, indicator relevance and cross-cultural validity. The process also aimed to preserve trend comparability while responding to evolving policy interests. Three dedicated expert groups either actively developed or oversaw the design, testing and refinement of questions and items in consultation with participating countries/territories. The development encompassed pilot studies, field trials and detailed analyses to improve material quality and relevance to address the key content areas stipulated by the conceptual frameworks for both enduring as well as emerging topics. For the core survey, a rotated questionnaire design allowed broader content coverage while managing response burden. For TALIS Starting Strong, carefully designed combined questionnaires tailored for specific types of early childhood education and care settings. For the Teacher Knowledge Survey, established multi-matrix approaches to item and block design were used.

Unclassified - Non classifié

3.1. Questionnaire development for the TALIS core survey

Since its inception in 2008, the OECD Teaching and Learning International Survey (TALIS) has aimed to produce valid, reliable and internationally comparable data and indicators that are relevant to school leaders, teachers and teaching, with an emphasis on those aspects that affect student learning. TALIS intends to bring the voices and concerns of teachers and school leaders to the table of policy makers. It designs questionnaires for cross-cultural comparisons, primarily focusing on lower secondary level (International Standard Classification of Education [ISCED] level 2). Since 2013, TALIS has also covered primary (ISCED level 1) and upper secondary (ISCED level 3) levels.

TALIS allows for broad insights into surveyed populations since it uses large, carefully chosen representative samples of schools and teachers as well as state-of-the-art methods of data collection and quantitative analysis. These approaches support conclusions about important associations between key factors that occur within and across countries and territories.

3.1.1. General aims, principles and timeline

TALIS 2024, based on the three previous cycles, applied a set of key principles to its questionnaire development process, namely:

- theory-driven development guided by a conceptual framework (see Chapter 2)
- input from countries/territories into the selection of themes and issues to be covered by the survey
- extensive consultations with countries/territories and experts in the survey's corresponding thematic areas as well as experts in questionnaire and sample design
- retention of selected constructs, variables and measures from TALIS 2018 to allow analyses of changes across TALIS cycles
- improvements to questions and items as deemed appropriate and validated through comparative experiments
- trialling and addition of new question material to address contemporary topics of interests and emerging issues
- descriptions of the cross-cultural validity of measures.

Chapter 2 and the conceptual framework for the TALIS core survey provide further detailed accounts of the scoping, theoretical grounding, design principles, operationalisation of the content areas and questions relevant for TALIS 2024 and relative to the previous cycles, as well as criteria for forming indicators.

Since expanding TALIS to primary and upper secondary contexts at ISCED levels 1 and 3 as optional survey components, TALIS has used the same data collection instruments with minor contextual adjustments and, occasionally, additions for these levels. This approach enables TALIS to validly document variations in teacher practices and development not only across and within countries and territories but also, where applicable, across different levels of education. Additionally, it allows for the reliable tracking of changes over time in key aspects relating to teachers and their working environments.

The four cycles of TALIS to date have enabled countries and territories with consistent participation to track key issues and concerns related to teachers and teaching over time through trends analyses. Since much of the questionnaire development took place during the Coronavirus disease 2019 (COVID-19) pandemic, experts recognised that comparisons between the 2018 and 2024 cycles could help assess the impact of the pandemic on teachers, teaching and student learning. While no direct pandemic-related data were collected, many conceptual areas highlighted their relevance during and after the pandemic.

As described in Chapter 2, a Questionnaire Expert Group (QEG) was formed to develop the conceptual underpinnings of TALIS 2024 and its retained, revised and new question material. A chair participated in Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) meetings to align

Unclassified - Non classifié

concepts and measures where appropriate, considering the shared and distinct aspects of early-childhood and school-based formal education.

Throughout the development work between late 2020 and late 2023, QEG members proposed framework text, thematic descriptions, questions and indicators, which the chair presented to the TALIS Governing Board (TGB) at key milestones. TGB members provided feedback on the framework, themes and questionnaire design, fulfilling their role in advising and approving the work of the international research consortium.

Key meetings of the QEG occurred as follows:

- Late 2020 – Consultation and development of the QEG membership nominations; kick-off; concept paper development.
- April 2021 – 1st QEG meeting (virtual): overview of the project and general scope and aims for framework and instrument development.
- May 2021 – 2nd QEG meeting (virtual): agreement on questionnaire design principles and development of thematic area descriptions.
- June 2021 – 3rd QEG meeting (virtual; three days): presentation and discussion of thematic area concept notes; proposals for pilot materials.
- September 2021 – 4th QEG meeting (virtual; four days): discussion of draft question material for the pilot.
- July 2022: 5th QEG meeting (in-person, with hybrid option in Hamburg; three days): review of pilot results and draft selection for the field trial.
- July 2023: 6th QEG meeting (in-person, with hybrid option in Amsterdam; four days): review of field trial results and deliberations for main survey material revision and selection.

Several shorter virtual calls were held between major meetings to provide updates, discuss specific materials (e.g. situational judgement tasks) and review materials developed on alternative timelines, including environmental and sustainability education and the use of artificial intelligence (AI) in education.

3.1.2. Item development phases

After the 2018 cycle, TGB members prioritised conceptual areas for an expanded set of items and indicators while preserving key measures for trend analysis, especially in light of COVID-19. They emphasised maintaining a median response time of 45 minutes or less in the English version. For the first time in TALIS, the TGB endorsed the consortium's technical proposal for a rotated design, where not all items would be asked of all teachers, supported by extensive consultation with the Technical Advisory Group (TAG) and a simulation study conducted by the OECD Secretariat. The QEG aimed to validate 60-minutes of items for the main survey, with pilot and field trial testing approximately 80- and 75-minutes' worth of question materials respectively, allowing the removal of underperforming items.

Table 3.1 provides an overview of the three main phases of questionnaire development.

Table 3.1. Item development phases

	Pilot	Field trial	Main survey
Purpose	Test new materials in preparation for the field trial	Refine and test materials for inclusion in the main survey.	Collect data for reporting
		Test all operational procedures	
Mode	Paper only	Online, paper as an option	

Unclassified - Non classifié

	Pilot	Field trial	Main survey
Format	Focus groups/retrospective think-aloud	Self-administration using mostly closed-ended formats with limited "Other, please specify" options to augment closed lists	Self-administration using closed formats (except for one open question on policy)
Scope	Mostly new and revised materials	All materials (total of about 75 minutes), additionally limited experiments	All final materials (target of 45 minutes per teacher, 60-70 minutes across all forms)
Design	Teacher questionnaire: two forms to balance burden	Teacher questionnaire: rotated design with three forms and analytical priorities (high/medium/low)	Teacher questionnaire: rotated design with three forms and three analytical priorities (common/standard/low)
	Principal questionnaire: one version	Principal questionnaire: one version	Principal questionnaire: one version
Translation	Many/key languages; parallel translatability assessment	All main languages, supported by translation notes and glossary	All languages, supported by translation notes and glossary
Participation	Approximately 40 countries/territories	All countries/territories	

Review of existing questions and instruments

The QEG's first task was to review the current state of education research within their thematic areas. Based on these reviews, QEG members developed literature summaries, proposed new items and identified prior items for revision in line with the TGB's priority rating. Thematic groups also explored intersections between themes and thematic concepts. The results of this first task were presented in virtual meetings in mid-2021. In these meetings, all QEG members provided feedback on thematic scope and cross-cultural applicability. These reviews formed the foundation of the conceptual framework document.

As part of the first task, QEG members also carefully reviewed the TALIS 2018 questions and instruments, identifying items to retain for comparisons in 2024, remove due to obsolescence or low priority, and revise based on recent research and general trends in education.

- *Pilot study*

The QEG's second task was to develop new questions for piloting and recommend revisions to prior TALIS items as needed. New item development encouraged the adaptation of items already established in the literature, with particular attention to validation in more than one educational system and ideally across a multilingual space. QEG members were also encouraged to consider using, where appropriate, the bank of items from TALIS 2018 that performed well in the pilot and field trial but were dropped due to response time limitations and include them on that 45-minute survey, rather than conceptual defects. When adaptation was not possible, thematic groups developed new items with keen attention to the item design principles established for TALIS over time and/or used by other international educational survey standards.

Throughout the QEG meetings in 2021, the thematic groups presented research summaries about their theme and identified key concepts tied to the theme. Thematic groups presented mappings of those key concepts already measured in prior TALIS cycles and those that were not, then presented proposals for items related to those concepts to include in TALIS 2024. They identified which items to: i) keep from TALIS 2018 as trend measures; ii) revise from TALIS 2018; iii) drop from TALIS 2018; and iv) pilot as new items. Deliberations during the meetings refined the proposed items based on TALIS principles, survey methodology in general and overlap with other concepts proposed by other thematic teams. When prior research was inconclusive as to the approach to take in asking a question, the QEG developed multiple forms of the questions to test as experiments on different questionnaire ballots. Experimental questions tested variations in wording of the question stem and answer categories, survey placement and answer order effects.

Unclassified - Non classifié

The main purpose of the pilot in early 2022 was to test the understanding of the items by respondents, i.e. teachers and principals, in a large variety of national settings. The goal was to revise and select questions for the field trial based on: the analysis of the pilot outcomes that aimed to collect information on sufficient conceptual coverage from the perspectives of teachers and principals (since TALIS is seen as the "voice of teachers"); conceptual understanding and clarity; international and cultural applicability; continued feasibility of a common questionnaire for ISCED levels 1 and 3; and feasibility of new, modified or alternative formats of new and adapted items.

For the pilot, small focus groups of teachers and principals were recruited in a subset of countries/territories (see Chapter 6 for details) to participate in a retrospective think-aloud exercise. The aim was for participants to come from a variety of age, cultural, subject domain, level and gender contexts, among other criteria. The pilot was conducted using paper instruments only and there was no data entry work except for recording feedback in standardised forms. In preparation for the pilot, countries/territories adapted the international source instruments using national adaptation forms and translated materials. A glossary was provided to support this process and was thus initially also validated as part of this exercise. The work or the group moderators was guided by probing questions developed by the QEG. Upon completion, the International Association for the Evaluation of Educational Achievement (IEA) cleaned and prepared all of the pilot feedback in a consolidated database for use by the QEG.

The focus groups provided insights that would have been difficult or impossible to obtain without direct interaction with respondents. The pilot was also useful in getting a diverse range of perceptions. The QEG then analysed results within thematic groups, identifying items that worked well, needed improvement or were ineffective due to cross-cultural challenges, complexity or response burden. In addition, QEG members also assessed the amount of time required for different questions. For those items that could be improved, groups were asked to propose revisions for the field trial. For concepts that were tested in experiments, thematic groups summarised the differences in effectiveness between experimental configurations.

Field trial

In preparation for the field trial, the QEG held its 5th meeting to review pilot results by theme, deciding which items to retain, revise or drop. QEG members collaborated to finalise field trial proposals and drafted the analytic possibilities for within-theme and cross-theme analysis based on the materials envisaged for the field trial to further develop the conceptual framework.

Results from the pilot's experiments were reviewed and reduced to one option for the field trial. For prior TALIS 2018 items, if no substantial differences were observed between the revised and the original formats, the revised format was adopted. If substantial differences were observed, the QEG reverted to the TALIS 2018 format to prioritise trend comparison capability. For new items set up in experiments, the set that best performed moved onto the field trial questionnaires.

At this phase in the project, the need to include the environmental and sustainability education theme was made clear among the OECD Secretariat and TGB member countries, based on an organisation-wide initiative to be better aware of the educational relevance, policies and practices in schools. An additional QEG member was appointed to develop a summary of the research on the theme as well as new question material for the field trial based on existing and validated survey initiatives in this field.

The consortium determined the field trial design for the teacher questionnaire, balancing the number of items and length of the three planned forms. The presentation order of the themes on the questionnaires remained consistent across the forms, but the rate of inclusion of each question varied by priority: questions of high analytical priority for the field trial validation and breakdown of results appeared on all three forms, new and revised materials on two forms to yield a larger number of cases for validation, and unchanged materials from TALIS 2018 on just one of the three forms due to low analytical priority at the field trial stage.

Unclassified - Non classifié

The field trial was prepared in late 2022 and implemented in early 2023 across all countries and territories. The data collection mode was through online, self-administered questionnaires to a random sample of 30 schools and 20 teachers, plus 1 principal in each. Chapter 4 provides further details about adaptation and translation of international source versions to one or more national languages, Chapter 5 includes details about the sampling design for the field trial and Chapter 6 describes the field work of national project managers (NPMs) in each country/territory as well as the support provided by the international study centre.

Following the field trial data collection, the IEA cleaned and prepared all field trial data as well as descriptive statistics and extensive exploratory and (multi-group) confirmatory factor analyses to test existing, revised and new materials in terms of dimensionality and cross-cultural comparability of the proposed latent constructs. All field trial data and analysis results were then shared with the QEG members for their individual and joint review and evaluation.

Main survey

After the field trial, the QEG analysed the results and data within thematic groups using the analyses provided by the consortium and their own modelling. The thematic groups identified well-functioning items, assessed revisions and flagged those lacking validity or reliability, especially in cross-cultural contexts. In addition, QEG members paid attention to the amount of time required for different questions. They also looked for evidence of stylistic responding and item non-response bias, including unusually high item skip/missingness and/or associated dropout from the survey. QEG members also noted the observed median timing of each question and sets. The thematic groups presented their analyses at the 6th QEG meeting, held in person in mid-2023.

Few question sets were deemed unsuitable for cross-cultural comparisons and, thus, recommended for exclusion from the main survey. Most question sets and items performed well. In the cases where new items were tested in question sets, the number of items were reduced for parsimony. Additional multi-group confirmatory factor analyses were conducted to determine which items to retain and which to drop in order to maintain maximum variability while maintaining cross-cultural comparability. There were no questions or items that invoked item non-response in any elevated or biased manner, nor any questions or items that led to respondents dropping out of the survey midway. Observed dropouts were linked to total time, such as reaching a 45- or 60-minute ceiling, potentially relative to time available during idle lessons, rather than any question or item content. Except for grammatical corrections, no changes in wording or format were allowed between the field trial and main survey. The 6th QEG meeting focused on reducing, removing or retaining item materials.

At the 6th QEG meeting, the rapid rise of ChatGPT and other generative AI tools available to educators and the general public prompted the OECD Secretariat to propose including some AI-related questions in the main survey. The QEG agreed that items that gauge observable behaviours, such as use of and familiarity with AI, would be less prone to cross-cultural misinterpretation errors than perceptual and belief-based items. The QEG's education technology group researched AI-related questions and proposed an initial set of items for the main survey. After further offline review, the final set of items on AI were vetted by the QEG, the OECD Secretariat and the consortium, and ultimately endorsed by the TGB as an exception to the otherwise long-standing principle that all materials had to be field trialled.

In parallel to the main survey preparations, QEG members reviewed and revised their thematic sections in the conceptual framework document. QEG members also reviewed, revised and verified the final construction, labelling and description of the scales set to be calculated from the main survey data collection.

In the 2013 and 2018 cycles, multiple forms were used at the pilot and field trial phases to balance response burden with the breadth of materials trialled. The 2024 cycle expanded the approach to the main survey

Unclassified - Non classifié

by using three partially overlapping forms for the teacher questionnaire. As outlined in the conceptual framework, the allocation was driven by a fixed sequence of questionnaire sections and three different analytical priorities. Questions required as essential socio-demographic measures or other outcomes of high relevance for cross-sectional or over-time analyses were included in all three forms as common questions. Most questions had standard priority, meaning that they were included in two rather than in all three forms. This resulted in some sections listing only the common questions, others not appearing at all on certain forms. Finally, questions with comparably lower analytical priority were included in only one of three forms.

In contrast to student assessments where items are largely interchangeable and organised in blocks and booklets, the degrees of the freedom to assemble and combine materials in a questionnaire survey such as TALIS are more limited. Sections vary in terms of question count, question type (e.g. a count versus Likert-type scales on perceptions), stem length, number of items and, thus, the predicted time needed to respond to questions. Additionally, linkages between the different content areas and their measures were largely driven by reporting plans, including correlational and multivariate analyses. The consortium, in close consultation with the QEG Chair, the OECD Secretariat and the TAG, balanced form length based on number of pages, number of questions, items and words, and field trial response times. Predicted response time differences of a few minutes were considered acceptable, prioritising conceptual and analytical consistency over strict timing uniformity.

Table 3.2 provides an overview of the resulting design of the main survey. The conceptual framework includes a full account of all questions and their allocation to the three forms. To note, a small number of questions allocated differently from the section-level design, and countries and territories could opt out agreed-upon optional questions.

Table 3.2. Configuration of main survey teacher questionnaire sections across forms

Section/theme	Number of questions	Number of common questions	Allocation of questions by section/theme		
			Form A	Form B	Form C
Background and qualification	8	4	All	All	Common only
Current work	8	3	All	All	Common only
Professional learning	9	2	Common only	All	All
Teaching in general	9	2	Common only	All	All
AI in teaching	4	0	All	n/a	n/a
Education and sustainability	7	0	All	n/a	All
Teaching in the target class	16	1	Common only	All	All
Situational judgement tasks	2	0	n/a	All	n/a
School climate	9	1	All	Common only	All
Occupational perceptions	9	2	All	All	Common only
Teacher mobility	3	0	All	n/a	n/a
Total	**84**	**15**	**54**	**60**	**58**

n/a: Not applicable.

3.2. Questionnaire development for TALIS Starting Strong

TALIS Starting Strong is a large-scale international survey of early childhood education and care (ECEC) staff and leaders working with children in pre-primary education settings and children under the age of three (U3). It aims to be internationally comparable and explores the quality of development, well-being

Unclassified - Non classifié

and learning environments in ECEC settings by asking ECEC practitioners about their pedagogical beliefs and practices, training and qualifications and working conditions.

3.2.1. General aims, principles and timeline

On its second cycle, TALIS Starting Strong builds on findings and lessons learned from its first implementation in 2018, which demonstrated that an internationally comparable ECEC survey was feasible to implement and relevant for policy making. TALIS Starting Strong 2018 was implemented with nine countries, which surveyed ECEC practitioners working with children in pre-primary education (ISCED level 02). Of these nine countries, four also administered the survey with practitioners working with U3 children. To account for home-based and single-staffed settings, the 2018 cycle also implemented a combined questionnaire, targeted to these staff working alone. An additional version of the combined questionnaire was used for setting leaders who also regularly performed staff duties in one of the participating countries in 2018.

TALIS Starting Strong 2024 surveyed ECEC staff and leaders in more countries/territories than the 2018 cycle. Building on the 2018 cycle, TALIS Starting Strong 2024 sought to facilitate trend analyses and to refine, rather than redesign, the 2018 survey. Hence, TALIS Starting Strong 2024 continued to collect data from pre-primary ECEC practitioners and ECEC practitioners working with U3 children. In addition, the 2024 cycle still used three types of questionnaires – staff, leader and combined – with two versions of the combined questionnaire. One was administered in single-staffed settings (including home-based settings in the sample of settings for U3 children) while the other was administered in centres whose leaders also regularly perform staff duties.

Correspondingly, TALIS Starting Strong 2024 addressed largely the same content areas as the 2018 cycle, with updates for relevance and conciseness, as well as to better reflect the focus of the 2024 cycle. The content areas were grouped under four domains, as listed below:

- Staff practices with children:
  - process quality
  - monitoring children's development, well-being and learning
  - professional beliefs about children's development, well-being and learning
  - self-efficacy.
- Staff and leader characteristics:
  - staff and leader demographic and educational background
  - professional development
  - well-being.
- ECEC setting characteristics:
  - structural quality
  - pedagogical and administrative leadership
  - organisational climate and working conditions
  - stakeholder relations.
- Cross-cutting content areas:
  - diversity, equity and inclusion in ECEC settings
  - approaches to comprehensive/continuous child support
  - fostering competent ECEC settings
  - digital technologies to support leaders and staff.

Unclassified - Non classifié

In line with the TALIS core survey for ISCED level 2, TALIS Starting Strong 2024 adopts the following guiding principles:

- Key policy issues are clearly articulated, and questions that are most relevant for participating countries are the survey's focus.
- The study provides value through international comparisons.
- Results should generate information that can be used to develop indicators.
- Based on a rigorous review of the existing evidence, the survey should yield information that is valid, reliable and internationally comparable.
- Participating countries should be able to interpret results in a meaningful way.
- Developing and administering the survey should be implemented in a timely and cost-effective fashion.

The key stages and milestones for instrument development, especially ECEC QEG meetings, were as follows:

- January 2021: The ECEC QEG was established and a 1st on-boarding meeting (virtual) held (see Chapter 2 for membership information).
- March 2021: A 2nd meeting (virtual) was held to discuss experts' review of the themes and commence development of instruments for the pilot.
- May 2021: Countries/territories participated in a priority rating exercise, indicating which questions should be kept as is, kept but modified or dropped, along with their respective priority.
- June 2021: 3rd ECEC QEG meeting (virtual) to introduce and discuss materials for piloting and further revisions.
- September 2021: 4th ECEC QEG meeting convened to discuss revisions for the staff and leader questionnaires (virtual).
- May 2022: Following piloting, prospective revisions to the field trial questionnaires were discussed during the 5th ECEC QEG meeting (in-person).
- July 2023: Following the field trial, the 6th and final ECEC QEG meeting was convened to review, edit and provisionally finalise the staff, leader and combined questionnaires (in-person).

As in the case of the TALIS core survey, numerous shorter and virtual meetings took place to discuss specific aspects or topics for questionnaire development; these included discussions regarding overarching survey themes (e.g. process quality) or regarding specific questions and items (e.g. situational judgement tasks). Aligned with major development phases, stakeholder feedback was collected and comments sought from the informal group of countries and territories (IG) participating in TALIS Starting Strong during formal meetings and special sessions on separate occasions or in conjunction with the TGB meeting. Additionally, the consortium informed the NPMs at each meeting about the process and progress of framework and instrument development work in order to familiarise them with the envisaged materials, translation workload and guidance.

3.2.2. Item development phases

Review of existing questions and instruments

In the interest of facilitating comparative trend analyses, the ECEC Network established, at its 27th meeting in March 2021, that TALIS Starting Strong 2024 should continue to collect data on the content areas covered by the 2018 cycle, alongside data on the identified areas of growing priority.

Unclassified - Non classifié

To identify which questions would be retained for the 2024 cycle's pilot phase, 18 stakeholders participated in a priority ranking exercise that asked to classify each question into 1 of 4 possible categories:

- keep with high priority
- keep with modifications
- keep with low priority
- drop.

Of the 46 questions included in this priority ranking exercise, 3 were deemed to be of low priority while only 1 was suggested for dropping from the questionnaire.

In addition, stakeholders were asked to rank-order the four areas of growing priority, with a rank of 1 representing the highest priority and 4, the lowest. Responses were collated to inform decision making regarding which questions and items would be retained for piloting.

Following this priority ranking exercise, annotated versions of the questionnaires were shared in advance with the ECEC QEG, identifying which questions warranted discussion. This series of deliberations resulted in pre-pilot questionnaire drafts, with questions mapped against their equivalent questions in the 2018 versions of the questionnaires, where applicable. In total, the pre-pilot staff questionnaire contained 48 questions while the pre-pilot leader questionnaire contained 38. These pre-pilot versions of the questionnaires were shared with OECD Secretariat for feedback, and changes were then presented to participating countries/territories followed by written feedback.

Pilot study

The pilot for TALIS Starting Strong 2024 took place in 2022 and tested the full set of questionnaires (i.e. staff, leader and combined). Since TALIS Starting Strong targets ECEC practitioners across two education levels (i.e. ISCED level 02 and U3 children), the staff questionnaire had one version for each level, with slight variations to ensure applicability. Eleven countries and territories took part in the pilot study, in at least one level: Chile, Colombia, Denmark, the Flemish Community of Belgium, Germany, Ireland, Japan, Morocco, New Zealand, Norway and Spain.

NPMs in these countries/territories organised focus group discussions, which sought to collect feedback on the following issues:

- applicability of concepts
- complexity of the questionnaires
- organisation of topics and questions in the survey instruments
- applicability of questions to ISCED level 02 and U3 contexts
- international and local applicability of the survey instruments
- clarity of wording and definitions of terms
- cultural relevance and appropriateness
- mandatory national adaptations
- translation issues
- length of the survey instruments and response time.

To facilitate this process, NPMs brought together separate groups of ECEC staff to discuss the staff questionnaire, ECEC leaders to discuss the corresponding leader questionnaire and ECEC leaders who also performed staff duties to discuss the combined questionnaire.

Ahead of the focus group discussion, staff and leaders were provided with pen-and-paper versions of the survey. Staff and leaders were given around 60 minutes to complete the survey. In doing so, participants were requested to note down comments on the questions and items for discussion.

Unclassified - Non classifié

Focus group discussions were informed by a protocol and pre-specified guidelines co-developed by the consortium, the ECEC QEG and the OECD. These focus group discussions helped generate insights into survey design and administration that could only have surfaced through direct consultation with the intended respondent population.

The pilot was administered using only pen-and-paper instruments. No data entry work was conducted besides documenting feedback collected in focus group discussions. Feedback from the focus group discussions was collated by participating countries' respective NPMs, who recorded feedback by filling in an online questionnaire. In preparation for the pilot, the instruments were adapted to each participating country/territory using national adaptation forms and translated materials. To support this process, a glossary, which was validated beforehand, was also provided. Feedback collated from these focus group discussions informed subsequent reviews by the ECEC QEG and OECD. These subsequent rounds of review resulted in the finalisation of the questionnaires that would be tested during the field trial.

Field trial

The field trial for TALIS Starting Strong 2024 took place in early 2023. It sought to test the psychometric properties of the questions, as well as the time burden on participants. Field trial data were collected through online, self-administered questionnaires. A total of 2 051 staff members across 436 ECEC settings at ISCED level 02 and 367 staff members across 77 ECEC settings at U3 level participated in the staff questionnaire field trial. On the other hand, 316 leaders in ECEC settings at ISCED level 02 and 38 leaders in ECEC settings at U3 level participated in the leader questionnaire field trial. Chapter 5 provides further details about the field trial sampling design while Chapter 6 lays out the survey administration procedures undertaken during the field trial.

The staff questionnaire appeared in separate ISCED level 02 and U3 versions while the leader and combined questionnaires had joint versions for both education levels. In preparation for the field trial, the survey instruments were adapted to and translated into the national languages of participating countries/territories, the process for which is described in Chapter 4.

The staff and leader questionnaires were released in two forms: A and B. These forms contained identical questions, except for variations in eight questions from the staff questionnaire and six questions from the leader questionnaire. Form A used one question variant while Form B used the other variant. In doing so, the field trial could test whether one question variant functioned better than the other and would therefore be a more suitable candidate for inclusion in the main survey.

In total, Forms A and B for both the ISCED level 02 and U3 versions of the staff questionnaire had 54 questions. On the other hand, the leader questionnaire – for which only one version was used for both ISCED level 02 and U3 survey respondents – had 44 questions in Form A and 46 questions in Form B, the difference explained by experiments involving additional questions in Form B.

After data collection, field trial data were cleaned and prepared for analysis. Analyses included calculation of descriptive statistics, as well as confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) to test questions' dimensionality, as well as validity across cultures and age groups. The results of these analyses were shared with the OECD and members of the ECEC QEG to inform decision making on which questions would be retained for the main survey. This process is described in more detail in the sub-section that follows.

Main survey

Using data from the field trial, descriptive statistics for each question and item were calculated, as well as psychometric properties for questions where scaled indices were planned. Response omission patterns, response distribution and time to answer were amongst the key descriptive statistics used in deliberations regarding exclusion or inclusion of questions and items in the main survey questionnaires. In addition, CFA

Unclassified - Non classifié

was conducted using field trial data to check the dimensionality of questions hypothesised to cluster together under given scales, including model fit and factor loadings. Scales that showed potential indications of multi-dimensionality based on 2018 data were also tested accordingly using EFA. Moreover, reliability, factor invariance and measurement invariance were tested for items hypothesised as forming scales.

Somewhat separately from the main analyses of field trial data described above, situational judgement test (SJT) items were examined using descriptive and correlational statistics. For instance, EFA was conducted to test SJT items' scale dimensionality. Applicability across age groups was also tested through item-rest correlations using raw scores and two scoring approaches laid out in the field trial analysis plan. Similarly, cross-cultural validity was tested by examining item-rest correlational patterns emerging from each country's/territory's dataset. Response omission patterns, response distributions and time to answer were also considered. All descriptive statistics, correlational patterns and psychometric analyses described above informed the decision-making process regarding which items would be retained in the questionnaires that would be used for the main survey. Statistical findings informed decision making around recommendations for each question. One of the following actions was recommended for each question:

- keep as is
- drop item(s)
- drop question
- discuss at meeting.

Ahead of convening the 6th ECEC QEG meeting, descriptive statistics, correlational patterns and psychometric analyses, alongside recommended actions for each question, were compiled and shared with the OECD and ECEC QEG members.

The 6th ECEC QEG meeting, which was attended by ECEC QEG members and representatives from the IEA, RAND and the OECD, took place in mid-2023. Each question used in the field trial, alongside its statistical properties, was presented and deliberated during this meeting, with a focus on questions recommended to be dropped or discussed. The meeting led to an agreement to move forward with only one version of the staff questionnaire applicable to both ISCED level 02 and U3, contrary to the two slightly different versions used during the field trial. Furthermore, two of the five SJTs tested during the field trial were selected for inclusion in the main survey staff questionnaire.

Resulting from deliberations during the 6th ECEC QEG meeting and subsequent discussions with relevant stakeholders, 49 questions were carried over into the main survey version of the staff questionnaire, 45 for the leader questionnaire, 67 for the Combined Questionnaire Main and 54 for the Combined Questionnaire Short.

3.3. Assessment and contextual questionnaire development for the Teacher Knowledge Survey

TALIS has, throughout its existence, sought to generate valid, internationally comparable information about teaching and teachers at the system, school and teacher levels, with an emphasis on aspects that can impact student learning. TALIS 2024 gave participating countries and territories the possibility to participate in the optional Teacher Knowledge Survey (TKS) module, aimed at assessing teachers' general pedagogical knowledge (GPK). GPK is defined as "[t]he specialised knowledge of teachers for creating effective teaching and learning environments for all students, independent of subject matter." (OECD, 2025, p. 8[1]). The TKS includes a contextual questionnaire (largely overlapping the questionnaire used in the TALIS core survey) and an assessment of GPK. It complements the core survey and provides

Unclassified - Non classifié

opportunities to benchmark teachers' pedagogical knowledge at the international level and to study how teachers' background, context and system characteristics influence the acquisition and development of GPK.

3.3.1. General aims, principles and timeline

General aims and principles

The TKS built on assessment instruments originally developed by the OECD Centre for Educational Research and Innovation as part of the Innovative Teaching for Effective Learning (ITEL) project (Guerriero, 2017[2]). In 2016, a pilot study was conducted in five countries/territories to assess the feasibility of measuring teachers' GPK (Sonmark et al., 2017[3]). As it is theorised that teachers' GPK is a determinant of teaching quality and an important aspect of teachers' professional competence more broadly (OECD, 2025), the inclusion of an instrument measuring the level of teachers' GPK in a representative sample of schools provides policy makers in participating countries/territories useful additional insights, such as examining the relationship between teachers' GPK and other important areas of policy concern, including initial teacher education and continuous professional learning, teachers' occupational perceptions and the quality of their teaching practices.

The GPK items were developed with reference to the TKS assessment framework and mapped to the three dimensions (and six sub-dimensions) of GPK (see framework for full details):

- Instruction
  - teaching methods and lesson planning
  - classroom management.
- Learning
  - learning and development
  - motivational-affective dispositions.
- Assessment
  - evaluation and diagnostic procedures
  - data literacy, interpretation and use.

Items were also mapped to three cross-cutting categories:

- Cognitive demand
  - recall
  - analyse or apply.
- Knowledge base
  - theoretical/scientific
  - practice-based.
- Thematic orientation
  - core knowledge
  - emergent priorities for teacher knowledge.

Items mapped to the category related to emergent priorities for teacher knowledge included those that addressed GPK in relation to teaching diverse learners, using technology for teaching, supporting social and emotional learning and developing 21st century thinking skills. These themes were identified based on a review of themes developed in the ITEL pilot study, alignment with the contemporary issues impacting

Unclassified - Non classifié

teachers, teaching and learning identified in the TALIS core survey, and consultation with TKS participant countries/territories in May 2021.

All TKS items were in selected response format: either as four-option simple multiple-choice (SMC) questions or as two-option complex multiple-choice (CMC) questions consisting of between three and five items. Limitations on a reasonable response time and constraints on resources for coding prevented constructed-response items being included in the TALIS 2024 TKS.

Much like the TALIS core survey, the development of the TKS instrument followed a set of key principles:

- a theory-driven development guided by a conceptual framework (see Chapter 2)
- input from participating countries/territories in the development of thematic foci and priorities, the selection of items and the balance of items by GPK dimension/sub-dimension and the cross-cutting categories for the main survey blueprint
- extensive consultations with experts in pedagogical knowledge as well as technical experts in assessment design
- adherence (where possible) to the original ITEL pilot study instrument design while maximising synergies with the TALIS 2024 core survey questionnaire material
- improvements to and selection of items based on qualitative feedback and psychometric analysis
- attention to the cross-cultural validity of measures
- maximising the number of score points and items for the construction of a GPK scale without over-burdening teachers
- the potential for countries' and territories' results from the GPK cognitive assessment to be reported as a profile, using sub-scales to identify relative strengths and weaknesses in teachers' knowledge of instruction, learning and assessment.

The use of a common cognitive assessment questionnaire across the participating countries/territories ensures that data from the survey can be used to validly measure teachers' GPK as well as their background and teacher training, opportunities to learn about pedagogy, affective-motivational characteristics and teaching and professional practices. The data then allow studying how GPK varies across and within countries/territories.

Timeline

The key stages and milestones for the development of the TKS instruments were as follows:

- May 2021 – establishment of the Teacher Knowledge Expert Group (TKEG).
- June 2021 – 1st and 2nd TKEG meetings: introduction and presentation of the systematic review of the ITEL TKS item bank.
- September 2021 – 3rd TKEG meeting: update on item review/development and the draft GPK blueprint.
- October 2021 – 4th TKEG meeting: review of new GPK items and feedback on draft assessment blueprint.
- April 2022 – 5th TKEG meeting: presentation of pilot analyses.
- June 2022 – 6th TKEG meeting: discussion of the TKEG's review of the proposed field trial instrument.
- February 2023 – TKEG update call to present key aspects of the field trial data analysis plan.
- July 2023 – 7th TKEG meeting: discussion of the field trial analysis report and GPK items for possible inclusion in the main survey.

Unclassified - Non classifié

- October 2023 – 8th TKEG meeting: presentation of updates on the survey design and changes to questionnaire and assessment items for the main survey.
- October 2024 – 9th TKEG meeting: presentation and discussion of the initial analysis of main survey data, psychometric quality, measurement invariance and dimensionality for GPK and further materials; additionally attended by select members of the TAG.

All TKEG meetings were held in virtual format. Written advice from the TKEG was sought at various points throughout the development process. In synchronicity with the development work for the TALIS core survey and TALIS Starting Strong, the consortium reported progress and insights at all scheduled TGB and NPM meetings. Dedicated special sessions for the countries and territories participating in the TKS were held at key milestones.

3.3.2. Item development phases

Review of existing questions, items and instruments

As a first step of the item development phase, ACER reviewed 208 GPK items from the ITEL study, attending to the quality of the item, estimated difficulty, item format and framework categorisation. This review led to the elimination of 54 items. The remaining 154 items were then reviewed by the TKEG. Each member of the TKEG independently rated them, using the following rating categories:

- Good: strong item/GPK relevance at ISCED level 2/cross-culturally appropriate/clearly worded/agree with the key.
- OK: fixable item/acceptable GPK relevance at ISCED level 2/may have some cross-cultural issues/wording lacks clarity but is fixable/disagree with key but fixable.
- Not OK: not a fixable item/not sufficiently GPK-relevant at ISCED level 2/likely to have cross-cultural problems/wording issues may not be fixable/key issues not fixable.

TKEG members were invited to add an explanation for how they rated each item, or to provide direction or advice on how the item might be improved or modified.

This process identified 82 items that TKEG members agreed were fit to retain, either with or without further modification. Modifications to existing items were made following the advice and recommendations of the TKEG, and each item was then mapped to the assessment framework and blueprint to identify the extent of coverage of the construct and any under-populated categories where new item development would be required.

New item development was undertaken by the ACER team in mid-2021 and mostly focused on items covering the assessment dimension of the GPK assessment framework, as well as thematic priorities identified via country consultation in May 2021. In all, 34 new items were developed, which were then reviewed by the TKEG in October 2021. Using the same rating scale as for the ITEL items, each TKEG member independently rated each of the new items, 28 being retained for inclusion or further revision following TKEG advice.

This process of TKEG review and recommendation of GPK items continued through to the post-pilot and post-field trial analysis. The TKEG also provided guidance on the selection of questionnaire material. As this mainly derived from the TALIS core survey, it was not subject to modification for the TKS module. Only one background question regarding the subjects that teachers studied as part of their teaching qualification and/or were currently teaching, and one set of four contextual questions on teachers' opportunities to learn about topics related to pedagogy, were unique to the TKS, and these were therefore slightly modified after the field trial following TKEG advice.

Unclassified - Non classifié

Pilot study

The original plan for was for pilot testing to be conducted in all participating countries and territories. At the time, however, only seven of the eight participating countries/territories were able to contribute. Small-scale pilot testing with convenience samples of (on average) 14 teachers per country/territory was conducted in February 2022 in 6 countries (Croatia, Morocco, Portugal, Saudi Arabia, South Africa and the United States). In addition, six countries (Chile, Croatia, Morocco, Portugal, South Africa and the United States) each piloted the items with one or two national experts. This resulted in 12 sources of feedback (6 teacher sources; 6 national expert sources) reflecting the views of 84 teachers and 11 national experts.

Two non-overlapping, paper-and-pen test forms were created with a total of 110 modified and newly developed GPK cognitive assessment items. Non-overlapping background and context questionnaire material was also included in each booklet. Because the majority of the TKS questionnaire material was being piloted for the TALIS core survey, the focus of the TKS piloting was to collect teacher and national expert perceptions and feedback on each of the GPK items, as well as to collect information on teachers' overall experience of taking an assessment of their GPK. This involved checking on various aspects such as:

- sufficient conceptual coverage of GPK from the perspectives of teachers/experts
- the conceptual understanding and clarity of the items
- international and cultural applicability of the knowledge being tested
- appropriateness of expected knowledge areas for teachers in each country/territory
- feasibility of the item formats.

Teachers individually completed a set of questionnaire material and GPK items using pen and paper under quasi-test conditions and then participated in a discussion about the GPK items in a cognitive laboratory format led by a designated facilitator. These sessions resulted in ratings per each GPK item, with feedback:

1. accept with no modifications
2. accept with modifications as described
3. prefer to omit item from assessment for reasons given.

National experts also conducted a separate review of the GPK items, offering feedback on the items using the same rating scale. All feedback data were returned to ACER for review. In addition, teacher responses to items were recorded, with the response data also returned and the items scored. There were not sufficiently high numbers of teachers to support a robust scaling analysis, but response frequencies for multiple-choice options, proportions of correct responses and item-rest correlations for all items were checked as part of the review. Rasch item response theory (IRT) analyses of the pooled multiple-choice data for each of the two test forms were also conducted.

Information collected from the pilot was used to inform further revision of the items and scoring in preparation for further review by TKEG members. Feedback from their review was used to complete a final revision of and reduction to the pool of GPK items, with 78 items advancing to field trial.

Field trial

The field trial was conducted in early 2023; its objective was to test the survey instruments and operational procedures in all participating countries/territories. Sample sizes ranged from 133 to 513 teachers (from 24 to 40 schools) across participating countries and territories. The field trial instrument included 78 GPK items, more specifically 48 in SMC format and 30 in CMC format. This selection provided good overall coverage of the TKS assessment framework, meeting the blueprint targets set for the main survey

Unclassified - Non classifié

instrument of approximately one-third per GPK dimension. Other targets for the cross-cutting characteristics of items (i.e. cognitive demand, knowledge base and thematic orientation) were also met.

The items in the field trial item pool were allocated to 6 clusters of 13 items, each cluster representing a unique set of items. Clusters were established to be roughly equivalent with respect to GPK dimension, item format (SMC and CMC) and spread of expected item difficulty. Clusters were checked to ensure items covering the same or similar content were not placed within the same cluster and, where possible, test forms were established to minimise content overlap. Each teacher completed three of the six blocks, using a rotated block design. Each cluster appeared once in each of the first, second and third positions across the test forms, though not an equal number of times with other clusters. Two booklets of questionnaire material were also included, mostly derived from the TALIS core survey, and preceded the GPK assessment instrument. Each teacher completed one or other of the booklets of questionnaire material.

Analysis of results from the field trial and selection of items for the main survey

The ACER team evaluated the measurement properties of the field trial GPK items, as well as the unique set of opportunities-to-learn (OTL) questions asked in the questionnaire section of the instrument. All other analysis of TALIS-derived questionnaire items was conducted by the IEA in conjunction with QEG core survey deliberations (see above).

For GPK items, ACER psychometricians undertook item and scale analysis and validation using Rasch modelling and classical test theory approaches. ACER also investigated the dimensionality of the GPK scale using exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and three-dimensional item response theory (IRT) modelling. Correlations between GPK weighted likelihood estimates (WLEs) and questionnaire scales were also explored.

Overall, the GPK items performed well in the field trial. Questions were generally well-matched to the GPK of the testing population, with an acceptable range of difficulty and an average facility close to the target of 50%. The questions generally also discriminated well and showed good fit statistics. Six items were discarded due to overall poor fit or discrimination, with a further ten questions flagged for review. The CFA, EFA and three-dimensional IRT modelling found that the GPK dimensions of instruction, learning and assessment were highly correlated and the GPK scale was found to be unidimensional. Some level of country differential item functioning (DIF) was found to exist for at least one participant country/territory in most of the questions, which for an assessment of this kind was to be expected. However, for most questions, the aggregate magnitude of country DIF was not extreme.

The ACER team identified a pool of 59 items deemed to be fit to advance to the main survey. These items included those that had, on balance, performed best psychometrically, showed the least amount of differential item functioning across countries/territories, provided an acceptable spread of difficulty, offered maximum score points and adequately covered the GPK assessment framework and blueprint. The remaining 19 items – identified as either less suitable or not suitable for advancement to the main survey – were also noted. Suggested minor modifications to some items were also included, where the evidence suggested such changes would improve their measurement properties.

TKEG members and the OECD Secretariat were asked to individually rate each of the 72 viable items using the following ratings:

- Include: strong support for including the item
- Consider: the item has merit and should at least be considered for inclusion
- Reconsider: the item does not have much merit and should perhaps not be considered for inclusion
- Exclude: strongly believe the item should not be included.

Each member was also invited to add comments or suggestions for each item to further explain their ratings. Feedback and recommendations from the TKEG and OECD demonstrated a high level of

Unclassified - Non classifié

agreement, with 43 items receiving universal agreement with minimal to no modifications necessary. After discussions with the TKEG, an additional 9 items for which there was two-thirds agreement were also added to the main survey item pool, leading to a final selection of 52 items (34 SMC and 18 CMC). These items presented a good fit to the main survey blueprint specifications, an acceptable range of difficulty and allowed for maximum score points for the generation of a GPK scale within a planned 25-minute test-taking timeframe.

For the selection of questionnaire material, the pool of questions used in the field trial needed to be reduced by 50% in order to keep the questionnaire section to about 30 minutes. Consideration was given to the correlational analysis conducted with GPK scales. However, as these correlations were generally quite weak, selection was mainly based on the material for which an existing body of research has already explored relationships with GPK, and those that would be most relevant or useful to understand in relation to GPK. For this process, each member of the TKEG and representatives from the OECD made independent recommendations.

Following a similar method used for the development of the field trial instrument, the GPK items in the main survey item pool were allocated to 4 clusters of 13 items, each cluster representing a unique set of items. Clusters were established to be roughly equivalent with respect to GPK dimension, item format (SMC and CMC) and spread of difficulty. Attention was also paid to ensuring clusters were equivalent in length, based on median response time data analysed from the field trial. Each teacher participating in the main survey was presented with 3 of the 4 GPK clusters (39 items), using a rotated block design. Each cluster appeared once in each of the first, second and third positions across the test forms, though not an equal number of times with other clusters. For the main survey, teachers received a single booklet of questionnaire material, which they answered before moving on to the GPK assessment.

References

Guerriero, S. (ed.) (2017), *Pedagogical Knowledge and the Changing Nature of the Teaching Profession*, Educational Research and Innovation, OECD Publishing, Paris, https://doi.org/10.1787/9789264270695-en. [2]

OECD (2025), *TALIS Teacher Knowledge Survey 2024 Conceptual and Assessment Framework*, OECD Publishing, Paris, https://doi.org/10.1787/65903902-en. [1]

Sonmark, K. et al. (2017), "Understanding teachers' pedagogical knowledge: report on an international pilot study"*, OECD Education Working Papers*, No. 159, OECD Publishing, Paris, https://doi.org/10.1787/43332ebd-en. [3]

Unclassified - Non classifié

4 Preparation of national survey instruments

This chapter outlines the procedures for preparing national survey instruments for the OECD Teaching and Learning International Survey (TALIS) 2024, including adaptation, translation and layout verification. All participating countries and territories adapted the English source instruments to their local contexts, following strict international standards to ensure comparability. The process involved decentralised translation, independent verification by cApStAn and detailed documentation via the International Association for the Evaluation of Educational Achievement StudyExpert system. Special attention was given to maintaining consistency with TALIS 2018 for trend analysis. The chapter also highlights national feedback, confirming the effectiveness of the quality control measures.

Unclassified - Non classifié

4.1. Introduction

This chapter summarises the procedures and outcomes for national adaptation and translation verification, and includes information about the layout verification process of the OECD Teaching and Learning International Survey (TALIS) instruments. The international adaptation, translation and layout verification of all specified instruments in the identified target languages was conducted before the field trial and main data collection of TALIS 2024. As all instruments underwent the same processes, this chapter does not contain separate sections for TALIS core survey, the Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) and the Teacher Knowledge Survey (TKS).

Quality control during production of the national instruments helped ensure the collection of high-quality data that can be compared internationally across countries/territories and over time. The materials for each country/territory and survey language were carefully cross-checked against the international source version, that is, the international (English-language) instruments (OECD, 2024[1]; OECD, 2024[2]; OECD, 2024[3]; OECD, 2024[4]; OECD, 2024[5]; OECD, 2024[6]; OECD, 2024[7]), the versions for the different target populations and the versions used in the previous TALIS cycle (TALIS 2018).

The development of the various target questionnaires produced from the international source version (in English), ranging from one to five different target populations (if and when applicable), was successful with respect to ensuring accuracy and consistency, not only within the national materials for each country/territory but also across the national survey instruments used by each participating country/territory and against the TALIS 2018 national versions (if applicable).

4.2. Overview of adaptation and translation verification

The TALIS 2024 survey instruments were reviewed during several stages of their preparation. Instruments included questionnaires (online and paper data collection) and cover letters for online data collection that contained information about TALIS and a link to the online questionnaires. The reviews focused on approving national modifications to all instruments (in a given target language) and this chapter describes the procedures related to that work, which encompassed three major activities:

- adaptation and translation of the international (English-language) source versions of the TALIS instruments and accompanying materials into the national languages
- international verification of the national translations and adaptations
- international layout verification of the final national instruments.

All participating countries/territories had to meet the procedural requirements for translation and translation verification (including the submission and review procedures) outlined in the TALIS 2024 Technical Standards (specifically Standards 4.1-4.37) (OECD, 2025[8]). The TALIS 2024 Survey Operations Procedures (SOP), Unit 3, provided to all TALIS 2024 national project managers (NPMs), contained detailed instructions on instrument preparation.

The survey instruments, developed as an international version in English, were released to the national centres during three key phases. The first phase consisted of a pilot study, during which experts reviewed the survey instruments. Each national centre was asked to translate the pilot instruments into their local language(s) or, if pilot participants could understand English, national centres could use the international source version of the instruments adapted to the local context. Because the piloted national TALIS questionnaires were used solely to collect qualitative data and feedback rather than quantitative, internationally comparable data, national adaptations and translations were not examined by external verifiers.

Unclassified - Non classifié

The second and third key phases were the field trial and the main survey respectively. During these phases, the national questionnaires underwent stringent independent adaptation, translation and layout verification processes. The national centres began this work by adapting the international source version of the questionnaires to fit their respective national or subnational contexts. This work included structural and non-structural adaptations of questions (see Section 4.4) and, to a very limited extent, national additions of items, categories and questions. Each national centre documented their adaptations to their national survey instruments using the International Association for the Evaluation of Educational Achievement (IEA) StudyExpert software. The TALIS 2024 international study centre (ISC) was responsible for verifying all documented adaptations.

In preparation for the field trial and the main survey, decentralised translation took place. This meant that each country/territory was responsible for adapting and translating its own national instruments from the international source version. The translation process required translation and translation review at the national level.

During the translation verification process, overseen by IEA Amsterdam, independent language specialists at cApStAn Linguistic Quality Control (a member of the consortium specialising in validating translations of international survey instruments) compared the translated instruments side by side with the international version. Upon completion of the verification, IEA Amsterdam returned the instruments – each of which contained verifier feedback accompanied by a severity code (established by the IEA, see Section 4.9) – to the TALIS 2024 NPMs and asked them to review the verifiers' comments and improve the translations or adaptations in line with IEA guidelines. From there, the NPMs submitted the instruments to the ISC for verification of the layout, after which the NPMs finalised their respective sets of instruments for data collection.

4.3. Instruments requiring adaptation and translation

- one principal questionnaire template, requiring a variety of mandatory adjustments for the different International Standard Classification of Education (ISCED) levels
- one teacher questionnaire template, requiring a variety of mandatory adjustments for the different ISCED levels (Forms A, B and C)
- one principal cover letter template for online administration, requiring a variety of mandatory adjustments for the different ISCED levels
- one teacher cover letter template for online administration, requiring a variety of adjustments for the different ISCED levels
- one TALIS Starting Strong leader questionnaire template requiring a variety of mandatory adjustments for the different ISCED levels
- one TALIS Starting Strong leader cover letter template for online administration, requiring a variety of adjustments for the different ISCED levels
- one TALIS Starting Strong staff questionnaire template requiring a variety of mandatory adjustments for the different ISCED levels
- one TALIS Starting Strong staff cover letter template for online administration, requiring a variety of adjustments for the different ISCED levels
- one TKS teacher questionnaire template
- extra quality control questions
- login pages for online administration
- system messages for online administration.

Unclassified - Non classifié

The TALIS 2024 School/Early Childhood Education and Care (ECEC) Setting Co-ordinator Manual and National Quality Observer Manual also needed to be adapted and translated into the language(s) used by the school co-ordinators and national quality observers (NQOs). Although the manuals were not subject to international translation or layout verification procedures, national translations of and adaptations to the manuals had to adhere to TALIS procedures. The IEA's independent international quality observers (IQOs) reviewed the national version(s) of the School/ECEC Setting Co-ordinator Manual and included their comments in their annual reviews (for details, see Chapter 7).

4.4. Identifying the target language(s)

Most countries and territories taking part in TALIS 2024 administered the survey in one predominant language, typically the language used throughout their entire education system or at least understood by all respondents. Of the 55 participating countries/territories, 15 administered the survey in more than 1 language (with the number ranging from 2 to 5 languages). The ISC advised these countries/territories to involve professionals familiar with more than one of these languages to review the translations and to ensure equivalency across versions.

Participating countries/territories translated the principal/leader and teacher/staff questionnaires into the languages listed in Table 4.1. The countries/territories that conducted online data collection translated cover letters to be distributed to participants. The cover letters contained information about the study, the web address for accessing the online questionnaire and a space in which the national centre would place a label containing the individualised user login information for the participant.

In general, each set of instruments underwent two rounds of translation verification, one for the field trial and one for the main survey. However, six of the languages administered during the main survey were not administered during the field trial. In Norway, only Bokmål was verified and administered during the field trial. For the main survey, both Bokmål and Nynorsk were verified and administered. Due to the similarities between Bokmål and Nynorsk, the national centre and the ISC agreed that the Nynorsk version, adapted from the Bokmål version, would only be administered and verified during the main survey. In Finland, the only language used during the field trial was Finnish. For the main survey, Finland also administered Swedish. Finland used the Swedish translation from Sweden as the starting point for translating the instruments into Swedish for Finland. Due to the small number of schools in Finland that use Swedish, it was agreed between the national centre and ISC that a Swedish version would not be used during the field trial to prevent under-representation of these schools during the main survey. For Spain, only Spanish (Castilian) was verified and administered for the field trial. For the main survey, Basque, Catalan, Galician, Spanish (Castilian) and Valencian were verified and administered. Due to co-ordination challenges experienced by the national centre and limited resources, the ISC agreed that Spain would only administer Spanish (Castilian) during the field trial.

As documented in the table below, several countries/territories used English versions of the instruments. These countries/territories all made national adaptations to the international source version and submitted them for adaptation verification, language verification and layout verification.

Table 4.1. Languages used in TALIS 2024

Participating country/territory	Main survey language(s)
Albania	Albanian
Alberta (Canada)	English
Australia	English
Austria	German
Azerbaijan	Azerbaijani and Russian
Bahrain	Arabic, English

Unclassified - Non classifié

Participating country/territory	Main survey language(s)
Brazil	Portuguese
Bulgaria	Bulgarian
Chile	Spanish
Colombia	Spanish
Costa Rica	Spanish
Croatia	Croatian
Cyprus	Greek and English
Czechia	Czech
Denmark	Danish
Estonia	Estonian
Finland[1]	Finnish and Swedish
Flemish Community (Belgium)	Flemish (Dutch)
France	French
French Community (Belgium)	French
Germany	German
Hungary	Hungarian
Iceland	Icelandic
Ireland	English and Irish
Israel	Hebrew and Arabic
Italy	Italian
Japan	Japanese
Kazakhstan	Kazakh and Russian
Korea	Korean
Kosovo	Albanian
Latvia	Latvian
Lithuania	Lithuanian
Malta	English
Montenegro	Montenegrin
Morocco	Arabic
Netherlands	Dutch
New Brunswick, Quebec (Canada)	English and French
New Zealand	English and Māori
North Macedonia	Macedonian and Albanian
Norway[2]	Bokmål and Nynorsk
Poland	Polish
Portugal	Portuguese
Romania	Romanian
Saudi Arabia	Arabic and English
Serbia	Serbian
Shanghai (China)	Mandarin
Singapore	English
Slovak Republic	Slovak
Slovenia	Slovene
South Africa	English
Spain[3]	Basque, Catalan, Galician, Spanish (Castilian) and Valencian
Sweden	Swedish
Türkiye	Turkish
United Arab Emirates	Arabic and English
United States of America	English
Uzbekistan	Uzbek and Russian

Unclassified - Non classifié

Participating country/territory	Main survey language(s)
Viet Nam	Vietnamese

1. For Finland, only Finnish was administered during the field trial.
2. For Norway, only Bokmål was administered during the field trial.
3. For Spain, only Spanish (Castilian) was administered during the field trial.

4.5. Adaptations

Adaptations were kept to a minimum, but some were mandatory to ensure that the principals/leaders and teachers/staff in each country/territory received questions equivalent to those administered to principals/leaders and teachers/staff in all other countries/territories. Revisions included structural and non-structural changes, as well as mandatory and elective adaptations.

Structural adaptations: The term "structural adaptation" referred to any adaptation that altered the structure of the international source version by: removing, adding or splitting categories; removing, adding or splitting national dimensions; removing or adding questions; or changing the width and range definition for a question.

Non-structural adaptations: Non-structural adaptations referred to adaptations that did not change the structure of the questionnaires compared with the structure of the international source version, that is, neither added nor subtracted questions, dimensions or categories to or from the instruments. Adaptations typically involved adapting terms and phrases to fit the cultural context of each country/territory. Adaptations of terms or phrases were more than pure translation since international terms or phrases were replaced by national terms or phrases.

Mandatory adaptations: The international questionnaires contained terms or phrases that needed to be adapted at the national level. These adaptations were non-structural because they did not alter the structure of the instrument but adapted it to fit a local context. To facilitate the mandatory adaptation process, international versions of the questionnaires included brackets and yellow highlighting to indicate the places where mandatory adaptations were needed.

- Square brackets […]: These required NPMs to add nationally specific information such as that relating to procedures on how to return questionnaires and specification of deadlines, for example, "[national return procedures and date]".
- Angle brackets <…>: These required NPMs to replace the words in the brackets with country-/territory-appropriate term or terms. Some of these words related to the target populations (respondents). For example, <ISCED Level x> needed to be replaced with the appropriate educational level set out in the ISCED 2011 mapping (UNESCO-UIS, 2012[9]) such as "lower secondary education". Additional advice and instruction in the TALIS 2024 Survey Operations Procedures, Unit 3, also helped NPMs identify appropriate adaptations.

Elective adaptations: Countries/territories could apply additional non-structural adaptations, such as replacing (where necessary) terms or phrases with terms or phrases relevant to their respective contexts and cultures. Examples included names of specific institutions and ways of addressing people. Elective adaptations also included the following:

- Valid ranges (if necessary), removal of non-applicable questions or dimensions, and addition of categories (if necessary).
- National questions. National centres were permitted to add these questions at the very end of the questionnaire. These national questions could be ones developed by the participating countries/territories themselves or be items originally discarded from the international instrument but still deemed appropriate for implementation. The ISC stipulated, as a rule, that

Unclassified - Non classifié

these additional questions should add no more than five minutes of response time to a questionnaire's total response time.

During the adaptation process, participating countries/territories decided not to administer certain items. A table of affected questions, dimensions and categories excluded from the national questionnaires can be found in Annex B of the *Teaching and Learning International Survey (TALIS) 2024 User Guide* (OECD, forthcoming[10]).

4.6. Documentation of national instrument preparation

All changes, selections and adaptations to the TALIS instruments were implemented with the goal of creating an international database containing comparable data from all participating countries/territories. NPMs noted all revisions to the instruments for the main survey within the IEA StudyExpert software. NPMs received training in using IEA StudyExpert and were required to work on their adaptations within IEA StudyExpert for each language in which they intended to administer the instruments. IEA StudyExpert ultimately contained the complete translation, adaptation and verification history of each set of national instruments for every applicable target population and was, therefore, an integral part of the adaptation and translation processes, international translation verification as well as layout review and layout verification.

During preparation of the national instruments, the main steps of documentation were as follows:

- **Step I, approval of adaptations**: The ISC reviewed the proposed adaptations entered in IEA StudyExpert. Terms and items used in TALIS 2018 had to be adapted identically to allow for trend analyses. The ISC released the TALIS 2018 main survey instruments as a reference. The ISC also provided all participating TALIS 2024 countries/territories with the link to the ISCED 2011 mapping (UNESCO-UIS, 2012[9]) to use this resource for referencing the ISCED levels.
- **Step II, translation verification**: External language experts (from cApStAn) reviewed the translated (updated) instruments within IEA StudyExpert, referring to the documentation within the software when relevant and commenting on any implemented adaptations. The experts also verified translations of the cover letters, system messages and login pages for online administration, extra quality control questions as well as the other international components (ISCED levels 1 and 3, TALIS Starting Strong, TKS).
- **Step III, layout verification**: During this stage, the ISC compared the layout of the national instruments with the international source version within IEA StudyExpert and noted any deviations from the international versions in IEA StudyExpert.
- **Step IV, national instrument sign-off**: Following layout verification, NPMs were asked to take a final look at their national instruments, review and confirm via email that their national questionnaires were ready for administration.
- **Step V, codebook verification**: The ISC created a national codebook for each country/territory asked to check the structure of the national codebook.

4.7. Hierarchy of international components during instrument preparation

TALIS 2024 offered countries/territories the opportunity to survey not only the international target population, that is, teachers and principals in schools providing lower secondary education (ISCED level 2) but also the populations of teachers and principals at ISCED levels 1 and 3 and those individuals involved in TALIS Starting Strong and the TKS. Countries/territories that chose to survey teachers/staff and principals/leaders from more than one of the target populations needed to ensure that the different survey

Unclassified - Non classifié

instruments were consistent across target populations. Deviations across target populations were only permissible if the country/territory could justify them and if the ISC approved those justifications.

As a further means of quality control, the ISC asked countries/territories to produce the ISCED level 2 version of the instruments in the predominant survey language and to use this version as the main blueprint for ISCED levels 1 and 3 instruments and/or additional language(s). This key process was ingrained in the survey operations to ensure that all national materials were of high quality and consistent across the different instruments used within one country/territory.

The ISCED levels 1 and 3 instruments were not subject to a full translation verification. Instead, revisions were recorded in IEA StudyExpert, and verifiers then checked these changes. A thorough consistency check during layout verification ensured that only ISC-approved adaptations to ISCED levels 1 and 3 instruments were implemented and that the rest of the instruments matched the ISCED level 2 instruments.

Preparation of the TALIS Starting Strong and TKS instruments followed the same procedure used for preparing the ISCED level 2 questionnaires.

Fifty-four participating countries/territories implemented the survey at ISCED level 2, 15 at ISCED level 1, 8 at ISCED level 3, 15 at ISCED level 02, 8 for children under the age of three (U3) and 8 for the TKS (Table 4.2).

Table 4.2. List of target populations administered in TALIS 2024 by country/territory

Participating country/territory	U3	ISCED 02	ISCED 1	ISCED 2	ISCED 3	TKS
Albania				✓		
Alberta (Canada)				✓		
Australia			✓	✓		
Austria				✓		
Azerbaijan				✓		
Bahrain				✓		
Brazil			✓	✓		
Bulgaria				✓		
Chile		✓		✓		✓
Colombia		✓		✓		
Costa Rica				✓		
Croatia				✓	✓	✓
Cyprus				✓		
Czechia				✓		
Denmark		✓		✓	✓	
Estonia				✓		
Finland[1]		✓		✓		
Flemish Community (Belgium)	✓	✓	✓	✓	✓	
France			✓	✓		
French Community (Belgium)			✓	✓		
Germany	✓	✓				
Hungary				✓		
Iceland				✓		
Ireland	✓	✓				
Israel	✓	✓		✓		
Italy				✓		

Unclassified - Non classifié

Participating country/territory	U3	ISCED 02	ISCED 1	ISCED 2	ISCED 3	TKS
Japan		✓	✓	✓		
Kazakhstan				✓		
Korea			✓	✓		
Kosovo				✓		
Latvia				✓		
Lithuania				✓		
Malta				✓		
Montenegro				✓		
Morocco		✓	✓	✓		✓
Netherlands			✓	✓		
New Brunswick (Canada)	✓					
New Zealand	✓	✓	✓	✓		
North Macedonia				✓		
Norway[2]	✓	✓		✓		
Poland				✓		✓
Portugal				✓	✓	✓
Quebec (Canada)	✓					
Romania				✓		
Saudi Arabia			✓	✓	✓	✓
Serbia				✓		
Shanghai (China)				✓		
Singapore				✓		
Slovak Republic				✓		
Slovenia			✓	✓	✓	
South Africa				✓		✓
Spain[3]		✓	✓	✓		
Sweden		✓		✓		
Türkiye		✓	✓	✓	✓	
United Arab Emirates			✓	✓	✓	
United States of America				✓		✓
Uzbekistan				✓		
Viet Nam				✓		

1. See Note 1 under Table 4.1
2. See Note 2 under Table 4.1
3. See Note 3 under Table 4.1

4.8. Engaging translators

The ISC advised NPMs to engage a minimum of two translators for each language in which their respective countries/territories intended administering the survey. Translators needed to have the target language as their mother tongue, possess excellent knowledge of English and be familiar with survey instruments. In addition, a good level of computer literacy, a computer with a Windows desktop or Windows server operating system and a reliable Internet connection were necessary to translate instruments in the IEA StudyExpert system.

The first of these translators, who was expected to be not only a language specialist but also someone with a sound understanding of the country's/territory's cultural context, translated the international source

Unclassified - Non classifié

version and manuals into the national language. The second translator, known as the reviewer, was expected to possess experience in the national educational context and be familiar with the subject of the study, and reviewed the translated materials to check the accuracy, readability and consistency with the international source version and trend version (if applicable) of the instruments.

The ISC reminded NPMs planning to divide up the translation work or to produce translations in more than one language of the importance of ensuring consistency within and across instruments. The ISC also encouraged the countries/territories that intended producing the survey instruments in more than one language to engage professionals familiar with all of those languages as special reviewers so as to establish equivalence across translations.

4.9. Producing translations

For English-speaking countries/territories, the instrument preparation process involved adapting language, terminology and classifications to local requirements. Countries/territories administering the survey in a language or languages other than English had to adapt and translate all survey materials into the local language(s).

The TALIS 2024 Survey Operations Procedures, Unit 3, Instrument Preparation (main survey) specified the need for translations not only to follow the rules of the target language and the country's/territory's national/school context but also to have the same meaning as the source text. The ISC produced a glossary document containing definitions and explanations of the most critical terms to help translators prepare sets of instruments that captured the meaning and intent of the international source version while safeguarding against inaccuracies or word-for-word translations that were not appropriate within the national language and context.

Upon the release of the TALIS 2024 field trial instruments, countries/territories were to translate the questions/items. For countries that participated in TALIS 2018, some of the questions/items were considered as trend and the process regarding trend translations is covered in the following section.

The translator's role was to prepare a full translation of the questionnaires and accompanying materials. Translators introduced the mandatory adaptations for the international components and, where applicable, documented the adaptations in a form called Term Adaptations Documentation located in IEA StudyExpert. The translated texts needed to ensure understanding and natural flow to the extent that anyone reading the texts could not tell that they had originated in English. Guidance on language use during translation, as outlined in the TALIS 2024 Survey Operations Procedures, Unit 3, Instrument Preparation (main survey), comprised the following:

- The translated text should have the same register (language level and degree of formality) as the source text.
- The translated text should have correct grammar and usage (e.g. subject/verb agreement, prepositions, verb tenses, etc.).
- The translated text should not add text to or omit text from the source version unless the ISC agreed to this.
- The translated text should employ equivalent qualifiers and modifiers appropriate for the target language.
- The translated text should have the equivalent social, political or historical terminology appropriate for the target language and used at this level of education.
- Idiomatic expressions should be translated appropriately, not necessarily word for word.
- Spelling, punctuation and capitalisation in the target text should be appropriate for the target language and the country/territory or cultural context.

Unclassified - Non classifié

When the individuals in the national centres responsible for the translation work completed their work, reviewers read and reviewed the materials to ensure that the translations were appropriate for teacher/staff and principal/leader respondents, accurate, readable, consistent with the international source version and trend (if applicable) version of the instruments and met the requirements of TALIS 2024. After the reviewers had completed their review and commented on the consistency and quality of the translations, the translators were expected to integrate the changes into the instruments. The country's/territory's NPM subsequently reviewed the translations and the reviewer's comments, acted as an arbitrator on disagreements between the translator and reviewer, and had the right to make the final decision on translations. This method meant that three independent people compared the national versions against the original international source version in English.

4.10. Trend translations

The TALIS 2024 instruments contained questions/items used in TALIS 2018 and these questions/items provided a basis for comparing data collected by the countries/territories that participated in both TALIS surveys. The TALIS 2024 countries/territories that had participated in TALIS 2018 were obligated to use the translations from the earlier cycle in order to ensure consistency and therefore possible comparability of data across the two surveys. The ISC asked the national centres to adhere to this objective when updating the field trial instruments for the TALIS 2024 main survey. When the field trial instruments were released to countries to begin instrument preparations, NPMs were required to review their national trend translations.

To help with their review, the ISC made sure that the NPMs had access to the approved TALIS 2018 main survey instruments for reference. If, when comparing the TALIS 2018 translations to the TALIS 2024 field trial translations, NPMs viewed a translation from TALIS 2018 as not appropriate or had any other concerns regarding the translation, the ISC asked the NPMs to address these issues and concerns by contacting the ISC. The ISC then reviewed the documentation to determine if the changes would influence the ability to preserve trend measurement. If a change was viewed as affecting trend, the NPM had to decide whether to revert the change and maintain the trend measure or keep the change and lose the trend measure.

Following the field trial all remaining trend items were locked in IEA StudyExpert to prevent editing and ensure identicalness to trend. During the TALIS 2024 main survey instrument preparation, NPMs were asked to review the trend items again. If any remaining issues were found, the NPMs were to document the issues, then make a request to the ISC to unlock the trend item. Similarly to the field trial process, the ISC then reviewed the documentation to determine if the change would influence the ability to preserve trend measurement. If the change was approved by the ISC, the item was then unlocked and the NPM was allowed to implement the change.

4.11. International translation verification

International translation verification was an important part of the TALIS 2024 Technical Standards (specifically Standards 4.26-4.30). IEA Amsterdam co-ordinated the translation verification process in collaboration with cApStAn Linguistic Quality Control, based in Brussels, Belgium, which engaged the services of native-speaking linguistic verifiers. The verifiers' role was to compare the translation to the source sentence-by-sentence and item-by-item and ensure that:

- The translation reflects the source and is linguistically correct.
- The translation and adaptation notes are followed.
- The term definitions and explanations are reflected.

Unclassified - Non classifié

- The agreed required and non-required adaptations are implemented as documented, with reactions to each entry in IEA StudyExpert.
- The trend questions remain unchanged.
- The errata are corrected in the target.
- They react to comments from the country/territory and from IEA.

In terms of generic guidelines, the verifiers were asked to pay special attention to:

- **Clarity and fluency**: The target should not sound like a translation; any ambiguity or connotations should be avoided.
- **Completeness**: No information should be omitted, and no additional information should be added.
- **Temporal and spatial frameworks**: Concepts such as “always” or “at school” should be appropriately rendered.
- **Consistency**: Questions, questionnaires, context and scales should be consistent.
- **Adaptations**: The intentional deviations from the source should be appropriate and linguistically correct.
- **Semantic distance**: Semantic distances in scales should match the source.
- **Text formatting**: Typographic features such as underlined, bold or italic text should be reflected correspondingly.

The verification feedback was reviewed firstly by cApStAn, then by IEA Amsterdam, before being sent to the country/territory. The ISC then asked the NPMs to carefully review all verifier comments and suggestions and to implement those that improved the materials according to the IEA’s guidelines for translation, while also ensuring that the translations retained the original meaning of the phrases. Although NPMs always had the right to make final decisions regarding national translations, they had to describe and explain any major differences of opinions between national centre personnel and verifiers. The ISC reviewed all differences of opinion and, in cases where the ISC wanted an additional opinion, it asked the translation referee to review and provide his/her opinion on the translation and documentation.

In cases of divergent expert opinions on translation matters, the ISC engaged a translation referee to provide arbitration. In 2021, cApStAn recommended Michèle Ernst Staehli for this role, a proposal that was subsequently agreed upon between the OECD and ISC.

Michèle Ernst Staehli is Head of the International Surveys Group at Swiss Centre of Expertise in the Social Sciences (FORS). She holds dual Doctor of Philosophy degrees in Sociology from the University of Marne-la-Vallée and in Social Sciences from the University of Lausanne. She is fluent in English, French, German and Italian and brings more than 15 years of academic experience in the sociology of work and social science methodology, complemented by practical expertise in managing scientific surveys at a Swiss fieldwork agency.

Since 2010, Michèle Ernst Staehli has led the international surveys team at FORS, acting as the Swiss National Co-ordinator for the European Social Survey (ESS). Her research focuses on key methodological issues in survey implementation, including questionnaire translation, response incentives, non-response bias and mixed-mode data collection strategies. In parallel, she continues collaborative work in her PhD research area with the Swiss National Centre of Competence in Research “LIVES – Overcoming Vulnerability: Life Course Perspectives” (NCCR LIVES).

During the field trial (FT), all administered national versions underwent full verifications of the translations, which means that every aspect of the translation was reviewed in comparison to the source. For countries/territories that participated in TALIS 2018 with trend questions/items, in the FT the verifier reviewed and compared the TALIS 2024 version of these questions/items with the TALIS 2018 version to ensure identical translations.

Unclassified - Non classifié

For the main survey (MS), all national versions underwent focused verifications, except those that were not administered in the FT, which underwent full verifications. In a focused verification, the verifiers reviewed the national versions with their main focus being on all changes implemented to the translations from the FT to MS. The FT to MS procedure involved applying updates shared by the item developers following the analysis of the FT international data. During this process, the verifiers accessed and reviewed the international source version and accompanying materials in IEA StudyExpert and made sure that the FT to MS changes shared by the item developers were implemented in the target versions. In addition to the international FT to MS changes, NPMs were to review, revise and document any changes they implemented to their FT to MS translations based on the analysis of their FT data. The national changes were also reviewed by the verifiers to ensure alignment with the international source version and accurate documentation. After the FT all trend questions/items for countries/territories that participated in TALIS 2018 were locked from editing. This led to the difference in procedure for verifying trend questions/items during the MS as only the trend/questions which were unlocked by the ISC to allow NPMs to implement an approved correction were reviewed by the verifiers.

During translation verification, verifiers inserted their comments and made changes directly in the national instruments (displayed side by side with the international source version). Verifiers also documented and recorded (in the form of comments) any deviations from the international source version and trend version, if applicable, and used the IEA severity code system to indicate the severity of the identified error or issue.

Each verifier comment contained one of the following severity codes:

- **Code 1: Major change or error**. Examples included the incorrect order of choices in a multiple-choice item, omission of an item, incorrect translation resulting in the answer being indicated by the item, an incorrect translation that changed the meaning or difficulty of the text/item and the incorrect order of items.
- **Code 1?: Discuss with ISC**. The verifiers used a Code 1? when they were unsure of how to correct a possible error and/or an input from the ISC was needed.
- **Code 2**: Minor change or error. Examples included spelling errors that did not affect comprehension.
- **Code 3**: Suggestion for alternatives. The translation might be adequate, but the verifier suggested different wording.

During the FT, if a national adaptation was implemented as documented, or a trend change was implemented as documented, the verifier entered a comment of “OK” and set the severity of the comment to “-”. For the MS this process differed slightly, as the verifiers were asked to enter the comment “Implemented as documented” instead of “OK”.

4.12. Feedback from NPMs on translation and international translation verification

The ISC developed a survey activities questionnaire (SAQ) that it administered after the field trial and again after collection of main survey data. The questionnaire, designed to elicit feedback from NPMs on their experiences administering TALIS 2024, included questions on the translation and international translation verification processes. Responses to the SAQ administered after the main data collection period indicated that the NPMs found the international translation verification process benefitted from preparation of the main survey.

All NPMs of the 57 participating countries/territories answered the SAQ. Their answers showed that most of the participants (54 of the 57) found the guidelines for translation and translation verification described in SOP Unit 3, clear and sufficient, experienced no difficulties translating the international source version

Unclassified - Non classifié

of the questionnaires into national language(s) or adapting them to local contexts (35 of the 57), or any problems with translation or international translation verification beyond that (46 out of 57). Most of the NPMs identified the international translation verification feedback provided by the verifier/s as useful (54 out of 57) and reported that after reviewing the feedback from the verifiers, they made several modifications to their instruments; 45 of the 57 said they corrected errors identified by the verifiers.

4.13. Layout verification: Online and paper administration

As a final step during production of the national instruments and after completion of the translation verification process, the ISC verified the layout of the online versions of the instruments and created the paper versions of the questionnaires in Word format for countries/territories using paper questionnaires. The production of paper questionnaires was conducted after layout verification for the online questionnaires was complete and layout of the online questionnaires was approved by the NPM.

The ISC carefully checked the national versions of the instruments against the international source version and the documented discrepancies within IEA StudyExpert. The aim of the layout verification was to ensure that the national versions of the TALIS instruments looked, as much as possible, like the international source version and that the online and paper versions were, to the greatest extent possible, equivalent.

NPMs informed the ISC that their online instruments were ready for layout verification. ISC staff then checked each questionnaire for missing items/response options/instructions, filter options, numbering, font size, font changes, blank pages, word emphases, page breaks, missing bold font/underlining, etc. If ISC staff found issues in the layout, the NPM was asked to implement the ISC's feedback in the online instruments.

After online layout approval, the ISC prepared the paper questionnaires for the countries and checked each paper version of an instrument against the approved online version. This practice helped to ensure that the instruments within one country/territory were the same. Visual checks were run using the same standards and procedures as for verification of the online layout. After finalising the paper questionnaires, the ISC asked each NPM to thoroughly check the files and report any mismatching to the ISC. Once the mismatches were resolved, the NPM was asked to confirm that the paper versions of the instruments were final and ready for release.

The majority of NPMs (53 of the 57) found the instructions for layout checks provided by the ISC helpful for preparing their national survey instruments.

References

OECD (2025), "TALIS 2024 Technical Standards", No. EDU/TALIS/GB(2023)11/REV1, Programme for Teaching and Learning International Survey, Directorate for Education and Skills, OECD, Paris, https://one.oecd.org/document/EDU/TALIS/GB(2023)11/REV1/en/pdf?sessionId=1755520362877. [8]

OECD (2024), "Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) 2024: Combined Questionnaire Main", http:///www.oecd.org/content/dam/oecd/en/data/datasets/talis-starting-strong/20230927%20TALIS%202024%20MS%20CQ-M_withSEnames.pdf. [6]

OECD (2024), “Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) 2024: Combined Questionnaire Short”, http://www.oecd.org/content/dam/oecd/en/data/datasets/talis-starting-strong/20230927%20TALIS%202024%20MS%20CQ-S_withSEnames.pdf. [7]

OECD (2024), “Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) 2024: Leader Questionnaire”, http://www.oecd.org/content/dam/oecd/en/data/datasets/talis-starting-strong/20230927%20TALIS%202024%20MS%20LQ_withSEnames.pdf. [5]

OECD (2024), “Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) 2024: Staff Questionnaire”, http://www.oecd.org/content/dam/oecd/en/data/datasets/talis-starting-strong/20230927%20TALIS%202024%20MS%20SQ_withSEnames.pdf. [4]

OECD (2024), “Teaching and Learning International Survey (TALIS): Principal Questionnaire, ISCED 1”, http://www.oecd.org/content/dam/oecd/en/about/programmes/edu/talis/talis2024questionnaires/TALIS2024PrincipalQuestionnaireISCED1.pdf. [2]

OECD (2024), “Teaching and Learning International Survey (TALIS): Principal Questionnaire, ISCED 2 & 3”, http://www.oecd.org/content/dam/oecd/en/about/programmes/edu/talis/talis2024questionnaires/TALIS2024PrincipalQuestionnaireISCED2-3.pdf. [3]

OECD (2024), “Teaching and Learning International Survey (TALIS): Teacher Questionnaire”, http://www.oecd.org/content/dam/oecd/en/about/programmes/edu/talis/talis2024questionnaires/TALIS2024TeacherQuestionnaireISCED1-2-3.pdf. [1]

OECD (forthcoming), *Teaching and Learning International Survey (TALIS) 2024 User Guide*, OECD Publishing, Paris. [10]

UNESCO-UIS (2012), *International Standard Classification of Education: ISCED 2011*, UNESCO Institute for Statistics, Montreal, https://unesdoc.unesco.org/ark:/48223/pf0000219109. [9]

Unclassified - Non classifié

5 Sampling design

The international target population for the OECD Teaching and Learning International Survey (TALIS) 2024 consisted of teachers providing International Standard Classification of Education (ISCED) level 2 education and the principals of the schools where they work. This is also referred to as the TALIS core survey target population. Teachers in ISCED level 2 were also the target population for the Teacher Knowledge Survey (TKS) in countries/territories that chose to administer it. Participating countries/territories could also opt to survey primary (ISCED level 1) and upper secondary (ISCED level 3) teachers. The international target population for TALIS Starting Strong consisted of staff providing learning opportunities or care for children in pre-primary (ISCED level 02) settings or in settings for children under the age of three years (U3). This chapter covers the sample design prepared for the TALIS 2024 countries/territories.

Unclassified - Non classifié

5.1. Overview

This chapter covers the sample design prepared for and implemented in the countries/territories participating in the OECD Teaching and Learning International Survey (TALIS) 2024. It details the sampling strategies used and describes all steps of the sample selection process.

Chapter 9 and Annex D of this report complement this current chapter. Chapter 9 details the strategies used to estimate the characteristics of the populations of interest and their sampling errors, while accounting for the design features described here. Annex D provides the characteristics of each national sampling plan.

5.2. ISCED levels 1, 2 and 3

5.2.1. International sampling plan

The populations of interest comprised schools providing International Standard Classification of Education (ISCED) level 2 (lower secondary) education, as well as their principals and teachers. Participating countries/territories could opt to additionally survey ISCED level 1 (primary education) and ISCED level 3 (upper secondary education) teachers.

The international sampling plan prepared for each of the TALIS 2024 teacher populations was, in essence, a systematic stratified two-stage cluster probability sampling design. This design meant that schools (first-stage or primary sampling units) were randomly selected, then a number of teachers (second-stage units or secondary sampling units) were randomly selected from the list of in-scope teachers for each of these schools. The principal in each selected school was asked to complete the principal questionnaire.

5.2.2. Target population and survey population

The TALIS programme of surveys (i.e. the TALIS core survey and the options for ISCED levels 1 and 3) aimed to cover all teachers of a given ISCED level in a participating country/territory. Because the programme's identification of policy issues encompassed matters related to classrooms, teachers, schools and school management, all subjects being taught in a school were within the scope of TALIS. As such, the programme's sampling coverage extended to all teachers of an ISCED level and to the principals of the schools in which these teachers were working.

Teachers at a given ISCED level were those who, as part of their regular duties in a target school, provided instruction in programmes at that ISCED level, irrespective of the time spent teaching students of that ISCED level. The TALIS populations of interest also included teachers teaching a mixture of subjects at different levels in a sampled school.

TALIS's international target population restricted the survey to those teachers who taught in "regular" schools and to the principals of those schools. Teachers teaching adults were not part of the international target population and were therefore deemed "out of scope"; teachers working with children with special needs were "in scope" if they taught in regular schools. However, when a school consisted exclusively of these teachers, the school itself was said to be out of scope. Teacher aides, pedagogical support staff (e.g. guidance counsellors, librarians) and health and social support staff (e.g. doctors, nurses, psychiatrists, psychologists, occupational therapists and social workers) were not considered teachers and therefore could not be part of TALIS.

A "principal" was defined as the person with the most responsibility for the administrative, managerial and/or pedagogical leadership at the school. As part of the leadership role, principals might have been responsible for the monitoring of students, the supervision of teachers, contact with parents and guardians,

Unclassified - Non classifié

and/or the planning, preparation and carrying out of the pedagogical work in the school. As principals received the principal questionnaire, they were treated as out of scope for the teacher population, even if they spent some of their time teaching.

For national reasons, participating countries/territories could choose to restrict the coverage of their national implementation of TALIS to a specified part or parts of the country/territory. For example, countries/territories could remove schools deemed difficult to access or where the instruments would have required major modification to work well from the international target population and thereby create a national survey population. Participating countries/territories were encouraged to restrict these exclusions to the greatest extent possible to maintain international comparability of the survey data. A 5% threshold was adopted for TALIS as an upper limit for the overall exclusion of teachers from the survey population. However, because of limitations in the availability of comprehensive and reliable national statistics on enumerations of teachers, validating adherence to this rule proved to be difficult for some participating countries/territories.

Annex C presents the national definitions of the TALIS 2024 target and survey populations for each ISCED level. National project managers (NPMs) provided this information on TALIS sampling forms, templates of which can be found in Annex B.

Ultimately, the TALIS 2024 samples of schools and teachers were selected from the national survey population. Table 5.1 illustrates how the international target population and national survey population related to one another.

Table 5.1. TALIS 2024 target and survey populations

<table>
<tr><td rowspan="2">TALIS 2024 out-of-scope</td><td colspan="3">TALIS 2024 international target population
=
all schools where at least one ISCED level X class is found</td></tr>
<tr><td>National exclusions</td><td colspan="2">National survey population</td></tr>
<tr><td>1. Schools exclusively for adult education</td><td>Defined by the country/territory</td><td>Not sampled</td><td>In sample</td></tr>
<tr><td>2. Schools exclusively for students with special needs
3. Substitute or emergency teachers
4. Teachers on long-term leave
5. Teachers exclusively for adult education in regular schools</td><td>Not more than 5% of teachers</td><td colspan="2">At least 95% of teachers</td></tr>
</table>

Teachers participating in TALIS were asked whether they were working in any other school and, if so, in how many schools. This information was used during the weighting process to correct for the chance of multiple selection (see the section “Teacher/staff multiplicity adjustment factor” in Chapter 9). Although unlikely, a teacher could have been selected in more than one school. In these instances, teachers were asked to complete a questionnaire for each of the schools from which they were selected.

5.2.3. Sample size requirements

Sample sizes for TALIS were determined with two important considerations in mind. First, sample sizes should ensure sufficient precision of the estimated population parameters. Second, they should allow for reliable estimation and modelling, also for sub-groups, while permitting some amount of non-response. In other words, main reporting sub-groups should be based on information collected from a sufficiently large number of individuals.

Regarding sampling precision, the goal of an effective sample size of 400 teachers per country/territory was set, i.e. a precision that would be achieved by selecting 400 teachers with simple random sampling (SRS). An effective sample size of the originally intended 400 teachers results in the following 95% confidence limits for sample estimates of population means, percentages and correlation coefficients.

Unclassified - Non classifié

- Means: $m \pm 0.1s$ (where m is the mean estimate and s is the estimated standard deviation)
- Percentages: $p \pm 4.9\%$ (where p is a percentage estimate and $p = 50\%$)
- Correlations: $r \pm 0.1$ (where r is a correlation estimate and $r = 0$).

As elaborated above, TALIS did not apply SRS but implemented a complex sampling design with several features impacting the precision of estimates. Specifically, TALIS recognised that teachers from one school would be more likely to share opinions and behave in similar ways than teachers across different schools, at least for some of the variables. This tendency for teachers in the same school to be "more alike" than teachers from different schools is called a "clustering effect". In essence, as the clustering effect becomes larger, the need to select more schools becomes greater to maintain the precision of the estimates evident in a non-clustered sampling design. The clustering effect, together with other features of the sampling design (e.g. stratification, unequal weights), contributes to the design effect. The design effect measures the ratio of the variance within the given sampling design to the variance expected from a simple random sample of the same size (Kish, 1965[1]).Those engaged in the preparation work for TALIS used, as a working hypothesis, a design effect of 5.2, based on the results of earlier TALIS cycles. Note, however, that design effects varied greatly across countries/territories, modules and variables, a situation that was indeed evident in the large variance in design effects apparent in TALIS 2024 (see Chapter 9).

To achieve an effective sample of 400 teachers at minimum, allowing for cost-efficiency and sufficiently large sub-groups at the same time, the school sample size was set to 200 schools, and 20 teachers within sampled schools, per country/territory and module (ISCED levels 1, 2 and 3). If there were fewer than 20 teachers in a school, all eligible teachers were selected. The nominal sample therefore comprised a minimum of 4 000 teachers.

Table 5.2. Establishing the sample size for TALIS 2024 (core survey)

		Intended sample size	Realised sample size
Effective sample size	a	400	433
Design effect	b	5.2	5.2
Actual sample size	c = a x b	2 080	2 252
Teachers per school	d	20	20
Minimum teacher response (%)	e	75	75
Minimum response per school	f = d x e	15	15
Number of schools required	g = c / f	139	150
Minimum school non-response (%)	h	75	75
Sample size for schools	i = g / h	185	200

Participating countries/territories could choose to augment their national sample by selecting more schools, by selecting more teachers within each selected school, or by increasing both.

In some cases, because the average number of teachers in the schools was lower than the number expected in the international plan, the sampling team maintained a minimum total number of participating teachers by increasing the number of schools to be sampled. Annex D presents the number of selected schools per participating country/territory and module.

5.2.4. National sampling strategies

The TALIS sampling team in co-operation with the national centres was responsible for developing a sampling design that adhered to the international requirements but also accommodated particular national research interests, if possible. Participating countries/territories could suggest variations to or adaptations

Unclassified - Non classifié

of the international sampling plan to better suit their national needs or conditions. All changes to the international sampling plan had to be reviewed and approved by the sampling team.

School sampling frames

Participating countries/territories were asked to provide the International Association for the Evaluation of Educational Achievement (IEA) Hamburg with a current and complete list of schools educating students at the ISCED level of interest. This list constituted the school sampling frame for TALIS and was expected to correspond to the survey population as defined and described on the sampling forms.

The sampling frame had to contain certain key variables: a national school identifier, a measure of size (preferably the number of teachers at the ISCED level of interest) and values for variables to be used for stratification. Whenever possible, the frame also needed to include the type of funding (private or public) and the type of education stream (academic or vocational).

Stratification

Stratification is part of many sampling designs and entails the grouping of sampling frame units by common characteristics. Examples for such groups of units (schools in the case of TALIS) are different types of schools, geographic regions, urbanisation level or source of funding. TALIS generally used stratification to improve the efficiency of the sample design or to allow disproportional sample allocation for precise sub-group estimation.

The sampling team invited participating countries/territories to discuss stratification strategies with them. If a country/territory required estimates with high precision levels for specific subgroups of interest, the sampling team could select more schools from within specific strata than a proportional sample allocation would have required. Therefore, the participating country/territory and the sampling team together determined how many schools should be selected per stratum. A proportional sample allocation would have reflected the proportions of the population regarding stratum size in the sample. The use of sampling weights made it possible to implement disproportional sample allocations without biasing population estimates.

Stratification could be done explicitly (whereby a fixed portion of the total sample was allocated to the stratum) or implicitly (whereby the variable was used to sort the sampling frame before sample selection, thus giving, on average, a proportional representation of the implicit strata in the sample). Samples for the different explicit strata were completely independent from one another.

Common stratification schemes reflected categories of geographic regions, urbanisation, source of financing, type of settings and language, or a combination of these. Annex D provides stratification details for each participating country/territory and each module in which it participated.

Sample selection

The sampling team at IEA Hamburg selected all school samples.

The most common method used to select the school samples was systematic random sampling with probability proportional to size (PPS) within explicit strata. If implicit stratification was used, schools in explicit strata were sorted by implicit strata. Sampling frames were always sorted by a measure of size (MOS) within explicit and implicit strata prior to sampling; in rare situations, an MOS could not be provided by the country/territory, and a constant value was used. Sorting by MOS was done in a serpentine manner, which meant alternating increasing and decreasing order in each adjacent implicit stratum so that adjacent schools would be of similar sizes even across implicit strata. This method is useful when creating replication zones for estimation of sampling error (see Chapter 9).

Unclassified - Non classifié

The mechanics of systematic random sampling with PPS can be described as follows. Let M be the sum of all MOS in an explicit stratum, let m_i be the MOS for school i in the explicit stratum and M_i be the cumulative sum of the school sizes up to and including school i, and let n be the number of schools to be sampled from that explicit stratum. A sampling interval k was computed as quotient $\frac{M}{n}$, and a random starting point d (in each stratum) was drawn at such that $1 \leq d < k + 1$. The sample was selected by walking steps of fixed length k along the (ordered) sampling frame. Where the step landed pointed to the school to be added to the sample. The pointer for school j was calculated by $int(d + (j - 1) \times k)$. This process was completed separately for each explicit stratum.

Whenever possible, two replacement schools for each sampled school – the school just below and the school just above the selected school on the sampling frame sorted by MOS – were assigned. The replacement schools had to come from the same explicit stratum as the sampled school. It was expected that this strategy would help maintain the sample size and minimise non-response biases by using schools with characteristics similar to those of the non-responding schools. Schools selected for the original sample could not be simultaneously selected as a replacement school.

Table 5.3 illustrates how an ordinary spreadsheet can be used to implement systematic random sampling with PPS. In this illustration, Explicit stratum A consists of 12 schools with a total MOS of 209 teachers, and the sample needed from this stratum is $n = 3$ schools; the sampling interval is $k = \frac{209}{3} = 69.7$. Suppose that the random start is $d = 49$. Here, for the first selection, $j = 1$ and the pointer is $int(49 + (1 - 1) \times 69.7) = 49$. In other words, the selected school is the one containing the 49th teacher from a hypothetical comprehensive teacher list. When $j = 2$, the pointer is at $int(49 + (2 - 1) \times 69.7) = int(118.7) = 118$. Finally, the pointer is at $int(49 + (3 - 1) \times 69.7) = int(188.4) = 188$. The schools that are automatically selected as replacements are the schools immediately below and above a selected school, if available. If the selected school is at the beginning or at the end of the explicit stratum, the replacements might be different ones. In this example, the second replacement for School 12 is the one above the first replacement.

Table 5.3. Illustration of systematic random sampling with PPS

National school ID	Explicit stratum	Implicit stratum	MOS	Cumulative MOS	School selected	Pointer	Selections and replacements
1	A	1	10	10			
2	A	1	12	22			
3	A	1	15	37			R2
4	A	1	17	54	1	49	S
5	A	2	20	74			R1
6	A	2	18	92			
7	A	2	16	108			R2
8	A	2	16	124	2	118	S
9	A	3	15	139			R1
10	A	3	17	156			R2
11	A	3	26	182			R1
12	A	3	27	209	3	188	S

Note: S = sampled school; R1 = first replacement; R2 = second replacement.

Unclassified - Non classifié

At the end of the school selection process, the sampling team sent each participating country/territory an Microsoft Excel file that contained the selected schools for the original sample, the replacement schools and a standardised TALIS school identification number.

IEA Hamburg provided each participating country/territory with the IEA Windows Within-School Sampling Software (WinW3S) for selecting the teachers. IEA WinW3S facilitated the creation of teacher sampling frames and the random selection of teachers, thus ensuring compliance with the sample design and the need to furnish complete documentation. The procedure of selecting teachers within schools is described in Chapter 6.

Annex D presents the sizes of the schools and teacher samples for each participating country/territory.

Overlap control between modules

If a country/territory participated in multiple modules at different ISCED levels, overlap control between these modules was used. In general, selecting schools for multiple modules was avoided. Teachers could work at different levels and therefore be part of multiple target populations. However, it was not feasible to let teachers complete multiple questionnaires referring to different ISCED levels they work at. It was also considered not feasible to let principals complete multiple questionnaires for the different levels of their schools. Therefore, a school could generally only be selected for one ISCED level, and only teachers of this ISCED level were then listed and sampled.

Following the requests of two countries/territories, selecting the same schools for two modules was accepted. In this case, the principal had to complete multiple questionnaires. Within schools, the teachers were selected only for one ISCED level.

Sampling for the field trial

Between February and March 2023 and prior to the main survey, each participating country/territory conducted a field trial (FT). The sample of 30 schools needed for the field trial in each country/territory was selected simultaneously with the main survey sample. In practical terms, the first sampling step involved selecting enough schools for both stages. During the second step, schools were sub-sampled from this sample for the field trial. The third and final step was to assign the replacement schools, one for the field trial and two for the main survey.

The simultaneous selection of the school samples for the field trial and the main survey made it possible to control sample overlap: that is, schools were selected for only one phase of the survey. This helped reducing the response burden on participating schools and teachers. Avoiding overlap was possible if the populations were big enough, that is, had more schools than needed for the field trial and the main survey. Overlap occurred in small countries/territories, where all schools had to be selected for the main survey. If schools were selected for the field trial and the main survey at the same time, measures were implemented to ensure that the teachers within these schools only had to participate once in TALIS.

5.3. The Teacher Knowledge Survey (TKS)

The target population for the TKS was identical to the one for the TALIS core survey, i.e. teachers and their principals in ISCED level 2. In case a country/territory chose to participate in the TKS, the same schools were selected to accommodate the TALIS core survey and the TKS. Within the selected schools, 20 teachers were randomly assigned to participate in the TALIS core survey, and 15 teachers were randomly assigned to the TKS. In schools with fewer than 35 teachers, all teachers were selected and distributed proportionally.

Unclassified - Non classifié

5.4. TALIS Starting Strong (ISCED level 02 and U3)

The sampling procedures for early childhood education and care (ECEC) settings of ISCED level 02 (pre-primary education for U3 to school-entry children) and for U3 children (U3) were mostly identical to those of the TALIS core survey. Differences are described in the following paragraphs.

5.4.1. Target population and survey population

The Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) component aimed to cover all staff providing ECEC for: i) ISCED level 02 children; and ii) U3 children in each participating country/territory. Staff at ISCED level 02 were those who, as part of their regular duties in a target setting, were carrying out pedagogical work, providing learning opportunities or care, in programmes at ISCED level 02, irrespectively of their working hours. Staff for U3 children were those who, as part of their regular duties in a target setting, were carrying out pedagogical work, providing learning opportunities or care, for children in this age range, again irrespectively of their working hours. Staff who were providing learning opportunities or care for both target populations were part of each population of interest.

The international target population restricted the survey to: i) staff who were working in institutional (officially registered) settings providing ECEC; and ii) the leaders in those settings. For U3 children, these settings could be home-based (within the rooms of the respective staff) or centre-based (within rooms specifically dedicated to ECEC). For ISCED level 02, a decision was made to only survey centre-based settings. Staff working with children with special needs were in scope if they were working in "regular settings". However, settings catering exclusively for children with special education needs were out of scope. Other staff who were out of scope included: short-term substitute staff (to replace staff on sick leave); people involved in informal arrangements within the ECEC setting; volunteers who occasionally came in to provide a special activity; auxiliary staff (e.g. cleaners, cooking staff) who did not interact regularly in a pedagogical manner with the children; and medical and therapeutic staff (e.g. speech therapists, occupational therapists) whose work was primarily non-pedagogical.

An ECEC setting leader was defined as the person with the most responsibility for the administrative, managerial and/or pedagogical leadership in the setting. In line with their leadership role, leaders could be responsible for monitoring children, supervising other staff, maintaining contact with parents and guardians, and/or planning, preparing and carrying out the setting's pedagogical work. Leaders may have also spent part of their time working with the children. If leaders were also working with children, they were part of the staff population at the same time.

5.4.2. Sample size requirements

As for the TALIS core survey, the effective sample was expected to be 400 staff. For TALIS Starting Strong, a design effect of two was assumed, based on experiences from TALIS Starting Strong 2018. The minimum sample size of staff within settings was set to eight staff, acknowledging that most settings across participating countries/territories are small. To allow for reliable estimation and modelling, also for sub-groups, while permitting some amount of non-response, the sample sizes were set to a minimum of 180 settings per module, aiming for a nominal sample size of about 1 200 staff in each country/territory and module. If a setting had fewer than eight staff, all eligible staff were sampled. If many settings had fewer than eight staff, more settings were sampled to achieve the intended nominal sample size.

Unclassified - Non classifié

Table 5.4. Establishing the sample size for TALIS 2024 (TALIS Starting Strong)

Effective sample size	a	400
Design effect	b	2
Actual sample size	c = a x b	800
Staff per setting	d	8
Minimum staff response (%)	e	75
Minimum response per setting	f = d x e	6
Number of settings required	g = c / f	135
Minimum setting non-response (%)	h	75
Sample size for settings	i = g / h	180

5.5. Sample characteristics by participating country/territory

The country/territory reports in Annex D provide more details on each set of plans, including population statistics, exclusions, the sampling design and the realised sample.

References

Kish, L. (1965), *Survey Sampling*, Wiley, New York. [1]

Unclassified - Non classifié

6 Field operations

This chapter outlines the procedures and outcomes of the OECD Teaching and Learning International Survey (TALIS) 2024 field operations, focusing on the key responsibilities of national centres. These include contacting schools and early childhood education and care settings, sampling within institutions and monitoring data collection for the International Standard Classification of Education (ISCED) level 2 core survey and other components such as ISCED levels 1 and 3, TALIS Starting Strong and the Teacher Knowledge Survey. The chapter also notes the support provided by the international study centre (ISC) through documents and software to assist national centres. Overall, the administration of TALIS 2024 was deemed highly successful across all participating countries and territories, with no significant issues reported. The field procedures were implemented as instructed by the ISC, and adherence to these procedures was mandatory, with exceptions allowed only under specific conditions approved by the TALIS consortium and the OECD.

Unclassified - Non classifié

6.1. Overview

This chapter provides an overview of the procedures and outcomes of OECD Teaching and Learning International Survey (TALIS) 2024 field operations. It highlights key areas of work within national centres, including contacting schools/early childhood education and care (ECEC) settings, conducting within-school/ECEC setting sampling and monitoring data collection for the level 2 TALIS core survey, as well as any additional International Standard Classification of Education (ISCED) levels (ISCED levels 1 and 3), Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) and the Teacher Knowledge Survey (TKS) included in the TALIS 2024 main survey.

Additionally, the chapter references the documents and software provided by the international study centre (ISC) to support national centres in carrying out these tasks.[1]

The administration of TALIS 2024 across all participating countries/territories was highly successful. No major obstacles were encountered and all field operation procedures, as defined and communicated by the ISC, were effectively implemented.[2]

While the procedures outlined in this chapter primarily focus on the administration of the ISCED level 2 TALIS core survey, they are also applicable to other international survey components, including ISCED levels 1 and 3, TALIS Starting Strong and the TKS. The ISC required all participating countries/territories to adhere to the established standards and procedures, with deviations permitted only in exceptional cases and only if discussed and formally agreed upon with the TALIS consortium and the OECD.

6.2. Technical standards, manuals, videos and software

During all phases of the survey, the national centres adhered to the standardised procedures prepared by the ISC and its consortium partners. These procedures were outlined in the following documents, released to the national centres before the field trial and then updated for the main survey (except for the TALIS 2024 General Guidelines for National Project Managers, Survey Operations Procedures (SOP) Unit 1 and the International Quality Observer Manual):

- **TALIS 2024 Technical Standards** – single version, see OECD (2025[1]): The consortium, in consultation with the OECD Secretariat, developed a concise, dedicated document outlining the technical standards and guidelines applicable to key planning and operational tasks. Once these standards were adopted by the TALIS Governing Board on 7 July 2022, it was imperative that all participating countries and territories adhered to them. The technical standards covered ten main topics, including survey ethics, confidentiality, survey operations, quality assurance and data management.
- **TALIS 2024 General Guidelines for National Project Managers** (single version): These guidelines were designed to provide national project managers (NPMs) with an overview of TALIS, detailing their responsibilities as well as those of national centres. Additionally, the document outlined key milestones and required deliverables throughout the process.
- **Survey Operations Procedures Unit 1 – Sampling Schools/ECEC Settings** (single version): This manual defined the target population of teachers across all ISCED levels, TALIS Starting Strong and the TKS. It also provided instructions on preparing and implementing a national sampling plan, developing the school/ECEC setting sampling frame and selecting the school/ECEC setting sample.
- **Survey Operations Procedures Unit 2 – Working with Schools/ECEC Settings** (three versions; TALIS core survey, TALIS Starting Strong, TKS): This manual provided guidance on securing and improving the co-operation of schools/ECEC settings, with a strong emphasis on public relations

Unclassified - Non classifié

strategies. It also detailed how to adapt the School/ECEC Setting Co-ordinator Manual to the national context and included instructions on shipping of materials and quality control measures.[3]

- **School/ECEC Setting Co-ordinator Manual** (three versions; TALIS core survey, TALIS Starting Strong, TKS): Designed for school/ECEC setting co-ordinators, this manual served as a key resource for the main point of contact between each school/ECEC setting and the national centre. Typically, the co-ordinator was a teacher/ECEC staff member, principal/ECEC setting leader of the school/ECEC setting participating in TALIS. The manual provided step-by-step instructions for listing and tracking teachers/ECEC staff and managing onsite survey administration. NPMs were solely responsible for adapting and translating the manual into their survey administration language(s) and incorporating relevant national information where necessary.
- **Survey Operations Procedures Unit 3 – Instrument Preparation** (single version): This manual provided national centres with instructions for developing internationally comparable national versions of the released international survey instruments and cover letters. It also detailed the various verification steps – including adaptation, translation and layout – to ensure consistency and accuracy throughout the process.[4]
- **Instructional videos accompanying Survey Operations Procedures Unit 3**: To support national centres in instrument preparation, the ISC released eight instructional videos. These videos provided guidance on key tasks such as verifying that all adaptations had been approved, ensuring all items had been translated, understanding locked items and following the style guide.
- **IEA StudyExpert Manual** (single version): This manual focused on the technical aspects of item and instrument localisation within IEA StudyExpert, a web-based tool for creating, translating and assigning online instruments, with a monitor to track and manage participation rates. The manual served as a comprehensive guide for all required tasks, including adaptation, translation and the extension of both items and instruments.
- **Instrument Assembly Guide** (single version): This document outlined the guidelines for editing instruments, including adding or removing items and inserting new items between existing ones during the assembly process.
- **Survey Operations Procedures Unit 4 – Data Collection and Quality Control** (two versions; TALIS core survey and TKS, TALIS Starting Strong): This document provided national centres with guidance on preparing for and supporting data collection in schools/ECEC settings. It included detailed instructions on listing and conducting within-school/ECEC setting sampling of teachers/ECEC staff, assigning and administering survey instruments, and tracking and monitoring data collection quality.
- **Survey Operations Procedures Unit 5 – Data Capture Procedures** (two versions; TALIS core survey and TKS, TALIS Starting Strong): This document outlined procedures for using the IEA Data Management Expert (DME) software, which was essential for capturing and verifying data from paper questionnaires.
- **National Quality Observer Manual** (two versions; TALIS core survey and TKS, TALIS Starting Strong): This manual provided guidance to NPMs on implementing a national quality observation programme. The procedures aligned closely with those used by international observers; however, NPMs had the flexibility to adapt the manual and procedures according to their specific needs.
- **International Quality Observer Manual** (one version): This manual was developed and distributed directly to the international quality observers, all of whom were contracted by the IEA. It provided detailed guidance on the observers' responsibilities, which included assessing the quality of survey implementation across participating countries/territories. As part of their tasks, the international quality observers conducted interviews with NPMs and school/ECEC setting co-ordinators. They documented the outcomes of these interviews using an online survey tool called the School/ECEC Setting Interview Record.

Unclassified - Non classifié

In addition to providing the operational manuals, videos and documents described above, the ISC released three key software packages to support national centres in the instrument preparation and data collection process:

- **IEA Windows Within-School Sampling Software (WinW3S)** (two versions; TALIS core survey and TKS, TALIS Starting Strong): This software assisted national data managers in preparing listing forms, qualifying and randomly sampling teachers/ECEC staff in selected schools/ECEC settings, and generating tracking forms for sampled individuals. All tracking data were stored in a single database, ensuring that they could later be used to verify the integrity of sampling procedures, assess the completeness of response data and ultimately compute sampling weights and participation rates.
- **IEA Data Management Expert (DME) software** (one version): IEA DME enabled national centre staff to manually enter data from paper questionnaires and conduct various validity checks on the recorded data. It included comprehensive codebooks for each questionnaire, ensuring that all data files adhered to the standard international format (see Chapter 8 for more details).
- **IEA StudyExpert** (one version): The software served as both an item builder and a translation system, facilitating the preparation of instruments for online administration and their assignment to respondents. Designed to be compatible with all modern web browsers and both desktop and handheld devices, it also featured a Participation Monitor component. This function enabled national centres to track participation rates and follow up with schools/ECEC settings in cases of low participation.

During meetings with NPMs, the ISC provided detailed explanations of field operation procedures as outlined in the manuals and guidelines, along with instructions on using the software packages. Representatives from national centres participated in hands-on training sessions to practice the correct handling of the software and its associated procedures. In case of any questions or concerns regarding procedures, guidelines or software during implementation, the ISC remained available to support national centres and assist in finding appropriate solutions.

6.3. Administering TALIS 2024

Most participating countries/territories in TALIS 2024 administered the ISCED level 2 TALIS core survey of teachers and their principals. Also, TALIS 2024 offered countries/territories the opportunity to survey ISCED levels 1 and/or 3 as well as to participate in TALIS Starting Strong and/or the TKS. (Table 4.2 in Chapter 4 provides an overview of the distribution of target populations across the participating countries/territories.) If countries/territories opted to administer TALIS at an additional ISCED level, TALIS Starting Strong and/or TKS, the ISC instructed them to prioritise the ISCED level 2 TALIS core survey. This mandate applied to national instrument production as well as to data collection and data processing.[5]

For countries/territories that opted to administer one or more international components, this process added an additional layer of complexity, as it had to be carried out alongside the production of national ISCED level 2 instruments. To support these efforts, the ISC emphasised the importance of adhering to an agreed-upon, individualised survey preparation schedule. These schedules enabled effective progress monitoring, resource planning and a smooth workflow between national centres and the ISC.

The national centres used between three and six months to get all survey instruments and materials ready in time for the start of main survey data collection. Table 6.1 gives an overview of the official main survey data collection windows and the period dedicated to main survey instrument preparation for both hemispheres. If a participating southern hemisphere country/territory conducted (part of) its data collection during the official northern hemisphere data collection period, the instrument preparation period for that

Unclassified - Non classifié

country/territory adhered to the official northern hemisphere preparation timeline (e.g. Columbia, Japan and South Africa for the core survey, Singapore for private schools).

Table 6.1. Preparation time for main survey instruments

Schedule	Official preparation time for main survey instruments	Official main survey data collection window
Northern hemisphere	October to December 2023	1 February to 30 April 2024
Southern hemisphere	October 2023 to May 2024	1 June to 31 August 2024

For many participating countries/territories, instrument preparation was relatively straightforward, with comfortable timelines, as they chose to administer the ISCED level 2 TALIS core survey in a single national language.

However, the schedules and procedures for Chile and Morocco were particularly complex, as both countries opted to administer the TALIS core survey, along with TALIS Starting Strong and the TKS. Additionally, Morocco surveyed the ISCED level 1 population and participated in TALIS for the first time, requiring them to translate all items from scratch, including trend items.

Spain faced additional challenges, administering the survey in five languages, which led to an intricate and extended adaptation and translation verification process.

6.4. Contacting schools/ECEC settings and within-school/ECEC setting sampling

The IEA's sampling team sent each NPM a selected school sample based on the sampling frames the NPM had already submitted (see Chapter 5 for more details on school/ECEC setting sampling). In order to achieve the highest possible participation rates at the school/ECEC setting level, the sampling team sampled two replacement schools/ECEC settings (assuming such schools/ECEC settings were available) in addition to each originally sampled school/ECEC setting.

Once NPMs received their sample, the national centres began contacting the designated schools/ECEC settings. National centres usually adhered to the technical standards and only contacted their first replacement school/ECEC setting if one of the originally sampled schools/ECEC settings declined participation. If this replacement school/ECEC setting also refused participation, NPMs approached their second replacement school/ECEC setting.

One participating country (Ireland) applied another process to increase the participation rates, namely contacting replacement ECEC settings before the original ECEC settings had confirmed/declined participation. If the original ECEC setting and the replacement ECEC setting both agreed to participate in the survey, the replacement ECEC setting was marked as a national ECEC setting and treated as an additional, self-representing unit carrying a weight; the weights of regularly participating ECEC settings were reduced accordingly. However, because this procedure represented a deviation from Technical Standard 5.5, national ECEC settings were not included during computation of the participation rates, conducted as part of the data adjudication process. Further mention of the adjudication procedure appears in the discussion in Chapter 10 on data adjudication.

National centres administering the survey for one or more target populations had to manage a minimum of 180 ECEC settings and 200 schools per target population. As a result, these national centres needed to carefully plan their resources to meet the demands of multiple tasks associated with the survey's complex design.

Unclassified - Non classifié

To streamline survey administration, most participating countries/territories required each school/ECEC setting to appoint a co-ordinator responsible for overseeing all TALIS-related tasks. In 46 countries/territories, principals/ECEC setting leaders, members of the management team and teachers/ECEC staff took on this role. Among them, 12 countries/territories reported that other personnel – such as administrative staff, state or governmental officials, district staff or county inspectors – were assigned as school/ECEC setting co-ordinators. Additionally, ten national centres noted that teachers/ECEC staff filled the role exclusively, while one national centre opted to hire an external agency for these responsibilities.

Close collaboration between school/ECEC setting co-ordinators and national centres was essential throughout the teacher/ECEC staff listing, sampling and survey administration processes. To facilitate effective communication, several countries and territories established dedicated hotlines, special email accounts, websites or online platforms.

6.4.1. Identification number, listing and tracking forms

Information about teachers/ECEC staff was gathered via the listing forms (TLF) and tracking form (TTF); see Annex E for more information on these two forms). National centres used the IEA WinW3S software to produce the forms. IEA WinW3S created hierarchical four-digit identification numbers that uniquely identified the sampled schools/ECEC settings within each participating country/territory. This number was also the identification code assigned to the person answering the principal/leader questionnaire. Teacher/ECEC staff identification codes were derived from the school/ECEC setting codes by adding two additional digits at the end of the school/ECEC setting identifier, a process that created a hierarchical link between schools/ECEC settings and teachers/ECEC staff.[6]

In accordance with the instructions in the School/ECEC Setting Co-ordinator Manual, co-ordinators listed the eligible teachers/ECEC staff members and their names, followed by a sequential number, exemption, year of birth, gender, main subject domain (TALIS core survey), leader and staff role (TALIS Starting Strong). Almost one-third of the NPMs reported that data protection/confidentiality laws and rules prevented them from providing teacher/ECEC setting staff names. These participating countries/territories therefore used only numbers or codes.

The national centres entered information from the TLFs into IEA WinW3S, which then drew the random within-school sample of 20 teachers per school and 8 ECEC staff members per ECEC setting.[7] After completion of the within-school/ECEC setting sampling, IEA WinW3S created TTFs that listed all sampled teachers/ECEC staff. The national centres sent the TTFs to schools/ECEC settings so school/ECEC setting co-ordinators knew which teachers/ECEC staff should receive which instruments.

The TTFs were also used to document the participation status of the sampled teachers/ECEC staff and therefore included teacher/staff names, teacher/staff ID, year of birth, gender, main subject domain (TALIS core survey), leader and staff role (TALIS Starting Strong) and administration mode (online/paper). Furthermore, each TTF contained a column that allowed the school/ECEC setting co-ordinators to document the questionnaire return status for paper questionnaires.

The national centres sent copies of the TTFs including teacher/staff IDs but no teacher/staff names to the ISC. Since names on the TTFs were cut off, all names were kept confidential.

6.4.2. Assigning instruments to teachers/ECEC staff and principals/ECEC setting leaders

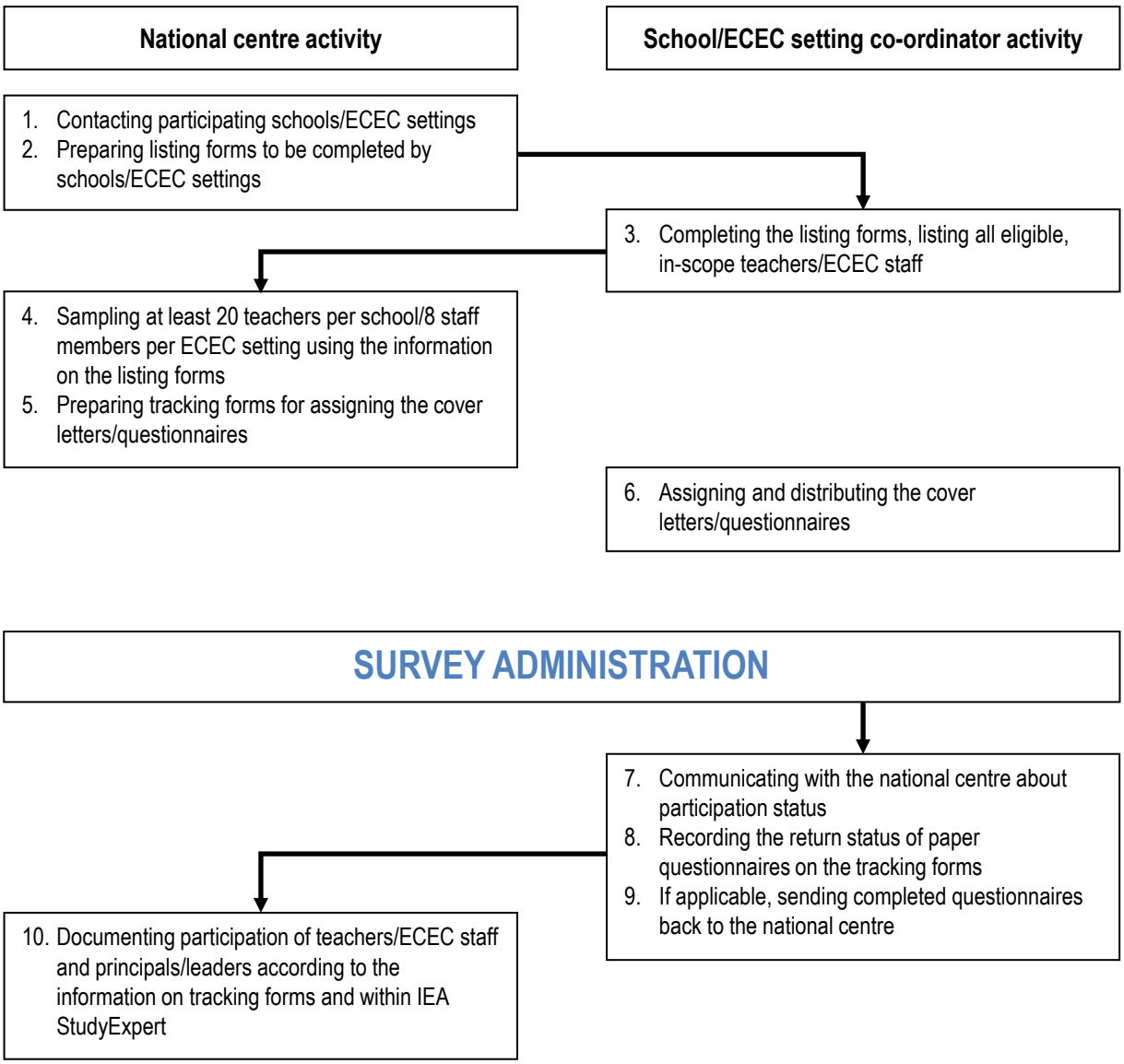
Each principal/ECEC setting leader was asked to complete a principal/leader questionnaire. The school/ECEC setting co-ordinator assigned the teacher/ECEC setting staff questionnaire to each teacher/ECEC staff listed on the TTFs (see Chapter 5 for more details on school sampling).

Unclassified - Non classifié

National centres sent a package containing all cover letters for online administration, paper questionnaires (where applicable), OECD data protection notice, TTFs, and any other relevant supplies to schools/ECEC settings. To address confidentiality concerns during paper administration, several countries/territories chose to provide teachers/ECEC staff with pre-paid envelopes so they could send their completed questionnaires directly to their respective national centre rather than handing them to the school/ECEC setting co-ordinator.

Figure 6.1 outlines the different responsibilities of and co-operation between the national centres and school/ECEC setting co-ordinators.

Figure 6.1. Responsibilities of national centres and school/ECEC setting co-ordinators



Unclassified - Non classifié

6.5. Administering the questionnaires and conducting national quality observations

The ISC requested each participating country/territory to select its own timeframe for survey administration within the designated international data collection period.

For countries and territories in the northern hemisphere, the international data collection period for the main survey was set from 1 February to 30 April 2024, with ten participants extending into May 2024, seven participants into June 2024, one participant continuing until July 2024 and one participant into August 2024.

For the southern hemisphere, the data collection period was scheduled from 1 June to 31 August 2024, with two participants extending into September 2024.

National centres were required to discuss any deviations from these timeframes with the ISC and obtain approval from both the ISC and the OECD. The main reason for extending the data collection period was in improving the participation rates of respondents and schools/ECEC settings.

Table 6.2 provides an overview of the originally planned data collection periods, any modifications made and instances where data collection extended beyond the internationally set timeframes. Some national centres opted to extend their data collection period to improve participation rates, either by starting earlier or finishing later than initially scheduled. As a result, data collection durations varied significantly, ranging from 15 days to nearly 6 months.

Table 6.2. Originally planned and actual data collection windows

Country/territory	Planned start of data collection window	Planned end of data collection window	Actual start of data collection window	Actual end of data collection window
Albania	11-Mar-24	12-Apr-24	11-Mar-24	15-Apr-24
Alberta (Canada)	05-Feb-24	19-Apr-24	01-Mar-24	14-Jun-24
Australia	03-Jun-24	31-Jul-24	03-Jun-24	19-Aug-24
Austria	18-Mar-24	05-May-24	18-Mar-24	02-May-24
Azerbaijan	01-Feb-24	30-Apr-24	01-Feb-24	02-Apr-24
Bahrain	04-Feb-24	31-Mar-24	04-Feb-24	02-Apr-24
Brazil	03-Jun-24	12-Jul-24	03-Jun-24	31-Jul-24
Bulgaria	12-Feb-24	22-Mar-24	12-Feb-24	26-Mar-24
Chile	03-Jun-24	26-Aug-24	24-Jun-24	17-Sep-24
Colombia, *TALIS core survey*	01-Mar-24	31-May-24	01-Mar-24	26-Aug-24
Colombia, *TALIS Starting Strong*	01-Apr-24	02-Aug-24	02-Apr-24	23-Aug-24
Costa Rica	03-Jun-24	30-Aug-24	01-Jun-24	12-Aug-24
Croatia	05-Feb-24	31-Mar-24	05-Feb-24	08-Apr-24
Cyprus	04-Mar-24	30-Apr-24	26-Feb-24	08-Apr-24
Czechia	26-Feb-24	12-Apr-24	04-Mar-24	15-Apr-24
Denmark	01-Feb-24	29-Apr-24	01-Feb-24	06-May-24
Estonia	12-Feb-24	29-Mar-24	12-Feb-24	02-Apr-24
Finland	18-Mar-24	30-Apr-24	18-Mar-24	13-May-24
Flemish Community (Belgium), *TALIS core survey*	20-Feb-24	30-May-24	26-Feb-24	10-Jun-24
Flemish Community (Belgium), *TALIS Starting Strong, U3*	20-Feb-24	15-Apr-24	24-Feb-24	31-May-24

Unclassified - Non classifié

Country/territory	Planned start of data collection window	Planned end of data collection window	Actual start of data collection window	Actual end of data collection window
Flemish Community (Belgium), *TALIS Starting Strong, ISCED 02*	20-Feb-24	30-May-24	27-Feb-24	10-June-24
France	05-Feb-24	26-Apr-24	05-Feb-24	26-Apr-24
French Community (Belgium)	18-Mar-24	21-Apr-24	18-Mar-24	22-Apr-24
Germany	01-Feb-24	30-Apr-24	05-Feb-24	13-Jun-24
Hungary	04-Mar-24	12-Apr-24	04-Mar-24	15-Apr-24
Iceland	01-Feb-24	30-Apr-24	01-Feb-24	22-May-24
Ireland	01-Feb-24	30-Apr-24	01-Feb-24	21-May-24
Israel	01-Feb-24	14-Apr-24	01-Feb-24	20-Jun-24
Italy	11-Mar-24	16-Apr-24	11-Mar-24	23-Apr-24
Japan, *TALIS core survey*	19-Feb-24	15-Mar-24	19-Feb-24	29-Apr-24
Japan, *TALIS Starting Strong*	01-Jul-24	22-Jul-24	01-Jul-24	09-Aug-24
Kazakhstan	05-Feb-24	15-Mar-24	21-Feb-24	19-Mar-24
Korea	20-May-24	17-Jun-24	27-May-24	11-Jul-24
Kosovo	11-Mar-24	15-Apr-24	11-Mar-24	22-Apr-24
Latvia	15-Feb-24	30-Mar-24	15-Feb-24	02-Apr-24
Lithuania	12-Feb-24	08-Mar-24	12-Feb-24	18-Mar-24
Malta	01-Feb-24	23-Feb-24	01-Feb-24	18-Mar-24
Montenegro	01-Mar-24	30-Apr-24	22-Apr-24	14-Jun-24
Morocco	15-Apr-24	23-Apr-24	06-May-24	21-May-24
Netherlands	01-Feb-24	30-Apr-24	01-Feb-24	05-Jul-24
New Brunswick (Canada)	19-Feb-24	31-Mar-24	19-Feb-24	27-May-24
New Zealand	03-Jun-24	29-Aug-24	03-Jun-24	10-Sep-24
North Macedonia	10-Feb-24	10-Mar-24	10-Feb-24	08-Apr-24
Norway	01-Feb-24	26-Apr-24	05-Feb-24	16-May-24
Poland	01-Mar-24	30-Apr-24	01-Mar-24	22-Mar-24
Portugal	05-Feb-24	15-Apr-24	12-Feb-24	23-Apr-24
Quebec (Canada)	19-Feb-24	31-Mar-24	19-Feb-24	27-May-24
Romania	01-Mar-24	29-Mar-24	01-Mar-24	02-Apr-24
Saudi Arabia	03-Mar-24	14-Mar-24	03-Mar-24	22-Mar-24
Serbia	26-Feb-24	05-Apr-24	26-Feb-24	12-Apr-24
Shanghai (China)	01-Apr-24	30-Apr-24	01-Apr-24	30-Apr-24
Singapore, *private schools*	15-Apr-24	17-May-24	15-Apr-24	17-May-24
Singapore, *public schools*	08-Jul-24	23-Aug-24	08-Jul-24	27-Aug-24
Slovak Republic	19-Feb-24	08-Mar-24	19-Feb-24	18-Mar-24
Slovenia	01-Mar-24	05-Apr-24	01-Mar-24	13-May-24
South Africa	13-May-24	14-Jun-24	13-Jun-24	05-Aug-24
Spain	01-Feb-24	31-Mar-24	01-Feb-24	02-Apr-24
Sweden	01-Feb-24	31-Mar-24	01-Feb-24	02-Apr-24
Türkiye	26-Feb-24	29-Mar-24	18-Mar-24	22-Apr-24
United Arab Emirates	05-Feb-24	29-Mar-24	23-Feb-24	03-May-24
United States of America	12-Feb-24	29-Apr-24	05-Mar-24	28-Jun-24
Uzbekistan	12-Feb-24	16-Mar-24	22-Mar-24	29-Apr-24
Viet Nam	15-Mar-24	30-Mar-24	28-Mar-24	12-Apr-24

Unclassified - Non classifié

To maintain high survey standards, the ISC expected the national centres to run a national quality observation programme. The ISC provided a manual template for national quality observers (NQOs); however, the design of the national quality observation programme was at the discretion of each country/territory.

It was expected that national centres appoint NQOs, recruited by and directly reporting to the NPMs. Most countries/territories chose national centre staff to implement the NQO programme. Others appointed external personnel, such as professionals in the field of education, researchers experienced in large-scale assessments, ministry officials and – specifically for the TALIS core survey – retired teachers. After the TALIS main survey data collection, NPMs reported the outcomes of the national quality observations in the survey activities questionnaire. Chapter 7 provides a discussion of these outcomes as well as information on the international quality observation programme, organised by IEA Amsterdam.

6.6. Monitoring the online questionnaires

National centres monitored completion of the online questionnaires (see Chapter 8 for more details), and NPMs communicated the completion status to school/ECEC setting co-ordinators. Countries/territories were free to manage this procedure according to their needs. Most national centres preferred regular email and/or telephone communication with school/ECEC setting co-ordinators. Other national centres contacted respondents directly using email or instant messaging or created national TALIS websites where school/ECEC setting co-ordinators could log on individually to access all necessary information.

The participation rate estimation tool kept data managers up to date on their current participation rate according to the returned paper questionnaires and/or submitted online questionnaires.

After data collection, each national centre exported the questionnaire data availability status from IEA StudyExpert. National centre personnel then imported this participation information as well as the participation information from IEA DME for the paper questionnaires (where applicable) into IEA WinW3S, a practice that enabled the national centres to verify the participation status of each sampled respondent. National centres were mandated to verify participation before they submitted data to the consortium, a process that all TALIS countries/territories completed successfully.

6.7. Preparing for data entry

The major tasks for NPMs immediately after main survey data collection included retrieving and collating the TTFs and paper questionnaires (where applicable) from schools/ECEC settings and verifying their integrity. After receiving the TTFs and questionnaires from schools/ECEC settings, NPMs:

- reviewed that they had received complete and appropriate cover letters/questionnaires for every teacher listed on the TTF
- verified that all identification numbers on all cover letters/questionnaires were accurate and legible
- checked that the participation status recorded on the TTFs matched the availability of questionnaires, the information on the paper questionnaires and the information in the Participation Monitor
- followed up with schools/ECEC settings that did not return all paper questionnaires or returned forms with incomplete or inconsistent information.

National centres recorded all necessary information about schools/ECEC settings, principals/leaders and teachers/ECEC staff, as well as the return status of the questionnaires in IEA WinW3S. NPMs then prepared the paper questionnaires and corresponding forms for data entry (see Chapter 8).

Unclassified - Non classifié

References

OECD (2025), "TALIS 2024 Technical Standards", No. EDU/TALIS/GB(2023)11/REV1, Programme for Teaching and Learning International Survey, Directorate for Education and Skills, OECD, Paris, https://one.oecd.org/document/EDU/TALIS/GB(2023)11/REV1/en/pdf?sessionId=1755520362877. [1]

Notes

[1] The ISC prepared software packages for sampling, online data collection, data entry and data processing to fit the needs of TALIS. The ISC requested that all participating countries/territories use solely the IEA software to perform the survey; no exceptions were allowed.

[2] With the survey activities questionnaire, administered during the field trial and again during the main survey, the ISC collected NPMs' feedback on their experiences administering TALIS 2024. The outcomes of the Field Trial Activities Questionnaire were considered in terms of improvements to the main survey's procedures and the software in use. The outcome of the main survey questionnaire was incorporated into this chapter.

[3] Materials are defined as all documents, forms, brochures, incentives (if applicable), etc. that are sent to schools/ECEC settings in advance of the data collection period.

[4] Instruments refer to the various questionnaires administered to different target populations within the TALIS 2024 context.

[5] If a participating country/territory administering one or more of the TALIS components was struggling with low participation rates during the survey, the national centre was requested to first focus on the TALIS core survey.

[6] An exception occurred for ECEC setting leaders with staff duties who were assigned six-digit identification numbers for the Combined Questionnaire Main.

[7] National centres were given the opportunity to sample more than the recommended 20 eligible teachers per school, and 8 ECEC staff members per ECEC setting, if desired.

Unclassified - Non classifié

7 Quality control: International and national quality observations

This chapter presents the multi-tiered quality control strategy implemented during the OECD Teaching and Learning International Survey (TALIS) 2024 main survey. The programme included international and national quality observations, additional respondent-level quality control questions and a post-survey questionnaire completed by national project managers. Independent international quality observers monitored adherence to survey procedures, reviewed co-ordinator manuals and conducted interviews with school and early childhood education and care (ECEC) setting co-ordinators. National quality observations complemented this effort, documenting local implementation practices. Additional quality control questions embedded in the survey captured respondents' experiences. Overall, findings confirmed high compliance with international standards and highlighted areas for refinement in future TALIS cycles.

Unclassified - Non classifié

7.1. General overview

This chapter describes the quality control programme developed and implemented for administration of the OECD Teaching and Learning International Survey (TALIS) 2024. The same programme was implemented across all components of TALIS: the TALIS core survey for teachers at International Standard Classification of Education (ISCED) levels 1, 2 and 3, the Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) and the Teacher Knowledge Survey or TKS. Assuring the quality of the collected data was a four-part process, comprising: i) an international quality control programme overseen by the International Association for the Evaluation of Educational Achievement (IEA) Amsterdam and designed to document the procedures for survey preparation and administration during the main survey data collection; ii) additional quality control questions put to respondents at the end of the TALIS 2024 questionnaires; iii) a national quality control programme carried out by national centres; and iv) a follow-up online survey activities questionnaire (SAQ) asking national project managers (NPMs) to comment on the implementation of the TALIS main survey procedures in their respective countries/territories.

A quality control programme in survey administration is very important for ensuring valid comparisons of survey results across countries/territories. Not only does it help document the quality of survey administration and the adherence to technical standards and survey administration guidelines and procedures in each participating country/territory, it also helps to identify issues that could influence the quality and comparability of the data.

Overall, the information collected by the international quality control programme by international quality observers (IQOs), together with the information shared by NPMs via the SAQ, as well the data collected from the additional quality control questions, showed that most countries/territories closely followed the international survey procedures.

Data from the international quality control programme and the SAQ suggest that respondents generally had few problems with the survey. Any issues or concerns regarding survey administration procedures and how to resolve these were shared between the national centres and the TALIS consortium. The quality of the implementation of the TALIS 2024 data collection procedures was well documented, mostly by quality observers at the international level. Data reflected stable and consistent data collection processes across participating countries/territories. In addition, the importance of effective communication in facilitating international project work and supporting project completion was, once again, highlighted, setting the stage for attainable success during future TALIS cycles.

7.2. Quality control in survey administration

During TALIS 2024, considerable effort went into developing standardised materials and procedures that ensured the data collected in each country/territory were internationally comparable to the greatest extent possible. More specifically, this standardisation process ensured that survey materials were administered to participants under comparable survey conditions for comparable analysis, across all countries/territories and languages, and for each mode of administration (i.e. online and/or paper data collection). Quality control was implemented at different levels and stages during instrument production, administration, and data entry and processing to document the extent to which each country/territory implemented the standard operating procedures.

Unclassified - Non classifié

This chapter describes the outcomes of the quality control activities conducted during the main survey data collection. Quality control consisted of four major parts:

- IEA Amsterdam designed and managed a standardised, international quality control programme to review and verify that main survey procedures adhered to the TALIS 2024 Technical Standards. International quality control, carried out by the IQOs, was implemented for the main survey only.
- During both the field trial and main survey, quality control questions were administered to a randomly selected subsample of survey respondents (20%) at the end of the questionnaire. These questions were intended to elicit relevant information directly from online respondents about their perceptions of TALIS 2024 and adherence to standardised procedures across participating countries/territories. The questions were tested during the field trial and modified for the main survey prior to implementation.
- An SAQ was submitted to NPMs after administration of the main survey data collection. The questionnaire elicited information about the NPMs' experiences in preparing for and conducting the TALIS 2024 data collection and the extent to which everyone involved followed procedures and guidelines. It also provided NPMs with an opportunity to give feedback on all aspects of survey administration. Information pertaining to the national quality control programmes was also reported in the SAQ and is presented later in this chapter.
- The TALIS consortium required the NPMs to implement national data collection quality observations (i.e. a national quality control programme made up of school visits) during both the field trial and the main survey. The design of the national quality observation programme was nevertheless at the discretion of each participant. The international study centre (ISC) provided a National Quality Observer Manual template that national centres could adapt to suit their contexts and use as a basis for training their national quality observers (NQOs).

During TALIS 2024, countries/territories could administer international components in addition to the TALIS core ISCED level 2 population, namely ISCED levels 1 and 3 and the TKS. Also, countries/territories could administer TALIS Starting Strong at ISCED level 02, for the under 3 (U3) population, or for both ISCED level 02 and U3. The sampled populations (and instruments) applicable to participants featured in the design of the quality control programme and were proportionally included in the schools selected for international quality observations in each country/territory. The TALIS consortium advised NPMs to adopt a similar approach with respect to national quality control.

7.3. International quality observation programme

As part of the OECD TALIS 2024 quality assurance process, IEA Amsterdam developed and implemented a standardised international quality control programme to monitor and document the survey administration and data collection activities in the participating countries/territories.

As part of the programme, IEA Amsterdam, in collaboration with the NPM, appointed an IQO in each participating country/territory to carry out relevant tasks within that country/territory. IQOs collected data before and during TALIS 2024 administration and had three main tasks, through which they were able to collect relevant information on how the survey was implemented.

1. **Visit the national centre for their country/territory, to meet and interview the NPM and collect specific materials**. Completing this task required:
    - Interviewing the NPM about TALIS 2024 activities and record their findings in an online NPM interview record.
    - Working with the NPM in the random selection of a subset of schools/early childhood education and care (ECEC) settings (approximately 10%) in view of interviewing the co-ordinators about

Unclassified - Non classifié

TALIS administration activities, which was then shared and approved by IEA Amsterdam before schools/ECEC setting co-ordinators could be contacted.

- Collecting specific materials needed for national centres to conduct the survey, including the School/ECEC Setting Co-ordinator Manual (for one or more components/ISCED levels/ languages depending on the country/territory).

2. **Review selected sections of the School/ECEC Setting Co-ordinator Manual(s)**. Completing this task required:
   - Comparing selected sections of the national version(s) of School/ECEC Setting Co-ordinator Manuals against the English international version and documenting any substantial differences across these.
   - In cases where the English source text was altered or adapted (as required by the ISC), providing a rough English backtranslation of the national text.
   - Reporting their findings by completing an online form.
3. **Conduct 20 online interviews per administered component (20 for TALIS Starting Strong and/or 20 for the TALIS core survey/TKS) with the school/ECEC setting co-ordinators of selected schools/ECEC settings**. Completing this task required:
   - Interviewing the school/ECEC setting co-ordinator about TALIS 2024 activities prior to and during survey administration.
   - If applicable, splitting interviews across the participating ISCED levels for each component.
   - Recording interview responses on the online co-ordinator interview record.

7.3.1. Selection and training of international quality observers

A critical component of the programme was the recruitment and appointment of independent IQOs, whose primary responsibility was to monitor survey administration and data collection activities in participating countries/territories. Prior to the survey administration period, IEA Amsterdam either proposed a candidate to the NPM or requested the NPM to nominate two potential individuals for the IQO role within their country/territory.

IQOs were often selected from a pool of observers who had previously served in this capacity for other studies managed by the ISC. In these instances, the NPM was asked to confirm their agreement with the suggested candidate or, if they disagreed, to provide two alternative nominations. For countries/territories where no existing candidate was available, the NPM was required to submit nominations directly to IEA Amsterdam.

Regardless of prior experience with quality control programmes for prior studies, all IQO candidates needed to fulfil the following requirements:

- proficiency in English (spoken and written) as well as the main language of administration for their country/territory
- experience with filling in online forms or questionnaires
- independence from the national centre responsible for the study within their country/territory
- experience and knowledge about the educational system within their country/territory
- experience in quality-control-related activities in the field of education (for new candidates, as an asset).

Examples of suitable candidates included school inspectors, ministry officials, retired teachers or principals.

Unclassified - Non classifié

Upon selection of the IQOs, an online training took place to inform them about their tasks and responsibilities within the programme. Training sessions were tailored to the respective survey administration timelines: IQOs in Northern Hemisphere countries/territories (NH) were trained before the start of survey administration in their countries/territories (end of January 2024), while Southern Hemisphere (SH) IQOs received their training before the start of survey administration in SH countries/territories (end of April 2024). In addition to the online training, the following materials were provided to support their work:

- the International Quality Observer Manual, which outlined the IQO tasks and responsibilities
- the school/ECEC setting selection record for co-ordinators interviews, where the settings selection would be included and shared with IEA Amsterdam for approval
- the NPM interview record, with an outline of the questions to be asked to the NPM
- the NPM visit form, for IQOs to list expected travel to visit the NPM
- the co-ordinator manual check (for TALIS Starting Strong, TALIS core survey and/or the TKS), where differences between the international and national version of the materials could be flagged
- the co-ordinator interview script (both for schools and ECEC settings)
- international versions of the co-ordinator manuals (for TALIS Starting Strong, TALIS core survey and/or the TKS)
- slides and recordings from the training sessions.

To manage the expected workload and to complete their responsibilities within the survey administration period, IQOs had the option to recruit assistants. The IQOs were responsible for training assistants and co-ordinating the international quality control activities within the respective country/territory. All communication with IEA Amsterdam remained the responsibility of IQOs, as assistants were not expected to interact directly with IEA Amsterdam.

7.3.2. NPM visit and interview outcomes

IQOs' first task was to visit the national centre to interview the NPM and collect specific materials. IQOs were required to visit the NPM at least ten working days prior to the beginning of the survey, thus providing sufficient time to identify and address any potential issues that could impact the survey's administration. In cases where the visit to the national centre could not be completed within a single working day, IQOs had the option to conduct an online interview with the NPM and request the necessary materials digitally.

The NPM interview collected information from the national centre regarding:

- the coverage of TALIS in traditional/social media
- attitudes among teachers/staff or the general educational community about the TALIS survey
- applicability of the teachers'/leaders'/staff's definitions to the national context
- exclusions that took place prior to the survey
- schools'/ECEC settings' refusal to participate in the survey
- how helpful the international version of the co-ordinator manual was (and if this was adjusted)
- any other activities that supported the co-ordinator manual, to train the co-ordinators in their duties.

Communication about TALIS 2024 and perceptions

In half of the participating countries/territories, TALIS was mentioned or discussed in traditional and/or social media. Key messages often highlighted the importance of the TALIS survey, recognised the contributions of teachers and staff, and emphasised the value of understanding teachers' and staffs' views and job satisfaction. In some countries/territories, the focus was on advocating for improved conditions for

Unclassified - Non classifié

teachers and ECEC staff based on survey findings or showcasing the significance of comparative results from an international perspective.

When NPMs were asked about the attitudes of the educational community or teachers/staff towards the survey, more than half of the countries/territories reported positive perceptions (Table 7.1). The remaining responses were primarily neutral or unknown.

Table 7.1. Perceptions of TALIS 2024

	Positive	Negative	Neutral	Unknown
Perception of education community (e.g. education researchers, policy makers) of TALIS 2024	38	1	12	6
Perception of teachers/staff (target population) of TALIS 2024	30	4	18	5

Note: Throughout the report, we will refer to 56 countries/territories and 1 country that participated through the IEA. The Flemish and French Communities of Belgium have been administered as two different territories with two NPMs. Data were collected for Belgium as a whole and can also be analysed for the two territories. NPMs from 56 countries/territories and 1 territory that participated through the IEA were interviewed for TALIS 2024.

In cases where perceptions were positive, NPMs noted that teachers and staff appreciated the opportunity to share their experiences through the TALIS survey and to acknowledge shared challenges. Other members of the educational community viewed TALIS as an excellent opportunity to contribute to global education research and support evidence-based decision-making processes.

Where perceptions were reported as negative, concerns included the lack of immediate, tangible benefits for participation, disruption to daily tasks and the perceived tediousness of the questionnaire. Some educators also expressed concerns about the anonymity of their responses and potential repercussions, as well as scepticism regarding the validity and utility of comparing results with other countries/territories.

Definitions of teachers, leaders and ECEC staff

As part of the survey administration and preparation activities, NPMs were also asked to elaborate on the applicability of the definitions for teachers, leaders and ECEC staff that were included in the international version of the School/ECEC Setting Co-ordinator Manual. These definitions, and the comparisons to the international guidelines, were essential to ensure that school/ECEC setting co-ordinators correctly selected the teachers/staff eligible for TALIS.

The definition of teachers in countries/territories participating in the TALIS core survey was found to be helpful and applicable in 47 out of the 54 cases (Table 7.2). In instances where the definition was challenging to apply, countries/territories reported that difficulties arose from changes in educational systems aimed at increasing inclusivity in the profiles of individuals working in schools. These changes complicated the identification of the target population. Examples included special needs educators supporting teachers in inclusive classrooms or other specialists involved in daily lessons.

Table 7.2. Definition of the target population and applicability

	Yes	No
Applicability of the teacher's definition (TALIS core survey)	47	7
Applicability of the ECEC staff's definition (TALIS Starting Strong)	11	5
Applicability of the leader's definition (TALIS Starting Strong)	14	2

Note: Sixteen out of 56+1 countries/territories participated in TALIS Starting Strong for 2024.

Unclassified - Non classifié

For TALIS Starting Strong countries/territories, a slightly higher number of difficulties were reported in applying the definition of ECEC staff compared to teachers, although 11 out 16 of the participating countries/territories still found the definition applicable. Countries/territories that faced challenges with defining ECEC staff cited issues such as variations in the extent of pedagogical work performed by certain employees and distinguishing these from other staff within the setting.

More difficulties were reported with the definition of leaders, with 14 out of 16 NPMs indicating challenges in applying these definitions within their country/territory. When issues arose, they mainly concerned cases involving leaders in settings who were not directly engaged in work with children.

Exclusions prior to sampling and participation refusal

Twenty-eight out of the 57 interviewed NPMs reported that some exclusions prior to the sampling took place within their country/territory. Most of these referred to exclusions that took place during the field trial in consultation with the ISC, but not for the main survey. Cases where exclusions took place referred to the number of students or teachers being too small, schools/ECEC settings being affected by natural catastrophes or schools that did not follow the national curriculum (such as international or foreign language schools).

By the time the NPM interviews took place, 37 countries/territories reported that some schools or ECEC settings had refused to participate.[1] NPMs indicated that, in most cases, the decision to decline participation was attributed to factors such as high workload in schools and settings, resource shortages, the implementation of other internal surveys aimed at understanding teachers' or staff situations, or the perception that schools and settings already had a sufficient understanding of educators' circumstances. Additionally, some schools and settings expressed reluctance to participate in a survey conducted by government bodies or relevant evaluation institutions due to dissatisfaction with these organisations.

The School/ECEC Setting Co-ordinator Manual and support materials

Lastly, NPMs were also asked to report on their impressions about the international version of the co-ordinator manual, how helpful these were, as well as if these were accompanied by other types of activities (such as online or in-person training sessions or provision of additional support materials).

As shown in Table 7.3, 36 countries/territories found the manual to be useful. However, in cases where the manual was deemed only somewhat useful, NPMs mentioned that the manual was too extensive and occasionally difficult to adapt to the national context of individual countries/territories.

Table 7.3. NPM perception of the co-ordinator manual

	Useful	Somewhat useful	Not useful
How useful did you find the international version of the co-ordinator manual?	36	19	2

Note: NPMs from 56 countries/territories and 1 territory that participated through the IEA, were interviewed for TALIS 2024.

To address these limitations (as described in School/ECEC Setting Co-ordinator Manual reviews), some countries/territories implemented structural changes, such as dividing the manual into separate documents or creating supplementary materials, including videos and pamphlets, containing the same information. These adaptations were designed to better align with the specific needs of their educational systems.

Unclassified - Non classifié

In addition to the provision of the manual, in 51 of the cases, countries/territories offered other types of activities or materials to support co-ordinators in understanding their roles more effectively. These ranged from in-person or online training sessions and workshops (which were sometimes recorded) to instructional videos, dedicated training platforms, brochures or flyers. Furthermore, some national centres provided additional support through email, phone calls, WhatsApp/Telegram groups, or even a hotline that co-ordinators could use to address urgent matters during the survey administration period.

7.3.3. School/ECEC Setting Co-ordinator Manual reviews

As part of their second task, when visiting the NPM, IQOs were required to obtain copies of all translated/adapted School/ECEC Setting Co-ordinator Manual(s) used by the participating country/territory.

The School/ECEC Setting Co-ordinator Manuals explained in detail the procedures co-ordinators needed to follow for the selection of teachers/ECEC staff eligible for the survey, the activities occurring prior to and during the survey administration, and the flow of communication between NPMs and co-ordinators to monitor different administration activities. The ISC provided an international version of the manual that needed to be translated and adapted by national centres. The manuals contained sections that needed to be adapted. These required adaptations were shown between brackets and highlighted in yellow.

As part of their review, IQOs were asked to compare selected sections of the translated manuals against the international (English) source versions. When reporting the results of their review, IQOs indicated if the text in the national manuals was:

- Comparable to the international source: the translation remained equivalent or near identical to the international source.
- Not comparable to the international source: the translation deviated in content or meaning from the international source. For these cases, IQOs were asked to provide a rough English back translation.
- Adapted (required): when a paragraph contained a required adaptation, IQOs provided a rough English back translation of the national adaptation.
- Not included: if a sentence or paragraph may have been removed in the national co-ordinator's manual, IQOs were asked to indicate which section or sections were removed.

In most of the cases, manuals were adapted and translated for each administered component and each ISCED level. Although manuals across ISCED levels were similar, IQOs were requested to review and report on each of these (see Table 7.4 for more information). Countries/territories could also adapt and translate the manuals into all of the administered survey languages, in which cases, IQOs were also requested to review each of the translated versions of the manuals.

Table 7.4. Manuals to be reviewed by the IQOs

Manual	TALIS core survey			TKS	TALIS Starting Strong	
	ISCED 2	ISCED 1	ISCED 3	ISCED 2	ISCED 02	U3
School Co-ordinator Manual – main survey TALIS core survey and optional ISCED levels	✓	✓	✓			
School Co-ordinator Manual – main survey TALIS core survey, TKS				✓		
ECEC Setting Co-ordinator Manual – main survey TALIS Starting Strong					✓	✓

Unclassified - Non classifié

IQOs reviewed a total of 76 manuals for countries/territories administering the TALIS core survey, 8 manuals for countries/territories administering the TALIS core survey (ISCED level 2) together with the TKS and 26 manuals for countries/territories that administered TALIS Starting Strong. Above 80% of the reviewed manuals were translated into all languages administered within a country/territory, whereas close to 10% of manuals were only translated to one of the administered languages (Table 7.5).

Table 7.5. Manuals to be reviewed

Was the manual translated into all of the administered languages?		
	Yes (%)	No (%)
School Co-ordinator Manual – main survey TALIS core survey and optional ISCED levels	92.1	7.9
School Co-ordinator Manual – main survey TALIS core survey, TKS	100.0	0.0
ECEC Setting Co-ordinator Manual – main survey TALIS Starting Strong	84.6	15.4

In addition, IQOs were asked to assess whether the format of the manuals deviated from the international source version. For both the TALIS core and TKS co-ordinator manuals, in approximately 25% of the cases, IQOs reported significant deviations in the manual's format compared to the international source version. In contrast, for the ECEC Setting Co-ordinator Manual, nearly half of the cases (Table 7.6) deviated in format, as also noted by some NPMs during the NPM interviews.

Examples of structural changes to the manuals primarily involved splitting the content into separate sections. For instance, some manuals included distinct sections focusing on procedures prior to data collection (such as teacher/staff selection) and sections dedicated to data collection processes. Other modifications included condensing and summarising the manual into smaller, more concise documents or relocating tables to appendices.

Following further review with IQOs (as detailed in the "Co-ordinator interviews outcomes" section), it was reported that regardless of the structural changes, co-ordinators understood their tasks and roles effectively. This suggests that the restructuring of the manuals did not negatively impact the co-ordinators' work.

Table 7.6. Format of manuals

Did the format of the manual(s) strongly deviate from the international source version?		
	Yes (%)	No (%)
School Co-ordinator Manual – main survey TALIS core survey and optional ISCED levels	28.9	71.1
School Co-ordinator Manual – main survey TALIS core Survey, TKS	25.0	75.0
ECEC Setting Co-ordinator Manual – main survey TALIS Starting Strong	57.7	42.3

In general, any modifications to the content of the manuals reported by the IQOs were minor. Examples of deviations included instances where the cover letters (containing the link to the survey) were shared directly by the national centre instead of by the co-ordinators, when materials were only administered on paper (which was the case for only one of the countries/territories), when the national centre monitored the online participation of teachers/staff and it was not necessary for co-ordinators to complete the tracking form, or when the listing forms (TLF) were also prepared directly by the national centre.

Unclassified - Non classifié

7.3.4. Co-ordinator interviews outcomes

One of the most demanding tasks for the IQO was to conduct online interviews with the co-ordinators for a selected number of centres.

Together with the NPM, the IQO needed to select 20 ECEC settings for TALIS Starting Strong and/or 20 schools for the TALIS core survey/TKS (depending on the components administered within the country/territory) and conduct online interviews with the school/ECEC setting co-ordinators of the randomly selected centres. The completion of this responsibility included:

- interviewing the school/ECEC setting co-ordinator about TALIS 2024 activities prior to and during survey administration
- where applicable, splitting the interviews across the participating ISCED levels for each component
- recording interview responses on the online Co-ordinator Interview Record.

The co-ordinator interview covered a range of topics, including the co-ordinator's background information, the initial preparations undertaken before survey administration, and challenges related to understanding and using the listing and tracking forms and manual. The interview also addressed survey administration activities, such as communication with the NPM, potential issues encountered during the survey process and the co-ordinator's overall impressions of the survey's administration. Additionally, IQOs were asked to share their impressions of the co-ordinator's performance and evaluate their preparedness for the role.

School/ECEC setting selection design

Upon meeting with the NPM, IQOs were asked to make a random selection (after detailed IEA guidelines were provided) of a subset of schools/ECEC settings. Prior to that random selection, the IQOs needed to disregard educational centres already selected for national quality observations (to avoid overburdening a school/ECEC setting).

Thanks to the mode of the interview (online), IQOs had no geographical constraints to consider when selecting centres. Although the total number of schools and/or ECEC settings to be selected was 20, IQOs were required to include at least 2 additional educational centres (per ISCED level) as potential replacements. For countries/territories administering the survey across more than 1 ISCED level, IQOs were instructed to ensure an even selection of the 20 schools/settings per level (as shown in Table 7.7). Similarly, for countries/territories administering the survey in multiple languages, IQOs were asked to account for this in their selection process.

Once the NPM shared the list of participating schools/ECEC settings and once the schools/ECEC settings selected for national quality observations were removed, the IQO randomly selected schools/ECEC settings from the remaining list of schools/ECEC settings. Samples of schools/ECEC settings submitted to the IEA were anonymised, with the names and addresses of the schools/settings omitted from the list.

Upon review and approval of the school's/ECEC setting's selection by IEA Amsterdam, the IQOs approached the school/ECEC setting co-ordinators to introduce themselves and set up the online interview. IQOs could make use of different platforms for the online interviews but were required to ensure that the platform was compliant with the data protection regulations of TALIS 2024, their country/territory, as well as to provide any relevant information about this to the individuals being interviewed.

Unclassified - Non classifié

Table 7.7. Number of schools and ECEC settings selected for interview per component and ISCED level

Country/territory	TALIS core survey (schools)			TALIS Starting Strong (ECEC settings)	
	ISCED 2	ISCED 1	ISCED 3	ISCED 02	U3
Albania	20				
Alberta (Canada)	20				
Australia	10	10			
Austria	20				
Azerbaijan	20				
Bahrain	20				
Brazil	10	10			
Bulgaria	20				
Chile*	20			20	
Colombia †	20			20	
Costa Rica	20				
Croatia*	10		10		
Cyprus	20				
Czechia	20				
Denmark	10		10	20	
Estonia	20				
Finland	20			20	
Flemish Community (Belgium)	7	7	6	10	10
France	10	10			
French Community (Belgium)	10	10			
Germany				10	10
Hungary	20				
Iceland †	19				
Ireland				10	10
Israel †	20			10	10
Italy	20				
Japan †	10	10		20	
Kazakhstan	20				
Korea	10	10			
Kosovo	20				
Latvia	20				
Lithuania	20				
Malta	20				
Montenegro	20				
Morocco*	10	10		20	
Netherlands	10	10			
New Brunswick, Quebec (Canada) †					20
New Zealand	10	10		10	10
North Macedonia	20				

Unclassified - Non classifié

Country/territory	TALIS core survey (schools)			TALIS Starting Strong (ECEC settings)	
	ISCED 2	ISCED 1	ISCED 3	ISCED 02	U3
Norway	20			10	10
Poland*	20				
Portugal*	10		10		
Romania	20				
Saudi Arabia*	7	7	6		
Serbia	20				
Shanghai (China)	20				
Singapore	20				
Slovak Republic	20				
Slovenia †	14		6		
South Africa*	20				
Spain	10	10		20	
Sweden †	20			20	
Türkiye	7	7	6	20	
United Arab Emirates	7	7	6		
United States*	20				
Uzbekistan	20				
Viet Nam	20				
Total	891	128	60	240	80

Notes: Countries/territories * with an asterisk refer to those that also participated in the TKS.
Colombia †: Due to the survey's large administration window (lasting from March until August), two IQOs were used for the quality control programme.
Iceland †: The planned number of schools was 20 but, due to time constrains, only 19 interviews with co-ordinators could take place.
Israel †: Due to the languages in which the survey was administered, two IQOs were used for the quality control programme.
Japan †: Due to the survey's large administration window (lasting from February until August), two IQOs were used for the quality control programme.
New Brunswick, Quebec (Canada) †: Ten settings were selected from the New Brunswick region (English speaking) and ten from Quebec region (French speaking).
Slovenia †: Due to the structure of the educational system, 14 centres at ISCED levels 1 and 2 were selected.
Sweden †: Due to the structure of the educational system, 20 ECEC settings were divided in 15 care centres and 5 early childhood centres.

Background information and initial preparations

The first section of the interview focused on the initial preparation for conducting the survey, which included co-ordinators' participation in training, impressions about the manuals, familiarising themselves with the procedures, and receiving and checking the required materials prior to the beginning of the administration.

In nearly 35% of the cases, school co-ordinators had prior experience in their role, having participated in TALIS or similar studies. By contrast, only 10% of ECEC setting co-ordinators reported having such experience.

A key resource for co-ordinators was the manual provided by national centres. Over 90% of both school and ECEC setting co-ordinators (see Table 7.8) found the manual helpful in understanding their role. However, in 10-15% of cases, co-ordinators suggested that improvements were needed to enhance its clarity or usability.

Unclassified - Non classifié

Table 7.8. Co-ordinators' initial preparation responses

	Yes (%)	No (%)
Have you previously acted as a co-ordinator for any other survey and/or assessment?		
School co-ordinators	34.5	65.5
ECEC setting co-ordinators	10.0	90.0
Overall, do you feel the TALIS 2024 co-ordinator manual helped you to understand your role?		
School co-ordinators	97.7	2.3
ECEC setting co-ordinators	91.5	8.5
Do you feel the TALIS 2024 co-ordinator manual could be improved in any manner?		
School co-ordinators	10.5	89.5
ECEC setting co-ordinators	14.7	85.3
In addition to the TALIS 2024 co-ordinator manual, were there any other types of activities or materials provided that helped you to better understand your position before the administration?		
School co-ordinators	67.0	33.0
ECEC setting co-ordinators	45.9	54.1

Note: One thousand and seventy-nine school co-ordinators were interviewed for countries/territories that administered the TALIS core survey; 320 ECEC setting co-ordinators were interviewed for countries/territories that administered TALIS Starting Strong.

Beyond the manual, national centres also informed about additional activities or provided additional materials to support co-ordinators. These included training sessions (conducted either in person or online), videos, presentations, brochures and support via phone, video calls or other communication platforms. However, there was a notable difference in the reported availability of these resources: while 67% of school co-ordinators indicated that they received additional support, only 46% of ECEC setting co-ordinators reported the same. IQO information matches the information provided by NPMs during the interview as reflected in the section "NPM visit and interview outcomes".

Regarding the receipt of required materials for administering the survey (see Table 7.9), close to 100% of school and ECEC setting co-ordinators reported receiving the TLFs, while the receipt of tracking forms (TTF) came to approximately 85% for both types of settings. IQOs and NPMs confirmed that, in some cases, the selection of teachers from schools/settings was handled by the national centres, as they had access to an updated census of teachers. Consequently, it was not necessary for IQOs to complete this task. Similarly, for TTFs, many national centres monitored survey completion directly, which reduced the need for co-ordinators to fill out the TTFs themselves.

Table 7.9. Correct receipt of needed items

	Yes (%)	No (%)	Not applicable (%)
Listing form			
School co-ordinators	96.8	1.8	1.5
ECEC setting co-ordinators	97.2	2.2	0.6
Tracking form			
School co-ordinators	86.9	5.3	7.8
ECEC setting co-ordinators	80.9	5.3	13.8
Cover letters (online data collection)			
School co-ordinators	93.2	1.7	5.1
ECEC setting co-ordinators	96.9	1.3	1.9

Unclassified - Non classifié

	Yes (%)	No (%)	Not applicable (%)
Data protection notice			
School co-ordinators	88.6	3.2	8.2
ECEC setting co-ordinators	88.1	2.8	9.1
Paper questionnaires (if applicable)			
School co-ordinators	9.9	2.2	87.8
ECEC setting co-ordinators	31.6	0.6	67.8

Note: One thousand and seventy-nine school co-ordinators were interviewed for countries/territories that administered the TALIS core survey; 320 ECEC setting co-ordinators were interviewed for countries/territories that administered TALIS Starting Strong.

In terms of cover letters, more than 90% of co-ordinators reported receiving them from the NPM, which aligns with cases where survey administration was conducted on line. The proportion of co-ordinators who received paper questionnaires was higher in ECEC settings compared to schools (31.6% versus 9.9%), suggesting that while paper-based administration was relatively uncommon overall, it was more frequently used in early years settings.

Co-ordinators were also asked about their communication with the NPMs (see Table 7.10) regarding their role, the receipt of materials and any potential delays in survey administration. For both ECEC setting and school co-ordinators, communication was reported to work well in more than 90% of cases, although slightly lower percentages were observed for ECEC settings compared to schools.

Table 7.10. Communication with NPMs

	Worked well (%)	Needs improvements (%)
Communication about the co-ordinator role itself		
School co-ordinators	97.9	2.1
ECEC setting co-ordinators	92.2	7.8
Communication about when the materials will be received		
School co-ordinators	96.4	3.6
ECEC setting co-ordinators	91.3	8.8
Communication about delays or changes in the administration for your country/territory		
School co-ordinators	96.5	3.5
ECEC setting co-ordinators	91.6	8.4

Note: One thousand and seventy-nine school co-ordinators were interviewed for countries/territories that administered the TALIS core survey; 320 ECEC setting co-ordinators were interviewed for countries/territories that administered TALIS Starting Strong.

Lastly, and in relation to the co-ordinators' understanding of the TLF (see Table 7.11), these reported minimal difficulties, with over 90% indicating that they understood and were able to use it effectively.

Table 7.11. Co-ordinators' difficulties understanding the listing form

	Yes (%)	No (%)
Difficulties understanding which teachers/staff should be listed in the listing form		
School co-ordinators	4.5	95.5
ECEC setting co-ordinators	7.2	92.8

Unclassified - Non classifié

	Yes (%)	No (%)
Difficulties understanding which teachers/staff should not be listed in the listing form		
School co-ordinators	2.5	97.5
ECEC setting co-ordinators	3.4	96.6
Difficulties completing the listing form		
School co-ordinators	2.9	97.1
ECEC setting co-ordinators	4.1	95.9
Difficulties returning the listing form		
School co-ordinators	1.0	99.0
ECEC setting co-ordinators	4.1	95.9

Note: One thousand and seventy-nine school co-ordinators were interviewed for countries/territories that administered the TALIS core survey; 320 ECEC setting co-ordinators were interviewed for countries/territories that administered TALIS Starting Strong.

Survey administration activities

The second section of the interview focused on how co-ordinators administered the survey, emphasising aspects related to the selection of the survey population and potential difficulties that may have arisen during the process.

In this section, IQOs were asked to review the TLFs with co-ordinators to confirm whether the selection adhered to the sampling guidelines. As shown in Table 7.12, in 96% of cases, co-ordinators reported that the teachers or staff listed on the form constituted a complete representation of the surveyed population, both for schools and ECEC settings.

Table 7.12. Teachers/staff sampled for the survey

	Yes (%)	No (%)
Is this a complete list of all teachers/staff employed at this school, teaching the surveyed population(s)?		
School co-ordinators	96.4	3.6
ECEC setting co-ordinators	96.6	3.4
Is there anyone listed on the listing form who is NOT a member of staff/leader/teacher?		
School co-ordinators	4.5	95.5
ECEC setting co-ordinators	1.6	98.4
Do you think you will experience any issues completing the tracking form before it is returned to the national centre?		
School co-ordinators	3.7	96.3
ECEC setting co-ordinators	3.4	96.6

Note: One thousand and seventy-nine school co-ordinators were interviewed for countries/territories that administered the TALIS core survey; 320 ECEC setting co-ordinators were interviewed for countries/territories that administered TALIS Starting Strong.

However, co-ordinators also noted that in 4.5% of cases for schools and 1.6% of cases for ECEC settings, individuals listed on the form fell outside the scope of TALIS. For schools, this included: substitute, emergency or occasional teachers; teachers exclusively teaching adults; teachers on long-term leave; teacher aides; pedagogical support staff; and health and social support staff. For ECEC settings, out-of-scope staff included nannies, volunteers, auxiliary staff, medical and therapeutic staff, occasional or emergency staff and staff on long-term leave.

Unclassified - Non classifié

The most common issues, particularly for schools, related to principal names being included in TLF or having listed teachers on long-term leave. Other challenges arose from staff changes occurring after the selection process, such as teachers leaving their positions. After further review and discussions with NPMs, it was confirmed that these issues were resolved during the weighting phase or addressed by identifying discrepancies in the TTF.

Co-ordinators were also asked if they encountered or anticipated any challenges in completing the TTF, a document that was used to record discrepancies between the teachers/staff listed on the form and the current situation in the school or ECEC setting, as well as to track the return status of questionnaires. Over 96% of co-ordinators from both schools and ECEC settings reported no difficulties or expected issues with completing the form.

Regarding the distribution of cover letters or paper questionnaires (where applicable), 86.5% of school co-ordinators and 79.9% of ECEC setting co-ordinators indicated that they provided these materials directly to teachers or staff. In the remaining cases, letters were sent to participants electronically by the national centre. Other methods included distribution by an assistant to the co-ordinator, handing them out during meetings or leaving them in teachers'/staff's mailboxes or pigeonholes.

To better understand the administration of the TALIS survey, co-ordinators were asked if they were approached by participants with questions or concerns about this process (Table 7.13). Overall, less than 15% of co-ordinators reported being contacted by respondents about survey-related issues. The most common queries pertained to the purpose of the survey (raised in 11.4% of cases for school co-ordinators), general clarifications about the survey (between 12% and 13.5% for school and ECEC setting co-ordinators), the confidentiality of responses (particularly for school co-ordinators, in 7.6% of cases) and difficulties with specific survey questions (reported by 6.6% of school co-ordinators and 10% of ECEC setting co-ordinators).

Table 7.13. Co-ordinator reports of questions/concerns from TALIS respondents

	Yes (%)	No (%)
Purpose of the survey		
School co-ordinators	11.4	88.6
ECEC setting co-ordinators	5.6	94.4
Questionnaire return procedures		
School co-ordinators	4.5	95.5
ECEC setting co-ordinators	3.4	96.6
Clarification of any kind		
School co-ordinators	12.7	87.3
ECEC setting co-ordinators	13.1	86.9
An error they spotted		
School co-ordinators	3.3	96.7
ECEC setting co-ordinators	1.3	98.8
Confidentiality of survey responses		
School co-ordinators	7.6	92.4
ECEC setting co-ordinators	1.9	98.1
Any questions they could not answer		
School co-ordinators	6.6	93.4
ECEC setting co-ordinators	10.0	90.0

Note: One thousand and seventy-nine school co-ordinators were interviewed for countries/territories that administered the TALIS core survey; 320 ECEC setting co-ordinators were interviewed for countries/territories that administered TALIS Starting Strong.

Unclassified - Non classifié

The IQO programme also investigated potential issues experienced by participants while completing the online questionnaire. Approximately 20% of school and ECEC setting co-ordinators reported that participants encountered challenges such as accessing the platform, login issues, Internet connectivity problems or a lack of familiarity with online surveys.

Lastly, co-ordinators were asked if they planned to implement specific actions to encourage participation, such as discussions with teachers or staff, providing food or small gifts, or sending reminders. Among school co-ordinators, 47.8% confirmed plans to implement such actions, compared to 28.4% of ECEC setting co-ordinators. Examples of these actions included organising staff meetings to promote participation, distributing TALIS informational materials, allowing teachers/staff to complete the questionnaire during working hours and adjusting schedules accordingly, engaging in informal conversations about the survey's importance and sending email reminders to participants.

Co-ordinators' and IQOs' general feedback

To close the interview, IQOs asked co-ordinators for their general impressions of the survey administration. IQOs were also invited to provide their own assessments of the co-ordinators' work and how well they were prepared for the survey's administration.

When co-ordinators were asked about the level of co-operation among survey participants in TALIS, most participants were reported as extremely co-operative (approximately 49%) or moderately co-operative (approximately 44%) for both school and ECEC setting co-ordinators. A similar pattern emerged when co-ordinators were asked about the attitudes of other school/ECEC staff towards the TALIS survey. For school co-ordinators, staff attitudes were primarily positive (48.6%) or neutral (41.0%), while for ECEC setting co-ordinators, the proportion of positive attitudes was slightly higher (58.0%) compared to neutral attitudes (36.7%). Only 7.2% of school co-ordinators and 3.1% of ECEC setting co-ordinators reported instances of refusal among participants.

Table 7.14. Co-ordinators' report of TALIS respondents' co-operation

	Extremely co-operative (%)	Moderately co-operative (%)	Somewhat co-operative (%)	Not very co-operative (%)
To what extent would you describe the participants as co-operative in their TALIS participation?				
School co-ordinators	49.2	44.2	6.3	0.3
ECEC setting co-ordinators	48.9	45.1	4.1	1.9
	Positive (%)	Neutral (%)	Negative (%)	Unknown (%)
Overall, how would you rate the attitude of other school/staff members towards the TALIS survey?				
School co-ordinators	48.6	41.0	1.5	8.9
ECEC setting co-ordinators	58.0	36.7	1.6	3.8

Note: One thousand and seventy-nine school co-ordinators were interviewed for countries/territories that administered the TALIS core survey; 320 ECEC setting co-ordinators were interviewed for countries/territories that administered TALIS Starting Strong.

Regarding co-ordinators' satisfaction with the administration of the TALIS survey within their centres, 97.9% of school co-ordinators and 91.3% of ECEC setting co-ordinators expressed high satisfaction.

IQOs' assessments of the co-ordinators' preparedness largely aligned with the co-ordinators' own impressions. IQOs reported that co-ordinators were very well prepared in 84% of schools and 74% of ECEC settings. This was followed by 14% to 24% of co-ordinators being rated as somewhat prepared in schools and ECEC settings respectively.

Unclassified - Non classifié

More than 89% of co-ordinators across both schools and ECEC settings were described as very willing to answer IQOs' questions (Table 7.15). Less than 1% of both school and ECEC setting co-ordinators were described as a little or very unwilling to answer questions.

Table 7.15. IQOs' perceptions

	Very prepared (%)	Somewhat prepared (%)	Somewhat unprepared (%)	Very unprepared (%)
In your opinion, how well prepared was the co-ordinator for administering the TALIS survey?				
School co-ordinators	84.0	14.4	1.5	0.2
ECEC setting co-ordinators	74.1	23.8	1.6	0.6
	Very willing (%)	A little willing (%)	A little unwilling (%)	Very unwilling (%)
How willing was the co-ordinator to answer your questions about survey administration activities?				
School co-ordinators	92.2	6.9	0.9	0.0
ECEC setting co-ordinators	89.4	9.7	0.6	0.3
	Definitely yes (%)	Probably yes (%)	Probably not (%)	Definitely not (%)
In your opinion, did the co-ordinator implement the TALIS procedures according to the international guidelines?				
School co-ordinators	83.4	14.9	1.5	0.2
ECEC setting co-ordinators	73.8	24.7	1.3	0.3

Note: One thousand and seventy-nine school co-ordinators were interviewed for countries/territories that administered the TALIS core survey; 320 ECEC setting co-ordinators were interviewed for countries/territories that administered TALIS Starting Strong.

Similar positive results appeared for the IQOs perceptions about the implementation of the TALIS procedures in line with the international guidelines, where in more than 73.8% of the cases IQOs agreed to have co-ordinators implement administrative processes in line with international procedures ("definitely yes").

Teacher Knowledge Survey general feedback

With the first-time administration of the TKS, IQOs also asked co-ordinators about their perceptions of this component both from teachers' and co-ordinators' perspective. Responses show that 56.7% of co-ordinators indicated that teachers' attitudes seemed to be positive and 66.3% of co-ordinators also indicated a positive view of the survey.

Table 7.16. TKS survey perceptions

	Positive (%)	Neutral (%)	Negative (%)
What are, so far, teachers' perceptions of the TKS?	56.7	42.3	1.0
What is your perception, as a co-ordinator, of the TKS?	66.3	33.7	x

Note: Ninety-eight school co-ordinators were interviewed for countries/territories that administered the TALIS core survey.
x: Not applicable.

Unclassified - Non classifié

7.4. Extra quality control questions

Following from the OECD TALIS 2018 cycle, additional innovative quality control questions were administered to respondents at the end of the questionnaires during the TALIS field trial and main survey. The quality control questions were intended to: i) allow the ISC to elicit relevant information directly from online respondents; and ii) help inform the adjudication process and decision making for TALIS 2024.

For the field trial, a total of 12 questions were administered to all respondents based on a rotated design. Questions were translated and adapted by countries/territories during the regular instrument preparation process (see Chapter 4). Respondents were randomly assigned one group of questions for a maximum of three questions per respondent. Questions were administered only after the regular survey was complete and an introductory message was provided indicating that responses were voluntary. Overall, response rates were high, ranging from a low of 70% to a high of 100%, indicating a willingness of respondents to provide information.

Following the field trial data collection, responses to the quality control questions were analysed by component and country/territory to look for potential areas of improvement prior to the main survey. In addition, the questions themselves were evaluated to ensure they provided clear and meaningful information.

There was consensus that the quality control questions did not overburden respondents and provided valuable data for the TALIS field trial. However, it was decided that full application of all questions for the main survey would be repetitive given that national and international quality observations would already collect some of this information. In addition, due to the applicability of some questions, several were dropped and others underwent minor revisions. Consequently, two question groups were included for the main survey, each with three questions. One of the two question groups was randomly assigned to 10% of respondents for each component such that 20% of the respondents overall (for each component) responded to a set of questions.

Across each component, a similar number of respondents answered each question. The approximate number of respondents across questions for each component was:

- ISCED level 1: 5 500 respondents
- ISCED level 2: 18 000 respondents
- ISCED level 3: 2 700 respondents
- TKS: 1 700 respondents
- TALIS Starting Strong: 1 800 respondents.

Overall, respondents reported that they were selected to participate in TALIS in a way that was consistent with the TALIS Technical Standards (Table 7.17). It was more common for all teachers/staff in a school/ECEC setting to be selected to participate at lower ISCED levels, which is in line with the fact that schools/ECEC setting generally increase in size as the ISCED level increases.

For most components, the majority of respondents (Table 7.18) were provided sufficient time to complete the survey. For the TKS, a higher percentage reported that they were only provided one day or less. This is consistent with the fact that the survey was only open for a 24-hour window once it was started. It is possible that some TKS respondents confused the full amount of time they had to complete the TKS with the time window they had to complete the survey once started. Therefore, modifications to this question could be considered for future TALIS cycles if this question were included.

Unclassified - Non classifié

Table 7.17. Respondent reports of selection for TALIS

	ISCED 1 (%)	ISCED 2 (%)	ISCED 3 (%)	TKS (%)	TALIS Starting Strong (%)
How were you selected to participate in OECD [TALIS/TALIS Starting Strong]?					
Every teacher/staff in this school/ECEC setting was selected to participate	46.5	30.6	16.7	31.5	40.1
I was informed that I was randomly selected to participate	41.1	57.1	64.9	52.3	47.3
I was asked to participate to replace a colleague who did not participate	0.2	0.3	0.3	0.6	0.4
I requested to participate myself	1.0	1.0	0.8	1.7	1.1
I do not know	11.3	11.1	17.4	14.0	11.0

Table 7.18. Respondent reports of time allotted for survey completion

	ISCED 1 (%)	ISCED 2 (%)	ISCED 3 (%)	TKS (%)	TALIS Starting Strong (%)
How much time were you provided to complete the survey?					
One day or less	23.9	30.2	17.9	48.7	25.4
More than one day but less than one week	20.8	16.0	16.5	12.1	24.2
Between one and two weeks	17.4	15.2	18.3	12.3	14.9
More than two weeks	28.1	29.3	38.3	21.8	19.5
I do not know	9.8	9.4	8.9	5.1	16.0

Security of login details is important to ensure that each individual is only able to access their own survey. Overall, respondents indicated (Table 7.19) that this information was provided in a secure manner. However, some respondents were provided their login details in ways that may have been visible to other teachers/staff in their educational centres.

Table 7.19. Respondent reports of security of login details

	ISCED 1 (%)	ISCED 2 (%)	ISCED 3 (%)	TKS (%)	TALIS Starting Strong (%)
How were your personal login details provided to you?					
In a secure manner (e.g. in a personal email, in a sealed envelope)	85.1	83.5	79.1	83.3	84.3
In a group email with information for other users visible	2.2	2.6	1.6	1.4	3.1
In a newsletter or posting visible to all teachers/staff in the school/ECEC setting	2.8	2.5	2.1	5.5	3.1
In direct communication to me, but not securely sealed (e.g. school/ECEC setting mailbox)	5.0	6.4	9.5	4.9	3.6
In some other way	4.8	5.1	7.7	4.9	5.9

In order to respond truthfully to the survey, it is important that respondents are aware that their responses are kept confidential. Less than 10% of respondents across components (Table 7.20) indicated that they were not at all confident their responses to the survey would be kept confidential, indicating overall confidence in the confidentiality of the TALIS data.

Unclassified - Non classifié

Table 7.20. Respondent reports of confidence in confidentiality

	ISCED 1 (%)	ISCED 2 (%)	ISCED 3 (%)	TKS (%)	TALIS Starting Strong (%)
How confident are you that your responses to OECD [TALIS/Starting Strong] will be kept confidential?					
Not at all	8.3	9.8	9.4	9.0	7.0
To some extent	29.6	28.2	23.0	18.4	27.5
Quite a bit	30.9	31.6	29.0	32.8	32.3
A lot	31.2	30.4	38.6	39.8	33.1

Overall, reports of problems encountered while completing the survey were small, although lack of time to complete the survey was selected as the most common issue (Table 7.21).

Table 7.21. Respondent reports of problems encountered

	ISCED 1 (%)	ISCED 2 (%)	ISCED 3 (%)	TKS (%)	TALIS Starting Strong (%)
Did you encounter any problems while completing the survey?					
Login issues	7.5	7.9	7.0	11.7	7.7
Response saving	9.5	10.6	10.3	9.1	6.7
Navigation issues	5.7	5.8	4.9	6.8	5.1
Internet failure	7.2	7.7	5.8	13.1	4.9
Computer failure (e.g. power loss)	3.3	3.6	2.7	6.1	2.5
Lack of time	35.7	30.0	30.2	32.5	35.8

Lack of time to devote to the survey was the most common issue reported by respondents. Interestingly, a lower percentage of respondents felt that TALIS was not a good use of their time. In addition, close to 50% of the respondents indicated that it was interesting, and less than 21% of the respondents reported the survey was difficult (Table 7.22). It is not surprising that a higher share of teachers reported the TKS as “difficult” compared to other ISCED level 2 respondents, given the inclusion of an assessment component.

Responses to the extra quality control questions were examined across countries/territories. Overall, the results indicated that particular responses were not clustered within countries/territories. If response clusters were identified that indicated a potential issue within a country/territory, these were discussed during data adjudication. During these discussions, it was determined that no identified issues within countries/territories warranted further investigation.

Overall, the extra quality control questions provided additional information on the quality of the TALIS implementation directly from respondents. The willingness of respondents to answer these questions indicates that they were receptive to providing this information and inclusion of the questions should be considered for future rounds. Most of the questions functioned well, but some (such as the time provided to respond to the survey, in the very specific case of the TKS) could have been unclear and should be modified for future cycles, if included. Country/territory level analysis was also helpful in pointing to potential issues that could be further investigated to ensure the highest quality data possible.

Unclassified - Non classifié

Table 7.22. Respondent reports of overall experience

	ISCED 1 (%)	ISCED 2 (%)	ISCED 3 (%)	TKS (%)	TALIS Starting Strong (%)
Which statements describe your overall experience participating in OECD [TALIS/TALIS Starting Strong]?					
It was straightforward	34.4	33.5	34.0	18.6	32.3
It was interesting	39.4	45.1	48.8	52.4	45.9
It was difficult	18.8	13.4	11.1	21.2	21.2
It was not a good use of my time	20.4	19.4	17.3	15.9	13.3

7.5. The survey activities questionnaire

The SAQ covered all aspects of survey administration. The ISC prepared this online questionnaire using the SoSci Survey software platform (http://www.soscisurvey.de) and delivered it to NPMs on 4 March 2024. The questionnaire, consisting of 10 content sections and 71 questions, asked the national centres to provide information about all survey-related activities and the extent to which procedures and guidelines had been followed. The questionnaire also gave NPMs an opportunity to provide valuable feedback on all aspects of survey administration, including survey procedures and manuals, guidelines, support materials and software. All participating countries/territories completed the questionnaire between March 2024 and January 2025. The following subsections present the results of this survey.

7.5.1. Within-school/ECEC setting sampling

The national centres in all countries/territories used the IEA Windows Within-School Sampling Software (WinW3S) provided by the ISC. Eight national centres used prepopulated teacher listing forms. The national centres included information from ministries or school authorities in the lists before they sent them to schools, which meant that the school co-ordinators (SCs) only had to update the information. Seventeen national centres used methods other than the paper/electronic forms created by IEA WinW3S to list and track teachers. These methods varied from online forms to special software provided to schools or already existing in schools. Regarding data protection and confidentiality laws, 13 countries/territories reported restrictions on using teacher names on the listing and tracking forms and the national questionnaires. These countries/territories, plus another 16, used numbers or codes on the forms instead.

7.5.2. Contacting schools/ECEC settings

In 32 of the participating countries/territories, NPMs typically made first contact with sampled schools/ECEC settings, although in 16 countries/territories, the NPMs and other members of the national centre did this task together. In 12 countries/territories, the ministry of education made first contact, sometimes in conjunction with the national centre.

Although the overall participation rates for TALIS 2024 were high, 32 national centres reported difficulties in convincing schools/ECEC settings to participate. The most reported reason cited by 16 national centres was a high workload. Eleven national centres noted general survey fatigue, four reported doubts about the usefulness of the survey and four stated lack of human resources. Strategies to overcome school/ECEC setting reluctance to participate included multiple follow-up attempts and seeking the support of teacher unions, provider associations, ministries of education or regional, state or national authorities. Twenty-one of the participating countries/territories requested an extension for the data collection beyond the international data collection period to improve the overall response rate. Participation rates show that

Unclassified - Non classifié

most of the national centres were able to overcome these difficulties and convince schools/ECEC settings to take part in the survey.

Fifty-two national centres reported that it was easy to identify and appoint a suitable person to fill the role of school/ECEC setting co-ordinator. For 44 national centres, adapting the School/ECEC Setting Co-ordinator Manual to their national context and needs was a straightforward and easy task; 13 NPMs reported some difficulties, such as adapting cultural specifics or shortening the manual. Because the co-ordinators played a key role within the survey, 34 NPMs provided them with additional formal training, while 23 used different communication channels, such as phone calls and written instructions. National centres also used emails to explain single tasks at the appropriate times throughout the survey process and videos to inform school/ECEC setting co-ordinators.

7.5.3. Listing teachers/ECEC staff

Due to the complexity of the listing procedure, 36 national centres found cases where school/ECEC setting co-ordinators listed teachers/ECEC staff incorrectly. Nine national centres reported one or more difficulties in explaining certain topics to the school/ECEC setting co-ordinators during the listing process: nine NPMs said that they experienced difficulties in explaining the definition of the teacher/ECEC staff population, five national centres reported that co-ordinators experienced challenges in correctly assigning the main subject domains/ECEC staff categories. However, national centres managed to resolve nearly all these issues before survey administration began.

7.5.4. Preparing the questionnaires

Mindful that translation and adaptation of survey instruments is a difficult exercise in any cross-national survey, the ISC supported the process by preparing individualised timelines for instrument preparation, additional support materials (e.g. eight instructional videos) and guidelines (e.g. Instrument Assembly Guide). Overall, 41 national centres said that documentation of the non-structural national adaptations (i.e. adaptations of terms or words that did not affect the structure of the questionnaires) was a straightforward task. Sixteen national centres experienced difficulties, mainly because they saw the process as time-consuming or found the guidelines not clear enough.

The SAQs comments on structural adaptations (i.e. adaptations that changed the structure of the questionnaires by, for example, adding or deleting questions, dimensions or categories) presented a similar picture. Thirty-seven national centres reported no difficulties with the task, while 20 reported difficulties, mainly due to the complexity of implementing structural adaptations within the IEA StudyExpert software or new staff who had to familiarise themselves with the software during main survey preparation.

Regarding translations, 34 national centres considered the process as not being difficult at all, while the remainder described it as “somewhat difficult”. Most reported difficulties related to certain translated terms and concepts that were difficult to apply within the national context or to align in meaning across different survey languages. Fifty-five national centres considered the translation guidelines within Survey Operations Procedures Unit 3 useful for facilitating the completion of the task.

Fifty national centres found the instructional videos to support instrument preparation useful, and 54 felt that the webinars related to the tasks to be accomplished within IEA StudyExpert were useful.

7.5.5. Online administration

During the main survey, no severe technical issues were experienced and the online dissemination platform worked very well. However, 33 countries/territories reported some difficulties concerning the login procedures. Most of these difficulties emerged from user errors (e.g. entering the URL into a search engine or command line of the browser, typos when entering the URL) or lost login details.

Unclassified - Non classifié

Some participants reported difficulties in accessing the questionnaires due to a slow Internet connection or specific browsers. In some cases, firewall blockings and pages loading slowly were reported. ISC staff worked closely with the national centres to provide technical support and resolve problems.

To monitor the online data collection process and participation progress regularly, the ISC provided a tool called Participation Monitor within IEA StudyExpert. This tool proved very helpful and the participating countries/economies used it several times a week during the data collection period. Thirty-eight national centres used the Participation Monitor at least once per day, while 17 national centres used it once or a few times a week. Fifty-four national centres characterised the Participation Monitor as a useful tool.

7.5.6. Paper administration

While most data were collected online, 13 TALIS 2024 participating countries/territories prepared paper questionnaires for administration. One country administered exclusively paper instruments, 12 chose a mixed-mode approach, that is, paper and online instruments (with the paper questionnaires either as a fall-back solution or using paper and online instruments in parallel).

7.5.7. Manual data entry and submission

National centres received training in performing manual data entry according to the rules and standards outlined in the Survey Operations Procedures Unit 5: Data Capture Procedures, the TALIS 2024 Technical Standards and in using the IEA Data Management Expert (DME) software. Of the 13 countries/territories that prepared paper versions of the questionnaires, only 8 actually used them and submitted the corresponding data. One national centre submitted their data and documentation by 20 April 2024 (as scheduled), seven national centres provided the required information between May and August 2024. As an important quality control measure, national centres were required to perform double entry of a sampled set of teacher/ECEC staff and principal/leader questionnaires to ensure high-quality data entry.

7.6. National quality observation programme

NPMs were instructed to implement a national quality observation programme during administration of the TALIS 2024 field trial and main survey data collection; the design of the quality observation programme remained at the discretion of each country/territory. National quality observations are an important means not only of collecting information about survey administration and implementation at schools/ECEC settings but also of helping to ensure the quality and comparability of the data collected in each country/territory. The ISC asked NPMs to use the relevant section of the SAQs to summarise and report salient findings from the national quality observations. However, the NPMs were not required to submit data collected by the NQOs to the ISC. Each national centre was responsible for designing its own quality observation programme, appointing NQOs and ensuring that they met required standards relating to data collection and survey administration. The ISC developed an NQO manual template containing detailed instructions that would not only help NPMs conduct national quality observation but also serve as the basis for training the NQOs.

The National Quality Observer Manual (NQO) could be adapted to fit the needs of the country/territory with respect to how it would collect their data, such as accommodating international components or covering features important for the national centres (e.g. communication at the national level or online resources for school co-ordinators). NQOs were mainly appointed from among national centre staff but they also included graduate students, university staff, external persons or retired school/ECEC staff. According to the SAQ, 44 countries/economies implemented a national quality control programme for the main survey. National centres in 13 countries/territories did not conduct a quality observation programme at the national level but opted to use other ways of observing survey operations and activities. These approaches included

Unclassified - Non classifié

maintaining ongoing telephone contact with schools/ECEC settings to receive real-time feedback or asking school/ECEC setting co-ordinators to complete an online questionnaire.

Altogether, 44 countries/territories used the manual template supplied by the ISC, with 17 national centres applying significant adaptations, such as editing, adding and/or omitting questions. NQOs conducted approximately 20 interviews with school/ECEC setting co-ordinators per country/territory. Challenges observed by some quality observers at the national level varied. The NQOs reported the following main points: the questionnaires were experienced as too long (10), the survey was felt as an additional burden for schools/ECEC settings (8) and the concept of TALIS was not clear (4).

7.6.1. Future improvements in quality control

Information regarding the quality of the data collected was gathered through multiple sources: the international quality observation programme, extra quality control questions, national quality observation programme implemented by national centres, and a follow-up SAQ administered online.

Overall, findings from these programmes indicated that most participating countries and territories adhered closely to the international survey procedures, thereby supporting cross-national comparability of the data. Nevertheless, each quality assurance programme revealed specific areas for improvement.

International quality observation programme

For the international quality observation programme, observers reported that they occasionally lacked a clear understanding of the school/ECEC settings and teacher/staff selection procedures. This sometimes resulted in misinterpretation of questions related to roles and responsibilities, requiring further clarification of the data submitted by the observers. Additionally, the co-ordinators manual review proved challenging and time-consuming, particularly in identifying significant differences between the international and national versions. To address these issues in future cycles, it is recommended that observers receive enhanced training on and understanding of within-school/setting sampling procedures, and that the manual review process be simplified. These adjustments aim to improve the accuracy of observations and reduce the burden on observers.

Extra quality control questions

The extra quality control questions were useful in evaluating the overall quality of the TALIS administration. Some questions should be modified or adapted in future rounds to address the issues with interpretation reported. In addition, it could be useful to tailor the questions to specific aspects of quality of interest in future TALIS cycles.

The Survey Activities Questionnaire

The SAQ proved to be a valuable tool during both the field trial and main survey, effectively capturing NPMs' insights on survey implementation and their recommendations for improvement.

To facilitate earlier and more targeted feedback from countries/territories, it is recommended to distribute the SAQ in smaller sections aligned with specific phases of the survey. This phased approach may help to identify and resolve issues as they arise, contributing to smoother implementation and continuous quality improvement.

National quality control programme

Although the implementation of a national quality observation programme was requested, not all countries/territories conducted one during the field trial and main survey. For future cycles, it is recommended to re-emphasise the importance of the national quality observation programme – particularly

Unclassified - Non classifié

during the field trial phase – to identify and address potential issues early on. This includes challenges related to teacher/staff listing and within-school or within-setting sampling. Early detection through the national quality observation programme allows for timely adjustments to procedures before the main survey, thereby supporting overall data quality and implementation consistency.

Note

[1] Please note that information about the number of schools/ECEC settings that declined participation was not collected by IQOs during the interview with the NPM.

Unclassified - Non classifié

8 Creating and checking the international databases

This chapter describes the common and specific approaches adopted to construct the national and international databases for the core OECD Teaching and Learning International Survey (TALIS), the Teacher Knowledge Survey and TALIS Starting Strong. It outlines the procedures conducted by the national centres and the exchange of data and documentation with the international study centre. The chapter further describes the integration of data collected through online and paper administration modes, as well as the editing and database construction processes implemented to ensure data quality. Particular attention is given to the identification and resolution of data inconsistencies. The chapter concludes with a description of the interim data sets produced and the collaborative efforts taken by all involved centres to validate the accuracy, integrity and completeness of the data in the national, restricted-use and public-use databases.

Unclassified - Non classifié

8.1. Overview

Creating the national and international databases for the core OECD Teaching and Learning International Survey (TALIS), the Teacher Knowledge Survey (TKS) and the Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) as well as ensuring their integrity required close co-ordination and co-operation among the international study centre (ISC), the national project managers (NPMs), consortium partners and the OECD Secretariat. In many, yet not all cases, national centres nominated a national data manager (NDM), who was the main focal point for data work between the national and international levels. The main responsibility of NPMs and NDMs was to manage data collection and submit accurate data for processing by the ISC at the international level.

The primary goals of this work were to ensure that:

- all originally collected data were complete and accurate
- all national adaptations to instruments were reflected accurately in the codebooks and corresponding documentation
- all information eventually conformed to the international data structure and code schemes
- any errors, such as logical inconsistencies or implausible values given by respondents or those occurring during data entry were minimised to the extent possible.

The processes and related quality control applied throughout were identical, to the extent feasible, for all target populations and surveys, i.e. TALIS core survey (International Standard Classification of Education (ISCED) levels 1, 2 and 3), the TKS and TALIS Starting Strong (children under the age of three [U3] and ISCED level 02). The TALIS core survey had established approaches applied with some adaptation to this fourth cycle. TALIS Starting Strong used established approaches from the 2018 cycle. The TKS is a new addition to the TALIS programme and largely used identical checks and edits as applied to the TALIS core survey given the overlap of measures and questions. Adjustments were required for questions asked exclusively in the TKS, such as the items used to assess teachers' general pedagogical knowledge (GPK) and a set of measures related to opportunities to learn (OTLs).

The ISC provided each participating country/territory with the International Association for the Evaluation of Educational Achievement (IEA) Within-School Sampling Software (WinW3S). IEA WinW3S supported all within-school/setting sampling operations, produced the necessary listing and tracking forms, and stored key information such as login credentials and information for questionnaire labels. A built-in participation rate estimator allowed national centres to estimate and monitor response rates during the field work. Chapter 5 describes these steps in full detail.

To familiarise NPMs and NDMs with their tasks and responsibilities, the ISC conducted a three-day data management training course in Hamburg, Germany, in August 2022 prior to the field trial (FT). The training focused on data sources and software use, procedures for national adaptations and mapping to international codes, as well as procedures for data entry, verification and submission. Following the administration of the FT in early 2023, NPMs and NDMs were informed of the outcomes as well as and process updates, software enhancements and other changes during the third NPM meeting, held in Ljubljana, Slovenia, in September 2023 prior to the main survey. NPMs were also updated on the progress of data management at all scheduled NPM meetings and webinars. Finally, national centre staff received a comprehensive memo on data use and reporting standards as non-public internal resource and were additionally convened for a comprehensive workshop on data analysis and use in Hamburg, Germany, in May 2025.

Unclassified - Non classifié

8.2. Online data collection and verification

The proportion of data collection conducted online increased steadily over the three previous TALIS cycles (2008, 2013 and 2018). In TALIS 2024, online administration became the default mode of data collection and was facilitated by the IEA StudyExpert platform (see Chapter 6 for further details). Paper questionnaires were still available for those participating countries/territories that requested this mode. National centres were required to provide individuals who either refused to participate in the online mode or lacked Internet access with a paper questionnaire, with an aim to minimise non-response. The TKS assessment was available exclusively in the online administration mode. Most TALIS core survey countries/territories relied solely on the online mode for data collection, while a single country used only the paper format. The remainder adopted a mixed-mode approach, combining online and paper questionnaires for particular educational levels, populations or specific school settings. In the case of TALIS Starting Strong, the majority of participants used the online mode exclusively, with the rest implementing a mixed-mode design (see Chapter 7 for further details).

The use of two parallel modes of data collection can be a potential source of errors and can affect comparability of the data. Measures were put in place to minimise these errors to the extent possible. In particular, to ensure uniform and comparable conditions across modes and across participating countries/territories, questionnaires in both modes were self-administered and comparable in terms of question sequence, layout and appearance; the same sample design and procedures were used to identify respondents; the same methods were used to contact respondents and to validate their participation; and both modes of data collection occurred over the same period of time.

The navigational design of the online questionnaire was developed to resemble the familiar experience of completing a paper questionnaire. In the data collection system, respondents could move between pages/screens using “Next” and “Previous” buttons, simulating the action of turning physical pages. In contrast to paper, a hyperlinked list of questions was available in the left-most panel of the delivery system. Each question/page was colour-coded (red for questions not answered, green for questions answered) to indicate completion status, allowing respondents to easily identify which questions were answered or skipped. The majority of respondents followed the questionnaire in sequential order, yet this navigation aid allowed them to skip or return to questions freely, further mimicking the flexibility of a self-administered paper instrument.

Despite efforts to harmonise the administration modes, notable differences in how the survey was experienced by respondents remained. To reduce respondent burden and survey complexity, the online survey automatically skipped questions not applicable to the respondent based on their responses, in contrast to the paper questionnaire, which instructed respondents to proceed to the next applicable question. Rather than presenting multiple questions per page, the online questionnaire proceeded question by question, with each located on an individual page in the browser. While vertical scrolling was potentially required for some longer questions (especially on smaller devices), horizontal scrolling was never necessary.

National centres were able to monitor online participation through a secure progress and statistics module as part of the wider IEA StudyExpert system. This feature gave national centres access to a range of monitoring reports and real-time progress once the instruments were deployed. Results were displayed in a grid format with functionalities for sorting and filtering data by column, enabling detailed inspection of participation indicators such as first and last login, number of logins and response progress. For ease of review, full cell content could be viewed by hovering the cursor over truncated entries. All displayed results could be exported in Microsoft Excel or comma-separated values (CSV) format using the export function. The access to the progress and statistics module was designed to support local follow-up activities while protecting data confidentiality; NPMs or NDMs did not have access to individual responses. Chapter 6 provides further information on the field operations and monitoring progress.

Unclassified - Non classifié

8.3. Data entry and verification of paper questionnaires and tracking information

Each national centre was responsible for transcribing any information from paper questionnaires using a standard data capture software, the IEA Data Management Expert (IEA DME), as well as from tracking forms into the aforementioned IEA WinW3S.

National centres entered responses into data files created against a pre-prepared national codebook, accounting for national adaptations and extension made to the questionnaires. The codebook contained information about the names, lengths, labels, valid ranges (for continuous measures or counts) or valid values/codes (for nominal or ordinal questions) and missing codes for each variable. Before data entry commenced, national centres were required to verify this national codebook, which then served as templates for creating the corresponding dataset.

The ISC instructed national centres to discard any returned paper questionnaires that were unused or returned completely empty, and to enter data from any returned questionnaire that contained at least one valid response. To ensure consistency across participating countries and territories, data entry was required to be “as is”, that is without any interpretation, correction, omission, imputation or other cleaning. Any inconsistencies that remained after this data-entry stage were managed at the time of data cleaning (see below).

Key rules for data entry from paper included:

- Responses to categorical single-choice questions were generally coded as “1” if the first option (checkbox) was marked, “2” if the second option was marked, and so on.
- Responses to individual items in “check-all-that-apply” questions were initially coded as either “1” (marked) or “9” (omitted or invalid).
- Responses to numerical or count questions (e.g. school enrolment) were entered “as is”, that is, without any correction or truncation, even if a value was outside the originally expected range.
- Likewise, responses to filter questions and filter-dependent questions were entered exactly as filled in by the respondent, even if the information provided was logically inconsistent with a filter and in a non-applicable path.
- If responses were not given at all, not given in the expected format, ambiguous or conflicting in any other way (e.g. selection of two options in a single-choice question), the corresponding variable was coded as “Omitted or invalid”.

Data entered into the IEA DME software were automatically validated. First, any entered respondent identifier (ID) was validated against the checksum generated by the IEA WinW3S software. Any mistake in either the ID or the checksum resulted in an error message that prompted the data-entry person to check and correct the entered values. The data verification module of IEA DME also enabled identification of a range of problems, such as inconsistencies in identification codes and out-of-range or otherwise invalid codes. These potential problems had to be resolved or confirmed before data entry could resume.

To verify the reliability of data entry in participating countries/territories, national centres were required to double-enter at least 5% of the completed teacher and principal questionnaires, or a minimum of 100 questionnaires for each instrument. This involved at least two different data-entry staff entering the same questionnaires into separate datasets independently. Once the required number of cases had been entered into the respective datasets, the national centre was mandated to compute the data-entry quality check, which compared datasets by cross-checking the values of all variables on matched IDs. Also, national centres were encouraged to begin the process early, enabling the timely detection of any systematic or incidental data-entry errors. It also served as a training tool to identify data-entry staff who might need further instruction.

Unclassified - Non classifié

An error rate of 1% or less was considered acceptable. Any discrepancy above 1% required reporting to the ISC for further discussion and typically necessitated re-entry of the data. This procedure helped ensure that the margin of error in the processed datasets remained well below the defined threshold for quality assurance.

Before sending the data to the ISC for international processing, national centres conducted mandatory verification steps on all entered data from paper questionnaires and undertook corrections, as necessary. The corresponding checks were included in the IEA DME software, and the data were systematically checked for duplicate identification codes, data outside the expected valid range or values defined as valid. National centres reviewed the corresponding reports, resolved any inconsistencies and, where possible, corrected problems by looking up the original survey questionnaires. National centres also verified that all returned non-empty questionnaires were, in fact, entered and that the availability of data corresponded to the participation indicators on any of the tracking forms.

Parallel to the data entry from questionnaires, national centres reviewed the information from the tracking forms to verify completeness of materials, then entered the participation information (i.e. whether respondents participated or left the school/setting permanently between the time of sampling and the time of administration) into IEA WinW3S.

In addition to submitting the data files described above, national centres provided the ISC with further documentation, including hard copies or electronic scans of listing and tracking forms, copies of the paper instruments used and a report on the data-entry work via the survey activities questionnaire (SAQ).

8.4. Data integration, checking, editing and quality control at the ISC

Once national centres submitted their data to the ISC, data integration, processing and cleaning commenced to ensure completeness, consistency, accuracy and alignment with the international data structure. The key objective of this process was to ensure that data adhered to internationally comparable formats and that information from respondents was complete, could be linked across different sources and levels, and that the data accurately reflected the information collected within each participating country/territory.

A complex survey project such as TALIS 2024 and its various components and populations required a correspondingly complex data-cleaning setup and design. The ISC employed and adapted a version of its proprietary IEA Data Processing Expert (DPE) software, developed as a dedicated data processing platform using relational structured query language (SQL) databases and, where appropriate, with custom R scripts and code to provide specific functionality for TALIS. These systems were designed to automate and standardise the data integration and cleaning process. The ISC implemented a controlled sequence of procedures to ensure that all steps were executed in the correct order, that any specific data requirements were addressed and that the cleaning process remained independent of the persons in charge.

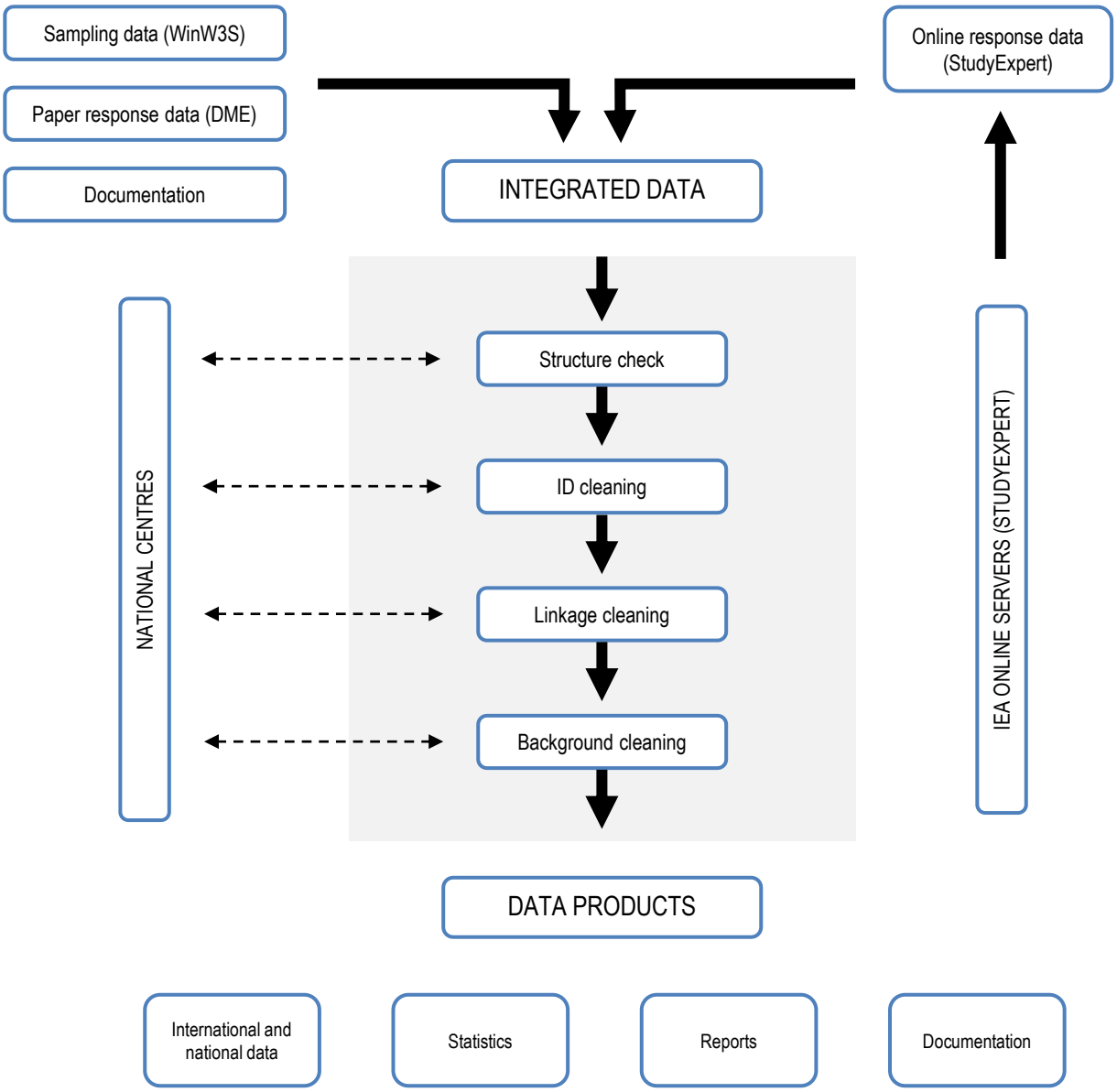
- All data processing systems and steps were thoroughly tested using simulated data containing the problems or inconsistencies that could be expected from the TALIS survey design.
- All incoming data and documentation were registered in a material receipt database along with the date of receipt and any specific information meriting attention later.
- All detected deviations from the international data structure resulting from national adaptations or extensions were cross-checked against the information provided by the countries/territories in the IEA StudyExpert instrument adaptation module, national instruments and codebooks.
- All general data processing and editing were organised according to rules consistently applied to all national datasets.

Unclassified - Non classifié

- All systematic or case-level corrections made to data were implemented and recorded in specific cleaning reports that the national centres reviewed and approved.

Figure 8.1 provides a schematic overview of this iterative process conducted in co-operation with the national centres. The following subsections of this chapter give a more detailed description of the sequential data-cleaning steps displayed in Figure 8.1.

Figure 8.1. Data processing at IEA Hamburg



Unclassified - Non classifié

8.4.1. Import, documentation and structure check

Data processing began with a review of the submitted data files and accompanying documentation, including the completed tracking forms. Most participating countries/territories submitted all required materials alongside their data, which facilitated this initial check. In accordance with national legislation and technical standards, any directly identifying clear text names had to be removed or redacted from the tracking forms before submission. Copies of tracking forms were routinely submitted electronically with national centres retaining the originals for their own reference and archive. For cases where documentation or data were incomplete or contradicting, the ISC followed up directly with the national centres to obtain the missing information. Once all necessary materials were received, the actual data processing proceeded.

All available data were imported from the respective sources and merged. This included online response data collected through the IEA StudyExpert system, paper response data entered into the IEA DME software, and sampling and tracking information generated through or entered into IEA WinW3S. At this stage, data from the online and paper administration modes were structurally harmonised and verified for consistency, ensuring that all datasets used the same valid and missing codes. This early integration allowed all records to be processed uniformly through the same data checks and procedures.

During import and integration, no within-case validation was conducted, yet all records were reviewed and filtered to ensure that only one record existed per respondent. This was particularly relevant for cases in which conflicting records were submitted, often where a respondent began the survey in one language and changed to another one later. Duplicate records were resolved systematically and, in most cases automatically, using the following steps:

- Detect all respondents with two or more records.
- Remove any record with no valid responses, retaining the record holding valid responses.
- Where responses exist in multiple records, compare the rate of completion (total responses provided divided by total responses expected), then drop records that are at least 0.5 percentage points less complete than others with the same ID.
- If records had similar completion rates, remove the one with less completion and an earlier timestamp.
- If still unresolved, drop the record with the earlier timestamp.

This process ensured that only the most complete and relevant data were retained for each respondent, thereby supporting the accuracy and reliability of subsequent processing steps. In the TALIS core survey and TKS, 947 duplicate cases were initially identified and addressed, while 79 such cases were handled using the same procedure in TALIS Starting Strong. Duplicate cases could only occur in countries/territories where the survey was administered in more than one language. Most issues occurred when respondents logged in, often answering no or only few questions, and then switched to another language version for reasons of familiarity or convenience.

For TALIS Starting Strong, responses collected through the Combined Questionnaire Main (CQ-M) and Combined Questionnaire Short (CQ-S) were allocated to the leader and/or staff databases based on predefined item mapping at the stage of instrument design (Tables 8.1 and 8.2). Although the two combined questionnaires were administered as separate instruments, their items were designed to correspond to constructs and variables relevant for leaders and/or staff. Using this mapping, all records were fully allocated to the corresponding target dataset(s) and the data from the combined questionnaires were not maintained as a separate dataset from that point onward. This approach ensured that the leader and staff datasets included all intended records and subsequent processing steps were implemented consistently regardless of the origin of data.

Unclassified - Non classifié

Table 8.1. Combined Questionnaire Main (CQ-M) mapping to Leader (LQ) and/or Staff (SQ) Questionnaire

Question number in CQ-M	Question number in SQ	Item mapping CQ-M to SQ	Question number in LQ	Item mapping CQ-M to LQ
1	1	Exact	1	Exact
2	2	Exact	2	Exact
3	5	Exact		
4	8	Exact		
5			5	Exact
6	9	Exact		
7	10	Exact		
8	11	Exact	3	c → b d → c e → d f → e g → f h → g i → h j → i
9			4	Exact
10	12	Exact		
11	13	Exact		
12	14	Exact		
13			13	Exact
14			14	Exact
15			15	Exact
16			16	Exact
17			18	Exact
18			19	Exact
19			20	Exact
20			21	Exact
21			22	Exact
22			23	Exact
23			24	Exact
24			25	Exact
25			26	Exact
26			27	Exact
27			28	Exact
28			29	Exact
29	15	Exact		
30	17	Exact		
31	18	Exact		Exact
32	19	p → g q → h r → i s → j t → k u → l v → m w → o	11	a → a b → b c → c d → d e → e f → f g → g h → h i → i j → j k → k l → l

Unclassified - Non classifié

Question number in CQ-M	Question number in SQ	Item mapping CQ-M to SQ	Question number in LQ	Item mapping CQ-M to LQ
				m → m n → n o → o
33	20	a → a b → b c → c d → d e → e f → f g → h h → i i → j j → k k → l	12	a → a b → b c → c e → d f → e g → f h → g i → h j → i k → j
34			30	Exact
35			31	Exact
36			32	Exact
37			33	Exact
38			34	Exact
39			35	Exact
40			36	Exact
41			37	Exact
42			38	Exact
43			39	Exact
44	43	Exact		
45	24	Exact		
46			40	Exact
47	27	Exact		
48	29	Exact		
49	30	Exact		
50	31	Exact		
51	33	Exact		
52	34	Exact		
53	35	Exact		
54	36	Exact		
55	37	Exact		
56	38	Exact		
57	39	Exact		
58	40	Exact		
59	41	Exact		
60			41	Exact
61			42	Exact
62	45	a → a b → b c → c e → d f → e g → h h → f k → i l → j m → k n → l	43	a → a c → d d → c f → e i → f j → g m → h n → i
63			44	Exact

Unclassified - Non classifié

Question number in CQ-M	Question number in SQ	Item mapping CQ-M to SQ	Question number in LQ	Item mapping CQ-M to LQ
64	47	a → a b → b c → c d → d e → e g → f h → g i → h j → l k → j l → k m → l n → m	45	c → a e → b f → c h → e i → f n → i
65	48	a → b b → c c → d d → e e → f f → g g → h		

Table 8.2. Combined Questionnaire Short (CQ-S mapping to Leader (LQ) and/or Staff (SQ) Questionnaire

Question number in CQ-S	Question number in SQ	Item mapping CQ-S to SQ	Question number in LQ	Item mapping CQ-S to LQ
1	1	Exact	1	Exact
2	2	Exact	2	Exact
3	4	Exact		
4	3	Exact		
5	5	Exact		
6	8	Exact		
7			6	Exact
8	9	Exact		
9	10	Exact		
10	11	Exact	3	Code: 1/2 → 1 3 → 2 4 → 3 5 → 4 6 → 5 7 → 6 8 → 7 9 → 8 10 → 9
11	12	Exact		
12	13	Exact		
13	14	Exact		
14			13	Exact
15			14	Exact
16			15	Exact
17			18	Exact
18			20	Exact

Unclassified - Non classifié

Question number in CQ-S	Question number in SQ	Item mapping CQ-S to SQ	Question number in LQ	Item mapping CQ-S to LQ
19			21	Exact
20			25	Exact
21			26	Exact
22			27	Exact
23	15	a → a b → b c → c d → d e → f f → g g → h h → i		
24	16	Exact		
25	17	Exact		
26	19	Exact		
27	20	a → a b → b c → c d → d e → e f → f g → h h → i i → j j → k	12	Exact
28	43	Exact		
29	23	Exact		
30	24	Exact		
31	25	Exact		
32	27	Exact		
33	28	Exact		
34	29	Exact		
35	30	Exact		
36	31	Exact		
37	33	Exact		
38	35	Exact		
39	37	Exact		
40	38	Exact		
41	39	Exact		
42	40	Exact		
43	41	Exact		
44			33	Exact
45			34	Exact
46			37	Exact
47			38	Exact
48			39	Exact
49			41	a → b b → c
50			42	a → a b → b c → c d → d e → e

Unclassified - Non classifié

Question number in CQ-S	Question number in SQ	Item mapping CQ-S to SQ	Question number in LQ	Item mapping CQ-S to LQ
				f → f g → g h → h i → p
51	45	a → a b → b c → c d → d e → e f → h h → i i → j j → k k → l	43	a → a c → d e → e g → g j → h k → i
52	46	Exact		
53	47	Exact	45	*c → a* *d → b* *e → c* *g → e* *h → f* *m → i*
54	48	a → b b → c c → d d → e e → f f → g g → h		

The next processing step was a structure check aimed to identify differences between the national and international record structures. The majority of participating countries/territories made structural adaptations and extensions to the questionnaires. The extent and nature of these adaptations and extensions varied greatly. Whereas some participating countries and territories administered the questionnaires without any or only minor changes, except for translations and necessary cultural adaptations, others adapted international questions, inserted new ones or opted out of certain questions or options. Given the risk of data loss when deviating from the international data structure, technical standards required national centres to follow strict rules.

Typical deviations reported during this step included unused international variables, added national variables, differences in variable lengths, added or removed response categories, and differences in coding schemes or validation rules. These deviations were systematically reviewed and cross-checked against the documented national adaptations. For online questionnaires, the vast majority of national adaptations were automatically mapped into variables and codes based on the comprehensive adaptation system in IEA StudyExpert. Where necessary, the ISC made additional modifications to align the data with the international design, such as recoding extra national options in multiple-choice questions to conform to the international coding scheme. The original national values were preserved in separate national variables for potential use in national reporting. For paper records, all mapping was performed manually. Additional systematic edits included: differentiating between “Omitted or invalid” and “Not administered”, and recoding values for unused international variables to “Not administered”.

NPMs and NDMs received detailed reports on structural deviations together with documentation on how the ISC resolved these. In a few cases, data were not available for certain variables because the corresponding question was not administered nationally. In some other instances, data had to be removed

Unclassified - Non classifié

because they were not internationally comparable due to errors in translation, adaptation or mapping that were only detected after the data had been collected. For more information, consult the *Teaching and Learning International Survey (TALIS) 2024 User Guide* (OECD, forthcoming[1]).

8.4.2. Identification variable and linkage cleaning

To uniquely identify, track and document each respondent and their corresponding questionnaire, each record in a data file must contain a unique identification number. In TALIS, the WinW3S software was used to assign these distinct IDs, whereas the IEA DME and StudyExpert systems received and validated these. It was crucial that records for primary sampling units (schools in the TALIS core survey and TKS, settings in TALIS Starting Strong) could then be linked to the records at the second level (teachers in the TALIS core survey and TKS, staff in TALIS Starting Strong). This linkage was implemented through a hierarchical ID numbering system, which was further cross-checked against tracking forms. After this step, the databases only included those primary sampling units marked as participating and with data available. The teacher and staff databases included only those records that were linked to one of these primary units.

Further ID cleaning focused on the consistency of tracking of information between the information used for listing, sampling and later tracking as well as the actual responses in the questionnaires. Whenever necessary, variables pertaining to teachers' or staff's listed gender, year of birth, exclusion and participation status were verified and checked against data availability and tracking forms.

The ISC required close co-operation with the national centres in order to resolve ID or linkage inconsistencies. For this purpose, national centres received standardised reports containing each identified inconsistency. Once the ISC had finalised the ID, linkage, participation and exclusion information, it transferred these data to the IEA's Sampling Team, which used this information to calculate participation rates, exclusion rates and estimation and replication weights.

Resolving inconsistencies in questionnaire data

After harmonising national data to the structure specified in the international codebooks, and after resolving all ID and linkage issues, the ISC applied a series of cleaning rules to the data. The process, conducted through scripts with the IEA DPE platform, identified and, in many cases, automatically corrected inconsistencies in the data. The ISC prepared detailed documentation of all checks and actions applied to the data and shared this documentation with national centres.

The classes of checks and actions are introduced below, and details are provided in the following sections, separately for the TALIS core survey/TKS and TALIS Starting Strong.[1]

- Filter questions, which appeared in the TALIS core survey, TKS and TALIS Starting Strong questionnaires, were used to direct respondents to a particular question or section of the questionnaire. Filter questions and their dependent questions were treated automatically in most cases. If a response to a filter question was equivalent to "No", meaning that the dependent questions were not applicable to that respondent, the dependent variables were set to "Logically not applicable" regardless of any values provided in any of the dependent questions and variables.
- "Check-all-that-apply" questions where all options within an item were marked as "Not checked", yet at least one response was expected, were consistently recoded to "Omitted/invalid". Similarly, if mutually exclusive and hence conflicting options within an item were marked as "Checked", all responses were recoded to "Omitted/invalid".
- For questions consisting of individual responses in percentage of a whole designed to add up to 100, constituent values were set to "Omitted or invalid" if the sum fell outside a 90 to 110 range (principal questionnaire PQ-12), or a 45 to 110 range (teacher questionnaire TQ-50). If any individual value was larger than 100, that value alone was set to "Omitted or invalid".

Unclassified - Non classifié

- Variables with implausible numerical values were also set to “Omitted or invalid”. For example, TQ-02 asked respondents about their age. Values below 18 were set to “Omitted or invalid”.
- Inconsistencies between the listed and actual responses regarding age and gender were resolved in a manner that only retained respondent-supplied information.[2]

The number of inconsistent or implausible responses in the data files varied from one participating country/territory to another, but no national dataset was completely free of inconsistent responses. Each problem was recorded in a database and identified by a unique ID. The entry also included a description of the problem and of the automatic action taken by the platform or the manual action taken by ISC staff. Staff referred issues that could not be corrected using systematic rules to the national centre so that they could check the original data collection instruments and tracking forms, trace the source of the inconsistency and recommend a remedy. Whenever possible, staff at the ISC proposed a solution and asked the national centre to either accept this or propose an alternative. Data files were then updated to reflect the agreed-upon solutions. Both systematic corrections and those applicable on a case-by-case basis were applied directly to scripts and executed automatically for each subsequent data run. If an NPM could not solve a problem by inspecting the instruments and forms or could not suggest a satisfying solution or explanation, the ISC in close consultation with the OECD Secretariat defined a final cleaning action.

8.4.3. Data editing actions for the TALIS core survey and TKS

Logically inconsistent filter/dependent responses

- PQ-22/23, PQ-31/32, PQ-33/34, PQ-35/36/37.
- TQ-04/05/06/07, TQ-10/11, TQ-17/18, TQ-20/21/22, TQ-36/37/38, TQ-41/42, TQ-68/69.
- A special treatment was used for TQ-10/11 for weighting purposes and calculation of the teacher multiplicity factor (WGTADJ4) (see Chapter 9 for more details).
  - If TQ-10 is “Yes” (1) and TQ-11 is “Omitted or invalid” or zero (0) → recode TQ-10 to “No” (2) and TQ-11 to “Logically not applicable”.
  - If TQ-10 is “No” (2) and TQ-11 is zero (0) or one (1) → recode TQ-11 to “Logically not applicable”.
  - If TQ-10 is “No” (2) but TQ-11 is two (2) or more → recode TQ-10 to “Yes” (1).

Check-all-that-apply questions with more than two items

- PQ-24, PQ-25 and PQ-36.[3]
- TQ-48 and TQ-68.

Out-of-range percentage sums

- For PQ-12, the complete set of variables was set to “Omitted or invalid” if the sum of percentages fell outside the range of 90-110. If any individual variable exceeded 100%, that variable was set to “Omitted or invalid”.
- For TQ-50, the complete set of variables was set to “Omitted or invalid” if the sum of percentages fell outside the range of 45-110. As with the others, any individual variable above 100% was set to “Omitted or invalid”.

Out-of-range/implausible numerical variables

- PQ-02: if value is less than 18 → set to “Omitted or invalid”.
- PQ-04a-d: if years of experience is greater than age (PQ-02) minus 18 → set to “Omitted or invalid”.

Unclassified - Non classifié

- PQ-04e: if years of experience in any other job is larger than age (PQ-02) minus 14 → set to "Omitted or invalid".
- PQ-04a-e: if age (PQ-02) is omitted and years of experience is larger than 79 → set to "Omitted or invalid".
- PQ-14a and PQ-14d: if value is zero (0) → set to "Omitted or invalid".
- PQ-17: if value is zero (0) → set to "Omitted or invalid".
- PQ-49: if sum of self-reported principal age (PQ-02) and PQ-49 is greater than 100 → set to "Omitted or invalid".
- TQ-02: if value is less than 18 → set to "Omitted or invalid".
- TQ-05: if value is between 40 and 99 → add 1 900 so values are changed to 1 940-1 999; if value is not between 1 940 and 2 024 → set to "Omitted or invalid".
- TQ-11: implausible values were reviewed and corrected in consultation with countries/territories, due to its influence on weighting.
- TQ-13a-c: if years of experience is greater than age (TQ-02) minus 18 → set to "Omitted or invalid".
- TQ-13d: if years of non-education experience is greater than age (TQ-02) minus 14 → set to "Omitted or invalid".
- TQ-13a–d: if age (TQ-02) is omitted and years of experience is greater than 79 → set to "Omitted or invalid".
- TQ-14: if value is greater than 120 → set to "Omitted or invalid".
- TQ-15: if value is greater than 120 → set to "Omitted or invalid".
- TQ-16: if value is greater than 120 → set to "Omitted or invalid".
- TQ-46: if enrolment is zero (0) or greater than 500 → set to "Omitted or invalid".
- TQ-74: if sum of self-reported teacher age (TQ-02) and TQ-74 is greater than 100 → set to "Omitted or invalid".

8.4.4. Data editing actions for TALIS Starting Strong

Logically inconsistent filter/dependent responses

- LQ-07/08 and LQ-09/10.
- SQ-06/07, SQ-09/10, and SQ-12/13/14, SQ-15/16/17/18.
- The following treatment was applied to SQ-09/10:
  - If SQ-09 is "Yes" (1) and SQ-10 is "Omitted or invalid" or zero (0) → recode SQ-09 to "No" (2) and SQ-10 to "Logically not applicable".
  - If SQ-09 is "No" (2) and SQ-10 is zero (0) or one (1) → recode SQ-10 to "Logically not applicable".
  - If SQ-09 is "No" (2) but SQ-10 is two (2) or more → recode SQ-09 to "Yes" (1).

Check-all-that-apply questions with more than two items

- LQ-15 and LQ-26 (included in the leader, combined-main and combined-short questionnaires).

Out-of-range percentage sums

- For LQ-31, the complete set of variables was set to "Omitted" if the sum of percentages fell outside the range of 75-125.

Unclassified - Non classifié

Out-of-range/implausible numerical variables

- LQ-02: if value is less than 18 → set to “Omitted or invalid”.
- LQ-05 (options a-b): if years of experience is larger than age (LQ-02) minus 18 → set to “Omitted”.
- LQ-05 (option c-d): if years of experience is larger than age (LQ-02) minus 10 → set to “Omitted”.
- LQ-05 (option a-d): if age (LQ-02) is missing (omitted) and years of experience is larger than 83 → set to “Omitted”.
- LQ-06: if value is greater than 120 → set to “Omitted or invalid”.
- LQ-22 (option a): if value is greater than 15 → set to “Omitted or invalid”.
- LQ-22 (options b-d): if value is greater than 200 → set to “Omitted or invalid”.
- LQ-23 (options a-c): if value is greater than 200 → set to “Omitted or invalid”.
- LQ-24: if value is greater than 200 → set to “Omitted or invalid”.
- LQ-25: if value is zero (0) in the questionnaire → set to “Omitted or invalid”.
- LQ-27 (options a-h): each item should be less than or equal to the value indicated in LQ-25.
- LQ-27: If LQ-25 is missing or flagged → use a threshold of 300 for each item.
- SQ-02: if value is less than 18 → set to “Omitted or invalid”.
- SQ-08 (option a-c): if years of experience is larger than age (SQ-02) minus 10 → set to “Omitted”.
- SQ-08 (options a-c): if age (SQ-02) is missing (omitted) and years of experience is larger than 83 → set to “Omitted”.
- SQ-10: implausible values were reviewed and corrected in consultation with countries due to their influence on weighting.
- SQ-27: if value is greater than 120 → set to “Omitted or invalid”.
- SQ-34 (options a–g): if value is greater than 500 → set to “Omitted or invalid”.
- SQ-35: if enrolment is zero (0) or greater than 300 → set to “Omitted or invalid”.
- SQ-36 (options a–e):
  - Keep cases only if each variable is less than or equal to SQ-35.
  - If SQ-35 is missing, then SQ-36a-e should be set to “Omitted” when larger than 300.
- SQ-37 (options a–g):
  - Each item should be less than or equal to the value indicated in SQ-35.
  - If SQ-35 is missing or flagged → use a threshold of 300 for each item.

8.4.5. Coding of missing data

In the online mode, the assignment of missing values was automatically determined by the instrument design and respondents’ actions. During manual data capture using IEA DME at the national centres, data-entry staff could assign either valid values or missing data codes. Later, the ISC applied additional missing values during processing to support analysis and to reflect distinct types of non-response. A response to a question can be missing for several reasons, and TALIS 2024 distinguishes between four types of missing codes, each treated differently during processing (length-dependent Statistical Package for the Social Sciences [SPSS] and tagged R missing codes stated in parentheses):

- “Not administered” (“8”, “98”, “998”, etc. / NA[a]): Assigned when a question was not presented to the respondent and one of the following instances applied:
  - Empty questionnaire: If the returned questionnaire is empty, all variables referring to that instrument are coded as “Not administered” (unit non-response).

Unclassified - Non classifié

  - Questions or parts not administered: A participating country/territory may have chosen not to administer a certain question or question part in their national questionnaire.
  - Questions not administered due to questionnaire design: In the TALIS core survey, each teacher received one of three forms with subset of questions each. In TALIS Starting Strong, the combined questionnaires did not present all questions from both the leader and staff questionnaires.
  - Translation or other data collection errors.
- "Omitted or invalid" ("9" / NA[m]): Used when the question was administered, but one of the following instances occurred:
  - Non-response: The question was administered but no response was provided.
  - Uninterpretable/invalid: The respondent selected more than the expected number of checkboxes (or marks in the paper administration) or gave an otherwise uninterpretable or invalid response.
- "Logically not applicable" ("6" / NA[(b}): Assigned during processing when a respondent's earlier response to a filter question rendered one or more dependent questions not applicable.
- "Not reached" ("7" / NA[r]): Used exclusively for GPK items in the TKS dataset.[4] Indicates that the respondent stopped answering before reaching the end. The last valid answer in the instrument was identified, first omitted response after this last answer was coded as "Omitted or invalid", and all subsequent variables were coded as "Not reached". Thus, "Not reached" values are exclusively located towards the end of the GPK instrument.

These distinctions ensure that distinct types of missing data are properly identified and consistently managed during processing, subsequent analyses and reporting.

8.5. Interim data products

Building the TALIS international database was an iterative process during which the ISC provided the OECD Secretariat and national centres with updated versions of data files whenever a major step in data processing was completed. This process aimed to ensure that countries and territories had a chance to review their data and conduct additional plausibility and statistical checks to validate the data. The data products that the ISC released included date files for the respective component and populations as well as data summaries. Given the role of the OECD Secretariat and countries/territories as data controllers, and the ISC as the primary data processor, all interim data were made available to the OECD Secretariat in full and without and suppressions, whereas each participating country/territory received only its own data.

Data releases were versioned and included the following major iterations, with a focus on the TALIS core survey:

- Following the respective end of data collection in each country or territory, the ISC released a first data version (v1.0) of unweighted and uncleaned data, except for the ID and linkage cleaning described above, to its sampling team for weighting in a staggered fashion from May to about September 2024. Where necessary for the purpose of non-response bias analyses, certain countries and territories also received their own data to facilitate cross-checking with administrative data or known control totals.
- The second major data version (v2.0) was weighted and cleaned to the extent possible and responses from national centres were available. It was released to the OECD Secretariat and countries and territories at the end of November 2024. At that time, almost all of the known identification, linkage and content issues in these data had been identified and resolved. Estimation

Unclassified - Non classifié

weights and variables facilitating variance estimation were also included. To protect respondents' identity, the ISC scrambled the original respondent IDs used in the field. These data were also used to begin production on the draft tables for the international reports. Importantly, NPMs were asked to review all data carefully and complete and submit a data sign-off form, a new step quality assurance step in TALIS 2024 to reduce the number of subsequent corrections, an observation made in 2018 and before, which complicated the report production at advanced stages.

- The third major data version (v3.0) was prepared and released in April 2025 following the scaling work and the inclusion of preliminary simple indices and other derived variables to be used to break-down reporting tables in the international report drafts as well as in relation to further limit the risk of re-identification by collapsing detailed count and other types information to coarsened grouped equivalents. An update of this database (v3.1) was shared with the OECD and participating countries/territories in July of 2025, concluding all data editing and correction, following the counties/territories review of the first draft of the reporting tables and chapters. Despite the earlier requirement to review all data comprehensively, this chapter and table review led to the identification of a sizeable number of issues in the data, for example erroneous mappings between national and international levels of education, which were not detected earlier. Version 3.1 also included the full set of derived variables, which were developed further in light of reporting needs and re-identification risk assessments at the international and national levels.

Between these three major versions, minor versions (e.g. Data version 2.1) were shared with countries and territories as well as the OECD, reflecting important per-country/territory updates that were deemed too substantial to only be reflected in the next major version.

The periods above relate to the largest survey component in TALIS 2024, namely the TALIS core survey. The periods for TALIS Starting Strong generally trailed those of the core survey by two to six weeks depending on the end of data collection, complexity and later reporting of the early childhood data in December 2025. The timeline for the TKS component generally followed the timeline for the core survey through major Version 2 but assembly of the complete draft database only occurred in June 2025, so about two to three months later than the TALIS core survey, given the additional steps required for the analysis and description of the GPK scale. The assembly of the TKS dataset was also less urgent, given that the initial report on the TKS and the associated dataset was planned for release in the first quarter of 2026, a few months after public release of data and report on the TALIS core survey.

All interim data products were accompanied by documentation detailing the data cleaning, national adaptation mappings, duplicate cases, weighting and descriptive statistics. The latter contained weighted as well as unweighted univariate statistics and frequencies for all questionnaire variables for each participating country/territory. For categorical variables, which represent most variables in TALIS, the percentages of respondents choosing each of the response options were displayed. For numeric or count variables, various descriptive measures were reported. These included the minimum, the maximum, the mean, the standard deviation, the median, the mode, percentiles and quartiles. For both types of variables, the percentages of missing information due to respondents omitting or not reaching a particular question were reported. These summaries were used for a more in-depth review of the data at the international and national levels in terms of plausibility, unexpected response patterns, suspicious profiles and so on.

8.6. Building the restricted and public-use international databases

For the international database (IDB), comprising data from more all countries and territories, data cleaning at the ISC ensured that the information coded in each variable was, in fact, internationally comparable, that national adaptations were reflected appropriately in all variables concerned (or data suppressed as a consequence of item and data adjudication), and that all records could be successfully linked across the two levels.

Unclassified - Non classifié

The process of building each IDB complied with the OECD's rules for the processing and transfer of personal data and, where relevant, with rules stipulated by national or regional legislation for the protection of personal data (e.g. the European Union General Data Protection Regulation).

The IDBs were produced in two different configurations serving two different audiences.

- The restricted-use file/database (RUF) was prepared for use by the participating countries and territories under confidentiality and embargo. This version of the database was comprehensive and only excluded variables used during sampling, collection and processing that carried no analytical value beyond the originating country/territory. It was made available in draft and final form, corresponding to data versions 3.0 and 3.1 described above.
- The public-use file/database (PUF) was prepared for use by the general public. Suppressions and coarsening of information were implemented to minimise the risk of re-identifying the original respondents and to comply with national laws and regulation on personal data protection, as well as with the OECD data protection rules. This database was produced as a single, final database to coincide with the launch of the respective international reports, noting that the first version in October 2025 excluded materials related to environmental and sustainability education. A second version was produced for release in due time including the questions and variables still under embargo in the first.

For the sake of completeness, all interim products included records for all sampled units (schools/settings or teachers/staff), even if the corresponding questionnaire was not returned or returned empty. In contrast, the international databases only included records that satisfied the participation standards. Records from units that either did not participate or did not pass adjudication for other reasons (e.g. because within-school/setting participation was insufficient) were removed. The adjudication process further determined a rating that identified which countries or territories were considered fit for comparative reporting. The adjudication rating was reflected in a new variable for TALIS 2024, namely ADJRT24.

To protect the respondents' identity and reduce the risk of re-identification, certain disclosure avoidance measures were applied: i) consistently for all participating countries/territories; and ii) in specific national datasets upon request by the national centres. The scope and details of these measures were further informed by assessments of the risk of re-identification implemented by the OECD Secretariat separately for the TALIS core survey and TALIS Starting Strong.

The eventual measures applied to both the RUF and PUF configurations of the international databases involved the following:

- The school (IDSCHOOL) and teacher (IDTEACH) IDs for the TALIS core survey, as well as staff (IDSTAFF) and early childhood and care setting (IDSETTING) IDs for TALIS Starting Strong were randomly scrambled. These scrambled and sequentially assigned IDs no longer matched those used during data collection; however, the structural link between levels was maintained. Matching tables were created for each participating country/territory and made available only to authorised individuals within that participating country/territory, yet not the OECD Secretariat.
- Variables used purely for the stratification of samples, that is, birth year (ITBIRTHY) and gender (GENDER) were removed. Only age and gender as collected in the questionnaires were retained.
- Variables used purely for stratification of schools or settings, i.e. IDSTRATE and IDSTRATI, were removed to prevent re-identification of geographical or organisational groups. Stratum information is mostly of interest for national-level analysis and was thus available to the concerned country/territory yet not others.
- Replication zone and unit variables (BRRSZONE, BRRSREP, BRRTZONE and BRRTREP) were dropped because they could enable indirect re-identification of units.
- For the TALIS core survey and TKS, the information used in the calculation of final sample and replicate weights (for the school level: WGTFAC1 and WGTADJ1C; for the teacher level:

Unclassified - Non classifié

WGTFAC1, WGTFAC2T, WGTADJ1T, WGTADJ2T and WGTADJ3T) was removed because it could allow identification of stratification cells. In TALIS Starting Strong, the variables excluded were similar (for the setting level: WGTFAC1 and WGTADJ1L; for the staff level: WGTFAC1, WGTADJ1S, WGTFAC2S, WGTADJ2S and WGTADJ3S).

- In the case of the TALIS core survey, specific interim variables were excluded to ensure consistency and analytical clarity. These included a set of language-related variables (TT4G29A-G), as well as the original responses to a question on teachers' policy recommendation (TT4G81) and its resolved counterpart (TT4G81_R). Additionally, the English version variable capturing teachers' single most important recommendation to stakeholders (T4TPOLREC) was excluded to address concerns related to sensitivity.
- Finally, the set of quality control questions were excluded from the teacher data in the TALIS core survey and TKS as well as staff data in TALIS Starting Strong (TTJ4G01, TTJ4G02, TTJ4G03, TTJ4G04, TTJ4G05A, TTJ4G05B, TTJ4G05C, TTJ4G05D, TTJ4G06A, TTJ4G06B, TTJ4G06C, TTJ4G06D, TTJ4G06E and TTJ4G06F).

The draft RUF for the core survey, which included data from all participating countries/territories, was made available to all authorised individuals in April 2025. This was done following the agreement to the general data sharing policy at the 14th TALIS Governing Board meeting in February 2025, the provision of information to participating countries/territories' NPMs on the planned configuration of the RUF database, and authorisation from the OECD Secretariat as the data controller. The equivalent draft RUF for TALIS Starting Strong was made available to participating national centres in May 2025. These releases enabled participating countries and territories to replicate all results presented in the draft chapters of the international reports and were further used in a confidential international analysis workshop that the ISC held in Hamburg, Germany, in May 2025. Only accredited national centre members, i.e. individuals who were nominated in the corresponding confidentiality agreement with the OECD Secretariat, had access to the database and workshop.

The final RUF was shared with countries/territories under the same embargo and confidentiality rules in July 2025. It included all variables deemed to have analytical utility for international comparisons. The corresponding database for TALIS Starting Strong was released to national centres in July 2025 and the database for the TKS in October 2025.

The final public-use database (PUF) for the TALIS core survey (excluding variables related to environmental and sustainability education) was scheduled for release in October 2025, December 2025 for TALIS Starting Strong, March 2026 for the TKS, and 2027 for the full PUF (including variables related to environmental and sustainability education).

Each PUF included all adjudicated countries/territories and all cases, unless withdrawn. To manage the risk of re-identification, the PUF will contain fewer variables than the RUF, with suppressed variables often replaced by a less detailed grouped alternative. This limitation of variable inclusion aimed to ensure confidentiality while supporting a wide range of analytical uses.

The full list of suppressions relative to the original questionnaires as well as additional guidance on the use and limitations of data use were documented in the user guide to the TALIS 2024 international databases (OECD, forthcoming[1]).

References

OECD (2019), *TALIS 2018 Technical Report*, OECD Publishing, Paris, http://www.oecd.org/education/talis/TALIS_2018_Technical_Report.pdf. [2]

Unclassified - Non classifié

OECD (2019), *TALIS Starting Strong 2018 Technical Report*, OECD Publishing, Paris, https://www.oecd.org/content/dam/oecd/en/publications/reports/2019/01/talis-starting-strong-2018-technical-report/TALIS-Starting-Strong-2018-Technical-Report.pdf. [3]

OECD (forthcoming), *Teaching and Learning International Survey (TALIS) 2024 User Guide*, OECD Publishing, Paris. [1]

Notes

[1] TALIS 2018 and previous cycles, as well as TALIS Starting Strong 2018 used an additional set of rules, which applied to questions with more than two items and response options “Yes” and “No” and similarly “Check-all-that-apply” questions for which multiple check boxes could be selected. Occasionally, respondents marked just the “Yes” boxes but left the “No” boxes unchecked, resulting in omitted values. In earlier cycles, it was assumed that any unmarked boxes meant “No/unchecked” in instances where a combination of “Yes” and “Omitted” responses was found, and the corresponding values were thus changed to “No”. For TALIS 2024, the TALIS Technical Advisory Group recommended a clear rationale to treat “lazy omissions” and intentional “No” selections in the same way. Such rationale cannot be established from the data, and this set of cleaning rules was thus discontinued. See OECD (2019[2]) for details for the TALIS core survey and OECD (2019[3]) for TALIS Starting Strong.

[2] In TALIS 2018 and previous cycles listed age or gender was used to impute omitted values in the questionnaire.

[3] Numbering from item PQ-30 onwards refers specifically to the ISCED level 1 principal questionnaire, which includes one additional question. In the ISCED levels 2 and 3 questionnaires, the numbering of corresponding questions differs from that point onward.

[4] As a departure from previous cycles, the “Not reached” missing code is no longer used for any instrument other than the GPK component of the TKS. See OECD (2019[2]) and (2019[3]) for details.

9 Estimation weights, participation rates and sampling error

This chapter covers three important aspects of the quality of the OECD Teaching and Learning International Survey (TALIS) 2024 outcomes. The first is the weighting of the data to produce unbiased estimates. The weights need to reflect the sampling design and correct for unequal selection probabilities. Descriptions are provided of how each component of the final estimation weights was defined and how those components were assembled into the final estimation weights. The second aspect, participation rates, is detailed as a significant factor affecting data quality. The third and final aspect described is balanced repeated replication, the method chosen for this survey to achieve unbiased estimates of the sampling error.

Unclassified - Non classifié

9.1. Overview

This chapter covers three important aspects of the quality of the OECD Teaching and Learning International Survey (TALIS) 2024 outcomes: the weighting of the data to correct for unequal selection probabilities and to adjust for non-response to produce unbiased estimates; participation rates; and the estimation of sampling error.

Although the international sampling design was prepared as a self-weighting sampling plan of teachers/staff members (whereby each teacher/staff member ultimately would have had the same final estimation weight), the actual conditions in the field, non-response at school/early childhood education and care (ECEC) setting and teacher/ECEC staff level, and the co-ordination of multiple samples made it impossible to fulfil this ideal plan. In the end, in most participating countries/territories, the national sampling plan was established as a stratified multi-stage probability sampling plan with unequal selection probabilities.

The following sections of this chapter detail how each component of the final estimation weight was defined and how these components were assembled into the final estimation weight. Annex F provides the resulting participation rates for each participating country/territory, module (International Standard Classification of Education [ISCED] levels 1, 2, 3 and 02, children under the age of three [U3], Teacher Knowledge Survey [TKS]) and population (teachers, schools/principals, staff, settings/leaders).

Because of the unequal weights and the complex structure of the samples, sampling error must be estimated by accounting for the survey's design and weights. Failure to do this can translate into severely biased estimates of sampling error.

Correctly estimating sampling error for complex samples is often a daunting task but simple and approximately unbiased methods are available. TALIS 2024, like its previous cycles, opted for balanced repeated replication (BRR) not only because of its statistical properties (consistency, asymptotic unbiasedness) and its portability (one formula fits all types of parameter estimates) but also because it is comparatively easy to compute.

The last section of this chapter explains how the variables ("replicates") needed for conducting this method were created and how the BRR estimates of sampling error, as displayed in the various reports, were computed. These estimates of the sampling error are another key element of the statistical quality of the TALIS survey outcomes.

A more detailed description of the survey design and its implementation can be found in Chapter 5 of this report.

9.2. Estimation weights

The statistics produced for TALIS 2024 were derived from data obtained through samples of schools/settings, principals/leaders and teachers/staff. To achieve meaningful statistics for a participating country/territory, those statistics needed to reflect the whole population from which they were sampled and not merely the sample used to collect them. The process of inferring characteristics of the survey population from sample data is called estimation.

The estimation weight, or final weight, is the device that allows the production of country-level estimates from the observed sample data. The estimation weight indicates the number of population units that a sampled unit (e.g. a survey respondent) represents. The final weight is the combination of many factors reflecting the selection probabilities during the various sampling stages and including a correction for non-response obtained at each stage. Other factors may also come into play as dictated by special

Unclassified - Non classifié

conditions to maintain unbiasedness of the estimates (e.g. adjustment for teachers/staff working in more than one school/setting).

Because TALIS 2024 consisted of multiple modules, estimation weights had to be computed independently for each module. This requirement held true even if the samples were co-ordinated across the modules.

Generally, final weights are the product of a design, or base weight, and of one or multiple adjustment factors; the former is the inverse of the selection probability, the latter compensates for random non-response that could, if not accounted for, induce bias in the estimates. These design weights and adjustment factors are specific to each stage of the sample design and to each explicit stratum. Because the participating countries/territories adapted the general sample design of TALIS 2024 to their own conditions, the estimation weights had to conform to these national adaptations.

The following are the conventional notations used in this chapter. The letters h, i and j are used as subscripts, lower-case letters d, k, l, m, n, q, r and t refer to the sample and upper-case letters H, L, M and N refer to the population (see also Table 9.1).

- Each participating country/territory had H explicit strata, and the index $h = 1, \ldots, H$ points to the explicit stratum.
- In each explicit stratum, a sample of n_h schools/settings was selected from the N_h schools/settings forming stratum h. The index $i = 1, \ldots, n_h$ therefore points to the i^{th} sampled school/setting in explicit stratum h.
- Each school/setting $i = 1, \ldots, n_h$ within the explicit stratum h had a measure of size (MOS) noted as M_{hi}; the sum of the individual MOS is noted as M_h. Ideally, this MOS comprised the expected number of eligible teachers/staff members in each school/setting, but if this information was unavailable, the MOS could be another size measure such as number of students/children. The number of teachers/staff members (not counting the leader) per school/setting at the time of teacher/staff sampling is given by L_{hi}.
- In each responding school/setting, a sample of m_{hi} teachers/staff was selected from the listing of L_{hi} teachers/staff. Leaders with staff duties (including persons who work alone in a setting) were added to the staff sample.

Table 9.1. Conventional notations used in this chapter

Unit	Indices	Units sampled	Participating units	Eligible non-participating units	Ineligible units	Units in population
Explicit stratum	h					H
Schools/settings	i	n	r		d	N
Measure of size						M
Teachers/staff (without leader)	j	m	t	q		L
Leaders with staff duties			t^l	q^l		

9.3. Weights for school/setting and principal/leader data

9.3.1. Design weight for school/setting and principal/leader data

The first sampling stage in TALIS 2024 consisted of selecting the school/setting samples. In most participating countries/territories, this sample followed a systematic random sampling scheme with probability proportional to size (PPS). In participating countries/territories where most schools/settings were small or no MOS was available, systematic simple random samples were selected instead, which

Unclassified - Non classifié

meant each school/setting in an explicit stratum had the same probability of being selected. Consequently, a school/setting base weight was needed to represent this first sampling stage. If all schools/settings were selected in an explicit stratum of a participating country/territory (i.e. a census was conducted), the school/setting base weight was set to 1 for that explicit stratum.

Using the notation given above, for each school/setting $i = 1, \ldots, n_h$ and each explicit stratum $h = 1, \ldots, H$, the school/setting base weight was given by:

$$WGTFAC1_{hi} = \frac{M_h}{n_h \times M_{hi}}$$

In countries/territories with a three-stage sampling design (see Annex D for information about the samples of individual countries/territories), the weight component corresponding to the first stage was incorporated into the school/setting base weight by multiplying the inverse of the first-stage selection probabilities with the original school/setting base weight.

9.3.2. Weight adjustment for school/setting or principal/leader non-response

Despite all efforts to secure the participation of all selected schools/settings, some were unable or unwilling to participate.

The school/setting non-response adjustment factor was computed separately for the teacher/staff and the principal/leader populations. A school was treated as non-responding with regard to the teacher population if less than 50% of the selected teachers participated. For the TALIS Starting Strong component (ISCED level 02 and U3), 33% of the selected members of staff had to participate to count the setting as responding with regard to the staff population. A school/setting was treated as non-responding with regard to the principal/leader population if the principal/leader did not return a completed questionnaire. Hence, a school/setting could be treated as participating for the teacher/staff population and non-participating for the principal/leader population, or vice versa.

Assuming non-participation occurred at random, i.e. there was no systematic difference between respondents and non-respondents within explicit strata, the weights of participating schools/settings were adjusted to also represent non-participating schools/settings.

For each explicit stratum $h = 1, \ldots, H$, if r_h schools/settings out of the n_h selected schools/settings participated in TALIS 2024, and if d_h schools/settings were found to be closed or out of scope, the non-response adjustment factor was:

for schools/principals in ISCED levels 1, 2 and 3:

$$WGTADJ1C_h = \frac{n_h - d_h}{r_h}$$

for settings/leaders in ISCED level 02 and U3:

$$WGTADJ1L_h = \frac{n_h - d_h}{r_h}$$

9.3.3. Final (estimation) school/setting weight for school/setting and principal/leader data

The school/setting estimation weight is the product of the school/setting base weight and the school/setting non-response adjustment factor. It was used to estimate the school-/setting-related parameters, with the information taken from the principal/leader questionnaires.

The final school/setting weight (school/setting estimation weight) for each participating school/setting $i = 1, \ldots, r_h$ and each explicit stratum $h = 1, \ldots, H$ was given as:

Unclassified - Non classifié

for schools/principals in ISCED levels 1, 2 and 3:

$$SCHWGTC_{hi} = WGTFAC1_{hi} \times WGTADJ1C_h = \frac{M_h}{n_h \times M_{hi}} \times \frac{n_h - d_h}{r_h}$$

for settings/leaders in ISCED level 02 and U3:

$$LEADERWGT_{hi} = WGTFAC1_{hi} \times WGTADJ1L_h = \frac{M_h}{n_h \times M_{hi}} \times \frac{n_h - d_h}{r_h}$$

9.3.4. Interpreting the principal/leader weights

For the principal/leader weights, it is important to consider that the approach taken by TALIS does not reflect situations where multiple principals/leaders work in the same school/setting, or where one principal/leader works in multiple schools/settings. This approach prioritises statements that are made referring to schools/settings. As a consequence, statement formulations like "The principals/leaders of 20% of schools/settings report that…" are recommended.

For any statements about schools/settings or principals/leaders, only the weights $SCHWGTC_{hi}$ or $LEADERWGT_{hi}$ in the principal/leader datasets must be used. The use of weighting variables from the teacher/staff datasets is incorrect.

9.4. Weights for teacher/staff data

9.4.1. Design weight for the school/setting level of teacher/staff data

The design weight for the school/setting level of the teacher/staff population is identical to the equivalent school/setting weights.

$$WGTFAC1_{hi} = \frac{M_h}{n_h \times M_{hi}}$$

9.4.2. Weight adjustment for non-participating schools/settings

In the case of teacher data, a school was considered a participating school if at least 50% of the selected teachers provided responses in their questionnaires; response to one single item was sufficient to be counted. For the TALIS Starting Strong component (ISCED level 02 and U3), 33% of the selected staff members had to participate to consider the setting as participating. Note that schools/settings for which principal/leader data were available could be deemed participating in the principal/leader survey but non-participating for the teacher/staff population, and vice versa. An adjustment factor to the school/setting design weight was thus necessary and it was possible that it would differ from the adjustment factor computed for the school/setting dataset.

For each explicit stratum $h = 1, \ldots, H$, if r_h schools/settings participated out of the n_h selected schools/settings, and if d_h schools/settings were closed or out of scope, the non-response adjustment factor was:

for teachers in ISCED levels 1, 2 and 3:

$$WGTADJ1T_h = \frac{n_h - d_h}{r_h}$$

for staff in ISCED level 02 and U3:

$$WGTADJ1S_h = \frac{n_h - d_h}{r_h}$$

Unclassified - Non classifié

9.4.3. Design weight for teacher/staff data

In each participating school/setting, a systematic random sample of teachers/staff was selected with equal probabilities from all teachers/staff who were not the leader. All leaders with staff duties had a staff design weight of 1 because they had been selected with certainty in every setting.

For each selected teacher/staff member $j = 1, \ldots, m_{hi}$ of school/setting $i = 1, \ldots, n_h$ in explicit stratum $h = 1, \ldots, H$, the teacher/staff base weight was:

for teachers in ISCED levels 1, 2 and 3:

$$WGTFAC2T_{hi} = \frac{L_{hi}}{m_{hi}}$$

for staff members who were not the leader in ISCED level 02 and U3:

$$WGTFAC2S_{hi} = \frac{L_{hi}}{m_{hi}}$$

for leaders with staff duties in ISCED level 02 and U3:

$$WGTFAC2S = 1$$

9.4.4. Weight adjustment for non-participating teachers/staff

Unfortunately, because not all selected teachers/staff members were able or willing to participate in TALIS, the non-participating teachers/staff members needed to be represented by the participating ones. Under the assumption of “Missing at random” within an explicit stratum, representation was achieved by applying the teacher/staff non-response adjustment factor.

Each participating school/setting $i = 1, \ldots, r_h$ of each explicit stratum $h = 1, \ldots, H$ had three kinds of sampled teachers/staff: those who responded (noted t_{hi}), those who left the school permanently after the sample had been selected or were found to be out of scope, and those who did not respond but who were still at the selected school/setting (noted q_{hi}). Here, the teacher/staff non-response adjustment factor was:

for teachers in ISCED levels 1, 2 and 3:

$$WGTADJ2T_{hi} = \frac{t_{hi} + q_{hi}}{t_{hi}}$$

for staff members who were not the leader in ISCED level 02 and U3:

$$WGTADJ2S_{hi} = \frac{t_{hi} + q_{hi}}{t_{hi}}$$

Non-responding leaders with staff duties were adjusted differently, assuming that leaders with staff duties could not be adjusted by increasing the staff weights from the same setting because their answers might have been systematically different due to their role within the setting. Therefore, other leaders with staff duties from the same explicit stratum represented non-participating leaders with staff duties:

for leaders with staff duties in ISCED level 02 and U3:

$$WGTADJ2S_h = \frac{t_h^l + q_h^l}{t_h^l}$$

9.4.5. Teacher/staff multiplicity adjustment factor

Some teachers/staff members were working in more than one school/setting. Because the teacher/staff samples were independent from one school/setting to the next, selecting the same teacher/staff members more than once was possible. An adjustment was needed to account for the number of schools/settings in

Unclassified - Non classifié

which a given teacher/staff member worked in order to avoid overestimation of teacher counts. In TALIS, this information came from the questionnaires teachers/staff members completed. The adjustment factor was the reciprocal of the number of schools/settings in which the teachers/staff members worked.

For teachers/staff members who did not provide an answer in the questionnaire, or who provided answers that were considered as being out of the possible range by the national centre, it was assumed that they did not work in other schools/settings.

The teacher/staff multiplicity adjustment factor computed for each responding teacher/staff member $j = 1, \dots, t_{hij}$ in each participating school/setting $i = 1, \dots, r_h$ in explicit stratum $h = 1, \dots, H$, was:

for teachers in ISCED levels 1, 2 and 3:

$$WGTADJ3T_{hij} = \frac{1}{nb_schools_{hij}}$$

with $nb_schools$ being the number of schools a teacher was teaching

for staff in ISCED level 02 and U3:

$$WGTADJ3S_{hij} = \frac{1}{nb_settings_{hij}}$$

with $nb_settings$ being the number of settings in which a staff member was working.

9.4.6. Final teacher/staff weight

The final teacher/staff weight (estimation weight) is the product of the school/setting design weight, the weight adjustment for school/setting non-response, the teacher/staff design weight, the weight adjustment for teacher/staff non-response and the teacher/staff multiplicity adjustment factor. All estimates referring to the teacher/staff population used the final teacher/staff weight.

The final teacher/staff weight computed for each participating teacher/staff $j = 1, \dots, t_{hi}$ in each participating school/setting $i = 1, \dots, r_h$ in explicit stratum $h = 1, \dots, H$ was:

for teachers in ISCED levels 1, 2 and 3:

$$TCHWGT_{hij} = WGTFAC1_{hi} \times WGTADJ1T_h \times WGTFAC2T_{hi} \times WGTADJ2T_{hi} \times WGTADJ3T_{hij}$$

$$= \frac{M_h}{n_h \times M_{hi}} \times \frac{n_h - d_h}{r_h} \times \frac{L_{hi}}{m_{hi}} \times \frac{t_{hi} + q_{hi}}{t_{hi}} \times \frac{1}{nb_schools_{hij}}$$

for staff members who were not the leader in ISCED level 02 and U3:

$$STAFFWGT_{hij} = WGTFAC1_{hi} \times WGTADJ1S_h \times WGTFAC2S_{hi} \times WGTADJ2S_{hi} \times WGTADJ3S_{hij}$$

$$= \frac{M_h}{n_h \times M_{hi}} \times \frac{n_h - d_h}{r_h} \times \frac{L_{hi}}{m_{hi}} \times \frac{t_{hi} + q_{hi}}{t_{hi}} \times \frac{1}{nb_settings_{hij}}$$

for leaders with staff duties in ISCED level 02 and U3:

$$STAFFWGT_{hij} = WGTFAC1_{hi} \times WGTADJ1S_h \times WGTFAC2S \times WGTADJ2S_h \times WGTADJ3S_{hij}$$

$$= \frac{M_h}{n_h \times M_{hi}} \times \frac{n_h - d_h}{r_h} \times 1 \times \frac{t_h^l + q_h^l}{t_h^l} \times \frac{1}{nb_settings_{hij}}$$

9.4.7. School/setting weights in the teacher/staff data

In the teacher/staff datasets, the school/setting weight is included as well. It is defined as:

$$SCHWGTT_{hi} = WGTFAC1_{hi} \times WGTADJ1T_h$$

Unclassified - Non classifié

This weight has not been used for any analysis presented in the TALIS international reports. However, it may be useful for scholars using the TALIS public database for secondary analysis, specifically for multi-level analysis, where aggregates determine modelling variables at the school/setting level (Atasever, Huang and Rutkowski, 2025[1]; Mang et al., 2021[2]). It must be noted that this school/setting weight is different from the one in the school/setting dataset; it should therefore not be used to analyse data from the school/setting dataset.

Please note that multi-level analysis is not recommended for TALIS Starting Strong because smaller numbers of staff members were surveyed within settings.

9.5. Participation rates

The quality requirements for TALIS translated into participation rates (response rates) for schools/settings and for teachers/staff (tabulated in Chapter 10 for participating countries/territories). Reaching the required participation levels does not preclude some degree of error in the results but should reduce reliance on the "Missing at random" assumptions made for the non-response adjustments.

9.5.1. Participation rate for schools/settings and principals/leaders

TALIS considered schools/settings where the principal/leader returned a questionnaire to be "Participating" schools/settings for the purposes of the school/setting and principal/leader weights and database.

The unweighted school/setting participation rate was computed as:

$$\frac{\sum_{h=1}^{H}\sum_{i=1}^{r_h} 1}{\sum_{h=1}^{H}\sum_{i=1}^{n_h-d_h} 1} = \frac{\sum_{h=1}^{H} r_h}{\sum_{h=1}^{H}(n_h - d_h)}$$

where r_h, n_h and d_h are as defined above. This formula represents the crude proportion of principals/leaders from which questionnaires were received.

The weighted school/setting participation rate was computed as:

for schools/principals in ISCED levels 1, 2 and 3:

$$\frac{\sum_{h=1}^{H}\sum_{i=1}^{r_h} WGTFAC1_{hi}}{\sum_{h=1}^{H}\sum_{i=1}^{r_h} SCHWGTC_{hi}}$$

for settings/leaders in ISCED level 02 and U3:

$$\frac{\sum_{h=1}^{H}\sum_{i=1}^{r_h} WGTFAC1_{hi}}{\sum_{h=1}^{H}\sum_{i=1}^{r_h} LEADERWGT_{hi}}$$

This formula represents the proportion of the population of schools/settings or principals/leaders accounted for by the participating schools/settings.

Both rates were computed once over the subset of participating schools/settings in the original selection (before replacement) and once over the complete set of participating schools/settings (after replacement). Although replacements could be called upon as substitutes for non-responding schools/settings, the countries/territories were encouraged to do all they could to obtain the participation of the schools/settings in the original sample. As the number of replacements increased, the sample would have lost its probabilistic features and become increasingly "purposive", a situation with the potential to undermine the reliability, validity and interpretability of a country's/territory's results.

Unclassified - Non classifié

9.5.2. Participation rate for teachers/staff

School/setting level

TALIS considered schools/settings where at least 50% of selected teachers/at least 33% of selected staff members responded to the questionnaire to be "Participating" schools/settings for the purpose of the teacher/staff weights and database, regardless of their participation status on the school/setting database, that is, regardless of whether or not their principals/leaders returned their questionnaire. TALIS deemed schools/settings that failed to meet this threshold as "Non-participating".

The unweighted participation rate for the school/setting level was computed as:

$$\frac{\sum_{h=1}^{H}\sum_{i=1}^{r_h} 1}{\sum_{h=1}^{H}\sum_{i=1}^{n_h-d_h} 1} = \frac{\sum_{h=1}^{H} r_h}{\sum_{h=1}^{H}(n_h - d_h)}$$

where r_h, n_h and d_h are as defined above.

The weighted school/setting participation rate was computed as:

for schools in ISCED levels 1, 2 and 3:

$$\frac{\sum_{h=1}^{H}\sum_{i=1}^{r_h} WGTFAC1_{hi}}{\sum_{h=1}^{H}\sum_{i=1}^{r_h} WGTFAC1_{hi} \times WGTADJ1T_h}$$

for settings in ISCED level 02 and U3:

$$\frac{\sum_{h=1}^{H}\sum_{i=1}^{r_h} WGTFAC1_{hi}}{\sum_{h=1}^{H}\sum_{i=1}^{r_h} WGTFAC1_{hi} \times WGTADJ1T_h}$$

Teacher/staff level

Teacher/staff participation was calculated over all participating schools/settings, whether the schools/settings were in the original sample or used as a replacement.

The unweighted teacher/staff participation rate was defined as:

$$\frac{\sum_{h=1}^{H}\sum_{i=1}^{r_h}\sum_{j=1}^{t_{hi}} 1}{\sum_{h=1}^{H}\sum_{i=1}^{r_h}\sum_{j=1}^{t_{hi}+q_{hi}} 1} = \frac{\sum_{h=1}^{H}\sum_{i=1}^{r_h} t_{hi}}{\sum_{h=1}^{H}\sum_{i=1}^{r_h} t_{hi} + q_{hi}}$$

This formula gives the crude ratio of the number of responding teachers/staff in participating schools/settings with respect to the expected sample size from the participating schools/settings.

The weighted teacher/staff participation rate was:

$$\frac{\sum_{h=1}^{H}\sum_{i=1}^{r_h}\sum_{j=1}^{t_{hi}} WGTFAC1_{hi} \times WGTFAC2T_{hij} \times WGTADJ3T_{hij}}{\sum_{h=1}^{H}\sum_{i=1}^{r_h}\sum_{j=1}^{t_{hi}} WGTFAC1_{hi} \times WGTFAC2T_{hij} \times WGTADJ2T_{hi} \times WGTADJ3T_{hij}}$$

This formula represents the proportion of teachers/staff in the population who would have participated in the assessment, given all schools/settings had participated.

Overall teacher/staff participation rates

The overall weighted and unweighted participation rates were the products of the respective participation rates at the school/setting level and the teacher/staff participation rates.

Unclassified - Non classifié

9.5.3. Reporting participation rates

Weighted and unweighted participation rates, with and without replacement schools, were produced for the school/setting and principal/leader data and for the teacher/staff data. The analytical results for each country/territory were annotated according to whether or not the response rate requirements were adequately met. The detailed participation rates are listed in Annex F.

9.6. Estimating sampling error with balanced repeated replication

Estimation of sampling error for surveys with complex sampling designs such as TALIS requires special attention. Both the survey design and the unequal weights are needed to obtain (approximately) unbiased estimates of sampling error. Neglecting these design features can lead to severe underestimation of the sampling error. While exact formulae exist in theory for stratified PPS sample designs, the required computations become practically impossible as soon as the number of primary units selected per stratum exceeds two.

Over the years, various statisticians have proposed approximate solutions for this problem. An important class of solutions is that of resampling or replication. The best-known examples of replication methods are interpenetrating subsamples (Mahalanobis), balanced half-samples or balanced repeated replication (McCarthy, Fay), the Jackknife (Quenouille, Tukey, Durbin, Frankel) and the Bootstrap (Efron). For reviews of these methods, see, for example, Lohr (1999[3]), Rust and Rao (1996[4]) or Wolter (2007[5]). Atasever, Meinck and Cortes (2025[6]) provided a comprehensive investigation and discussion of the advantages and disadvantages of the major replication methods used in international large-scale assessments and their variants, including the methods used for TALIS.

In a similar vein to what was done for the OECD Programme for International Student Assessment (PISA) since its inception (OECD, 2024[7]), TALIS adopted the balanced repeated replication (BRR) method for estimation of the sampling error of the population parameter estimates. BRR is a replication method suited to sample designs where exactly two primary sampling units (PSUs) are selected in each stratum, and the total of participating PSUs is a multiple of four.

The principle of BRR is as follows: each of the two PSUs can provide an unbiased estimate of any sample-observed parameter of interest of its stratum. If the sampling design comprises H strata, then 2^H possible unbiased estimates of the parameter of interest are obtained by combining either PSU from each of the H strata. The sampling error of the estimate of the parameter of interest can directly be computed by comparing each of the 2^H estimates with their mean, as is usually done in simple basic statistics. Even with moderate values of H, the number of unbiased estimates may be quite large (e.g. $2^5 = 32$, $2^{10} = 1\,024$ $2^{20} = 1\,048\,576$). BRR provides a way to extract from the complete set of 2^H possible replicates a much smaller subset that gives the same measure of sampling error as the full set.

9.6.1. Creating replicates for BRR

BRR was developed for sample designs that use only two PSUs per stratum. Clearly, none of the countries/territories participating in TALIS 2024 implemented this type of design. Fortunately, a superimposed “BRR-ready” sample plan could be used to approximate the implemented sample design. The participating schools/settings (of the original sample or the replacements), listed in the order in which they appeared on the sampling frame and sorted by stratification and size, were paired within explicit strata, and each pair was dubbed “pseudo stratum” or “zone”.

If the number of participating schools/settings in an explicit stratum was odd, a triplet was formed with the last three schools/settings. If the sample was a census, the schools/settings had the function of explicit strata, and the teachers/staff members within schools/settings were paired. In the very rare cases where

Unclassified - Non classifié

a school/setting had only one teacher/staff member, it was not possible to form either a pair or a triplet, and this teacher/staff member stayed alone in a zone. The pairs (or triplets) were then numbered sequentially from 1 to G, spanning the whole sample; within each pseudo stratum or zone, each school/setting was assigned a random pseudo-PSU number of 1 or 2 as depicted in Table 9.2.

Table 9.2. Example of "BRR-ready" sample design and random assignment of pseudo-PSUs

Explicit stratum	School/setting identifier	Zone = pseudo stratum	Pseudo-PSU
1	1001	1	1
1	1002	1	2
1	1003	2	2
2	1004	2	1
2	1005	3	1
2	1006	3	2
3	1007	3	1
…	…	…	…
H	…	G-1	2
H	…	G-1	1
H	…	G	1
H	…	G	2

In BRR, to compute a replicate estimate of the parameter of interest, the weight of one of the two pseudo PSUs is dropped, and the weight of the remaining PSU is doubled. A special matrix (of order $4t$) of +1s and -1s (the so-called Hadamard matrix) is used to indicate which PSU should be kept (+1) and which should be dropped (-1) from each pseudo stratum in BRR, a process associating the +1s with the PSUs numbered 1 and the -1s with the PSUs numbered 2. As an example, the Hadamard matrix of order 8 can be written as:

$$Hadamard_8 = \begin{pmatrix} +1 & +1 & +1 & -1 & +1 & -1 & -1 & -1 \\ -1 & +1 & +1 & +1 & -1 & +1 & -1 & -1 \\ -1 & -1 & +1 & +1 & +1 & -1 & +1 & -1 \\ +1 & -1 & -1 & +1 & +1 & +1 & -1 & -1 \\ -1 & +1 & -1 & -1 & +1 & +1 & +1 & -1 \\ +1 & -1 & +1 & -1 & -1 & +1 & +1 & -1 \\ +1 & +1 & -1 & -1 & -1 & -1 & +1 & -1 \\ -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 \end{pmatrix}$$

In this matrix, each column is a BRR replicate, and each line is a pseudo stratum or zone. The matrix entry indicates which pseudo-PSU should be kept from each pseudo stratum to create the BRR replicate. The Hadamard matrix of order 8 translates into the pattern depicted in Table 9.3.

For TALIS 2024, and in keeping with what was done in the previous cycles of TALIS and PISA, a variation of the BRR developed by Fay (1989[8]) was implemented. Instead of completely dropping a PSU and doubling the weight of the other one, the final weight ($TCHWGT_{hij}/STAFFWGT_{hij}$) of every teacher/staff member in the PSU indicated by the Hadamard matrix was multiplied by the replicate factor of 1.5 to get the replicate weight. Likewise, the final weight ($TCHWGT_{hij}/STAFFWGT_{hij}$) of the teachers/staff in the remaining PSU was multiplied by the replicate factor of 0.5. This strategy removed the risk of completely deleting a subgroup within the replicate sample contributing to some subgroup estimates.

In cases where there was an odd number of PSUs in an explicit stratum, the last three PSUs constituted the last zone. For each replicate, as indicated by the Hadamard matrix, the weight of the selected unit was multiplied by 1.7071 if it was the single unit, and the weights of the remaining pair were multiplied by

Unclassified - Non classifié

0.6464. If the matrix indicated that the pair should be selected, the weights of the paired units were multiplied by 1.3536, and the weight of the single unit was multiplied by 0.2929. This strategy, developed by Judkins (Adams and Wu, 2003[9]), ensured that the sum of the factors was 3.

Table 9.3. Example of which pseudo-PSU to select per zone

Zone	Replicate 1	Replicate 2	Replicate 3	Replicate 4	Replicate 5	Replicate 6	Replicate 7	Replicate 8
1	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 2
2	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 2
3	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 2
4	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 2
5	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 2
6	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 2
7	Pseudo-PSU 1	Pseudo-PSU 1	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 1	Pseudo-PSU 2
8	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 2	Pseudo-PSU 2

The resulting factors based on the Hadamard matrix of order 8 looked like the pattern in Table 9.4 for the first seven schools/settings of the example above.

Table 9.4. Example of BRR factors

School/setting identifier	Zone	Pseudo-PSU	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
1001	1	1	1.5	1.5	1.5	0.5	1.5	0.5	0.5	0.5
1002	1	2	0.5	0.5	0.5	1.5	0.5	1.5	1.5	1.5
1003	2	2	1.5	0.5	0.5	0.5	1.5	0.5	1.5	1.5
1004	2	1	0.5	1.5	1.5	1.5	0.5	1.5	0.5	0.5
1005	3	1	0.6464	0.6464	1.3536	1.3536	1.3536	0.6464	1.3536	0.6464
1006	3	2	1.7071	1.7071	0.2929	0.2929	0.2929	1.7071	0.2929	1.7071
1007	3	1	0.6464	0.6464	1.3536	1.3536	1.3536	0.6464	1.3536	0.6464

Because the nominal sample size for ISCED levels 1, 2 and 3 was $n = 200$ schools, a maximum of $G = 100$ zones or pseudo strata were created for each participating country/territory, and a series of $G = 100$ BRR replicate weights were also computed and stored. For ISCED level 02 and U3, with $n = 180$ settings, a maximum of $G = 92$ zones were created and $G = 92$ BRR replicate weights were calculated. The creation of BRR weights was applied to all participating countries/territories, regardless of the sample size and of the method of sample selection.

Unclassified - Non classifié

9.6.2. Estimating the sampling error

Let θ be the population parameter of interest. Let $\hat{\theta}$ be the full sample estimate for θ obtained by using the final weight, and let $\hat{\theta}_g$, $g = 1,\ldots,G$, be the G BRR replicate estimates (i.e. 92 or 100) of the same parameter of interest obtained by using the BRR weights described earlier. Then, with k set to equal 0.5, Fay's BRR estimate of the sampling variance and sampling error of $\hat{\theta}$ are, respectively, given as:

$$\hat{V}_{FAY}(\hat{\theta}) = \frac{1}{G(1-k)^2}\sum_{g=1}^{G}(\hat{\theta}_g - \hat{\theta})^2 = \frac{4}{G}\sum_{g=1}^{G}(\hat{\theta}_g - \hat{\theta})^2$$

$$se_{FAY}(\hat{\theta}) = \sqrt{\hat{V}_{FAY}(\hat{\theta})}$$

9.6.3. Using sampling error when comparing estimates

When estimates (either variables or groups within a country/territory) are compared across two countries/territories, or when a country/territory value is compared to the international average, the comparison must be scaled through use of the appropriate estimate of sampling error.

The standard error for the difference of two estimates from one country/territory, say θ_1 and θ_2, is given as:

$$se(\hat{\theta}_1 - \hat{\theta}_2) = \sqrt{\hat{V}_{FAY}(\hat{\theta}_1) + \hat{V}_{FAY}(\hat{\theta}_2) - 2\widehat{Cov}(\hat{\theta}_1, \hat{\theta}_2)}$$

The standard error for the difference of the estimates for two countries/territories, or for the difference of the estimates of two TALIS cycles, say θ_A and θ_D, is:

$$se(\hat{\theta}_A - \hat{\theta}_D) = \sqrt{\hat{V}_{FAY}(\hat{\theta}_A) + \hat{V}_{FAY}(\hat{\theta}_D)}$$

The standard error for the difference of an estimate for a given country/territory, say θ_A and the international average $\hat{\bar{\theta}}$, is:

$$se\left(\hat{\theta}_A - \hat{\bar{\theta}}\right) = \sqrt{\frac{(C^2 - 2C)\hat{V}_{FAY}(\hat{\theta}_A) + \sum_{k=1}^{C}\hat{V}_{FAY}(\hat{\theta}_k)}{C^2}}$$

where $\hat{\bar{\theta}} = \sum \hat{\theta}_k / C$, C is the number of countries/territories contributing to the mean $\hat{\bar{\theta}}$, and $\hat{\theta}_A$ is the estimate for country/territory A.

Comparisons of subpopulations within a country/territory should be done while accounting for sample dependency. Specific software, such as, for example, the International Association for the Evaluation of Educational Achievement (IEA) International Database Analyzer (IDB Analyzer) (2025[10]), accounts automatically for covariance between units of the groups to be compared. Another solution would be to apply a regression using a dummy variable, as illustrated in the following example. Suppose that the difference between male and female teachers for some characteristic (e.g. hours of class management per week) is of interest. A dummy variable $Gender = 0$ if male, $Gender = 1$ if female can be set. A regression model can then be written as $Score = a_0 + a_1 Gender$. Clearly, if $Gender = 0$, then $Score_{male} = a_0$. Likewise, by setting $Gender = 1$, $Score_{female} = a_0 + a_1$ is obtained. Design-based estimation of the regression parameters a_0 and a_1 can be done using appropriate software that uses the replicate weights to estimate the standard errors of the regression parameters. If the test of significance on a_1 cannot reject the null hypothesis H_0: $a_1 = 0$, then it must be concluded that scores for male teachers and female teachers are not significantly different.

If $\hat{\theta}$ is one of the statistics described above and $se(\hat{\theta})$ is the standard error of $\hat{\theta}$, confidence intervals about zero can easily be obtained by computing the following boundaries:

Unclassified - Non classifié

$$lower_{\alpha} = \hat{\theta} - t_{\frac{\alpha}{2};df} se(\hat{\theta})$$

and

$$upper_{\alpha} = \hat{\theta} + t_{\frac{\alpha}{2};df} se(\hat{\theta})$$

where $1-\alpha$ is the pre-set confidence level (e.g. $1-\alpha = 0.95$) and $t_{\frac{\alpha}{2};df}$ is $1-\frac{\alpha}{2}$ percentile of the student distribution with df degrees of freedom. In most applications, df will be large enough to allow the use of the standard normal deviate $z_{1-\frac{\alpha}{2}}$ (e.g. $z_{1-\frac{\alpha}{2}} = 1.96$ for $\alpha = 0.05$). However, in order to confirm the number of degrees of freedom, one should verify how many zones actually contribute to the statistic $\hat{\theta}$and how many BRR replicates contribute to the computation of $se(\hat{\theta})$. The IEA IDB Analyzer provides the number of variance zones contributing to a variance estimate as an output parameter for any analysis.

9.6.4. Design effect (deff) and effective sample size

Sampling within complex surveys such as TALIS is known to be “less efficient” than simple random samples of the same size. Usual explanations include the fact that respondents are selected in groups of individuals sharing many characteristics, such as leadership, environment, professional training, equipment and so on. Stratification and weighting can also affect the efficiency of a sampling design. This effect, often causing a loss in efficiency is usually summarised in a statistic called “design effect” or *deff* (Kish, 1965[11]). The design effect for a statistic and a sampling plan is the ratio of the variance of the estimate under the sampling plan to the variance of the same estimate under simple random sampling (SRS) of the same size. In the case of TALIS, the true design effect was approximated by:

$$deff(\hat{\theta}, BRR) = \frac{\hat{V}_{Fay}(\hat{\theta})}{\hat{V}_{SRS}(\hat{\theta})}$$

where the estimate under SRS is unweighted.

Alternatively, the design effect can be regarded as the ratio of sample sizes. The “effective sample size” describes the sample size of the complex survey adjusted for the design effect:

$$n_{effective} = \frac{n}{deff(\hat{\theta}, BRR)}$$

The following tables give the estimated design effect for selected variables from the principal/leader questionnaires (Table 9.5 to Table 9.9) and the teacher/staff questionnaires (Table 9.10 to Table 9.15), by the participating country/territory. *Deff* values near 1 indicate that the design was as precise as a simple random sample of the same size. *Deff* values larger than 1 indicate that the sampling design was less efficient than a simple random sample of the same size; *deff* values smaller than 1 indicate a gain in precision. Alternatively, deff values indicate by what factor the sample size was affected: the larger the *deff*, the smaller the effective sample size; reciprocally, the smaller the *deff*, the larger the effective sample size.

Because the value of the *deff* depends on the design itself (efficiency of the stratification, clustering, sample size) and on the true sampling variance of the variable in the population, it varies from one variable to the next.

While design effects in international large-scale assessments ILSA are mostly driven by the effects of cluster sampling, *deff* for principal/leader data are exclusively due to the effects of stratification and weighting as no clustering occurs for these target populations. While stratification has the potential to increase the efficiency of a sampling design, weighting – accounting for unequal selection probabilities and varying non-response patterns – can affect the *deff* in both directions. In most cases, largely varying weights increase sampling error and the *deff*. Due to the TALIS sampling approach for schools/settings (selection with probabilities proportional to size) and the largely varying final school/setting weights being

Unclassified - Non classifié

a consequence of this, effects of the *deff* can be significant. As can be seen in Table 9.5 to Table 9.9 however, the samples for principal/leaders are still often as efficient as a simple random sample (*deff* of about 1). Relatively large sampling errors for these populations are due to the fact that the sample size is relatively small (200 principals/180 leaders).

Table 9.5. Estimated design effects for selected variables, ISCED level 2, principal data

Country/territory	Diversity beliefs	Academic rigor	Job satisfaction, overall	Instructional leadership
	T4PDIVBF	T4PACADT	T4PJOBSAT	T4PLEADS
Albania	1.21	1.17	0.92	1.33
Alberta (Canada)	1.38	1.42	1.75	1.86
Australia	1.28	1.25	1.28	1.93
Austria	1.20	1.87	1.14	1.62
Azerbaijan	1.99	1.39	1.52	1.63
Bahrain	1.00	1.02	0.98	0.82
Belgium	1.89	2.00	1.29	1.69
Flemish Community (Belgium)	1.63	1.73	1.34	1.12
French Community (Belgium)	2.05	1.23	1.04	1.43
Brazil	1.20	1.63	1.29	1.26
Bulgaria	1.22	1.30	1.18	1.51
Chile	1.98	2.83	2.73	2.46
Colombia	1.18	1.27	1.01	2.11
Costa Rica	1.81	1.65	1.64	1.58
Croatia	1.03	1.35	1.31	1.09
Cyprus	0.83	0.86	0.74	0.95
Czechia	1.27	1.30	1.34	1.09
Denmark	1.38	1.22	1.23	1.81
Estonia	1.21	0.82	0.99	1.26
Finland	1.58	1.21	1.52	1.39
France	1.03	1.09	1.06	1.33
Hungary	1.24	1.09	1.20	1.14
Iceland	1.15	0.99	0.72	0.83
Israel	1.70	2.25	2.23	2.41
Italy	0.94	0.82	1.24	1.53
Japan	0.98	1.17	1.31	1.12
Kazakhstan	2.53	2.94	2.54	1.85
Korea	1.17	1.38	1.62	0.91
Kosovo	1.16	0.80	1.36	0.95
Latvia	1.76	1.39	1.84	1.93
Lithuania	1.34	1.64	2.03	1.44
Malta	1.09	0.91	1.11	0.91
Montenegro	0.94	1.05	0.84	0.81
Morocco	2.84	2.19	1.95	1.91
Netherlands	1.35	1.37	1.13	1.75
New Zealand	2.10	1.91	1.31	1.09
North Macedonia	0.79	1.13	1.20	1.16
Norway	1.42	1.90	1.32	1.38
Poland	1.12	1.74	1.56	1.52
Portugal	1.46	0.94	1.69	0.91
Romania	1.36	1.59	1.46	1.31
Saudi Arabia	1.20	1.15	0.97	1.58
Serbia	1.15	1.18	1.16	1.24
Shanghai (China)	2.03	1.45	1.30	1.51

Unclassified - Non classifié

Country/territory	Diversity beliefs	Academic rigor	Job satisfaction, overall	Instructional leadership
	T4PDIVBF	T4PACADT	T4PJOBSAT	T4PLEADS
Singapore	1.24	1.05	1.30	0.81
Slovak Republic	0.90	1.18	1.11	1.26
Slovenia	1.26	1.02	1.30	1.58
South Africa	1.58	1.80	1.59	1.20
Spain	2.40	2.01	3.64	2.65
Sweden	1.51	1.15	1.53	1.66
Türkiye	1.26	1.60	1.03	1.63
United Arab Emirates	1.15	1.05	1.21	1.29
United States	2.81	5.31	0.92	4.06
Uzbekistan	1.20	1.05	0.93	1.50
Viet Nam	1.20	1.24	0.94	1.25

Table 9.6. Estimated design effects for selected variables, ISCED level 1, principal data

Country/territory	Diversity beliefs	Academic rigor	Job satisfaction, overall	Instructional leadership
	T4PDIVBF	T4PACADT	T4PJOBSAT	T4PLEADS
Australia	1.16	1.44	1.05	1.12
Belgium	1.33	0.98	1.25	1.34
Flemish Community (Belgium)	1.17	1.06	1.01	1.09
French Community (Belgium)	1.52	1.11	1.27	1.19
Brazil	1.43	1.27	1.31	1.09
France	1.02	0.94	0.96	1.08
Japan	0.81	0.96	1.36	1.08
Korea	2.02	2.15	1.86	1.54
Morocco	1.12	1.68	1.59	1.38
Netherlands	0.89	0.93	1.22	1.10
New Zealand	1.98	1.48	1.17	1.08
Saudi Arabia	1.52	0.95	1.12	1.35
Slovenia	1.29	1.18	1.24	1.56
Spain	1.90	1.84	2.24	1.87
Türkiye	1.38	1.05	1.13	1.29
United Arab Emirates	1.13	1.21	1.07	1.07

Table 9.7. Estimated design effects for selected variables, ISCED level 3, principal data

Country/territory	Diversity beliefs	Academic rigor	Job satisfaction, overall	Instructional leadership
	T4PDIVBF	T4PACADT	T4PJOBSAT	T4PLEADS
Croatia	1.50	1.28	1.44	1.62
Denmark	1.87	2.14	1.49	1.26
Flemish Community (Belgium)	1.27	0.76	1.12	1.24
Portugal	1.50	1.60	1.08	1.49
Saudi Arabia	1.20	1.38	1.20	1.14
Slovenia	0.76	0.79	1.31	0.88
Türkiye	1.40	1.42	1.23	1.34
United Arab Emirates	0.95	0.76	1.25	1.53

Unclassified - Non classifié

Table 9.8. Estimated design effects for selected variables, ISCED level 02, leader data

Country/territory	Work experience	Time spent on leadership tasks	Leader innovations in the ECEC setting	Job satisfaction
	SL2G05B	SL2G31B	S2LEADSPL2	SL2G43I
Chile	1.06	1.15	1.23	1.36
Colombia	3.17	2.91	3.49	2.03
Denmark	1.33	1.32	1.34	0.98
Finland	1.12	1.14	1.12	1.56
Flemish Community (Belgium)	1.27	1.13	1.45	1.27
Germany	1.05	0.84	0.93	1.05
Ireland	1.14	1.91	1.93	2.37
Israel	0.95	1.14	0.91	0.74
Japan	1.69	1.62	1.67	1.40
Morocco	0.83	0.98	0.71	0.73
New Zealand	1.41	1.63	1.18	1.59
Norway	1.58	1.21	1.16	1.02
Spain	2.19	1.82	2.79	1.63
Sweden	1.14	2.59	2.06	2.15
Türkiye	1.22	1.26	1.47	1.15

Table 9.9. Estimated design effects for selected variables, U3, leader data

Country/territory	Work experience	Time spent on leadership tasks	Leader innovations in the ECEC setting	Job satisfaction
	SL2G05B	SL2G31B	S2LEADSPL2	SL2G43I
Flemish Community (Belgium)	2.94	2.23	1.60	1.59
Germany	1.10	0.92	1.00	0.85
Ireland	1.88	1.55	1.21	1.85
Israel	1.02	1.85	1.89	1.52
New Brunswick (Canada)	1.18	1.10	1.20	1.41
New Zealand	0.37	1.96	1.24	2.36
Norway	1.67	1.22	1.26	1.06
Quebec (Canada)	0.94	1.26	1.17	1.76

Table 9.10. Estimated design effects for selected variables, ISCED level 2, teacher data

Country/territory	Job satisfaction, overall	Exchange of information and ideas among teachers	Teacher self-efficacy, overall	Clarity of instruction
	T4JOBSAT	T4EXINF	T4SELF	T4CLAIN
Albania	3.20	2.35	1.53	1.96
Alberta (Canada)	5.11	3.82	3.31	1.78
Australia	1.64	1.61	1.30	1.23
Austria	2.71	1.72	1.45	1.37
Azerbaijan	3.13	1.95	2.62	2.17
Bahrain	1.02	0.89	0.86	1.14
Belgium	2.42	3.36	1.91	1.36
Flemish Community (Belgium)	2.15	4.83	1.58	1.24
French Community (Belgium)	2.17	1.50	1.40	1.50
Brazil	2.67	2.05	1.33	1.42
Bulgaria	3.82	3.17	2.44	2.14
Chile	2.57	2.97	2.49	2.91

Unclassified - Non classifié

Country/territory	Job satisfaction, overall	Exchange of information and ideas among teachers	Teacher self-efficacy, overall	Clarity of instruction
	T4JOBSAT	T4EXINF	T4SELF	T4CLAIN
Colombia	3.15	3.94	3.21	2.60
Costa Rica	2.92	2.15	1.69	1.51
Croatia	2.42	1.18	2.04	1.74
Cyprus	1.20	1.07	1.29	1.28
Czechia	2.46	1.86	1.37	1.55
Denmark	1.91	2.45	2.24	1.60
Estonia	2.23	1.48	1.61	1.27
Finland	2.54	2.26	1.42	1.69
France	1.86	1.65	1.43	1.16
Hungary	2.59	1.72	2.03	1.39
Iceland	0.95	1.13	0.93	1.21
Israel	2.05	1.88	2.09	1.50
Italy	1.81	1.38	2.34	1.08
Japan	2.36	1.70	1.03	1.28
Kazakhstan	3.21	2.93	2.09	2.00
Korea	2.14	2.33	1.63	1.18
Kosovo	1.73	1.93	2.21	2.19
Latvia	1.94	2.03	1.66	2.16
Lithuania	3.12	1.64	1.72	1.33
Malta	1.02	0.95	0.94	0.91
Montenegro	1.11	1.20	1.19	1.23
Morocco	4.30	3.21	1.66	2.55
Netherlands	1.89	2.31	2.52	1.56
New Zealand	2.45	2.68	1.81	0.77
North Macedonia	2.92	1.73	2.16	1.45
Norway	3.23	3.72	2.09	1.64
Poland	2.78	1.84	2.13	1.89
Portugal	1.90	2.33	1.20	1.04
Romania	3.28	1.43	1.93	1.62
Saudi Arabia	1.91	1.35	1.26	1.18
Serbia	2.24	1.87	1.70	1.62
Shanghai (China)	2.47	1.98	1.93	1.22
Singapore	1.92	0.99	1.80	1.77
Slovak Republic	3.26	1.57	1.57	1.20
Slovenia	1.70	1.66	1.25	1.22
South Africa	3.07	3.52	2.29	2.05
Spain	5.07	3.41	2.68	2.07
Sweden	3.00	1.92	3.30	2.71
Türkiye	4.18	2.38	1.50	1.60
United Arab Emirates	4.82	6.02	3.34	3.65
United States	3.74	3.67	3.09	2.35
Uzbekistan	2.78	2.34	2.13	3.13
Viet Nam	2.98	2.12	2.38	1.57

Unclassified - Non classifié

Table 9.11. Estimated design effects for selected variables, ISCED level 1, teacher data

Country/territory	Job satisfaction, overall	Exchange of information and ideas among teachers	Teacher self-efficacy, overall	Clarity of instruction
	T4JOBSAT	T4EXINF	T4SELF	T4CLAIN
Australia	2.40	2.39	2.07	2.53
Belgium	2.69	1.74	1.69	1.67
Flemish Community (Belgium)	2.32	1.45	1.40	1.63
French Community (Belgium)	3.10	1.85	1.80	1.45
Brazil	3.02	3.27	1.92	1.42
France	1.83	2.16	1.59	1.45
Japan	2.76	2.11	1.82	1.56
Korea	1.97	1.66	1.21	1.86
Morocco	3.55	4.98	4.01	3.25
Netherlands	2.29	2.36	0.99	1.21
New Zealand	2.64	3.40	1.60	1.49
Saudi Arabia	2.90	1.47	1.48	1.39
Slovenia	1.70	1.96	1.51	1.11
Spain	5.62	3.38	3.80	3.02
Türkiye	2.11	2.34	2.24	2.07
United Arab Emirates	5.71	2.91	2.97	2.75

Table 9.12. Estimated design effects for selected variables, ISCED level 3, teacher data

Country/territory	Job satisfaction, overall	Exchange of information and ideas among teachers	Teacher self-efficacy, overall	Clarity of instruction
	T4JOBSAT	T4EXINF	T4SELF	T4CLAIN
Croatia	1.79	2.05	1.49	1.20
Denmark	3.56	2.05	1.95	2.12
Flemish Community (Belgium)	2.80	2.40	1.80	1.42
Portugal	2.03	2.77	1.37	1.03
Saudi Arabia	2.14	2.33	1.61	1.62
Slovenia	1.22	1.46	1.38	1.24
Türkiye	3.70	1.38	2.25	1.23
United Arab Emirates	4.18	5.34	7.06	3.27

Table 9.13. Estimated design effects for selected variables, ISCED level 02, staff data

Country/territory	Professional development needs: pedagogical	Time spent with children	Facilitating prosocial behaviour	Job satisfaction
	S2PDNPED	SS2G28A	S2PRSOC	SS2G45L
Chile	4.89	2.06	1.64	1.30
Colombia	4.07	2.09	3.95	4.06
Denmark	1.54	1.02	0.99	1.57
Finland	1.52	1.38	1.36	1.96
Flemish Community (Belgium)	1.33	1.34	1.16	1.36
Germany	1.33	1.17	1.76	1.84
Ireland	1.60	2.40	1.65	3.33
Israel	1.79	1.49	1.14	1.03
Japan	1.27	1.31	1.72	2.13
Morocco	2.47	1.57	1.57	1.64

Unclassified - Non classifié

Country/territory	Professional development needs: pedagogical	Time spent with children	Facilitating prosocial behaviour	Job satisfaction
	S2PDNPED	SS2G28A	S2PRSOC	SS2G45L
New Zealand	2.45	3.55	1.28	2.97
Norway	1.43	1.46	1.42	1.31
Spain	2.04	2.44	4.39	2.64
Sweden	1.84	1.31	1.61	1.57
Türkiye	1.38	1.58	1.30	1.89

Table 9.14. Estimated design effects for selected variables, U3, staff data

Country/territory	Professional development needs: pedagogical	Time spent with children	Facilitating prosocial behaviour	Job satisfaction
	S2PDNPED	SS2G28A	S2PRSOC	SS2G45L
Flemish Community (Belgium)	1.48	1.52	1.48	1.77
Germany	1.63	1.18	1.30	1.54
Ireland	2.48	2.03	1.64	2.25
Israel	1.42	1.63	1.81	2.05
New Brunswick (Canada)	1.85	1.01	1.16	0.87
New Zealand	1.44	3.16	0.79	2.75
Norway	1.32	1.34	1.86	1.56
Quebec (Canada)	1.36	1.24	2.01	1.71

Table 9.15. Estimated design effects for selected variables, TKS, teacher data

Country/territory	Joy of teaching	Exchange of information and ideas among teachers	Self-efficacy in instruction	Clarity of instruction
	T4JOYTCH	T4EXINF	T4SEINS	T4CLAIN
Chile	2.53	3.03	2.59	2.86
Croatia	1.56	1.95	2.04	1.27
Morocco	2.12	2.78	2.49	2.30
Poland	2.46	2.18	2.18	1.90
Portugal	1.79	1.49	1.07	1.35
Saudi Arabia	1.33	1.43	1.27	1.53
South Africa	1.70	1.87	2.17	2.35
United States	2.37	2.41	2.65	2.67

The minimum sample sizes for teachers/staff determined for TALIS were derived assuming a design effect of 5.2 for ISCED levels 1, 2 and 3, and of 2 for ISCED level 02 and U3, based on the observed deff in earlier cycles (see Chapter 5). Table 9.10 to Table 9.15 above show that the sample designs implemented in the various participating countries/territories outperformed the design hypotheses for many presented variables for most countries/territories, thus resulting in effective samples that were larger than the expected nominal 400 teachers/staff members. This allows estimation of population parameters with higher precision and opens up greater potential for subgroup analysis.

Unclassified - Non classifié

References

Adams, R. and M. Wu (eds.) (2003), *Programme for International Student Assessment (PISA): PISA 2000 Technical Report*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/9789264199521-en. [9]

Atasever, U., F. Huang and L. Rutkowski (2025), "Reassessing weights in large-scale assessments and multilevel models", *Large-scale Assessments in Education*, Vol. 13/9, https://doi.org/10.1186/s40536-025-00245-y. [1]

Atasever, U., S. Meinck and D. Cortes (2025), "An examination of the performance of variance estimators in ILSAs", IEA (R&D Outcomes), https://www.iea.nl/sites/default/files/2025-07/RD-Call-Three-Variance-Estimators.pdf. [6]

Fay, R. (1989), "Theoretical application of weighting for variance calculation", in *Proceedings of the Section on Survey Research Methods of the American Statistical Association*. [8]

IEA (2025), *IEA International Database Analyzer (software, version 5.0)*, International Association for the Evaluation of Educational Achievement, https://www.iea.nl/data-tools/tools#section-308. [10]

Kish, L. (1965), *Survey Sampling*, Wiley, New York. [11]

Lohr, S. (1999), *Sampling: Design and Analysis*, Duxbury Press. [3]

Mang, J. et al. (2021), "Sampling weights in multilevel modelling: An investigation using PISA sampling structures", *Large-scale Assessments in Education*, Vol. 9/6, https://rdcu.be/chvOJ. [2]

OECD (2024), *PISA 2022 Technical Report*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/01820d6d-en. [7]

Rust and Rao (1996), "Variance estimation for complex estimators in sample surveys", *Statistical Methods in Medical Research*, Vol. 5/3, pp. 283-310, https://doi.org/10.1177/096228029600500305. [4]

Wolter, K. (2007), *Introduction to Variance Estimation, Second Edition*, Springer Series in Statistics, Springer-Verlag, New York, NY, https://doi.org/10.1007/978-0-387-35099-8. [5]

Unclassified - Non classifié

10 Data adjudication

This chapter covers the adjudication of the OECD Teaching and Learning International Survey (TALIS) 2024 data collection process and data. The first two sections of the chapter address the purpose of adjudication and what was adjudicated during TALIS 2024. The third section briefly describes the criteria used to assess each parameter. The recommended usage rating for each participating country/territory and component are presented in the last section. Complete tabulations of unweighted and weighted participation rates can be found in Annex F.

Unclassified - Non classifié

10.1. The general adjudication process in TALIS

The OECD Teaching and Learning International Survey (TALIS) is designed to produce data that are internationally comparable and can inform policy. Through adjudication, the consortium verifies that survey implementation is consistent with these aims and identifies concerns that could affect the use of the data.

This chapter describes the adjudication process for TALIS 2024. The criteria used to assess the quality of each element appear in the third section of the chapter, while the fourth focuses on what each rating means in practice. The outcomes of the adjudication are given at the end of this section. Full tabulation of unweighted and weighted participation rates can be found in Annex F.

10.2. What was adjudicated in TALIS?

The basic principle guiding adjudication was to determine whether the data released to the countries/territories and to the OECD were "fit for use" as intended. The consortium looked at every step of the survey process to determine their effects on the overall utility of the data. For example:

- **Questionnaire adaptation to the national context**: incomplete questionnaires (national questionnaires needed to include all introductory texts and questions in the international source versions as well as the corresponding notes, instructions, response categories and coding schemes); questions removed or modified without agreement.
- **Translation and verification**: changes to national translations of trend items that would make comparisons difficult.
- **Quality of sampling frame (before sampling and confirmation at weighting)**: measure of size disproportionate to what was known of the participating country/territory; missing values.
- **Handling of out-of-scope and of refusal units**: for example, a replaced unit found to be out of scope.
- **Handling of replacement and "volunteer" units**: for example, replacement schools/early childhood education and care (ECEC) settings participating when the original school/setting was also on the database.
- **Teacher/staff lists and within-school/-setting sampling**: incomplete teacher/staff lists or apparent biased selection of teacher/staff sample.
- **Main survey administration**: non-compliance with the technical standards and survey operation procedure units, rules and guidelines; failure to administer the data collection within the agreed data collection window; failure to administer the questionnaires according to the tracking form.
- **Data collection (paper and online modes)**: missing records (physical or electronic).
- **Data cleaning**: issues with cleaning and editing; need to make post-collection call-backs to national project managers (NPMs).
- **Quality observer reports**: reported issues included differences in the documentation of national decisions on translation verification feedback and the actual implementation in the final national instruments; unnatural and non-fluent national translations; deviations in sampling procedures for listing all eligible teachers/staff in a school/setting; failure to administer the questionnaires according to the tracking form.
- **Weighting**: miscoded schools/settings or teachers/staff; only rough comparisons of survey results with frame information; need to make call-backs to NPMs; estimates of population sizes not matching information on frame; school/setting listings too short; school/setting identifier with no matching unit entry on frame.

Unclassified - Non classifié

- **Participation rates of principals/ECEC setting leaders and teachers/ECEC staff**: weighted and unweighted rates strikingly different.

During the adjudication sessions in November and December 2024, each individual dataset (one per component per education system) was submitted to the same examination. As was the case for TALIS 2018, the consortium adjudicated the principal/school and leader/setting data independently of the teacher/staff data.

10.3. The process and criteria for assessment

The members of the consortium responsible for a particular key step of the survey presented, discussed and assessed any unresolved issues that might reduce the final fitness for use of each dataset. Consortium members considered that any problem that had already been resolved did not need to be discussed. Otherwise, the adjudication committee worked through a series of questions to help determine the nature of the issue and its potential impact on data quality:

- What was the problem?
- What solutions had been tried and failed?
- What solutions had partially worked and to what extent?
- Was the perceived impact such that words of caution should be issued to users?
- Did the adjudication committee feel that international (or national) comparisons appeared to have been compromised or limited to the largest subpopulations?
- Was more information from countries/territories needed to assess the issue in full?

Participating countries/territories where 75% participation had not been met were asked to file a non-response bias analysis (NRBA). It should be clear that “bias” is a theoretical construct that cannot be measured or estimated from a single survey (Kish, 1965[1]). The observed difference between a survey estimate and the corresponding true value (as derived from administrative sources, say) could be purely due to sampling error, or due to a flawed selection or implementation process, resulting in systematic underrepresentation of certain groups, or both.

Moreover, it must be understood that the NRBA reports can only give an idea of the closeness of the survey estimates to the corresponding known population values. The NRBA also indicates how the addition of replacement schools/settings does, or does not, change how sample estimates are close to the corresponding population values. The NRBA reports cannot provide detailed information on how well the data under analysis would yield estimates that are comparable to those of another participating country/territory, nor can they foretell how reliable estimates for sub-populations will be.

Once the committee had assessed each survey, they formulated an adjudication rating. While the rating was mostly dictated by the participation rate thresholds set in the TALIS 2024 Technical Standards (OECD, 2025[2]), the adjudication committee at times improved the rating of a dataset if, after expert consideration, unique and favourable conditions were met (e.g. closeness to the threshold value and/or the NRBA report showing evidence for negligible bias risks).

The adjudication rating is made at the country/territory level. However, potential non-response bias is specific to each estimate. Therefore, some estimates of countries/territories with an adjudication rating of “good” might still have a high non-response bias; correspondingly, some estimates of countries/territories with an adjudication rating of “poor” might still be reliable.

Unclassified - Non classifié

10.4. Adjudication ratings for participants

For easy reference, Tables 10.1 and 10.2 reproduce the adjudication tables found in the TALIS 2024 Technical Standards (OECD, 2025[2]).

Table 10.1. Adjudication rules for school/setting or principal/leader data

Principal/leader participation before replacement	Principal/leader participation after replacement	Risk of non-response bias	Rating
≥75%	≥75%		Good
≥50% but <75%	≥75%		Fair (A)
≥50% but <75%	≥50% but <75%	Low	Fair (C)
≥50% but <75%	≥50% but <75%	High	Poor (D)
<50%			Insufficient

Source: TALIS Technical Standard 3.26

Table 10.2. Adjudication rules for teacher/staff data

School/setting participation before replacement	School/setting participation after replacement	Teacher/staff participation after school/setting replacement	Risk of teacher/staff non-response bias	Rating
≥75%	≥75%	≥75%		Good
≥75%		≥50% but <75%		Fair (A)
≥50% but <75%	≥75%	≥75%		Fair (B)
≥50% but <75%	≥75%	≥50% but <75%	Low	Fair (C)
≥50% but <75%	≥75%	≥50% but <75%	High	Poor (D)
≥50% but <75%	≥50% but <75%			Poor (E)
<50%	≥75%			Poor (F)
<50%	<75%			Insufficient

Source: TALIS Technical Standard 3.27

The aim of the following bulleted list is to help data users understand what constitutes limitations on use or quality of the data:

- **Good**: The data of the participating country/territory can be used for all reporting and analytical purposes and should be included in international comparisons.
- **Fair (A)**: National and subnational estimates can be produced; some teacher/staff characteristics may be less precise, as indicated by a larger standard error (s.e.), hence the warning “fair”, but with no additional warnings to users deemed necessary.
- **Fair (B, only for teacher/staff data adjudication)**: National and subnational estimates can be produced; some subnational estimates may be of lower precision (larger s.e.) if the sample size is locally low, hence the warning “fair”, but with no additional warnings to users considered necessary.
- **Fair (C)**: National and subnational estimates can be produced; some subnational estimates may be of lower precision (larger s.e.) if the sample size is locally low, hence the warning “fair”, but with the possible inclusion of a note on data quality that points to the outcome of the NRBA; school/setting participation somewhat lower than under (B), meaning that comparison of subnational estimates needs to be done with care given that some of these results are based on just a few schools/settings; comparison of small subnational estimates with similar groups from

Unclassified - Non classifié

other countries/territories is unlikely to uncover statistically meaningful differences because of potentially overly large standard errors.

- **Poor (D)**: In addition to the warnings issued for the previous category, a note that warns users of higher risks of non-response bias in some estimates should be appended; comparisons of subnational estimates need to be limited to the groups with the larger sample sizes (because the sample at this point represents between 37% and 56% of teachers/staff from a relatively small sample of schools/settings, comparisons with similar groups in foreign countries/territories is inadvisable).
- **Poor (E, only for teacher/staff data adjudication)**: Subnational estimates are not recommended; a note pointing out the difficulty of obtaining a representative sample of schools/settings, therefore, needs to be appended.
- **Poor (F, only for teacher/staff data adjudication)**: The limitations are similar to those for line E, but with the inclusion of a note pointing out the difficulty of obtaining at least 50% participation of the selected sample of schools/settings; there is an evident risk of having a non-representative sample of schools/settings.
- **Insufficient**: Weights should not be calculated for any official tabulations, meaning that data should not be incorporated into international tables, models, averages, etc. If such data are used despite this recommendation, it must be clearly indicated that samples rated as "insufficient" have a higher risk of being affected by non-response bias and should therefore be interpreted with caution.

Thus, the final ratings depended on participation rates before and after replacements, on data quality issues raised during the adjudication session and on the apparent severity of the non-response biases. The next 11 tables present the recommended rating for each participating country/territory, by component and population. Detailed results of unweighted and weighted participation can be found in Annex F.

10.5. Ratings by countries/territories

Table 10.3. ISCED level 2: Principal participation and recommended ratings

Participating country/territory	Number of participating principals	Estimated size of school population	Principal participation before replacement (%)	Principal participation after replacement (%)	Recommended rating
Albania	282	1 090	99.6	100.0	Good
Alberta (Canada)	139	1 152	38.5	50.3	Insufficient
Australia	181	2 575	63.0	89.9	Fair
Austria	266	1 446	83.6	96.7	Good
Azerbaijan	222	4 090	99.7	100.0	Good
Bahrain	115	116	99.1	99.1	Good
Belgium	262	1 226	65.0	73.4	Fair
Flemish Community (Belgium)	139	791	57.1	66.2	Fair
French Community (Belgium)	123	436	76.0	83.8	Good
Brazil	212	56 460	89.9	94.3	Good
Bulgaria	208	1 691	97.7	98.7	Good
Chile	362	5 776	70.0	84.3	Fair
Colombia	189	15 310	63.8	68.5	Fair
Costa Rica	183	939	85.7	87.1	Good
Croatia	259	857	87.8	87.8	Good
Cyprus	99	100	99.0	99.0	Good

Unclassified - Non classifié

Participating country/territory	Number of participating principals	Estimated size of school population	Principal participation before replacement (%)	Principal participation after replacement (%)	Recommended rating
Czechia	346	2 819	99.8	100.0	Good
Denmark	189	1 555	54.9	80.9	Fair
Estonia	192	367	94.1	94.1	Good
Finland	226	723	99.6	100.0	Good
France	171	6 780	86.0	87.0	Good
Hungary	231	2 665	93.5	93.9	Good
Iceland	109	140	77.9	77.9	Good
Israel[1]	198	1 232	92.5	93.0	Good
Italy	198	5 799	97.5	98.0	Good
Japan	200	10 277	89.5	98.1	Good
Kazakhstan	371	6 676	99.1	99.1	Good
Korea	173	3 085	65.3	85.6	Fair
Kosovo	222	630	99.1	99.1	Good
Latvia	213	514	96.3	97.9	Good
Lithuania	211	738	98.7	100.0	Good
Malta	50	55	90.9	90.9	Good
Montenegro	130	161	80.7	80.7	Good
Morocco	398	3 860	99.7	100.0	Good
Netherlands	78	1 345	35.6	52.3	Insufficient
New Zealand	90	1 871	27.2	51.4	Insufficient
North Macedonia	201	335	99.6	99.6	Good
Norway	147	1 093	44.5	69.7	Insufficient
Poland	279	12 502	93.6	99.6	Good
Portugal	224	1 195	98.8	99.3	Good
Romania	216	4 587	100.0	100.0	Good
Saudi Arabia	319	7 743	95.6	95.6	Good
Serbia	199	1 129	98.5	99.5	Good
Shanghai (China)	205	689	100.0	100.0	Good
Singapore	154	189	95.6	96.9	Good
Slovak Republic	239	1 608	95.7	99.0	Good
Slovenia[2]	207	443	77.4	79.1	Good
South Africa	318	7 806	84.4	84.6	Good
Spain	494	7 151	97.7	97.9	Good
Sweden	183	1 693	86.4	88.8	Good
Türkiye	226	16 723	98.5	98.5	Good
United Arab Emirates	210	875	98.8	98.8	Good
United States[3]	152	59 531	48.0	59.4	Insufficient
Uzbekistan	210	10 485	100.0	100.0	Good
Viet Nam	202	11 439	100.0	100.0	Good

Note: A school was deemed a participating school if the principal returned their questionnaire with at least one question answered.
ISCED: International Standard Classification of Education.
1. Israel: Ultra-Orthodox schools were excluded after the survey administration due to very low participation rates. They are not considered in the participation rate but contribute to the exclusion rate.
2. Slovenia: The school sample was identical for ISCED levels 1 and 2. Principals were asked to participate in both questionnaires but did not in many cases. Eleven items were copied between ISCED levels in these cases.
3. United States: The national centre managed questionnaire delivery from their own servers using the platform provided by the International Association for the Evaluation of Educational Achievement (IEA) in a single participant setup. Following data collection, the United States assessed disclosure risk and applied related measures based on federal requirements (https://nces.ed.gov/fcsm/dpt/). No documentation of these measures was provided. The results of the non-response bias analysis conducted by the United States indicate a low likelihood of bias, despite the participation rate of schools (before replacement) being below 50%. For this reason, in OECD reports, data from the United States are treated as if the rating was "poor" and are, therefore, included in all tables and in international averages.

Unclassified - Non classifié

Table 10.4. ISCED level 2: Teacher participation and recommended ratings

Participating country/territory	Number of participating schools	Number of participating teachers	Estimated size of teacher population	School participation before replacement (%)	School participation after replacement (%)	Teacher participation in participating schools	Overall teacher participation	Recommended rating
Albania	282	4 029	11 830	99.6	100.0	99.4	99.4	Good
Alberta (Canada)	153	1 823	11 190	46.4	56.4	82.2	46.4	Insufficient
Australia	179	3 035	122 147	66.6	88.5	86.7	76.7	Fair
Austria	247	4 335	43 477	77.5	89.8	85.9	77.2	Good
Azerbaijan	222	4 307	95 548	99.5	100.0	98.4	98.4	Good
Bahrain	116	3 104	4 581	100.0	100.0	97.7	97.7	Good
Belgium[1]	273	5 175	40 763	67.5	76.5	84.5	64.6	Fair
Flemish Community (Belgium)[2]	143	2 444	24 689	58.1	68.3	84.2	57.5	Poor
French Community (Belgium)	130	2 731	16 075	81	88.4	84.7	74.9	Good
Brazil	207	3 009	590 695	89.9	92.4	95.2	87.9	Good
Bulgaria	210	3 629	21 777	97.9	99.6	99.1	98.7	Good
Chile	353	2 319	59 796	66.2	79.8	84.0	67.0	Fair
Colombia	213	3 010	167 714	71.7	77.2	91.9	70.9	Fair
Costa Rica	187	3 026	14 638	87.6	89.0	94.2	83.8	Good
Croatia	268	3 163	15 957	90.5	90.5	82.6	74.8	Good
Cyprus	99	1 793	4 151	99.0	99.0	91.2	90.3	Good
Czechia	346	6 369	49 671	99.7	100.0	98.4	98.4	Good
Denmark	189	2 488	23 083	53.5	80.0	85.6	68.5	Fair
Estonia	199	3 339	8 860	97.5	97.5	89.1	86.9	Good
Finland	226	4 300	20 980	99.6	100.0	94.8	94.8	Good
France	161	2 877	206 033	80.2	81.7	76.4	62.4	Good
Hungary	235	3 890	43 537	95.1	95.5	92.6	88.4	Good
Iceland	131	1 427	1 982	94.2	94.2	81.6	76.9	Good
Israel[3]	196	3 227	35 940	92.0	92.0	87.4	80.5	Good
Italy	200	3 874	168 045	98.5	99.0	92.4	91.5	Good
Japan	201	3 558	209 963	90.2	98.5	97.7	96.2	Good
Kazakhstan	377	7 360	205 012	99.8	99.8	99.6	99.3	Good
Korea	169	3 098	76 205	65.3	83.7	91.0	76.2	Fair
Kosovo	222	3 281	7 339	99.1	99.1	91.4	90.6	Good
Latvia	215	4 088	9 219	97.2	98.6	91.0	89.8	Good
Lithuania	210	4 223	16 848	99.1	99.5	97.1	96.6	Good
Malta	48	2 263	3 265	88.6	88.6	81.3	72.0	Good
Montenegro	126	1 354	2 186	78.3	78.3	84.0	65.7	Fair
Morocco	398	6 112	71 394	99.7	100.0	98.3	98.3	Good
Netherlands	84	1 271	58 097	37.6	56.4	73.7	41.5	Insufficient
New Zealand	97	1 204	24 847	28.1	43.0	73.1	31.5	Insufficient
North Macedonia	202	3 992	7 322	100.0	100.0	94.9	94.9	Good
Norway	112	1 528	20 156	34.1	53.9	73.1	39.4	Insufficient
Poland	279	3 783	172 089	93.6	99.6	94.7	94.4	Good
Portugal	224	3 511	38 887	98.7	99.1	92.2	91.4	Good
Romania	216	3 873	64 851	100.0	100.0	97.4	97.4	Good
Saudi Arabia	326	3 306	112 606	98.1	98.1	94.6	92.8	Good
Serbia	199	4 007	23 354	98.5	99.5	95.6	95.2	Good

Unclassified - Non classifié

Participating country/territory	Number of participating schools	Number of participating teachers	Estimated size of teacher population	School participation before replacement (%)	School participation after replacement (%)	Teacher participation in participating schools	Overall teacher participation	Recommended rating
Shanghai (China)	205	4 078	44 556	100.0	100.0	98.4	98.4	Good
Singapore	156	3 355	10 601	96.9	98.1	97.2	95.3	Good
Slovak Republic	242	4 190	22 949	97.1	100.0	96.1	96.1	Good
Slovenia	222	2 831	8 269	82.7	84.2	89.1	75.0	Good
South Africa	361	3 301	87 309	92.8	93.3	91.2	85.0	Good
Spain	507	9 098	198 806	99.8	100.0	94.1	94.1	Good
Sweden	196	3 065	33 858	92.7	95.1	76.4	72.7	Fair
Türkiye	229	4 932	291 832	99.6	99.6	97.2	96.8	Good
United Arab Emirates	212	4 369	28 559	99.5	99.5	98.4	97.9	Good
United States[4]	154	1 988	1 206 856	49.6	60.2	82.8	49.8	Poor
Uzbekistan	210	4 431	306 057	100.0	100.0	98.7	98.7	Good
Viet Nam	202	4 348	305 410	100.0	100.0	99.0	99.0	Good

Note: A school was deemed a participating school if at least 50% of the selected teachers returned their respective questionnaires with at least one question answered.
1. Belgium: Some sampled schools of the Flemish Community were located in the same places. The national centre advised these schools to distribute teachers between listing forms to avoid being selected multiple times. This deviation from the procedures could not be corrected for.
2. Flemish Community (Belgium): Some sampled schools were located in the same places. The national centre advised these schools to distribute teachers between listing forms to avoid being selected multiple times. This deviation from the procedures could not be corrected for.
3. Israel: Ultra-Orthodox schools were excluded after the survey administration due to very low participation rates. They are not considered in the participation rate but contribute to the exclusion rate.
4. United States: The national centre managed questionnaire delivery from their own servers using the platform provided by the IEA in a single participant setup. Following data collection, the United States assessed disclosure risk and applied related measures based on federal requirements (https://nces.ed.gov/fcsm/dpt/). No documentation of these measures was provided. The rating was defined as "poor" although the participation rate of schools before replacement did not completely reach 50%.

Table 10.5. ISCED level 1: Principal participation and recommended ratings

Participating country/territory	Number of participating principals	Estimated size of school population	Principal participation before replacement (%)	Principal participation after replacement (%)	Recommended rating
Australia	178	7 023	63.0	85.6	Fair
Belgium	333	4 241	61.1	81.0	Fair
Flemish Community (Belgium)	158	2 417	46.4	75.6	Insufficient
French Community (Belgium)	175	1 824	76.2	86.6	Good
Brazil	284	93 385	84.1	93.2	Good
France	322	34 412	91.9	93.3	Good
Japan	202	19 323	87.4	98.1	Good
Korea	198	6 133	66.1	88.4	Fair
Morocco	389	23 888	98.7	98.7	Good
Netherlands	132	5 993	43.8	68.3	Insufficient
New Zealand	141	2 044	34.8	58.1	Insufficient
Saudi Arabia	204	12 267	92.8	92.8	Good
Slovenia[1]	206	443	77.1	78.8	Good
Spain	487	13 736	97.2	97.2	Good

Unclassified - Non classifié

Participating country/territory	Number of participating principals	Estimated size of school population	Principal participation before replacement (%)	Principal participation after replacement (%)	Recommended rating
Türkiye	231	16 361	97.1	97.1	Good
United Arab Emirates	206	789	99.6	99.6	Good

Note: A school was deemed a participating school if the principal returned their questionnaire with at least one question answered.
1. Slovenia: The school sample was identical for ISCED levels 1 and 2. Principals were asked to participate in both questionnaires but did not in many cases. Eleven items were copied between ISCED levels in these cases.

Table 10.6. ISCED level 1: Teacher participation and recommended ratings

Participating country/territory	Number of participating schools	Number of participating teachers	Estimated size of teacher population	School participation before replacement (%)	School participation after replacement (%)	Teacher participation in participating schools	Overall teacher participation	Recommended rating
Australia	178	3 003	137 078	63.0	85.6	89.9	76.9	Fair
Belgium	326	4 913	63 889	59.9	79.3	84.2	66.8	Fair
Flemish Community (Belgium)	146	2 258	38 107	42.1	69.9	88.0	61.5	Insufficient
French Community (Belgium)	180	2 655	25 783	78.2	89.1	81.3	72.4	Good
Brazil	279	2 994	667 700	81.0	90.9	97.4	88.5	Good
France	291	1 993	179 824	89.1	91.2	88.9	81.1	Good
Japan	202	3 356	311 128	87.4	98.1	97.9	96.0	Good
Korea	184	3 124	122 407	60.3	82.1	90.6	74.4	Fair
Morocco	394	4 905	192 370	100.0	100.0	99.1	99.1	Good
Netherlands	140	1 305	60 642	46.9	72.2	85.3	61.6	Insufficient
New Zealand	130	1 529	21 009	30.6	54.7	79.5	43.5	Insufficient
Saudi Arabia	218	3 783	213 117	99.1	99.1	94.6	93.8	Good
Slovenia	220	3 615	12 379	81.8	83.5	91.5	76.4	Good
Spain	500	8 060	201 862	99.2	99.2	94.7	94.0	Good
Türkiye	232	4 053	205 969	97.5	97.5	96.3	93.9	Good
United Arab Emirates	206	4 091	25 817	99.5	99.5	97.5	97.0	Good

Note: A school was deemed a participating school if at least 50% of the selected teachers returned their respective questionnaires with at least one question answered.

Table 10.7. ISCED level 3: Principal participation and recommended ratings

Participating country/territory	Number of participating principals	Estimated size of school population	Principal participation before replacement (%)	Principal participation after replacement (%)	Recommended rating
Croatia	180	381	90.0	90.0	Good
Denmark	179	610	54.4	77.1	Fair
Flemish Community (Belgium)	137	744	47.6	65.2	Insufficient
Portugal	203	731	98.9	100.0	Good
Saudi Arabia	214	5 131	92.5	92.5	Good
Slovenia[1]	104	140	74.3	74.3	Good
Türkiye	197	10 741	97.0	97.0	Good
United Arab Emirates	197	629	98.3	98.3	Good

Note: A school was deemed a participating school if the principal returned their questionnaire with at least one question answered.
1. Slovenia: The rating was defined as “good” although the participation rate of schools did not completely reach 75%.

Unclassified - Non classifié

Table 10.8. ISCED level 3: Teacher participation and recommended ratings

Participating country/territory	Number of participating schools	Number of participating teachers	Estimated size of teacher population	School participation before replacement (%)	School participation after replacement (%)	Teacher participation in participating schools	Overall teacher participation	Recommended rating
Croatia	192	3 497	14 212	96.0	96.0	85.7	82.3	Good
Denmark	179	2 550	16 672	58.3	79.3	86.1	68.3	Fair
Flemish Community (Belgium)[1]	141	2 427	47 252	50.5	67.1	86.5	58.1	Poor
Portugal	203	3 878	34 288	99.6	100.0	93.9	93.9	Good
Saudi Arabia	226	3 952	107 791	98.7	98.7	94.1	92.9	Good
Slovenia	113	2 717	6 076	80.7	80.7	83.4	67.4	Good
Türkiye	201	4 976	287 877	99.0	99.0	95.5	94.5	Good
United Arab Emirates	200	4 228	20 222	99.5	99.5	98.8	98.3	Good

Note: A school was deemed a participating school if at least 50% of the selected teachers returned their respective questionnaires with at least one question answered.
1. Flemish Community (Belgium): Some sampled schools were located in the same places. The national centre advised these schools to distribute teachers between listing forms to avoid being selected multiple times. This deviation from the procedures could not be corrected for.

Table 10.9. ISCED level 02: Leader participation and recommended ratings

Participating country/territory	Number of participating leaders	Estimated size of setting population	Leader participation before replacement (%)	Leader participation after replacement (%)	Recommended rating
Chile	160	8 748	78.6	88.3	Good
Colombia	157	75 191	55.2	68.3	Poor
Denmark	150	3 378	55.5	82.4	Fair
Finland	204	4 160	92.4	97.1	Good
Flemish Community (Belgium)	158	2 288	62.7	83.2	Fair
Germany	138	50 860	45.2	70.3	Insufficient
Ireland[1]	149	3 950	36.0	59.9	Insufficient
Israel[2]	285	12 399	86.1	92.2	Good
Japan	189	37 007	71.4	95.0	Fair
Morocco	429	21 931	93.3	98.3	Good
New Zealand[3]	38	-	19.7	22.9	Insufficient
Norway	84	4 929	31.5	46.4	Insufficient
Spain	481	13 714	98.2	98.2	Good
Sweden	197	12 467	91.7	92.8	Good
Türkiye	267	23 809	99.4	99.4	Good

Note: A setting was deemed a participating setting if the leader returned their questionnaire with at least one question answered.
1. Ireland: Replacement settings were contacted before the participation of the originally sampled setting was defined. Consequently, replacements participated although the original setting participated as well. These replacements were moved into separate strata and were treated as self-representing. They do not contribute to participation rates.
2. Israel: Ultra-Orthodox settings were excluded after the survey administration due to very low participation rates. They are not considered in the participation rate but contribute to the exclusion rate.
3. New Zealand: Te Kōhanga Reo settings were excluded after the survey administration because no setting of this type participated. They are not considered in the participation rate but contribute to the exclusion rate. Due to low participation rates, a non-response adjustment was not implemented, and the estimated population size therefore remains unknown.

Unclassified - Non classifié

Table 10.10. ISCED level 02: Staff participation and recommended ratings

Participating country/territory	Number of participating settings	Number of participating staff	Estimated size of staff population	Setting participation before replacement (%)	Setting participation after replacement (%)	Staff participation in participating settings	Overall staff participation	Recommended rating
Chile	143	741	54 091	70.7	79.5	88.0	70.0	Fair
Colombia[1]	150	553	162 032	55.3	65.2	97.7	63.6	Poor
Denmark	148	946	27 274	54.9	81.3	89.5	72.8	Fair
Finland	204	1 386	42 851	92.4	97.1	95.4	92.7	Good
Flemish Community (Belgium)	164	1 143	21 469	66.3	86.3	89.4	77.2	Fair
Germany	142	810	456 372	47.2	72.1	82.2	59.3	Insufficient
Ireland[2]	170	690	18 557	41.6	69.5	73.9	51.4	Insufficient
Israel[3]	291	1 153	42 272	87.7	94.2	86.1	81.1	Good
Japan	189	1 283	317 235	71.4	95.0	98.9	93.9	Fair
Morocco	428	954	48 583	91.1	98.0	99.2	97.2	Good
New Zealand[4]	35	163	-	17.6	20.4	72.7	14.8	Insufficient
Norway	68	377	46 985	25.5	37.6	73.8	27.8	Insufficient
Spain	489	3 576	121 268	100.0	100.0	96.7	96.7	Good
Sweden	208	1 219	93 674	97.0	98.0	86.2	84.5	Good
Türkiye	265	1 289	93 250	97.8	97.8	98.4	96.2	Good

Note: A setting was deemed a participating setting if at least 33% of the selected staff returned their respective questionnaires with at least one question answered.
1. Colombia: Due to incomplete staff listing, the staff data of 11 settings were rejected. This includes cases where a combined questionnaire was used for leaders with staff duties. As the incomplete lists only affected the staff population, the combined questionnaires were not rejected in the leader dataset.
2. Ireland: Replacement settings were contacted before the participation of the originally sampled setting was defined. Consequently, replacements participated although the original setting participated as well. These replacements were moved into separate strata and were treated as self-representing. They do not contribute to participation rates.
3. Israel: Ultra-Orthodox settings were excluded after the survey administration due to very low participation rates. They are not considered in the participation rate but contribute to the exclusion rate.
4. New Zealand: Te Kōhanga Reo settings were excluded after the survey administration because no setting of this type participated. They are not considered in the participation rate but contribute to the exclusion rate. Due to low participation rates, a non-response adjustment was not implemented, and the estimated population size therefore remains unknown.

Table 10.11. U3: Leader participation and recommended ratings

Participating country/territory	Number of participating leaders	Estimated size of setting population	Leader participation before replacement (%)	Leader participation after replacement (%)	Recommended rating
Flemish Community (Belgium)[1]	125	5 327	34.9	53.4	Insufficient
Germany[2]	165	46 847	49.5	74.2	Poor
Ireland[3]	183	2 154	39.6	59.5	Insufficient
Israel[4]	289	5 953	77.2	85.5	Good
New Brunswick (Canada)	84	489	31.3	35.9	Insufficient

Unclassified - Non classifié

Participating country/territory	Number of participating leaders	Estimated size of setting population	Leader participation before replacement (%)	Leader participation after replacement (%)	Recommended rating
New Zealand[5]	34	-	21.1	24.8	Insufficient
Norway	76	4 812	28.0	40.9	Insufficient
Quebec (Canada)	85	10 317	23.4	59.8	Insufficient

Note: A setting was deemed a participating setting if the leader returned their questionnaire with at least one question answered.
U3: children under the age of three.
1. Flemish Community (Belgium): Settings without subsidy were excluded after the survey administration due to very low participation rates. They are not considered in the participation rate but contribute to the exclusion rate.
2. Germany: The rating was defined as "poor" although the participation rate before replacement did not completely reach 50%.
3. Ireland: Replacement settings were contacted before the participation of the originally sampled setting was defined. Consequently, replacements participated although the original setting participated as well. These replacements were moved into separate strata and were treated as self-representing. They do not contribute to participation rates.
4. Israel: Ultra-Orthodox settings were excluded after the survey administration due to very low participation rates. They are not considered in the participation rate but contribute to the exclusion rate.
5. New Zealand: Te Kōhanga Reo settings, free kindergartens and play centres were excluded after the survey administration because no setting of these types participated. They are not considered in the participation rate but contribute to the exclusion rate. Due to low participation rates, a non-response adjustment was not implemented, and the estimated population size therefore remains unknown.

Table 10.12. U3: Staff participation and recommended ratings

Participating country/territory	Number of participating settings	Number of participating staff	Estimated size of staff population	Setting participation before replacement (%)	Setting participation after replacement (%)	Staff participation in participating settings	Overall staff participation	Recommended rating
Flemish Community (Belgium)[1]	128	499	16 765	35.8	55.3	83.6	46.2	Insufficient
Germany	167	876	310 220	50.5	76.0	87.8	66.7	Fair
Ireland[2]	207	899	11 865	44.0	66.3	75.2	49.8	Insufficient
Israel[3]	297	1 505	25 597	78.7	87.9	85.4	75.1	Good
New Brunswick (Canada)	88	275	2 345	34.7	38.6	85.4	33.0	Insufficient
New Zealand[4]	33	164	-	17.8	23.9	73.0	17.4	Insufficient
Norway	68	367	41 262	26.2	36.8	73.4	27.0	Insufficient
Quebec (Canada)	82	311	41 882	23.3	49.7	75.0	37.3	Insufficient

Note: A setting was deemed a participating setting if at least 33% of the selected staff returned their respective questionnaires with at least one question answered.
1. Flemish Community (Belgium): Settings without subsidy were excluded after the survey administration due to very low participation rates. They are not considered in the participation rate but contribute to the exclusion rate.
2. Ireland: Replacement settings were contacted before the participation of the originally sampled setting was defined. Consequently, replacements participated although the original setting participated as well. These replacements were moved into separate strata and were treated as self-representing. They do not contribute to participation rates.
3. Israel: Ultra-Orthodox settings were excluded after the survey administration due to very low participation rates. They are not considered in the participation rate but contribute to the exclusion rate.
4. New Zealand: Te Kōhanga Reo settings, free kindergartens and play centres were excluded after the survey administration because no setting of these types participated. They are not considered in the participation rate but contribute to the exclusion rate. Due to low participation rates, a non-response adjustment was not implemented, and the estimated population size therefore remains unknown.

Unclassified - Non classifié

Table 10.13. TKS: Teacher participation and recommended ratings

Participating country/territory	Number of participating schools	Number of participating teachers	Estimated size of teacher population	School participation before replacement (%)	School participation after replacement (%)	Teacher participation in participating schools	Overall teacher participation	Recommended rating
Chile	341	1 645	59 136	64.4	78.5	80.5	63.2	Fair
Croatia	262	2 282	16 182	88.5	88.5	81.6	72.2	Good
Morocco	398	4 584	73 480	99.7	100.0	98.5	98.5	Good
Poland	279	2 831	171 437	93.6	99.6	94.8	94.4	Good
Portugal	224	2 634	39 447	98.7	99.1	91.6	90.8	Good
Saudi Arabia	324	2 435	112 287	98.6	98.6	93.4	92.1	Good
South Africa	359	2 376	85 677	92.7	93.2	91.5	85.3	Good
United States[1]	145	1 362	1 175 282	46.5	56.6	79.7	45.1	Insufficient

Note: A school was deemed a participating school if at least 50% of the selected teachers returned their respective questionnaires with at least one question answered.
TKS: Teacher Knowledge Survey.
1. United States: The national centre managed questionnaire delivery from their own servers using the platform provided by the IEA in a single participant setup. Following data collection, the United States assessed disclosure risk and applied related measures based on federal requirements (https://nces.ed.gov/fcsm/dpt/). No documentation of these measures was provided. The results of the non-response bias analysis conducted by the United States indicate a low likelihood of bias, despite the participation rate of schools (before replacement) being below 50%. For this reason, in OECD reports, data from the United States are treated as if the rating was "poor" and are, therefore, included in all tables and in international averages.

References

Kish, L. (1965), *Survey Sampling*, Wiley, New York. [1]

OECD (2025), "TALIS 2024 Technical Standards", No. EDU/TALIS/GB(2023)11/REV1, Programme for Teaching and Learning International Survey, Directorate for Education and Skills, OECD, Paris, https://one.oecd.org/document/EDU/TALIS/GB(2023)11/REV1/en/pdf?sessionId=1755520362877. [2]

Unclassified - Non classifié

11 Construction and validation of questionnaire scales

The Teaching and Learning International Survey (TALIS) 2024 questionnaires are composed of sets of questions that are designed to be manifestations of a latent trait or construct. The primary objective of these item sets is to yield a single composite scale score that summarises the responses and indicates respondents' positions along the theoretical continuum of the latent trait. This chapter describes the steps taken to compute these scale scores and it illustrates the implications for analysis based on the characteristics and comparability of these scale scores. The chapter concludes presenting some of the limitations for cross-country/territory comparisons.

Unclassified - Non classifié

11.1. Overview

The Teaching and Learning International Survey (TALIS) questionnaires include numerous items related to school, principal and teacher characteristics as well as their attitudes, perceptions and practices. The TALIS datasets include item-level survey data as well as additional indices and scale scores:

- Simple indices refer to variables created either by aggregating responses to ensure respondent anonymity (e.g. precise age data grouped into age categories) or by deriving new variables from existing ones through relational calculations (e.g. student-teacher ratios).
- Scale scores summarise responses to multiple items addressing the same latent construct. They were derived using latent variable modelling within the framework of confirmatory factor analysis (CFA).

CFA treats items as indicators of unobservable latent variables, such as self-efficacy or beliefs, and uses combinations of items to develop a measurement model of these latent constructs. After testing and confirming a well-fitting unidimensional latent model, scale scores may be estimated to serve as continuous values for the latent constructs. While simple indices enhance the analysis of observable (manifest) characteristics, such as student-teacher ratios, scale scores enable analysis of non-observable (latent) characteristics such as attitudes or other personal traits. They both rely on measurement assumptions, with the difference that the assumptions of manifest variables cannot be tested in the way that those of latent variables can.

This chapter begins by listing the specific simple indices (e.g. ratios, averages and binary indicators) and their computation. Afterwards, it outlines the procedures used to perform CFA scale evaluation and scale score estimation. It finally describes the scales, including the items used to compose each scale, the results of scale evaluation and the parameters used to compute scale scores. These descriptions are grouped by TALIS components and start with indices and scales included in the TALIS core survey (including International Standard Classification of Education (ISCED) levels 1, 2 and 3); the ones included in the Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) are then presented (for ISCED level 02 and children under the age of three [U3]) and, finally, scales from the TALIS Teacher Knowledge Survey (TKS) are described.

11.2. Simple indices

A range of *simple indices*, i.e. measures derived from simple deterministic transformations rather than latent trait analyses based on factor-analytical approaches, as well as *derived variables* used during reporting or intended to capture important information in a grouped/coarsened way that would otherwise be suppressed from public-use data, were added to the dataset.

The names, labels and logic for computing these indices or deriving variables are stated below, separately for the TALIS core survey (covering the TKS where identical questions were used) and TALIS Starting Strong.

The handling of missing data in single source variables was mostly straightforward. In cases of multiple source variables where the values were consistently “Not administered” or consistently “Omitted or invalid”, the derived index or variable was coded to match this type of missingness. The descriptions below describe exceptions to this general handling where applicable, e.g. where a derived variable was computed or not if responses were only partially available or responses did not allow for certain transformations like the division by zero in ratios.

Unclassified - Non classifié

11.2.1. TALIS Core Survey/Teacher Knowledge Survey (as applicable)

Principal/school level

Principal's age (grouped) (T4PAGEGR)

The principal's age in variable TC4G02 was grouped into four categories: 1 = Under 40 years old, 2 = 40-49, 3 = 50-59, and 4 = 60 or above.

Principal's highest level of formal education completed (grouped) (T4PHEDAT)

The principal's highest level of formal education completed was calculated by using the responses in variable TC4G03, recoded into five categories: 1 = Below ISCED level 5, 2 = ISCED level 5, 3 = ISCED level 6, 4 = ISCED level 7, and 5 = ISCED level 8.

Principal's years of work experience at current school (grouped) (T4PYEXPPS)

This variable was derived from responses in variable TC4G04A, which asked about the principal's work experience at their current school in years. A grouped variable was created with four categories: 1 = Less than or equal to 5 years, 2 = 6 to 10 years, 3 = 11 to 20 years, and 4 = Above 20 years.

Principal's years of work experience in total (grouped) (T4PYEXPPT)

Responses in variable TC4G04B were grouped into four categories: 1 = Less than or equal to 5 years, 2 = 6 to 10 years, 3 = 11 to 20 years, and 4 = Above 20 years.

Principal's years of work experience in school management (grouped) (T4PYEXPSM)

Responses in variable TC4G04C were grouped into four categories: 1 = Less than or equal to 5 years, 2 = 6 to 10 years, 3 = 11 to 20 years, and 4 = Above 20 years.

Principal's years of work experience as teacher (grouped) (T4PYEXPT)

Responses in variable TC4G04D were grouped into four categories: 1 = Less than or equal to 5 years, 2 = 6 to 10 years, 3 = 11 to 20 years, and 4 = Above 20 years.

Principal's years of work experience in other non-education roles (grouped) (T4PYEXPO)

Responses in variable TC4G04E were grouped into four categories: 1 = Less than or equal to 5 years, 2 = 6 to 10 years, 3 = 11 to 20 years, and 4 = Above 20 years.

Principal's employment status in terms of working hours (grouped) (T4PEMPWH)

The four levels of working hours in variable TC4G06 were further grouped into: 1 = Full-time/more than 90% of full-time hours, and 2 = Part-time/90% of full-time hours or less.

School location (grouped) (T4SCHLOC)

The school location variable was constructed from responses in variable TC4G11 regarding the size of the community where the school is located. To coarsen the variable, the following three categories were derived: 1 = Rural (up to 3 000 people), 2 = Town (3 001 to 100 000 people), and 3 = City (more than 100 000 people).

Unclassified - Non classifié

Number of teachers (grouped) (T4NUMTCH)

The grouped number of teachers variable was derived from responses in variable TC4G14A using five categories: 1 = Fewer than 25 teachers, 2 = 25 to 49 teachers, 3 = 50 to 74 teachers, 4 = 75 to 99 teachers, and 5 = 100 or more teachers.

Student to teacher ratio (T4STRATIO)

The student-teacher ratio was calculated at the school level based on the principal's responses about the number of currently employed teachers in variable TC4G14A and the total number of enrolled students across all grades in variable TC4G17. The ratio is computed by dividing the total number of students by the number of teachers, provided that both values are greater than zero.

Teacher to pedagogical support personnel ratio (T4TPRATIO)

The teacher-pedagogical support personal ratio was calculated at the school level based on the principal's responses about the number of currently employed support personnel in variable TC4G14B and the total number of teachers in variable TC4G14A. The ratio was derived by dividing the number of teachers by the number of pedagogical support personnel in a given school, provided that both are greater than zero.

Teacher to administrative or management personnel ratio (T4TARATIO)

The teacher-administrative or management personnel ratio was calculated at the school level based on the principal's responses about the number of currently employed administrative staff (variable TC4G14C), the number of management personnel (variable TC4G14D) and the total number of teachers (variable TC4G14A). The ratio was derived by dividing the total number of teachers by the sum of the number administrative and management personnel in a given school, provided that both the numerator and denominator are greater than zero.

Teacher to new teacher ratio (T4TTNRATIO)

This ratio was calculated using responses in variable TC4G15A about the number of newly hired teachers in the last 12 months and in variable TC4G14A about the total number of teachers. The ratio was computed as the total number of teachers divided by the number of new teachers, provided both values are greater than zero.

Teacher to left teacher ratio (T4TTLRATIO)

The variable was derived from variable TC4G15B about the number of teachers who left the school permanently in the last 12 months and from variable TC4G14A about the total number of teachers. The ratio was computed by dividing the total number of teachers by the number of teachers who left the school, conditional on both being greater than zero.

Teacher to absent teacher ratio (T4TTARATIO)

This variable was calculated using responses in variable TC4G15C about the number of teachers absent or unavailable on the most recent Tuesday school was in session and in variable TC4G14A about the total number of teachers. The ratio was computed as the total number of teachers divided by the number of absent teachers, where both values were greater than zero.

Unclassified - Non classifié

Number of ISCED levels taught in the school (T4SCHISCN)

The number of ISCED levels offered in the school was determined using responses from variables TC4G16A through F. A binary, zero-based variable was created with codes: 0 = One ISCED level, and 1 = More than one ISCED level.

Number of programmes taught in the school (T4SCHPRGN)

The number of programmes taught based on variables TC4G16A through F was grouped into two zero-based categories: 0 = One track (either general or vocational), and 1 = More than one track (general and vocational).

Number of enrolled students (grouped) (T4NUMSTUD)

The grouped number of enrolled students was calculated using the principal's responses about the current school enrolment in variable TC4G17. The values were recoded into three categories: 1 = Fewer than 250 students, 2 = 250-749 students, and 3 = 750 students and above.

School autonomy indices (T4PAUTS/T4PAUTB/T4PAUTP/T4PAUTI/T4PAUTC/T4PAUTD)

In addition to scale scores developed through CFA, indices for school resources and school autonomy were created using recoding of the frequencies of the items, as CFA models were not appropriate for the measured items comprising these indices.

To describe the extent of school autonomy in decision making, six simple indices were derived from questions 24 and 25 of the school principal questionnaire:

- school autonomy for staffing (T4PAUTS)
- school autonomy for budgeting (T4PAUTB)
- school autonomy for educational policies (T4PAUTP)
- school autonomy for instructional policies (T4PAUTI)
- school autonomy for curriculum (T4PAUTC)
- school autonomy for diversity policies (T4PAUTD).

Table 11.1 presents the corresponding items for all school autonomy indices.

Table 11.1. Items included in school autonomy simple indices (T4PAUTS, T4PAUTB, T4PAUTP, T4PAUTI, T4PAUTC, T4PAUTD)

Simple index and variables	Item wording
T4PAUTS: School autonomy for staffing	
TC4G24A1 – TC4G24A5	Appointing or hiring teachers
TC4G24B1 – TC4G24B5	Dismissing or suspending teachers from employment
T4PAUTB: School autonomy for budgeting	
TC4G24C1 – TC4G24C5	Establishing teachers' starting salaries, including setting pay scales
TC4G24D1 – TC4G24D5	Determining teachers' salary increases
TC4G24E1 – TC4G24E5	Deciding on budget allocations within the school
T4PAUTP: School autonomy for educational policies	
TC4G24F1 – TC4G24F5	Establishing student disciplinary policies and procedures
TC4G24G1 – TC4G24G5	Establishing student assessment policies, including <national/regional> assessments

Unclassified - Non classifié

Simple index and variables	Item wording
TC4G24H1 – TC4G24H5	Approving students for admission to the school
T4PAUTI: School autonomy for instructional policies	
TC4G24F1 – TC4G24F5	Establishing student disciplinary policies and procedures
TC4G24G1 – TC4G24G5	Establishing student assessment policies, including <national/regional> assessments
TC4G24J1 – TC4G24J5	Determining course content, including <national/regional> curricula
TC4G24K1 – TC4G24K5	Deciding which courses are offered
T4PAUTC: School autonomy for curriculum	
TC4G24I1 – TC4G24I5	Choosing which learning materials are used
TC4G24J1 – TC4G24J5	Determining course content, including <national/regional> curricula
TC4G24K1 – TC4G24K5	Deciding which courses are offered
T4PAUTD: School autonomy for diversity policies	
TC4G25C1 – TC4G25C5	Determining policies on student diversity
TC4G25D1 – TC4G25D5	Determining policies on teacher diversity

School autonomy indices were created using a total of 13 items, each of which had 5 response options. School principals had to indicate who, among a range of stakeholders, had a considerable responsibility in making decisions relating to tasks listed in the questionnaire. Considerable responsibility could be attributed to one or more of the following:

- principal
- other members of the <school management team>
- teachers (not as part of the <school management team>)
- <school governing board>
- <local, municipality/regional, state, or national/federal> authorities.

For a particular task, the extent of school-level autonomy was determined by whether considerable responsibility lay at the school level (i.e. with the principal, other members of the <school management team>, teachers [not as a part of the <school management team>] or the <school governing board>), with other authorities (i.e. <local, municipality/regional, state, or national/federal>) or was shared by both groups. Each response option ("Checked", "Not checked") was a variable of its own.

The indices were computed in the following way:

- A new variable for each item was created (each item had five response options, one for each decision maker). If at least one of the response options was checked, the variable was coded as 0.
- If, for a given item, none of the first four response options (describing decision making as being at the school level) were checked and the fifth response option (indicating decision making being the responsibility of other authorities) was checked, then the new variable was coded as -1. Thus, if the principal checked only the "Local, municipality/regional, state, or national/federal> authorities" response option, the task was considered to be an external responsibility (not autonomous).
- If the school principal checked response options from both groups (decision making at the school level and decision making by other authorities), the responsibility was considered to be shared, and the value remained 0 (see point 1).
- If one of the first four response options (the decision making being at the school level) was checked, and the fifth response option (decision making being other authority responsibility) was not checked, the new variable was coded as +1. Therefore, if the principal selected at least one of the

Unclassified - Non classifié

four school-level responsibility options and no other authority responsibility option, the task was considered to be a school responsibility (autonomous).

- The newly created variables were recoded: -1 was recoded to 1, 0 to 2, +1 to 3.
- For each index, if more than half of the newly created variables were classified as autonomous, the school was classified as autonomous. If more than half of the corresponding tasks were classified as not autonomous, the school was classified as not autonomous. If neither criterion was met, the school was classified as mixed. The final indices were coded 1 for “No autonomy”, 2 for “Mixed autonomy”, and 3 for “Autonomy”.

School resources indices (T4PLACP/T4PLACSNP/T4PLACMR)

To describe the level of resources available in schools, three simple indices were derived from ten items in question 39[1] of the principal questionnaire. The question asked school principals to indicate the extent (“Not at all”, “To some extent”, “Quite a bit”, “A lot”) to which a shortage or lack of resources in a range of areas hindered the school’s capacity to provide quality instruction.

Table 11.2 presents the corresponding items for the three indices: lack of pedagogical personnel (T4PLACP), lack of specific needs pedagogical personnel (T4PLACSNP) and lack of material resources (T4PLACMR).

Table 11.2. Items included in school resources simple indices (T4PLACP, T4PLACSNP, T4PLACMR)

Simple index and variables	Item wording
T4PLACP: Lack of pedagogical personnel	
TC4G40A	Shortage of qualified teachers
TC4G40B	Shortage of teachers with competence in teaching students with special education needs
TC4G40C	Shortage of vocational teachers
TC4G40K	Shortage of teachers with competence in teaching students in a multicultural or multilingual setting
TC4G40L	Shortage of teachers with competence in teaching students from <socio-economically disadvantaged homes>
T4PLACSNP: Lack of specific needs pedagogical personnel	
TC4G40B	Shortage of teachers with competence in teaching students with special education needs
TC4G40K	Shortage of teachers with competence in teaching students in a multicultural or multilingual setting
TC4G40L	Shortage of teachers with competence in teaching students from <socio-economically disadvantaged homes>
T4PLACMR: Lack of material resources	
TC4G40D	Shortage or inadequacy of instructional materials (e.g. textbooks)
TC4G40E	Shortage or inadequacy of <digital resources and tools> for instruction
TC4G40F	Insufficient Internet access
TC4G40G	Shortage or inadequacy of library materials
TC4G40I	Shortage or inadequacy of instructional space (e.g. classrooms)
TC4G40J	Shortage or inadequacy of physical infrastructure (e.g. classroom furniture, school buildings, heating/cooling, and lighting)
TC4G40M	Shortage or inadequacy of necessary materials to train vocational skills

The indices were computed in the following way:

- If all responses to the items included in the particular index were “Not at all” or “To some extent”, the index received a value of 1 = Not a problem.

Unclassified - Non classifié

- If all responses to the component variables for the particular index were “Quite a bit” or “A lot”, the index received a value of 3 = A problem.
- All other combinations were coded as 2 = A bit of a problem.
- The final indices are coded as: 1 for “Not a problem”, 2 for “A bit of a problem”, and 3 for “A problem”.

Teacher level

Teacher’s age (grouped) (T4TAGEGR)

The teacher’s age group variable was derived from teachers’ responses to the question about their age in variable TT4G02. It was created by recoding the original responses into five age bands: 1 = Under 29 years old, 2 = 30-39, 3 = 40-49, 4 = 50-59, and 5 = 60 or above.

Teacher’s highest level of formal education completed (grouped) (T4THEDAT)

This variable was constructed using responses in the variable TT4G03 regarding the highest level of formal education completed by teachers by grouping these into five categories: 1 = Below ISCED level 5, 2 = ISCED level 5, 3 = ISCED level 6, 4 = ISCED level 7, and 5 = ISCED level 8.

Year of completion of first teaching qualification (grouped) (T4TYQUAL)

This variable was derived from teacher responses in variable TT4G05 about the year in which they completed their first teaching qualification, grouped into nine time periods: 1 = 1940-49, 2 = 1950-59, 3 = 1960-69, 4 = 1970-79, 5 = 1980-89, 6 = 1990-99, 7 = 2000-09, 8 = 2010-19, and 9 = 2020-24.

Number of schools teacher works at (T4TNSCH)

The variable indicating the number of schools a teacher works at was derived from variables TT4G10 and TT4G11 by categorising the responses into three groups: 0 = Not working in other schools, 1 = Working in one other school, 2 = Working in two or more other schools.

Teacher’s employment status in terms of working hours (grouped) (T4TEMPWH)

This variable was derived from responses in variable TT4G12 and captures the teacher’s employment status based on their reported working hours. The grouped variable was created with two categories: 1 = Full-time (more than 90% of full-time hours), and 2 = Part-time (90% of full-time hours or less).

Teacher’s years of work experience at current school (grouped) (T4TYEXPTS)

This variable was derived from responses in variable TT4G13A concerning the number of years a teacher has worked at the current (sampled) school. The grouped variable has four categories: 1 = Less than or equal to 5 years, 2 = 6-10 years, 3 = 11-20 years, and 4 = Above 20 years.

Teacher’s years of work experience in total (grouped) (T4TYEXPTT)

The total number of years a teacher has worked in the profession was obtained from responses in variable TT4G13B by classifying responses into four categories: 1 = Less than or equal to 5 years, 2 = 6-10 years, 3 = 11-20 years, and 4 = Above 20 years.

Unclassified - Non classifié

Teacher's years of work experience in other education roles (grouped) (T4TYEXPE)

This variable was derived from teachers' responses in variable TT4G13C regarding their work experience in roles outside of classroom teaching but within the education sector. The grouped variable has four categories: 1 = Less than or equal to 5 years, 2 = 6-10 years, 3 = 11-20 years, and 4 = Above 20 years.

Teacher's years of work experience in other non-education roles (grouped) (T4TYEXPO)

Responses in variable TT4G13D measuring teachers' experience in roles outside the education sector, was likewise grouped into four categories: 1 = Less than or equal to 5 years, 2 = 6-10 years, 3 = 11-20 years, and 4 = Above 20 years.

Nominal list of languages used by teacher (multilingualism) (T4TLANG)

The list of languages used by a teacher was derived through processing responses to the closed and open responses in variable TT4G29A-G (or where applicable nationally extended response options). The resulting variable is a nominal list that alphabetically records the languages reported to be regularly used by the teacher, coded against the ISO 639-2 standard.

Multilingualism (T4TLANGN)

The derived multilingualism variable was generated based on the above mentioned T4TLANG variable. The variable represents the number of languages used by a teacher: 1 = One language (monolingual), 2 = Two languages (bilingual), and 3 = Three or more languages (multilingual).

Target class size (grouped) (T4TCSIZE)

The grouped target class size was derived from teachers' responses to variable TT4G46 by recoding the original responses into four class size bands: 1 = Fewer than 15, 2 = 15-24, 3 = 25-34, and 4 = 35 or above.

Index of methods of assessing student learning (T4FASPR)

To describe the frequency of use of assessment methods, an index was derived from variables TT4G53C, D and E, where teachers indicated the frequency ("Never or almost never", "Occasionally", "Frequently", "Always") with which they are providing oral or written feedback to indicate areas or improvement (TT4G53C), asking students to assess their own progress (TT4G53D) and observing students when working on particular tasks and providing immediate feedback (TT4G53E).

The index was computed in the following way:

- The responses are recoded to 0 ("Never or almost never"), 1 ("Occasionally"), 2 ("Frequently"), 3 ("Always").
- A simple sum with 0-9 as possible values was computed. If any of the variables had an "Omitted or invalid" value, T4FASPR was set to omitted/invalid, i.e. it was only computed if all three responses were available.

Index of classroom infrastructure quality (T4CLSINF)

To describe the level of classroom infrastructure quality, a simple index was derived from variables TT4G59A-F, items which asked teachers to indicate the extent ("Not at all", "To some extent", "Quite a bit", "A lot") to which their capacity to provide quality instruction in the target class was hindered by various infrastructure features of the target class.

The index was computed in the following way:

Unclassified - Non classifié

- If all responses to all items were “Not at all” or “To some extent”, the index received a value of 1 = Not a problem.
- If all responses to all six items were “Quite a bit” or “A lot”, the index received a value of 3 = A problem.
- All other combinations were coded as 2 = A bit of a problem.

The final index is coded as: 1 for “Not a problem”, 2 for “A bit of a problem”, and 3 for “A problem”.

Teacher’s single most important recommendation to stakeholders or policy makers (T4TPOLREC)

The variable captured a teacher’s single most important recommendation to stakeholders or policy makers, derived from responses in variable TT4G81 and subsequent translation, correction and vetting to ensure accuracy and consistency in close collaboration with national centres.

11.2.2. TALIS Starting Strong

Leader/setting level

Leader’s age (grouped) (S2LAGEGR)

The grouped leader age variable was derived from leaders’ responses to the question about their age (SL2G02). A new variable was created by recoding the original responses into three age bands: 1 = Under age 30, 2 = Between ages 30 and 49, and 3 = Age 50 and older.

Leader’s education (grouped) (S2LISCED)

This variable dichotomised early childhood education and care (ECEC) leaders according to the highest level of formal education they have completed, based on responses to SL2G03, with categories: 1 = ISCED 2011 level 5 and below, 2 = ISCED 2011 level 6 and above.

Training in early childhood, financial or human resource management, or pedagogical leadership (S2LTRAIN)

The variable identified whether the education or training completed by ECEC setting leaders included key topics related to early childhood development, management or pedagogical leadership. It was constructed using responses to SL2G04A-D, which asked whether the respondent’s education or training covered the following areas: early childhood development, well-being and learning, financial management, human resource management and pedagogical leadership. This variable was coded into the following categories: 0 = No training in any of the following topics, 1 = Training in at least one of these topics.

If any of SL2G04A-D were marked as “Yes”, the variable was coded as 1, indicating training in at least one topic. If all responses were “No”, the variable was coded as zero, indicating no training in any of the topics. If responses were “No” with some missing data, the variable was coded as “Omitted or Invalid”.

Leader’s experience (grouped) (S2LEXPGR)

The variable categorised ECEC setting leaders based on their total years of experience working as a centre leader. It was constructed using responses to SL2G05B, which asked leaders to report their overall duration in this role, with categories: 1 = 3 years or less, 2 = Between 4 and 9 years, and 3 = 10 years or more.

Unclassified - Non classifié

Sources of ECEC funding (SL2G18A_R-SL2G18D_R)

To capture the range of funding sources for ECEC settings, a set of variables was constructed using responses to the original variables SL2G18A-D. These variables asked whether the setting received funding from specific sources during the past 12 months. Respondents were instructed to select one of three response options for each source: “Yes”, “No”, or “Do not know”. The funding sources included direct payments from government entities at any level; fees or charges paid directly or indirectly by parents or guardians; direct payments from employers of parents or guardians; and other non-governmental funding sources, such as funding from religious institutions, donations, fundraising by parents or guardians, or subsidies through non-profit ECEC providers.

For analysis, responses were recoded as follows: a response of “Yes” was assigned a value of 1, “No” was assigned a value of 2, and “Do not know” was treated as valid missing code.

Publicly or privately managed ECEC settings: for-profit or non-profit (S2SMANPRF)

To describe the financial and human resource management structures of ECEC settings, a variable was constructed based on responses from the leader questionnaire. This index was derived from two items: SL2G19 and SL2G21.

- SL2G19 asks the ECEC setting leader to indicate whether the setting is publicly or privately managed.
- SL2G21 asks the leader to specify whether the institution operates on a for-profit or non-profit basis.

Based on these responses, the index was coded as follows:

- A value of 1 was assigned when the setting is publicly managed.
- A value of 2 was assigned when the setting is privately managed and operates on a for-profit basis, or if SL2G19 was missing and SL2G21 indicated operating on a for-profit basis.
- A value of 3 was assigned when the setting is privately managed and operates on a non-profit basis.
- A value of “Omitted” was assigned when the SL2G19 was missing and SL2G21 indicated working on a non-profit basis. Likewise, a value of “Omitted” was assigned in cases that indicated they were privately managed in SL2G19 and SL2G21 was missing a response.

Sum of all staff members (S2SUMSTAFF)

To determine the total number of staff members working in each ECEC setting, a composite variable was created based on responses in variables SL2G22A-D, which asked for the number of individuals working with children in ISCED-2011 level 02 or below at this ECEC setting, grouped by role:

- SL2G22A: <ECEC setting leaders>
- SL2G22B: <Teachers>
- SL2G22C: <Assistants>
- SL2G22D: Other <ECEC staff>.

This sum was computed if at least one of the four items was answered. If any of SL2G22A-D was missing, the missing value was treated as zero in the summation.

Sum of all staff members (grouped) (S2SUMSTAFFGR)

This variable grouped the responses of S2SUMSTAFF into four categories: 1 = 5 staff or fewer, 2 = Between 6 and 10 staff; 3 = Between 11 and 20 staff, and 4 = 21 staff or more.

Unclassified - Non classifié

Proportion of staff who left permanently in the last 12 months (S2LSTAFFLEFT)

This variable calculated the proportion of staff who permanently left this ECEC setting in the last 12 months. This was created by dividing SL2G23B by S2SUMSTAFF, provided S2SUMSTAFF is greater than zero, and assigning the following categories: 1 = Less than 10%, 2 = 10% or more.

Setting size (national tertiles) (S2SSIZGR)

The variable categorised ECEC settings into national tertiles based on the number of children enrolled in the relevant level of ECEC (i.e. ISCED level 02 or settings for children under the age of 3), as recorded in SL2G25. The tertiles were based on estimated integer values and all observations with the same estimated value are grouped into the same bin, typically the lower category, leading to groups with an unequal number and weighted proportion of observations in each. Non-missing values in the variable SL2G25 were used to allocate cases to the following tertile categories: 1 = lowest (1st) national tertile of setting size, 2 = 2nd national tertile of setting size, and 3 = highest (3rd) national tertile of setting size. Cases with missing information in SL2G25 were coded as “Omitted or invalid”. Due to a large number of settings with low number of children enrolled, the tertiles were adjusted for Québec (Canada).

Proportion of children with specific characteristics in ECEC settings (S2SPCTU3/S2SPCT3O/S2SPCTLNG/S2SPCTSEN/S2SPCTDIS/S2SPCTMIG/S2SPCTREF/ S2SPCTMIN)

To describe the composition of children in ECEC settings, a set of grouped proportions was created to categorise the percentage of children with specific characteristics. These categories were based on responses in variables SL2G25 and SL2G27A-H.

- SL2G25 asked for the total number of children currently enrolled in the ECEC setting.
- SL2G27A-H asked for the number of children in each of the following categories:
  - A: Under the age of 3
  - B: Age 3 and older
  - C: Whose first language is different
  - D: With special education needs
  - E: From socio-economically disadvantaged homes
  - F: Who are immigrants or with migrant backgrounds
  - G: Who are refugees
  - H: Who are belonging to ethnic/national minorities.

Respondents were instructed to enter a number for each category and to use zero if none. Because children may belong to multiple categories, these reported counts may overlap.

Each of the eight proportions were calculated using the same logic:

- If SL2G25 had no response, the index was assigned a value of “Omitted or invalid”.
- If the reported number of children for a given category was zero, the index was assigned a value of 1.
- If the number was greater than zero but represented less than 10% of the total enrolment, the index was assigned a value of 2.
- If the proportion of children in the category was between 10 and 50% of the total enrolment, the index was assigned a value of 3.
- If the proportion exceeded 50%, the index was assigned a value of 4.

Unclassified - Non classifié

Proportion of children in this ECEC setting whose first language is different (S2SPRPLNG)

This grouped variable collapsed the values in S2SPCTLNG into two categories: 1 = Less than 10%, 2 = 10% or more.

Proportion of children in this ECEC setting with special education needs (S2SPRPSEN)

This grouped variable collapsed the responses of S2SPCTSEN into two categories: 1 = Less than 10%, 2 = 10% or more.

Proportion of children in this ECEC setting from socio-economically disadvantaged homes (S2SPRPDIS)

This grouped variable collapsed the responses of S2SPCTDIS into two categories: 1 = Less than 10%, 2 = 10% or more.

Proportion of children in this ECEC setting who are immigrants or with migrant backgrounds (S2SPRPMIG)

This group variable collapsed the responses of S2SPCTMIG into two categories: 1 = Less than 10%, 2 = 10% or more.

Proportion of children in this ECEC setting who are refugees (S2SPRPREF)

This group variable collapsed the responses of S2SPCTREF into two categories: 1 = Less than 10%, 2 = 10% or more.

Proportion of children in this ECEC setting belonging to ethnic/national minorities (S2SPRPMIN)

This group variable collapsed the responses of S2SPCTMIN into two categories: 1 = Less than 10%, 2 = 10% or more.

Reasons for unmet enrolment demand (SL2G26A_R-SL2G26E_R)

To assess whether there were children who wanted to enrol at an ECEC setting but were unable to do so because there were no available places, a set of variables was constructed using responses to SL2G26A-E. These asked respondents to indicate whether such cases occurred in the last 12 months and to specify the circumstances:

- A: Yes, children were placed on a waiting list and later enrolled
- B: Yes, children were placed on a waiting list and are still waiting for a place
- C: Yes, but children were not placed on a waiting list
- D: No
- E: I do not have this information.

Respondents could select more than one option. Cases where contradictory options (e.g. “Yes, children were placed on a waiting list and are still waiting for a place” [B] and “I do not have this information” [E]) were selected simultaneously were marked invalid.

For analysis, responses from each variable SL2G26A-SL2G26E were recoded into two categories for new variables SL2G26A_R-SL2G26E_R: “Checked”, and “Not checked”. Each individual variable was recoded based on the selection of answers across the source variables. When only one variable was marked as “Checked”, all others should be marked as “Not checked”. This is applicable in all cases except for a

Unclassified - Non classifié

combination of “Checked” in SL2G26B and SL2G26C. In these cases, SL2G26B_R and SL2G26C_R retain a value of “Checked” in both variables. In cases where answers were contradictory, the response was marked as “Omitted or invalid”, such as the example above for items B and E. Responses marked as “Not applicable” were recoded as a valid missing value.

Physical environment conditions (SL2G28A_R-SL2G28H_R)

To assess the quality of the physical environment in ECEC settings, a set of variables was created based on responses to question SL2G28A-H. This question asked respondents to indicate their level of agreement with a series of eight statements describing the adequacy and condition of physical spaces within the setting. Responses were provided on a four-point scale: “Strongly disagree”, “Disagree”, “Agree”, and “Strongly agree”, along with a “Not applicable” option.

The statements addressed the following aspects of the setting:

- A: Adequate ventilation for healthy airflow
- B: Sufficient furniture for each child (e.g. chairs, tables)
- C: Indoor space arranged to allow children to move around freely
- D: Background noise levels that do not interfere with interactions
- E: Roof, ceiling, walls and floor in good condition (e.g. no leaks or mould)
- F: Easy access to bathrooms for children
- G: Outdoor space arranged to support free movement
- H: Availability of shaded areas in the outdoor space.

For analysis, responses were recoded such that “Strongly disagree” was coded as 1, “Disagree” as 2, “Agree” as 3, “Strongly agree” as 4, and “Not applicable” was treated as a valid missing code.

Sum of available induction/orientation activities (S2SNINAC)

To measure the availability of induction or orientation activities in ECEC settings, an index was created based on responses to variables SL2G29A-J. This question asked whether various types of induction or orientation activities are available for new ECEC staff or setting leaders, activities intended to support individuals who are either new to the profession or new to the specific setting.

Respondents were asked to indicate whether the following induction/orientation activities are available at their setting, each coded as “Yes” or “No”:

- A: Courses/seminars/workshops attended in person
- B: Online courses/seminars/workshops
- C: Supervision by the ECEC setting leader and/or experienced ECEC staff
- D: Networking or collaboration with other ECEC settings
- E: Observation visits to other classroom/playgroup/group within the same setting
- F: Working in a team with experienced ECEC staff
- G: Use of portfolios/diaries/journals for self-reflection on own practice
- H: Reduced workload
- I: General/administrative introduction
- J: Coaching programme.

To calculate the sum, each “Yes” response was assigned a value of 1 and summed across variables SL2G29A through SL2G29J, resulting in a total ranging from 0 to 10. For a sum of zero, any combination

Unclassified - Non classifié

of “No” and “Omitted or invalid” values were possible, if at least one response was “No”. If all variables are marked as either 100% “Not administered” or 100% “Omitted or invalid”, the index is coded to match.

Sum of activities to facilitate children’s transitions (S2SNTRAC)

To assess the extent to which ECEC settings support children’s transitions to a new ECEC setting or to ISCED 2011 level 1, an index was created using responses to variables SL2G35A-F. This question asked whether the setting undertakes specific activities aimed at facilitating smooth transitions for children.

Respondents were asked to indicate “Yes” or “No” for each of the following six activities:

- A: Communicating with receiving ECEC settings or ISCED level 1 schools about children making transitions
- B: Organising visits to the next ECEC setting or ISCED level 1 schools for transitioning children
- C: Holding meetings with staff across ECEC settings or ISCED level 1 schools
- D: Offering in-service training for ECEC staff on transition issues
- E: Working with local authorities to develop transition programmes
- F: Providing activities for parents or guardians to support the transition (e.g. information sessions, meetings or home visits).

Each “Yes” response was coded as 1, each “No” response as 0. The index was calculated by summing the number of “Yes” responses across items SL2G35A to SL2G35F, resulting in a value ranging from 0 to 6. For a sum of zero, any combination of “No” and “Omitted or invalid” values were possible, if at least one response was “No”. If all variables are marked as either 100% “Not administered” or 100% “Omitted or invalid”, the index is coded to match.

Sum of policies and practices related to diversity (S2SNDIPOL)

To capture the extent to which ECEC settings implement diversity-related policies and practices, an index was created based on responses to variables SL2G39A-E. This question asked leaders whether specific diversity-supportive practices are implemented in their setting.

Respondents were asked to indicate “Yes” or “No” for each of the following five items:

- A: Supporting play that encourages children’s expression of diverse ethnic and cultural identities (e.g. re-enacting a religious festival learned about through parents, peers, staff or books)
- B: Including books and pictures that feature people from a variety of ethnic and cultural groups
- C: Including books and pictures that represent people with different physical needs
- D: Including books and pictures that reflect diverse family structures (e.g. single-parent families, families with parents from sexual or gender minorities)
- E: Employing staff who are representative of the diverse backgrounds of the children and families served.

Each “Yes” response was coded as 1, each “No” response as 0. The index was calculated by summing the number of “Yes” responses across SL2G39A to SL2G39E, resulting in a value ranging from 0 to 5. For a sum of zero, any combination of “No” and “Omitted or invalid” values were possible, if at least one response was “No”. If all variables are marked as either 100% “Not administered” or 100% “Omitted or invalid”, the index is coded to match.

Satisfaction with work at this ECEC setting (national quartiles) (S2LJOBSARQR)

The variable categorises leaders’ reported satisfaction into national quartiles based on the values as recorded in S2LJOBSAR. The quartiles are based on estimated integer values and all observations with

Unclassified - Non classifié

the estimated quartile value were grouped into the same bin, typically the lower category, leading to groups with an unequal number and weighted proportion of observations in each. Non-missing values in the variable S2LJOBSAR were used to allocate cases to the following quartile categories: 1 = 1st national quartile; 2 = 2nd national quartile; 3 = 3rd national quartile; 4 = 4th national quartile. Cases with missing information in S2LJOBSAR were coded as “Omitted or invalid”.

Level of stress and impact on leaders’ well-being (national quartiles) (S2LSTRESLQR)

The variable categorises leaders’ reported well-being into national quartiles based on the values recorded in S2LSTRESL. The quartiles are based on estimated integer values and all observations with the estimated quartile value were grouped into the same bin, typically to the lower category, leading to groups with an unequal number and weighted proportion of observations in each. Non-missing values in the variable S2LSTRESL were used to allocate cases to the following quartile categories: 1 = 1st national quartile; 2 = 2nd national quartile; 3 = 3rd national quartile; 4 = 4th national quartile. Cases with missing information in S2LJOBSAR were coded as “Omitted or invalid”.

Staff level

Staff age (grouped) (S2SAGEGR)

The staff age group variable was derived from ECEC staff responses to the question about their age (variable SS2G02). A new variable was created by recoding the original responses into three age bands: 1 = Under age 30, 2 = Between ages 30 and 49, and 3 = Age 50 and older.

Staff role (grouped) (S2SROLEGR)

This variable grouped the responses of SS2G03 into two categories: 1 = Leader or teacher, 2 = Other.

Staff employment status (grouped) (S2SEMPGR)

This variable grouped the responses of SS2G05 into two categories: 1 = Permanent employment, 2 = Other.

Working hours and reasons for part-time work (S2SFPTW)

The variable categorised ECEC staff based on their working hours and the reasons for part-time employment. It was constructed using responses in two variables: SS2G06, which asks about current working hours, and SSG07, which asks why the respondent works part-time.

In SS2G06, respondents were asked to report whether they work:

- “full-time (more than 90% of full-time hours)”
- “part-time (50-90% of full-time hours)”
- “part-time (less than 50% of full-time hours)”.

Respondents who indicated that they work part-time were then asked SSG07, which captures their primary reason for doing so based on two available response options:

- “I was only looking for part-time work (e.g. due to health, family commitments or further education)”
- “I was only offered part-time work (e.g. only part-time hours available or limited setting hours)”.

Based on the responses, the variable S2SFPTW was created to distinguish between full-time and part-time staff, as well as the reasons for part-time employment. Staff were classified as full-time if they reported working more than 90% of full-time hours (1). Those working part-time were further divided based on their

Unclassified - Non classifié

reasons: staff who reported choosing part-time work – for example, due to personal preferences such as health, family commitments or education – were classified as voluntary part-time (2). In contrast, staff who indicated that they were only offered part-time hours, such as when only part-time positions were available, were categorised as involuntary part-time (3).

Staff work experience in total (grouped) (S2SEXPGR)

This variable grouped the responses of SS2G08B into two categories: 1 = 3 years or less, 2 = 4 years or more.

Staff education groups (S2SISCED)

This variable was constructed using responses to the question regarding the highest level of formal education completed by staff (variable SS2G11), with categories: 1 = ISCED 2011 level 3 and below, 2 = ISCED 2011 level 4 or ISCED 2011 level 5, and 3 = ISCED 2011 level 6 and above.

Staff education or training to work with children (S2SETCHD)

This variable grouped the responses of SS2G12A-F into two categories: 1 = Yes, 2 = No. If any response was marked as “Yes”, then the variable was coded as “Yes”, otherwise “No”.

No participation in professional development activities (S2SNOPD)

The variable identified whether ECEC staff reported no participation in any professional development activities during the past 12 months. It was based on responses to variables SS2G15A-I, which presented the following response categories: “Yes, in person”; “Yes, virtual or online”; “Yes, in person and virtual/online” and “No”.

The activities listed included:

- A: Courses, seminars or workshops
- B: Conferences where ECEC staff and/or researchers present or discuss education and care issues
- C: Qualification programmes (e.g. degree programmes)
- D: Planned visits to other ECEC settings
- E: Planned visits to other groups within the same setting
- F: Coaching programmes as part of a formal ECEC setting arrangement
- G: Formal or informal staff networks for professional learning
- H: Induction or orientation programmes
- I: Other professional development activities.

The variable was coded into the following categories: 0 = Participation in any professional development activities over the last 12 months, 1 = No participation in professional development activities over the last 12 months.

It was coded as 1 (No participation) if the respondent answered “No” to all listed activities or for any combination of “No” responses and missing. It was coded as 0 (participation) if the respondent indicated participation in any activity – regardless of format – in at least one of the items.

Mode of professional development participation (S2PDMODE)

The variable captured the mode in which ECEC staff participated in professional development activities over the past 12 months. It was based on responses to question SS2G15A-I, which asked whether staff

Unclassified - Non classifié

had engaged in various types of professional development, and, if so, whether participation occurred in person, virtually/online, or in both formats.

The activities listed include courses and workshops, conferences, qualification programmes, planned visits, coaching programmes, staff networks, induction programmes and other forms of professional development.

Based on the responses across all items, the variable S2PDMODE was recoded into four categories:

- 1 = Only in person. Assigned when the respondent participated exclusively in person, meaning that for all activities where participation was reported, the response was “Yes, in person” (with any remaining items marked as “No” or missing).
- 2 = Only virtual/online participation. Assigned when the respondent participated exclusively in virtual or online activities, meaning that for all activities where participation was reported, the response was “Yes, virtual or online” (with any remaining items marked as “No” or missing).
- 3 = Mixed modes of participation. Assigned when the respondent participated in both in-person and virtual/online activities, representing any combination of responses not captured by Categories 1 or 2.
- 4 = No professional development. Assigned when no participation was reported, meaning all responses were a combination of “No” or missing.

No support for professional development activities (S2SNOPDSUP)

The variable indicated whether ECEC staff received no support for professional development activities undertaken during the past 12 months. It is based on responses to variables SS2G18A-H, which asked whether specific forms of support were provided for participation in professional development.

Respondents were asked to indicate whether they received any of the following types of support:

- A: Release from working with children during regular working hours (e.g. reduced teaching time, days off, study leave)
- B: Monetary supplements for time spent outside working hours
- C: Reimbursement or payment of professional development costs (e.g. registration fees)
- D: Reimbursement for out-of-pocket costs (e.g. transportation, materials, food)
- E: Materials needed for the activities (e.g. office supplies)
- F: Non-monetary rewards (e.g. classroom materials, book vouchers, software/applications)
- G: Non-monetary professional benefits (e.g. fulfilling professional development requirements, enhanced promotion opportunities)
- H: Increased salary.

Available response categories for these variables were: “Yes”, “No”.

The variable was coded as 1 (no support received) if the respondent answered “No” to all items or for any combination of “No” responses and missing. It was coded as 0 (support received) if the respondent selected “Yes” for at least one type of support.

Percentage of time spent with direct contact with children (S2STMWCHD)

This percentage variable was calculated by SS2G28A divided by the sum of SS2G28A and SS2G28B, multiplied by 100, provided the sum was greater than zero. Any output greater than 100% was automatically coded to “Omitted or invalid”.

Unclassified - Non classifié

Percentage of time spent without contact with children (S2STMWOCHD)

This percentage variable was calculated by SS2G28B divided by the sum of SS2G28A and SS2G28B, multiplied by 100, provided the sum was greater than zero. Any output greater than 100% was automatically coded to “Omitted or invalid”.

Percentage of time spent planning or preparing play and/or learning activities on your own (S2SPTMPROWN)

This percentage variable was calculated by SS2G28C divided by the sum of SS2G28A and SS2G28B, multiplied by 100, provided the sum was greater than zero. Any output greater than 125% was automatically coded to “Omitted or invalid”.

Percentage of time spent planning or preparing play and/or learning activities with other ECEC staff (S2SPTMPROTH)

This percentage variable was calculated by SS2G28D divided by the sum of SS2G28A and SS2G28B, multiplied by 100, provided the sum was greater than zero. Any output greater than 125% was automatically coded to “Omitted or invalid”.

Percentage of time spent documenting children’s development, well-being and learning (S2SPTMDOC)

This percentage variable was calculated by SS2G28E divided by the sum of SS2G28A and SS2G28B, multiplied by 100, provided the sum was greater than zero. Any output greater than 125% was automatically coded to “Omitted or invalid”.

Percentage of time spent collaborating and speaking with parents or guardians from this ECEC setting (S2SPTMCOL)

This percentage variable was calculated by SS2G28F divided by the sum of SS2G28A and SS2G28B, multiplied by 100, provided the sum was greater than zero. Any output greater than 125% was automatically coded to “Omitted or invalid”.

Percentage of time spent participating in management, staff meetings and general administrative work (S2SPTMMGM)

This percentage variable was calculated by SS2G28G divided by the sum of SS2G28A and SS2G28B, multiplied by 100, provided the sum was greater than zero. Any output greater than 125% was automatically coded to “Omitted or invalid”.

Percentage of time spent laundry, tidying-up, cleaning, shopping or food preparation tasks (S2SPTMHOU)

This percentage variable was calculated by SS2G28H divided by the sum of SS2G28A and SS2G28B, multiplied by 100, provided the sum was greater than zero. Any output greater than 125% was automatically coded to “Omitted or Invalid”.

Sum of staff members working with the target group (S2SUMSTAFFTG)

To determine the total number of staff members working with the target group, a composite variable was created based on responses to SS2G34A-E. This question asked for the number of individuals working with the target group on a specific reference day, grouped by role. Incomplete responses to this variable will still lead to a final value for S2SUMSTAFFTG, for if at least one item was answered then a sum was

Unclassified - Non classifié

available. Missing values such as “Omitted or invalid” were treated as if they were a 0 response during the calculation.

Specifically, the variable was calculated by summing the reported number of individuals in the following categories:

- A: ECEC setting leaders and teachers
- B: Assistants
- C: Staff for individual children
- D: Other ECEC staff (e.g. staff for special tasks, intern).

Sum of staff members working with the target group (grouped) (S2SUMSTAFFTGGR)

This variable grouped the responses of S2SUMSTAFFTG into two categories: 1 = 3 or fewer, 2 = 4 or more.

Number of children in target group (grouped) (S2SNUMCHDTG)

This group variable collapsed the responses of SS2G35 into three categories: 1 = 10 children or fewer, 2 = 11 to 20 children, and 3 = 21 children or more.

Proportion of children in target group whose first language is different (S2SPRPTGLNG)

This variable calculated the proportion of children in the target group whose first language is different by taking SS2G36A divided by SS2G35, provided SS2G35 was greater than zero. The result was collapsed into two categories: 1 = Less than 10%, 2 = 10% of more. Those cases where SS2G35 was missing were coded to “Omitted or invalid”.

Proportion of children in target group with special education needs (S2SPRPTGSEN)

This variable calculated the proportion of children in the target group with special education needs by taking SS2G36B divided by SS2G35, provided SS2G35 was greater than zero. The result was collapsed into two categories: 1 = Less than 10%, 2 = 10% of more. Those cases where SS2G35 was missing were coded to “Omitted or invalid”.

Proportion of children in target group from socio-economically disadvantaged homes (S2SPRPTGDIS)

This variable calculated the proportion of children in the target group from socio-economically disadvantaged homes by taking SS2G36C divided by SS2G35, provided SS2G35 was greater than zero. The result was collapsed into two categories: 1 = Less than 10%, 2 = 10% of more. Those cases where SS2G35 was missing were coded to “Omitted or invalid”.

Proportion of children in target group who are immigrants or with migrant backgrounds (S2SPRPTGMIG)

This variable calculated the proportion of children in the target group who are immigrants or with migrant backgrounds by taking SS2G36D divided by SS2G35, provided SS2G35 was greater than zero. The result was collapsed into two categories: 1 = Less than 10%, 2 = 10% of more. Those cases where SS2G35 was missing were coded to “Omitted or invalid”.

Unclassified - Non classifié

Proportion of children in target group belonging to ethnic/national minorities (S2SPRPTGMIN)

This variable calculated the proportion of children in the target group belonging to ethnic/national minorities by taking SS2G36E divided by SS2G35, provided SS2G35 was greater than zero. The result was collapsed into two categories: 1 = Less than 10%, 2 = 10% of more. Those cases where SS2G35 was missing were coded to “Omitted or invalid”.

Satisfaction with profession (national quartiles) (S2PROSARQR)

The variable categorised staff reported satisfaction into national quartiles based on the values as recorded in S2PROSAR. The quartiles were based on estimated integer values and all observations with the estimated quartile value were grouped into the same bin, typically the lower category, leading to groups with an unequal number and weighted proportion of observations in each. Non-missing values in the variable S2PROSAR were used to allocate cases to the following quartile categories: 1 = 1st national quartile; 2 = 2nd national quartile; 3 = 3rd national quartile; 4 = 4th national quartile. Cases with missing information in S2PROSAR were coded as “Omitted or invalid”.

Level of stress and its impact on staff well-being (national quartiles) (S2STRESSQR)

The variable categorised staff reported level of stress and its impact on staff well-being into national quartiles based on the values as recorded in S2STRESS. The quartiles were based on estimated integer values and all observations with the estimated quartile value were grouped into the same bin, typically the lower category, leading to groups with an unequal number and weighted proportion of observations in each. Non-missing values in the variable S2STRESS were used to allocate cases to the following quartile categories: 1 = 1st national quartile; 2 = 2nd national quartile; 3 = 3rd national quartile; 4 = 4th national quartile. Cases with missing information in S2STRESS were coded as “Omitted or invalid”.

11.3. Scaling procedures of questionnaire items

TALIS aims to collect robust and rich information about teacher, principal, staff and leader characteristics as well as information about their schools and centres. Many of the specific personal traits, such as attitudes and self-efficacy, cannot be observed directly, but only through expressed discrete opinions or intended and observed behaviour. Such traits are considered latent, that is, not directly observable. Large-scale studies, such as TALIS, purposefully develop instruments that consist of questions with multiple items to measure various latent traits. The presence of multiple items makes it possible to estimate and test the underlying measurement models. The procedure used to combine responses to these questions into a single scale score representing the latent construct of interest is called scaling.

The instruments used in TALIS 2024 are the teacher, principal, staff and leader questionnaires, each with items designed to capture specific facets of the envisaged latent traits. These instruments were developed to collect empirical evidence and test theoretical assumptions derived from the TALIS conceptual framework (see Chapter 2). This framework builds on constructs established in previous TALIS cycles while also introducing new dimensions considered relevant to current educational contexts. Accordingly, questionnaire development was theory-driven and informed by both accumulated experience and evolving conceptual priorities. The development of the instruments follows a multi-step process to ensure validity of the scales (Messick, 1995[1]). The data intended to represent constructs and to be used for scale score computation were subjected to extensive quality checks that included the use of item-level statistics to check missing data, response category frequencies and a reliability estimate.

Field trial data were used to evaluate the instruments with a focus on items intended to measure latent constructs. The TALIS international consortium, the Questionnaire Expert Group (QEG) and the OECD

Unclassified - Non classifié

then used these results to make decisions about item and scale selection and revision for the main survey. In some instances, the decision was made to not create scale scores but instead to report the individual items. Some items were removed from the instruments after the field trial to reduce the length of the questionnaires (for details on this matter, see Chapter 3). All decisions considered the state of instrument development at the time of the field trial and the low number of cases in the field trial data. This means that the limitations of the field trial were considered in the decision-making process. For example, items displaying less favourable item statistics were occasionally retained when they were deemed theoretically essential for the valid representation of the construct.

Analysis of the main survey data involved another thorough examination of the extent to which items of each scale measured its construct consistently (construct reliability) (Lyubomirsky and Lepper, 1999[2]) and the extent to which the scale measured the same construct in a similar manner across the countries/territories (construct invariance) (Cheung and Rensvold, 2002[3]; Vandenberg and Lance, 2000[4]). The process used for scale evaluation and scale score calculation in the main survey encompassed the following steps:

1. data preparation
2. scale evaluation
    a. item statistics
        i. percent of missingness
        ii. distribution of responses across response options
    b. scale analysis
        i. item-total correlation (discrimination)
        ii. reliability (based on a pooled international dataset and by country/territory)
        iii. CFA based on a pooled international dataset (combined dataset including most of the countries/territories)
        iv. confirmatory factor analysis by country/territory (for each country/territory within each level)
        v. multiple-group CFA (MGCFA) for measurement invariance testing
3. scale score computation
    a. scale score estimation with parameters based on the pooled international dataset
    b. scale score standardisation
    c. composite scale score computation.

Each of the steps mentioned above is described in more detail in the following sections. For some scales there was an iterative process to determine the final scale composition resulting in re-estimating scale and measurement invariance analyses multiple times until an acceptable solution was found.

The psychometric adequacy of the scales was assessed by estimating unidimensional CFA models for each scale. Given that the responses to the items come from the selection of ordered categorical (ordinal) response scales (e.g. Likert scale), the analysis items are considered as categorical in each part of the analysis. One of the advantages of categorical CFA models is that they do not make distributional assumptions about the observed variables and are thus appropriate to use with ordinal response scales. However, this leads to estimating more item parameters, as an additional threshold parameter has to be estimated for each intersection of two ordinal response categories. This has further implications during measurement invariance testing, as there are more options for specifying the model identification and to constrain model parameters (Wu and Estabrook, 2016[5]). The factor and measurement invariance analyses were estimated using the weighted least squares mean and variance adjusted (WLSMV) estimator. WLSMV is appropriate for ordinal data and adopted when the multivariate normality assumption of the observed variables is violated (Millsap and Yun-Tein, 2004[6]; Mîndrila, 2010[7]; Wu and Estabrook,

Unclassified - Non classifié

2016[5]). The observed covariance matrix (*S*) that is used with continuous indicators is replaced by a correlation matrix using polychoric correlations in the case of ordered polytomous indicators.

In CFA models for ordinal indicators each observed variable is assumed to reflect an underlying continuous latent response variable ($y*$). These $y*$ variables are assumed to be normally distributed and are partitioned by threshold parameters that define the transitions between response categories. Estimation is typically based on the polychoric correlation matrix among the $y*$ variables, and thus the observed variances of the categorical indicators are not modelled directly (Brown, 2015[8]). In our analyses, y^* is scaled in a way that the variance of y^* is fixed to 1 for all items. As a result, the residual variances of categorical indicators are not identified and not part of the CFA model. This approach is referred to as delta parametrisation. All analyses related to psychometric adequacy of the questionnaire scales were conducted using the 4.2.1 version of the R programming language (R Core Team, 2022[9]) and the following libraries:

- version 1.9.8 of the wCorr library (Bailey and Emad, 2021[10]), to estimate correlations
- version 0.6-19 of the lavaan library (Rosseel, 2012[11]), to conduct factor analysis.

In cases where the initial model did not meet acceptable fit criteria, one of the following modifications was applied: i) reducing the number of items; or ii) splitting the scale into two constructs. Most model improvements were suggested by the modification indices produced by the CFA implementation software. These reflect the approximate change of χ^2 if certain fixed/constrained parameters are freely estimated (Brown, 2015[8]). Only selected model re-specification resulting in the biggest (or, for some cases, second biggest) change to χ^2 were considered. The items where model modifications suggested an included correlation (residual covariance) were inspected. In addition, items with very low or negative loadings were considered for removal from the scale. All scale modifications were accompanied by plausibility checks conducted by the scaling team, as well as by the QEG chair in consultation with the OECD, thus acknowledging that changes to the model structure had relevant implications for scale content.

It is important to stress that these statistical criteria were used for the decision-making process that was based on an iterative process involving content-related considerations between the International Association for the Evaluation of Educational Achievement (IEA) scaling team, the QEG chair and the OECD. Scales that could not be improved through modifications were dropped from the analysis.

11.3.1. Data preparation

TALIS 2024 distinguished between valid and missing data values. Missing data of items included in scales were assigned a value of “Omitted or invalid” or “Not administered”.

- Omitted or invalid: The respondent was presented the question but did not respond, leaving the corresponding item or question blank. Some questions consisted of numeric responses, which were checked for plausibility. If the values for respondents fell outside a specific range, that value was considered invalid (for more details see Chapter 8). These were considered only when presenting the percentage distributions of single items and did not contribute to the calculation of scale statistics.
- Not administered: The missing code is used for those items that were deliberately not administered to a respondent (due to the design of teacher questionnaire Forms A, B and C, for example). These items did not contribute to the calculation of the item statistics or scale construction.

Scale evaluation was conducted both on single country/territory datasets and on a pooled international dataset, where the data from all countries/territories were combined into a single dataset. The countries/territories excluded from the pooled international dataset are presented in Table 11.3. In analyses of pooled international data, the data for each included country/territory are weighted using sampling weights transformed in a way that each country/territory contributes equally to the results. Since

Unclassified - Non classifié

weights were not rescaled for each scale to account for the cases with only one valid response or less, the effective contribution of each country/territory may vary slightly by scale.

Table 11.3. Included and excluded countries/territories from the international pooled data

Population	Number of countries/territories in the pooled sample for scale evaluation	Excluded countries/territories
TALIS core survey		
ISCED 2 Teachers	49	Alberta (Canada), Netherlands, New Zealand, Norway
ISCED 1 Teachers	12	Netherlands, New Zealand
ISCED 3 Teachers	8	No exclusions
ISCED 2 Principals	49	Alberta (Canada), Netherlands, New Zealand, Norway
ISCED 1 Principals	12	Netherlands, New Zealand
ISCED 3 Principals	7	Flemish Community (Belgium)
TALIS Starting Strong		
ISCED 02 Staff	14	New Zealand
ISCED 02 Leaders	14	New Zealand
U3 Staff	6	New Zealand
U3 Leaders	6	New Zealand
TKS		
ISCED 2 Teachers	8	No exclusions

Note: For the TALIS core survey, the excluded countries/territories are based on recommended adjudication ratings. The listed countries/territories were rated as “insufficient”. Because of the small number of countries/territories participating in TALIS Starting Strong, no country/territory was excluded except for New Zealand. The reason was that their data represent only respondents included in the sample and not the population targeted by the survey. For the TKS, no country/territory was excluded because of the small number of countries/territories that participated in the international component. The two Canadian provinces were combined into one dataset for the TALIS Starting Strong U3 population.

11.3.2. Scale evaluation

Item statistics

Items were analysed in relation to missingness and the distribution of the responses. Where applicable, items were reverse coded, so that the higher the value on an item, the higher the level of the latent construct. The item statistics were first evaluated based on the international pooled data. Selected item statistics were also reviewed by country/territory: percentage of omitted responses, percentage of infrequently used response categories and distribution of country/territory item means. For the first two statistics, country/territory data for each item were assessed based on the proportion of omitted responses and infrequently used categories. Countries or territories were flagged if the share of omitted responses exceeded specific thresholds: under 10% was not flagged, between 10% and 20% triggered a moderate flag and values above 20% were flagged for closer consideration. TALIS aims to provide internationally comparable information on teachers, staff, principals and leaders. To support this objective, item response distributions are monitored to identify whether certain response categories are used infrequently across countries or territories. Specifically, countries/territories are flagged when one or more response categories are selected by fewer than 2.5% of respondents. If one response category falls below this threshold, a moderate flag is assigned; if two or more response categories fall below, a stronger flag is issued. Limited variation in a single country or territory is not necessarily problematic, as it may reflect context-specific realities. However, if the same item shows restricted variation in multiple countries or territories, this may indicate that the item provides limited discriminatory power and thus contributes less to meaningful international comparisons.

Unclassified - Non classifié

Scale analysis

In order to obtain a reliable and valid scale estimate, whenever conducting (single country/territory or pooled) scale analysis, it was first checked that each of the items within a scale presented variation.

The evaluation of the scales was based on various criteria. Inter-item correlations were checked (flagging correlations above 0.8 as well as correlations below 0.2), corrected item-total correlations (values less than 0.2 were considered as low), reliability, CFA model results and multiple-group CFA (MGCFA) model results to evaluate measurement invariance. For the CFA model fit, commonly used fit indices were considered. The cut-off criteria that were used for the scale evaluation are listed below.

Reliability

Scale analysis encompassed the calculation of Cronbach's alpha reliability. It was estimated using a polychoric correlation matrix taking into account the ordinal nature of the response data. Cronbach's alpha (Cronbach, 1951[12]) index was used as an indication of the internal consistency of each scale. Higher values of the coefficient indicate higher internal consistency. Consistent with previous TALIS cycles, the following cut-off values of the reliability index were used: ≥0.700 (good), 0.600-0.699 (acceptable), <0.600 (poor).

Confirmatory factor analysis based on the pooled international dataset

CFA was conducted to evaluate the measurement models. The evaluation focused on the fit between the model-implied data structure and the observed data structure, as well as on key model parameters, particularly the factor loadings. Using the model fit indices as evaluation criteria, the specified (or theoretical) model of each scale is assessed with respect to its alignment to the empirical data (Hu and Bentler, 1999[13]).

To evaluate overall performance, CFA was conducted on an international pooled dataset composed of data from most countries/territories at ISCED level 2, which is the TALIS target population surveyed by all countries/territories in the TALIS core survey. As TALIS Starting Strong did not have a core population, pooled international datasets for both populations were considered separately when making a final decision. For included and excluded countries/territories, please refer to Table 11.3.

The initial examination of each scale was based on the CFA models' fit indices. The models that passed the cut-off criteria described below proceeded to further steps, while improvements were made to the models of the scales that originally failed to pass the cut-off values. Model improvements included changes to the model structure, mostly through item exclusions. Modified models were re-tested using the same procedure.

The measures of model-fit indices from categorical CFA provide the extent to which the data structure implied by an a priori model matches the observed data. Four commonly used fit indices include the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA) and the standardised root mean square residual (SRMR). Fit indices are often differentially affected by various aspects of the analytic situation, such as sample size, model complexity, estimation method, amount and type of misspecification, normality of data and type of data. Commonly used cut-off criteria for model fit evaluation are presented below (Browne et al., 1993[14]; Hu and Bentler, 1999[13]; Kline, 2015[15]; Little, 2013[16]; Schermelleh-Engel, Moosbrugger and Müller, 2003[17]):

- Comparative fit index (CFI): This index compares the targeted factor structure model and the baseline model (all relationships fixed to zero). A higher value indicates a better model fit. The following cut-off values were used as guidelines: ≥0.950 (good), 0.900-0.949 (acceptable), <0.900 (poor).

Unclassified - Non classifié

- Tucker-Lewis index (TLI): This index gives the distance between the targeted factor structure model and the baseline model as a proportion. Compared to the CFI, the TLI includes a stronger penalty for model complexity, and thus gives priority to parsimonious models. A higher value indicates a better model fit. The following cut-off values were used as guidelines: ≥.950 (good), 0.900-0.949 (acceptable), <0.900 (poor).
- Root mean square error of approximation (RMSEA): This index is an "error of approximation" index because it assesses the extent to which a model fits reasonably well in the population and relies on the noncentral χ^2 distribution. The non-centrality parameter expresses the degree of model misspecification. It approaches 0 as the fit of the model improves. The following cut-off values were used as guidelines: ≤0.050 (good), 0.051-0.100 (acceptable), >0.100 (poor).
- Standardised root mean square residual (SRMR): This index indicates the degree of model misspecification in terms of the model average of squared residuals between the observed covariance and the model-implied covariance matrices, as well as differences in observed and model-implied item intercepts. The value is provided in a standardised metric ranging from 0 to 1, with smaller values indicating a better model fit. The following cut-off values were used as guidelines: ≤0.050 (good), 0.051-0.100 (acceptable), >0.100 (poor).

In addition to model fit, standardised factor loadings were also inspected, as they are equally important statistics to consider in model evaluation. Factor loadings reflect the strength of the relationship between the item and the latent scale. Weak factor loadings undermine the interpretability of the latent structure, rendering model fit indices largely moot. The following cut-off values were used in our evaluation:

- Factor loadings higher than 0.600 were considered good, indicating strong relationships between the item and the scale.
- Factor loadings between 0.450 - 0.599 were considered acceptable.
- Factor loadings below 0.450 were considered poor, as they indicate weaker relationships.

Confirmatory factor analysis based on the country/territory dataset

The CFA model was tested on the datasets of each country/territory across all participating populations, using the same scale composition as used on the pooled dataset described in the previous section. For each scale, a total of 79 single country/territory CFA models were analysed across all populations for the TALIS core survey (ISCED levels 1, 2 and 3), 22 models for TALIS Starting Strong (ISCED level 02 and U3) and 8 for the TKS (ISCED level 2). The evaluation procedure for these models was very similar to that of the pooled international model. The model fits of the final scale compositions for each country/territory are included in the results section.

Measurement invariance analysis and model evaluation across countries/territories

The aim of TALIS is to enable comparisons between countries/territories. A prerequisite for such comparisons is that the instruments and scales used are comparable. The statistical procedure used to analyse the comparability of latent scales in different groups is called measurement invariance testing (Cheung, 1999[18]; Davidov, 2008[19]; Steenkamp and Baumgartner, 1998[20]; van de Vijver et al., 2019[21]; OECD, 2014[22]; Cheung and Rensvold, 2002[3]). The TALIS 2024 scales were evaluated with respect to their equivalence (comparability) across countries/territories within levels, within the CFA framework. More details on the measurement invariance testing within the CFA framework can be found in (OECD, 2014[22]).

It is important to remember that the construction of latent scales is based on associations between several items and the underlying latent construct, as estimated in the measurement model. Specified within the CFA framework, the measurement model contains different parameters that are estimated: item factor loadings, intercepts (or thresholds in the case of categorical CFA) and residual variances, as well as latent means and variances (Davidov et al., 2014[23]).

Unclassified - Non classifié

During the procedure to test for measurement invariance, different (nested) models are specified and compared to one another. The models differ from one another in terms of certain parameters being either unconstrained (i.e. freely estimated) between groups, which implies incomparability across groups, or constrained (i.e. to the same value) between groups, which implies comparability across groups. The degree to which the stricter model (i.e. a model that assumes equal parameters across groups), as compared to the less strict model (i.e. a model that assumes some degree of flexibility of parameters between groups) suits the data is evaluated by means of model fit comparisons.

The comparability between countries/territories was evaluated for each scale in the teacher, principal, staff and leader questionnaires by estimating MGCFA models. To estimate these models, two conditions must be met for a group (country/territory) to be included in the measurement invariance analysis:

- A minimum number of 150 respondents with at least 2 responses provided for each scale. Due to low sample size and to get an indication about scale comparability, this cut-off was lowered to 100 for the TALIS Starting Strong leader population.
- Each item included in the scale had to present the same number of used response categories in each group.

If a country/territory failed to meet these requirements, the data for that country/territory were not used in the measurement invariance analysis for the relevant scale. The measurement invariance analysis was checked within population levels across countries/territories. Countries/territories excluded from the pooled model were excluded from measurement invariance testing as well (see Table 11.3 for details).

In multiple groups analysis, various constraints can be set for model identification. In the baseline multiple groups model, the factor loadings and thresholds are freely estimated in all groups, with the variance of the latent factor fixed to one in all groups. The baseline model tests whether the model structure, including the number of latent variables and the pattern of factor loadings and thresholds, is the same across groups.

Different sequences have been proposed for comparing models for measurement invariance testing, along with differing recommendations for the cut-off criteria used in these comparisons. Following Rutkowski and Svetina (2017[24]), after specifying a baseline (i.e. unconstrained) model, the loadings were next fixed to be equal across groups and in the last step the factor loadings and thresholds were constrained to equality across groups. The variance of the latent factor of group one was fixed to one in both models and freely estimated in other groups.

To examine the plausibility of invariant loadings and, subsequently, invariant thresholds, the changes to the model fit indices CFI, TLI, RMSEA and SRMR were observed. The following cut-off values were considered as general guidelines, to evaluate evidence of reasonable measurement invariance:

- The baseline invariance (the structure of the item-construct relationship is identical across all groups, thresholds and loadings are estimated freely across the groups) was established if the model passed the following criteria: CFI/TLI ≥0.90, RMSEA/SRMR ≤0.10. If the results show considerable deviance from all of these criteria, the scale reached no invariance.
- The loadings invariance (loadings constrained to equality across all groups) was established if the difference in fit indices between the loadings and baseline model did not considerably exceed the following criteria: ΔCFI/ΔTLI≥–0.004, ΔRMSEA/ΔSRMR≤0.05 for multiple-group comparisons across the countries/territories (Rutkowski and Svetina, 2017[24]).
- The thresholds and loadings invariance (thresholds and loadings constrained to equality across all groups) was established, if the difference in the fit indices between the equal loadings and thresholds and the equal loadings models did not considerably exceed the following criteria: ΔCFI/ΔTLI≥–0.004 and ΔRMSEA/ΔSRMR≤0.01 (Rutkowski and Svetina, 2017[24]).

Unclassified - Non classifié

Of note, the strategy adopted for measurement invariance testing follows the usual procedure using continuous models. But it needs to be pointed out that before meaningfully interpreting the equality of factor loadings alone, first the equality of thresholds would need to be established. If thresholds differ, the latent response variables are scaled differently, and the correlations between them are not comparable.

For the principal and leader instruments, sample sizes were smaller and, in certain cases, the distribution of responses was skewed, resulting in certain response categories not being used in some countries. In these few instances, response categories were collapsed.

There were some cases where the baseline model was “just identified”, meaning that the model fit could not be evaluated due to the lack of degrees of freedom. The fit indices therefore indicated perfect model fit because the model was derived directly from the data (Brown, 2015[8]). These cases occur in unidimensional scales with three items, resulting in a model that perfectly described the empirical structure of data. When comparing the fit indices of a perfectly fitting baseline invariant model with an equal loadings invariant model, differences are often greater than the recommended thresholds. Thus, in the TALIS 2024 scale evaluation, the models with three indicators were considered to be partially invariant if the equal loadings model fitted the data well (with the same criteria used for the baseline model used for the evaluation). The equal loadings and thresholds model are then evaluated using the same change-in-fit criteria applied to the equal loadings model for longer scales (ΔCFI/ΔTLI$\geq$–0.004 and ΔRMSEA/ΔSRMR $\leq$0.05).

The reason for these special evaluation criteria is that the addition of constraints to a just-identified model typically leads to worse fit indices beyond the difference criterion between the equal loadings and baseline models outlined above, with this worsening having the potential to influence the resulting level of invariance. Models with low degrees of freedom (1 or 2) share the same problem but, as for TALIS 2018, the decision was to adopt these specific criteria only for three-item scales.

11.3.3. Computation of scale scores and their use for analysis

Scale score estimation

After completion of the scale evaluation, scale scores for each of the constructs were created. Using scale scores instead of analysing single items or sum scores offers many methodological and practical advantages. Although scale scores are not completely free of measurement error, when compared to individual variables this error is often minimised, thus increasing the reliability of these scores (Brown, 2015[8]; Yang-Hansen, Rosén and Gustafsson, 2006[25]). In practice, using a single score enhances the readability, interpretation and implementation of analysis as compared to analysis based on a set of variables. Another advantage of scale scores compared to simple sum scores is that the former accounts for differences in the relative strength of the relationships between the latent construct and the items (see for example Cheung and Rensvold (2002[3])). Scale scores also have better metric properties than simple sum scores. In addition, scale score computations account for missing data while still producing a score for each observation, while this is more difficult to obtain using a simple sum score. As in previous TALIS cycles, scale score computation based on CFA was used during TALIS 2024 (OECD, 2019[26]; OECD, 2019[27]; OECD, 2014[22]; OECD, 2010[28]).

To compute estimated values for the factor scores in the model, the Empirical Bayes Modal (Skrondal and Rabe-Hesketh, 2004[29]) approach available in the R package named lavaan was used. This is a two-step procedure, where the structural parameters (e.g. factor loadings and (co)variances) are estimated first, and then these estimated structural parameters are used as fixed parameters to estimate the factor scores. For all scales, the pooled international model parameters were used to calculate the factor scores for each respondent. Scale scores were calculated for respondents that provided at least two responses to the items included in the scale. There was no score imputation for non-respondents or respondents with a single response.

Unclassified - Non classifié

Among the scales that met the evaluation criteria and were retained for analysis, scale scores were computed in nearly all cases, with only a few exceptions. The reason for not computing scores for a scale was a missing item from the scale for a country/territory. This happened when a country/territory did not administer an item, or an item was deleted because of an administration or translation error. These cases are described in Table 11.4.

Table 11.4. Countries/territories without scale scores

Component	Level	Respondent	Scale	Country/territory without scale score
TALIS core survey	ISCED 2	Teachers	T4WELS	Viet Nam
			T4STUHAR	Azerbaijan, Bahrein, Israel, Kazakhstan, Morocco, Singapore, Türkiye, United Arab Emirates, Uzbekistan
	ISCED 1, ISCED 2	Teachers	T4ADLE	Slovenia
TALIS Starting Strong	ISCED 02	Leaders	S2LSTRESG	Israel
			S2LSTRESP	Israel

Scale score standardisation

To enhance the interpretation, the scale scores were standardised in such a way that the value 10 corresponds to the item mid-point value (IMV) of the response scale. Of note, this approach differs from standardisations in which a specific value is set to be equal to the mean of the scale. Before presenting the formula, the interpretation of the scale score values is explained referring to the example presented in Figure 11.1, which displays the questionnaire items which were used to create the scale *joy of teaching* (T4JOYTCH). The metric of scale scores was transformed to indicate the relative mid-point of the original scale items' categories. More specifically, T4JOYTCH is measured by responses to items A through D (with variable names TT4G80A through TT4G80D) from question in the teacher questionnaire. These items contained the responses "Strongly disagree", "Disagree", "Agree" and "Strongly disagree" coded 1 through 4 respectively.

Numerically, the mid-point for each item is 2.5, as shown in the figure. To calculate the IMV for each individual, a simple average was calculated for all item responses. Conceptually, if an individual's IMV is less than 2.5 then this suggests that the respondent on average disagrees with all of the items. An IMV greater than 2.5 suggests the respondent on average agrees to the included items. A value of 2.5 suggests indifference.

The estimated factor scores were standardised using data from ISCED level 2 (in the case of the TALIS core survey and TKS) and data from ISCED level 02 (for TALIS Starting Strong) that were included in the evaluation procedure (for details on excluded countries/territories, see Table 11.3). A metric with a standard deviation of 2.0 and 10 corresponding to the IMV was set to standardise the factor scores. This mathematical transformation ensured that all or almost all values were positive, thus allowing for a convenient interpretation. Mathematically, the standardisation is represented as follows:

$$X_i = \left(\frac{F_i - \bar{F}_M^*}{\sigma_{F^*}}\right) * 2 + 10$$

where X_i is the standardised factor score of individual i, F_i is the raw estimated factor score of that individual, $\bar{F}_M^*$ is the mean raw estimated factor score for individuals with an IMV equal to the mid-point of the response scale of the ISCED level 2 population for the TALIS core survey and TKS, or in the case of TALIS Starting Strong ISCED level 02, σ_{F^*} is the standard deviation of the factor score of ISCED level 2 in the case of the TALIS core survey and TKS, or ISCED level 02 for the TALIS Starting Strong population.

By subtracting $\bar{F}_M^*$, the standardised scale scores are shifted so that the scale score average is 10 for those individuals from the target population with an IMV equal to the mid-point of the response scale. This allows

Unclassified - Non classifié

for easier interpretation of scale score: scores above 10 suggest positive evaluation of the construct (e.g. agreement, of more importance), scores below 10 suggest negative evaluation of the construct (e.g. disagreement, of lesser importance), while scores of exactly 10 suggest indifference.

Figure 11.1. Illustration of the mid-point of a scale's items

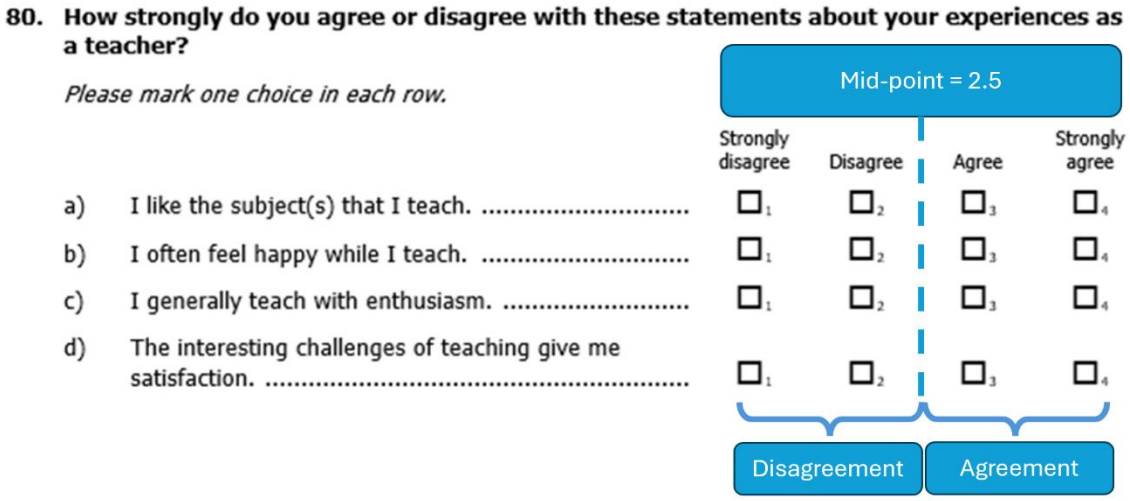


Table 11.5 provides an example of this procedure for the scale T4JOYTCH. The column on the left shows all possible IMVs for individuals when aggregating the responses to the four items of the scale. The column on the right shows the mean factor score of individuals from the target population with the corresponding IMV. As shown, individuals with an IMV of 2.5 have an average scale score of 10. In general, these means rise as the IMV rises and fall as the IMV falls. The values used for standardisation for each scale are presented in Table 11.7 and Table 11.8.

Table 11.5. Item mean-scale score equivalence table for the scale *Joy of teaching* (T4JOYTCH)

Item mid-point value	Scaled score T4JOYTCH
1.00	6.39
1.25	7.02
1.50	7.55
1.67	8.43
1.75	8.15
2.00	8.80
2.25	9.31
2.33	9.55
2.50	10.00
2.67	10.62
2.75	10.90
3.00	12.25
3.25	13.22
3.33	13.43
3.50	14.19
3.67	14.71
3.75	15.10
4.00	16.31

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Composite scale scores

Among the scales created for the TALIS 2024 dataset, there are also some that represent overall constructs based on different scales. Usually, they pertain to multidimensional constructs that are defined as the combination of two or more components (e.g. the teachers' composite job satisfaction score is composed of two subscales: teachers' job satisfaction with the work environment and teachers' job satisfaction with the profession).

As the analyses were based on unidimensional CFA models only, sometimes no good model fit could be achieved for multidimensional constructs. Therefore, the scale scores for multidimensional scale's subscales were calculated as other unidimensional scale scores detailed in the above two subsections. Composite scores were computed by taking a simple average of the corresponding scale scores of the subscales. The computation of the composite scores for individual i can be summarised as follows:

$$Y_i = \frac{\sum_{j=1}^{N} x_{ij}}{N}$$

where Y_i is the composite score for a certain multidimensional scale for individual i, $x_{ij}$are the raw scale scores of the subscale j for individual i, and N is the number of subscales of this multidimensional scale.

It is worth noting that creating a composite score for a multidimensional construct relies on an auxiliary measurement theory that makes certain assumptions. Composite scores measuring job satisfaction, for example, rely on a logic of formative indicators rather than reflective ones. This measurement logic does not assume unidimensionality or interchangeability of items. Due to issues with model identification, the assumptions of reflective models are difficult to test empirically – see for example Edwards and Bagozzi (2000[30]).

These scores were then standardised in the same manner as described in sub-section "Scale score standardisation". The mid-point shift was not applied to composite scores. In these cases, $\bar{F}^*$ was used instead of $\bar{F}_M^*$. $\bar{F}^*$ is the mean of the scale score of ISCED level 2 in the case of the TALIS core survey and TKS, or ISCED level 02 for TALIS Starting Strong. As a result, composite scale scores have a mean of 10 and a standard deviation of 2.

The scales computed as composites are listed in Table 11.6. The mean scores, standard deviations and IMV shifts for each scale are presented in Table 11.7 and Table 11.8.

Table 11.6. Composite scale scores across components

Component	Level	Respondent	Scale	Sub-scales
TALIS core survey	ISCED 1, ISCED 2, ISCED 3	Teachers	T4SELF	T4SEENG, T4SEINS, T4SECLS
			T4JOBSAT	T4JSENVT, T4JSPROT
		Principals	T4PJOBSAT	T4PJSPRO, T4PJSENV
TALIS Starting Strong	ISCED 02, U3	Staff	S2STRESR	S2STRESC, S2STRESO
		Leaders	S2LSTRES	S2LSTRESG, S2LSTRESP

Table 11.7. International mean, standard deviation and scale score corresponding to the IMV for the calibration sample for the TALIS core survey and TKS

Respondent	Scale	$\bar{F}^*$	σ_{F^*}	$\bar{F}_M^*$
Principal	T4PACADT	-0.044	0.792	-0.500
	T4PATBRCC	0.023	0.842	0.567
	T4PDELI	0.021	0.855	0.466
	T4PDIVBF	-0.132	0.726	-0.880

Unclassified - Non classifié

Respondent	Scale	$\bar{F}^*$	σ_{F^*}	$\bar{F}^*_M$
	T4PINBRCC	0.023	0.832	0.453
	T4PJSENVT	-0.053	0.772	-0.698
	T4PJSPROT	-0.017	0.841	-0.406
	T4PLEADESE	-0.009	0.850	-0.292
	T4PLEADS	0.007	0.817	0.091
	T4POPPART	-0.023	0.844	-0.331
	T4PTLEAD	-0.009	0.859	-0.312
	T4PWELS	0.024	0.868	0.211
	T4PWLOAD	-0.007	0.816	0.157
	T4PJOBSAT	-0.070	1.404	
Teacher	T4ADLE	-0.022	0.879	-1.150
	T4ADVDRT	-0.001	0.886	-0.343
	T4AUTCH	-0.028	0.863	-1.052
	T4BLFDRT	-0.020	0.905	-0.900
	T4CHFAT	0.030	0.909	0.706
	T4CLAIN	-0.035	0.824	-1.224
	T4CLASM	-0.048	0.847	-0.747
	T4CLIBUL	-0.036	0.829	-1.626
	T4CLSDIS	0.069	0.840	1.023
	T4COGAC	0.004	0.858	-0.080
	T4COLES	0.006	0.811	0.415
	T4COMSEL	-0.024	0.853	-0.951
	T4DRTIIA	0.009	0.900	0.246
	T4DRTWCI	0.011	0.869	0.331
	T4EMPS	-0.050	0.853	-1.233
	T4EXINF	-0.010	0.853	-0.481
	T4FULFIL	-0.014	0.892	-1.079
	T4GROMST	-0.010	0.904	-0.373
	T4INSTLE	-0.054	0.845	-1.157
	T4JOYTCH	-0.059	0.829	-1.734
	T4JSENVT	-0.028	0.844	-0.806
	T4JSPROT	-0.016	0.869	-0.930
	T4MOPU	-0.050	0.799	-1.045
	T4MOSU	-0.068	0.778	-1.332
	T4OPPART	-0.020	0.891	-0.720
	T4PBLE	-0.011	0.887	-0.793
	T4PDBR	0.003	0.797	0.211
	T4PDGENP	-0.003	0.903	-0.089
	T4PDIV	-0.007	0.860	-0.132
	T4PDSUBMP	0.007	0.883	0.062
	T4RELEAD	-0.039	0.869	-1.199
	T4SECLS	-0.042	0.847	-1.254
	T4SEDRT	-0.029	0.901	-0.678
	T4SEENG	-0.030	0.860	-0.974
	T4SEINS	-0.030	0.848	-1.264
	T4SEMUL	-0.024	0.889	-0.717
	T4SESDEV	-0.027	0.888	-0.958
	T4SESEN	-0.001	0.920	-0.254
	T4STBEH	0.007	0.825	0.359
	T4STESE	-0.009	0.912	-0.311
	T4STUD	-0.019	0.862	-1.603

Unclassified - Non classifié

Respondent	Scale	$\bar{F}^*$	σ_{F^*}	$\bar{F}_M^*$
	T4STUHAR	0.016	0.885	0.653
	T4TCHCLC	-0.006	0.902	-0.389
	T4TLEAD	-0.023	0.900	-1.068
	T4VALP	0.018	0.878	0.409
	T4WELS	0.034	0.858	0.381
	T4WLOADT	0.008	0.879	0.244
	T4JOBSAT	-0.044	1.485	
	T4SELF	-0.102	2.220	

Table 11.8. International mean, standard deviation and scale score corresponding to the IMV for the calibration sample for TALIS Starting Strong

Respondent	Scale	$\bar{F}^*$	σ_{F^*}	$\bar{F}_M^*$
Leader	S2LDLEAD	-0.006	0.855	-0.167
	S2LEADSPL1	0.007	0.875	0.148
	S2LEADSPL2	0.005	0.856	0.430
	S2LJOBSAR	-0.022	0.795	-0.535
	S2LNIGHBR	0.022	0.882	0.728
	S2LOPPART	0.009	0.780	0.214
	S2LPDEV	-0.001	0.972	-0.058
	S2LPDLS	-0.012	0.871	-0.185
	S2LPDPL	0.001	0.962	-0.003
	S2LSQPRS	0.038	0.815	0.322
	S2LSQSET	-0.035	0.864	-0.753
	S2LSQSTA	0.023	0.900	0.602
	S2LSTRESG	0.008	0.770	0.167
	S2LSTRESL	0.029	0.865	0.330
	S2LSTRESP	-0.002	0.874	0.190
	S2LSTRES	0.045	1.441	
Staff	S2CCAFL	-0.022	0.865	-0.531
	S2COLLR	-0.008	0.873	-0.453
	S2JOBSAR	-0.045	0.825	-1.157
	S2PAAD	0.013	0.901	0.366
	S2PARENR	0.004	0.906	-0.404
	S2PDIVR	-0.003	0.886	-0.177
	S2PDNPED	0.007	0.940	0.101
	S2PRACTR	-0.021	0.901	-0.773
	S2PREMR	-0.145	0.747	-1.104
	S2PRINTR	-0.045	0.797	-0.847
	S2PRLANR	-0.017	0.914	-1.200
	S2PROLIR	-0.005	0.901	-0.441
	S2PRONUR	0.008	0.905	-0.007
	S2PROSAR	-0.063	0.768	-1.042
	S2PRSOC	-0.144	0.738	-1.354
	S2SELF	-0.009	0.928	-0.404
	S2SELFC	-0.039	0.865	-0.676
	S2SOCIALR	-0.034	0.870	-1.350
	S2SSLEAD	-0.038	0.902	-1.072
	S2STRESC	0.005	0.868	0.281
	S2STRESO	-0.004	0.858	0.189

Unclassified - Non classifié

Respondent	Scale	$\overline{F}^{*}$	$\sigma_{F^{*}}$	$\overline{F}^{*}_{M}$
	S2STRESS	0.038	0.852	0.472
	S2STRESR	0.001	1.556	

Recommendation for analysis and interpretation

To determine the type of analysis that can be conducted with scale scores, it is essential to know how they were computed. Since its first cycle, TALIS focuses on providing information on scale comparability across country/territory. In 2008 and 2018, scale scores were constructed based on their measurement invariance level (OECD, 2019[26]; OECD, 2019[27]; OECD, 2010[28]). In 2013, the scale scores were constructed using a common international model for all countries/territories (OECD, 2014[22]). The strategy of the 2013 cycle was applied in the current cycle as well. Scale scores for all countries/territories were constructed using parameters based on the international pooled dataset, facilitating scale score comparability across all countries/territories. In general, scale scores created for TALIS 2024 can be used in different types of analyses, including comparisons of country/territory means for each individual scale. The results of specific scales, including cautionary notes about limitations, are presented in the next sections.

The scaling process for each scale was independent, and scale score standardisation was done separately. Even though the metric had the same units, the scale scores are not linked between different scales. Therefore, direct mean comparisons across different scales are not meaningful. This is also true for comparisons of scale scores across cycles. Traditionally, scales in TALIS are not constructed in a way that they would allow trend comparison. Therefore, TALIS 2024 scale scores are not comparable to previous TALIS cycles.

Sometimes the same items are part of more than one scale. This is, for example, the case for some “overall” scales that are further split into subscales. The scale results come from different unidimensional models and the “overall” scale shares items (and variation) with its subscales. Another example are scales that are created as an average of other scales. When analysing these scale scores together, researchers should keep in mind that the shared variance affects the results. There is an additional limitation pertaining only to composite scale scores. The composite scores could be biased because of the weight of the subscale on the latent construct not being taken into account (i.e. assumed to be equal for all subscales).

Even though the scales in TALIS Starting Strong were created using ISCED level 02 international parameters, specific attention was paid to the results of the U3 level as well. In some cases, the same scale composition could not be confirmed in the U3 population. In these cases, scale scores were computed only for ISCED level 02. Furthermore, in one scale, the model fit in the U3 population was exceeding the acceptable values. In this case, it is advised that the scale scores be used with caution. The specifics of the scales that are relevant for analyses are presented in Table 11.9.

Table 11.9. Specifics of scales across components

Component	Level	Respondent	Scale	Specific
TALIS core survey	ISCED 1, ISCED 2, ISCED 3	Teachers	T4PDIV	Shares item TT4G24J with scale T4PDGENP
			T4PDGENP	Shares item TT4G24J with scale T4PDIV
TALIS Starting Strong	ISCED 02, U3	Staff	S2SELF	Shares items SS2G24B, SS2G24C, SS2G24F, SS2G24G, SS2G24I, SS2G24J with scale S2SELFC
			S2SELFC	Shares items SS2G24B, SS2G24C, SS2G24F, SS2G24G, SS2G24I, SS2G24J with scale S2SELF
		Leaders	S2LPDLS	Only available for ISCED 02
			S2LSQSTA	Only available for ISCED 02

Unclassified - Non classifié

Cross-country/territory comparability

The scale scores for all scales included in TALIS 2024 are calculated using the same international model parameters and are constructed to be statistically equivalent across countries/territories and populations. An important consideration when using the scale scores in analysis is the results of the cross-country/territory measurement invariance testing. The TALIS 2024 strategy of measurement invariance testing is described in the section "Measurement invariance analysis and model evaluation across countries/territories". Of note, the cut-off thresholds reported and used in the literature were established under different conditions and contexts than those in TALIS 2024. Specifically, there are a larger number of groups, with varying numbers of items included in a scale, and with different number of response categories across scales. For this reason, the cut-off values reported in the literature were used as guidelines when evaluating the results of MGCFA models.

All of the scales presented in this report and included in the international database exhibited at least an acceptable baseline model fit. In addition, for the constrained loadings models, a noticeable drop in model fit compared to the baseline models was not observed. These results establish the basic level of comparability of constructs across the included countries/territories. For many of the scales, an acceptable drop in model fit can be further observed when comparing the model where trained loadings and thresholds across countries/territories were constrained to the model with equal loadings only. These results support the comparability of scale scores across countries/territories and the use of scale scores in various types of analyses including regression analysis and comparisons of means across countries/territories.

The results of measurement invariance testing for each of the scales are included in the section "Results from scales evaluation". A note was added to scales for which comparisons of scale scores need to be interpreted with caution. This applies when the most constrained model exhibited a poor fit or a large drop in fit compared to the less constrained model. Similar to scale scores that are constructed as partially invariant, meaning they allow for a certain number of country-specific parameters, these scale scores contain some noise. Using the selected procedure, it is difficult to quantify the exact amount of noise within these scale scores. However, given that the scale evaluation results are mostly acceptable, results from analyses using these scale scores can be useful as well. To remind users that complete comparability was not established for certain scales, a summary of these notes is provided in Table 11.10 for TALIS core survey and TKS and in Table 11.11 for TALIS Starting Strong.

Finally, as scale scores are optimised for use by most countries/territories, the selected international models may not always be the most optimal for a single country/territory. Therefore, in addition to the results based on the pooled international data, results for each country/territory are presented as well. To highlight cases where the international models do not work well in single countries/territories, we also provide notes in Table 11.10 for TALIS core survey and TKS and in Table 11.11 for TALIS Starting Strong. For these scales, scale score comparisons should also be interpreted carefully, as the scores may have a slightly different meaning in each country/territory.

11.4. Results from scales evaluation

The remainder of this chapter presents the results of the TALIS 2024 questionnaire scales, organised into three main sections: TALIS core survey, TALIS Starting Strong and TKS. Each section is further divided by instrument. Within the core survey section, the results for the teacher questionnaire scales are presented first, followed by the principal questionnaire scales. For TALIS Starting Strong, the results for the staff questionnaire scales are presented first, followed by those for the leader questionnaire scales. The chapter is closed with the results of the TKS context questionnaire scales.

The results for each scale are described in a dedicated subsection. Each of them begins with an overview of the question and items used in the scale, including the item names, item wording and the response

Unclassified - Non classifié

categories used for scaling, together with the scale mid-point. Where applicable, any items that were reverse coded or scales for which response categories were collapsed for scale construction purposes are noted. The results for scale reliability and model fit results across all participating countries/territories for each ISCED level are then presented. For scales based on three items, only scale reliability results are reported. This is followed by the results of measurement invariance testing for ISCED level 2, in the case of the TALIS core survey, and ISCED level 02 and U3 in the case of TALIS Starting Strong. The measurement invariance tables show model fits for the baseline, equal loadings and equal loadings and threshold models, as well as the difference in model fits between a more restricted model and a less restricted model. For example, the difference between equal loadings and baseline models is displayed as Δ CFI, Δ TLI, Δ RMSEA and Δ SRMR in the row of equal loadings model. Each scale subsection concludes with the item loadings and thresholds from the final models, based on the pooled international data, which were used to construct the final scale scores. In the text, items that exhibited low loadings in individual countries/territories are pointed out.

A full description of the criteria for interpreting the results (i.e. reliability, model fit, measurement invariance, item loadings)[2] can be found in the section “Scale analysis”. The main criteria to interpret the scale evaluation results presented in the next sections are focusing on reliability, CFA model fits (based on pooled and single country/territory datasets), factor loadings and MGCFA model fits with different restrictions.

Specifically for MGCFA, all of the cut-off criteria were used as guidelines and a more lenient approach was applied, recognising that the cut-off criteria were established under circumstances different to large-scale assessments with many groups.

It is also important to note that some indices were created as composites of multiple subscales. These aggregated indices are not described in the following sections; only the subscales are presented.

For the TALIS core survey, the composite scales are:

- teacher self-efficacy, overall (T4SELF), created as the average of the self-efficacy in student engagement (T4SEENG), self-efficacy in instruction (T4SEINS) and self-efficacy in classroom management (T4SECLS) scales (this scale is also available for TKS)
- job satisfaction, overall (T4JOBSAT), created as the average of the job satisfaction with profession (T4JSPROT) and job satisfaction with work environment (T4JSENVT) scales
- job satisfaction, overall (principal) (T4PJOBSAT), created as the average of the job satisfaction with profession (principal) (T4PJSPROT) and job satisfaction with work environment (principal) (T4PJSENVT) scales.

For TALIS Starting Strong, the composite scales are:

- sources of work stress, overall (S2STRESR), created as the average of the aspects specific to children’s development, well-being and learning (S2STRESC) and aspects related to capacity, resources and time (S2STRESO) scales
- sources of work stress, overall (leader) (S2LSTRES), created as the average of the sources of work stress associated with general leadership concerns (S2LSTRESG) and sources of work stress associated with pedagogical leadership (S2LSTRESP) scales.

Except for the composite scales mentioned above, all other TALIS 2024 scales are presented in Table 11.10 (for the TALIS core survey and TKS) and Table 11.11 (for TALIS Starting Strong), listed by their scale label and variable name as found in the international database. Additional comments are provided indicating which scales in which countries/territories need to be interpreted and used with caution. This evaluation takes into account the measurement invariance testing results and the single country/territory results, which cover both scale reliability and CFA model fit. For the single country/territory results, attention is drawn to countries/territories that showed poor outcomes on more than two statistics[3].

Unclassified - Non classifié

In the overview tables, the column “Notes on scale performance” points to the scales and/or countries/territories where specific scale results were poor. A distinction is made between two different levels of caution for cross-country/-territory comparability:

- When considerably poor model fit based on most of the fit indices for the equal loadings and thresholds model are observed, particular caution must be made when interpreting the scale results. In the table, we denote this with the note: “Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.”
- When the equal loadings and thresholds model exhibited a large drop compared to the equal loadings model but the absolute value of two indices does not exceed the cut-off thresholds, some caution in using the scale scores across countries is advised. This is denoted by the following note: “Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.”

In both cases, the scale scores contain some degree of noise. However, with the selected procedure we cannot quantify the exact amount of noise within these scale scores. Since the other scale evaluation results are generally acceptable, analyses using these scale scores can still be conducted and may yield useful insights. Nevertheless, it is recommended that the evaluation results are kept in mind when interpreting any findings based on these scale scores. The results from single countries/territories that exhibit poor scale results must be interpreted with considerable caution as there is indication that the selected construct composition does not work.

If a scale has no accompanying note, its scale scores can be used in various types of analysis without the need for specific caution in interpretation.

Table 11.10. Overview of TALIS core survey and TKS scales

	Scale label	Variable name	Notes on scale performance for TALIS core survey	Notes on scale performance for TKS
Teacher scales	Need for professional development in subject matter and subject-specific pedagogy	T4PDSUBMP		NA
	Need for professional development in general pedagogy	T4PDGENP	Poor scale results in the Netherlands (ISCED level 1)	NA
	Need for professional development for teaching for diversity	T4PDIV		NA
	Barriers to professional development: lack of support in access	T4PDBR	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution Poor reliability in Costa Rica, Iceland, Kosovo and Norway in ISCED level 2; and in the Flemish Community (Belgium) in ISCED level 1	NA
	Exchange of information and ideas among teachers	T4EXINF	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution	

Unclassified - Non classifié

	Scale label	Variable name	Notes on scale performance for TALIS core survey	Notes on scale performance for TKS
	Professional collaboration in lessons among teachers	T4COLES	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution	
	Self-efficacy in classroom management	T4SECLS		
	Self-efficacy in instruction	T4SEINS		
	Self-efficacy in student engagement	T4SEENG		
	Self-efficacy in multicultural classrooms	T4SEMUL		NA
	Growth mindset	T4GROMST		NA
	Self-efficacy in special education needs	T4SESEN		NA
	Comfort with social and emotional aspects of teaching	T4COMSEL		NA
	Self-efficacy in using digital resources and tools	T4SEDRT		NA
	Beliefs in digital resources and tools	T4BLFDRT		NA
	Adversity to digital resources and tools	T4ADVDRT		NA
	Student engagement in environmental and sustainability education	T4STESE		NA
	Confidence to teach about climate change	T4TCHCLC		NA
	Clarity of instruction	T4CLAIN		
	Cognitive activation	T4COGAC	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution Poor scale results in the Netherlands and Sweden (ISCED level 2)	
	Classroom management	T4CLASM		
	Use of digital resources and tools for whole class instruction	T4DRTWCI	Comparisons of results across countries/ and territories in results of on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution	NA
	Use of digital resources and tools for individualised instruction and assessment	T4DRTIIA		NA
	Perceived classroom disruption	T4CLSDIS		NA
	Adaptive learning	T4ADLE		
	Progression-based learning	T4PBLE		
	Autonomy of teaching	T4AUTCH		NA
	Fulfilment of lesson aims (complexity of teaching)	T4FULFIL		
	Empathy with students	T4EMPS		NA
	Social and emotional skill development	T4SESDEV		NA
	Opportunities to participate in school decisions	T4OPPART		NA
	Teacher leadership	T4TLEAD		NA
	Teacher-student relations	T4STUD		NA
	Relational leadership	T4RELEAD		NA
	Instructional leadership	T4INSTLE		NA

Unclassified - Non classifié

	Scale label	Variable name	Notes on scale performance for TALIS core survey	Notes on scale performance for TKS
	School climate regarding bullying	T4CLIBUL		NA
	Student harassment in school	T4STUHAR		NA
	Change fatigue	T4CHFAT		NA
	Personal utility motivations to teach	T4MOPU		NA
	Social utility motivations to teach	T4MOSU		NA
	Workplace well-being and stress	T4WELS		NA
	Workload stress	T4WLOADT	Comparisons of results across countries/ and territories in results of on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution	
	Student behaviour stress	T4STBEH	Comparisons of results across countries/ and territories in results of on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution Poor reliability in Serbia (ISCED level 2)	
	Job satisfaction with work environment	T4JSENVT		NA
	Job satisfaction with profession	T4JSPROT		NA
	Perceptions of value and policy influence	T4VALP		NA
	Joy of teaching	T4JOYTCH		
	Opportunities to learn – Assessment	KRBASS	NA	
	Opportunities to learn – Additional pedagogical topics	KRBEPR	NA	
	Opportunities to learn – Classroom instruction	KRBINS	NA	
	Opportunities to learn – Student learning	KRBLEA	NA	
Principal scales	Instructional leadership (principal)	T4PLEADS		
	Teacher leadership (principal)	T4PTLEAD	Poor scale results in Latvia (ISCED level 2)	
	Opportunities to participate in school decisions (principal)	T4POPPART	Poor reliability in the Netherlands (ISCED level 1)	
	Academic rigor	T4PACADT	Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution Poor reliability in Croatia and Latvia (ISCED level 2)	
	School delinquency and violence	T4PDELI	Comparisons of results across countries/ and territories in results of on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution	
	Diversity beliefs	T4PDIVBF		
	Leadership in environmental and sustainability education	T4PLEADESE	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most	

Unclassified - Non classifié

	Scale label	Variable name	Notes on scale performance for TALIS core survey	Notes on scale performance for TKS
			restricted multi-group model and must be interpreted with considerable caution Poor scale results in Denmark and the Slovak Republic (ISCED level 2) and in New Zealand (ISCED level 1)	
	Instructional barriers to teaching climate change	T4PINBRCC		
	Attitudinal barriers to teaching climate change	T4PATBRCC	Poor scale results in France and the United States (ISCED level 2)	
	Workplace well-being and stress (principal)	T4PWELS	Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution	
	Workload stress (principal)	T4PWLOAD	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution Poor reliability in Czechia, Denmark, France, Italy, Norway, Slovenia and Sweden (ISCED level 2); in Belgium, the Flemish Community (Belgium), France, New Zealand and Spain (ISCED level 1); and in the Flemish Community (Belgium) (ISCED level 3)	
	Job satisfaction with work environment (principal)	T4PJSENVT	Poor reliability in Slovenia (ISCED level 2)	
	Job satisfaction with profession (principal)	T4PJSPROT		

Table 11.11. Overview of TALIS Starting Strong scales

	Scale label	Variable name	Notes on scale performance
Staff scales	Professional development needs: pedagogical	S2PDNPED	
	Professional development needs: diversity	S2PDIVR	
	Self-efficacy, overall	S2SELF	
	Self-efficacy: children's development, well-being and learning	S2SELFC	
	Facilitating play	S2PRINTR	
	Facilitating prosocial behaviour	S2PRSOC	
	Facilitating emotional development	S2PREMR	
	Child-centred planning	S2CCAFL	Comparisons of results across countries/ and territories in results of on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for the ISCED level 02 population.
	Daily adaptive pedagogical practices	S2PRACTR	Comparisons of results across countries/ and territories in results of on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for the ISCED level 02 population.
	Facilitating language development	S2PRLANR	
	Facilitating literacy development	S2PROLIR	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable

Unclassified - Non classifié

	Scale label	Variable name	Notes on scale performance
			caution for the ISCED level 02 population. Poor scale results in Germany (ISCED level 02 and U3) and in Finland (ISCED level 02).
	Facilitating numeracy development	S2PRONUR	Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for both the ISCED level 02 and U3 populations.
	Behavioural support in the classroom/playroom	S2SOCIALR	
	Promoting awareness and acceptance of diversity	S2PAAD	Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for the ISCED level 02 population.
	Engagement in collaborative practices	S2COLLR	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution for the ISCED level 02 population. Poor scale results in Chile (ISCED level 02).
	Facilitating parent/guardian engagement	S2PARENR	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution for the ISCED level 02 population. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for the U3 population.
	Satisfaction with setting leadership	S2SSLEAD	
	Satisfaction with profession	S2PROSAR	
	Satisfaction with work at this early childhood education and care (ECEC) setting	S2JOBSAR	
	Sources of work stress: aspects specific to children's development, well-being and learning	S2STRESC	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution for both the ISCED level 02 and U3 populations. Poor scale results in Germany (ISCED level 02).
	Sources of work stress: aspects related to capacity, resources and time	S2STRESO	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution for the ISCED level 02 population. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for the U3 population.

Unclassified - Non classifié

	Scale label	Variable name	Notes on scale performance
	Level of stress and its impact on staff well-being	S2STRESS	Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for the ISCED level 02 population. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution for the U3 population. Poor scale reliability in Norway (ISCED level 02, U3).
Leader scales	Professional development needs, overall	S2LPDEV	Poor scale results in the Flemish Community (Belgium) (ISCED level 02 and U3), Germany (ISCED level 02 and U3) and New Zealand (U3)
	Professional development needs: leadership and setting management (ISCED 02 only)	S2LPDLS	Poor scale results in New Zealand
	Professional development needs: pedagogy and pedagogical leadership	S2LPDPL	Poor scale results in the Flemish Community (Belgium) (ISCED level 02 and U3), Germany (ISCED level 02) and New Zealand (ISCED level 02 and U3)
	Neighbourhood environment	S2LNIGHBR	Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for the ISCED level 02 population.
	Structural quality: adequacy of setting	S2LSQSET	Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for the ISCED level 02 population.
	Barriers to structural quality: adequacy of physical resources	S2LSQPRS	Poor scale results in the Flemish Community (Belgium) (ISCED level 02)
	Barriers to structural quality: adequacy of staffing (ISCED 02 only)	S2LSQSTA	Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution. Poor scale results in New Zealand
	Leader support for staff in pedagogical learning	S2LEADSPL1	Poor scale results in Norway (U3)
	Leader innovations in the ECEC setting	S2LEADSPL2	Poor reliability in Germany (ISCED level 02 and U3).
	Distributed leadership	S2LDLEAD	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution for both the ISCED level 02 and U3 populations. Poor scale results in Colombia, Finland and Ireland (ISCED level 02).
	Satisfaction with work at this ECEC setting	S2LJOBSAR	
	Level of stress and impact on leaders' well-being	S2LSTRESL	Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution for both the ISCED level 02 and U3 populations. Poor scale results in Norway (ISCED level 02 and U3) and New Zealand (U3).

Unclassified - Non classifié

	Scale label	Variable name	Notes on scale performance
	Sources of work stress associated with pedagogical leadership	S2LSTRESP	Comparisons of results across countries and territories on scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution for both the ISCED level 02 and U3 populations. Poor scale results in Ireland, Norway and New Zealand (U3).
	Sources of work stress associated with general leadership concerns	S2LSTRESG	Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution for both the ISCED level 02 and U3 populations. Poor scale results in New Zealand (ISCED level 02).

11.4.1. TALIS core survey

Complex scales from the teacher questionnaire

Need for professional development in subject matter and subject-specific pedagogy (T4PDSUBMP)

Three separate scales were constructed from statements in TQ 24, where teachers were asked to indicate the extent to which they currently need professional learning activities in different areas. For each area, they selected from the following response options: “No need at present”, “Low level of need, “Moderate level of need” or “High level of need”. Responses to three of the items in this question (TT4G24A, TT4G24B, TT4G24C) were used to derive a scale reflecting teachers’ *Need for professional development in subject matter and subject-specific pedagogy* (T4PDSUBMP). Higher values on this scale indicate a greater need for professional development.

Table 11.12 provides the item names as used in the dataset, question stem and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.13. The fit indices for the T4PDSUBMP scale are not presented here as the scale was measured by just three items, resulting in a model that is just identified and therefore shows a perfect fit. The scale T4PDSUBMP has high reliability (above 0.700) in all participating countries/territories in all populations.

Table 11.14 presents the results from the measurement invariance testing for T4PDSUBMP for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. In the equal loadings model, the CFI, TLI and SRMR are within the cut-off criteria, whereas the RMSEA is above the cut-off value. The degree of change between the equal loadings and the equal thresholds and loadings models is within the cut-off criteria for the TLI and RMSEA for ISCED level 2. No specific caution is required when comparing scale score results across countries/territories.

Table 11.15 reports the standardised item loadings and thresholds based on pooled data for scale T4PDSUBMP. The loadings for all of the items are high for the pooled model as well as in single countries/territories.

Unclassified - Non classifié

Table 11.12. Items and response categories used in the construction of scale T4PDSUBMP

Scale or item	Question or item wording
T4PDSUBMP	For each of the areas listed below, please indicate the extent to which you currently need professional learning activities
	Recoded response categories for scaling: 1=No need at present; 2=Low level of need; 3=Moderate level of need; 4=High level of need
	Scale mid-point: 2.5
TT4G24A	Knowledge and understanding of my subject field(s)
TT4G24B	The pedagogy of the subject matter(s) I teach
TT4G24C	Knowledge of the curriculum

Source: OECD, TALIS 2024 database.

Table 11.13. Reliability coefficient alpha for single countries and pooled model for scale T4PDSUBMP

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.923
Alberta (Canada)	0.882
Australia	0.887
Austria	0.722
Azerbaijan	0.872
Bahrain	0.947
Belgium	0.826
Flemish Community (Belgium)	0.842
French Community (Belgium)	0.814
Brazil	0.927
Bulgaria	0.971
Chile	0.902
Colombia	0.903
Costa Rica	0.896
Croatia	0.915
Cyprus	0.922
Czechia	0.751
Denmark	0.762
Estonia	0.818
Finland	0.836
France	0.804
Hungary	0.875
Iceland	0.801
Israel	0.896
Italy	0.822
Japan	0.892
Kazakhstan	0.941

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Korea	0.952
Kosovo	0.894
Latvia	0.873
Lithuania	0.862
Malta	0.895
Montenegro	0.934
Morocco	0.925
Netherlands	0.826
New Zealand	0.867
North Macedonia	0.944
Norway	0.792
Poland	0.877
Portugal	0.870
Romania	0.948
Saudi Arabia	0.937
Serbia	0.943
Shanghai (China)	0.959
Singapore	0.913
Slovak Republic	0.815
Slovenia	0.925
South Africa	0.954
Spain	0.825
Sweden	0.826
Türkiye	0.912
United Arab Emirates	0.957
United States	0.930
Uzbekistan	0.901
Viet Nam	0.949
International pooled data	0.911
ISCED level 1	
Australia	0.890
Belgium	0.833
Flemish Community (Belgium)	0.871
French Community (Belgium)	0.772
Brazil	0.916
France	0.816
Japan	0.883
Korea	0.959
Morocco	0.924
Netherlands	0.835
New Zealand	0.870

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Saudi Arabia	0.954
Slovenia	0.938
Spain	0.832
Türkiye	0.929
United Arab Emirates	0.938
International pooled data	0.909
ISCED level 3	
Croatia	0.902
Denmark	0.784
Flemish Community (Belgium)	0.824
Portugal	0.852
Saudi Arabia	0.946
Slovenia	0.916
Türkiye	0.896
United Arab Emirates	0.953
International pooled data	0.901

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.14. Measurement invariance results from MGCFA for scale T4PDSUBMP with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.995	0.993	0.130	0.019	-0.005	-0.007	0.130	0.019
Equal loadings and thresholds	0.987	0.994	0.119	0.094	-0.009	0.001	-0.011	0.075

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.15. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDSUBMP

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G24A	0.920	-0.761	0.099	0.995
TT4G24B	0.918	-0.931	-0.015	0.955
TT4G24C	0.822	-0.770	0.109	0.978

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Need for professional development in general pedagogy (T4PDGENP)

A second scale was constructed from statements of TQ 24. Teachers were asked to indicate the extent to which they currently need professional learning activities in different areas. For each area, they selected from the following response options: “No need at present”, “Low level of need, “Moderate level of need” or “High level of need”. Responses to four of the items in this question (TT4G24D, TT4G24H, TT4G24M, TT4G24J) were used to derive a scale reflecting teachers’ *Need for professional development in general pedagogy* (T4PDGENP). Higher values on these scales indicate a greater need for professional development. Table 11.16 provides the item names, question stem, item statements and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.17. The scale T4PDGENP has high reliability (above 0.700) in all populations. As can be observed from Table 11.17, the CFI for T4PDGENP meets the acceptable cut-off for all participants in all populations, except for the ISCED level 1 population in the Netherlands. The TLI does not meet the cut-off criterion in Belgium ISCED level 2, the Flemish Community of Belgium for both ISCED levels 2 and 3, the Netherlands for both ISCED levels 1 and 2, and the ISCED level 1 population in France and New Zealand. The RMSEA exceeds the cut-off criterion in most participating countries or territories. In 28 of these, the RMSEA is between 0.100 and 0.140; in 20 is between 0.141 and 0.200, and in 6 is above 0.201 (the ISCED level 2 population in Malta, the ISCED level 1 population in Australia, New Zealand, France and Slovenia and the ISCED level 3 population in the Flemish Community of Belgium). Finally, the SRMR is within the cut-off criterion across all populations. Based on the single CFA model fit results, the scale T4PDGENP works well across all populations except in the Netherlands (ISCED level 1), where the CFI, TLI and RMSEA do not meet the acceptable cut-off criteria.

Table 11.18 presents the results from the measurement invariance testing for T4PDGENP for ISCED level 2. All indices, except the RMSEA, are within the cut-off criteria in the baseline invariance model. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.19 presents the standardised item loadings and thresholds based on pooled data for scale T4PDGENP. The loadings for all of the items are high. Results by participating country/territory show a low loading for item TT4G24H in the Flemish Community of Belgium (ISCED level 2) and in the Netherlands (ISCED level 1).

Table 11.16 Items and response categories used in the construction of scale T4PDGENP

Scale or item	Question or item wording
T4PDGENP	For each of the areas listed below, please indicate the extent to which you currently need professional learning activities
	Recoded response categories for scaling: 1=No need at present; 2=Low level of need; 3=Moderate level of need; 4=High level of need
	Scale mid-point: 2.5
TT4G24D	Student assessment practices
TT4G24H	Classroom management for student behaviour
TT4G24J	Approaches to individualised learning
TT4G24M	Analysis and use of student assessments

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.17. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PDGENP

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.935	1.000	0.999	0.045	0.004
Alberta (Canada)	0.855	0.986	0.957	**0.125**	0.024
Australia	0.823	0.979	0.937	**0.163**	0.029
Austria	0.812	0.987	0.961	**0.112**	0.022
Azerbaijan	0.927	1.000	0.999	0.037	0.004
Bahrain	0.927	0.999	0.996	0.078	0.007
Belgium	0.764	0.963	**0.889**	**0.176**	0.043
Flemish Community (Belgium)	0.732	0.950	**0.851**	**0.184**	0.047
French Community (Belgium)	0.804	0.978	0.933	**0.161**	0.034
Brazil	0.923	0.996	0.988	**0.120**	0.013
Bulgaria	0.910	0.996	0.989	**0.105**	0.013
Chile	0.849	0.993	0.980	0.086	0.018
Colombia	0.870	0.996	0.988	0.068	0.012
Costa Rica	0.892	0.993	0.979	**0.112**	0.017
Croatia	0.871	0.988	0.965	**0.137**	0.020
Cyprus	0.890	0.993	0.978	**0.134**	0.019
Czechia	0.845	0.992	0.976	**0.113**	0.019
Denmark	0.795	0.974	0.921	**0.171**	0.037
Estonia	0.784	0.987	0.960	**0.101**	0.020
Finland	0.819	0.975	0.926	**0.159**	0.031
France	0.819	0.983	0.950	**0.145**	0.027
Hungary	0.824	0.982	0.946	**0.145**	0.028
Iceland	0.767	0.990	0.969	0.086	0.016
Israel	0.868	0.994	0.983	0.088	0.016
Italy	0.838	0.984	0.953	**0.145**	0.025
Japan	0.883	0.995	0.984	**0.106**	0.015
Kazakhstan	0.926	0.999	0.997	0.051	0.006
Korea	0.918	0.998	0.993	0.093	0.009
Kosovo	0.938	0.997	0.991	**0.130**	0.012
Latvia	0.852	0.992	0.977	0.099	0.017
Lithuania	0.863	0.989	0.966	**0.128**	0.022
Malta	0.835	0.968	0.905	**0.235**	0.039
Montenegro	0.931	0.998	0.993	**0.120**	0.011
Morocco	0.901	0.998	0.994	0.048	0.007
Netherlands	0.741	0.964	**0.893**	**0.126**	0.036
New Zealand	0.831	0.969	0.908	**0.195**	0.037
North Macedonia	0.922	0.999	0.997	0.061	0.006
Norway	0.767	0.989	0.968	0.077	0.017

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.871	0.992	0.975	0.097	0.018
Portugal	0.835	0.994	0.982	0.086	0.015
Romania	0.900	0.990	0.969	**0.161**	0.021
Saudi Arabia	0.948	0.999	0.997	0.085	0.006
Serbia	0.911	0.999	0.997	0.062	0.007
Shanghai (China)	0.909	0.992	0.976	**0.155**	0.018
Singapore	0.836	0.992	0.977	0.081	0.019
Slovak Republic	0.902	0.995	0.986	**0.114**	0.013
Slovenia	0.877	0.993	0.980	**0.119**	0.018
South Africa	0.920	0.996	0.989	**0.104**	0.011
Spain	0.859	0.984	0.952	**0.140**	0.027
Sweden	0.833	0.979	0.937	**0.150**	0.028
Türkiye	0.914	0.997	0.990	**0.102**	0.013
United Arab Emirates	0.933	0.998	0.994	0.060	0.018
United States	0.877	0.979	0.936	**0.128**	0.027
Uzbekistan	0.897	1.000	0.999	0.019	0.004
Viet Nam	0.921	1.000	0.999	0.035	0.004
International pooled data	0.893	0.995	0.986	0.100	0.014
ISCED level 1					
Australia	0.866	0.974	0.923	**0.230**	0.036
Belgium	0.769	0.982	0.945	**0.130**	0.027
Flemish Community (Belgium)	0.750	0.988	0.963	**0.106**	0.022
French Community (Belgium)	0.791	0.970	0.910	**0.170**	0.035
Brazil	0.919	0.996	0.987	**0.116**	0.013
France	0.760	0.935	**0.804**	**0.217**	0.054
Japan	0.887	0.988	0.965	**0.153**	0.024
Korea	0.938	0.998	0.994	**0.115**	0.013
Morocco	0.911	1.000	1.000	0.015	0.003
Netherlands	0.713	**0.895**	**0.684**	**0.230**	0.054
New Zealand	0.850	0.962	**0.886**	**0.228**	0.043
Saudi Arabia	0.956	1.000	0.999	0.060	0.004
Slovenia	0.881	0.983	0.949	**0.212**	0.032
Spain	0.856	0.975	0.925	**0.158**	0.039
Türkiye	0.921	0.994	0.983	**0.142**	0.015
United Arab Emirates	0.929	0.994	0.981	**0.151**	0.017
International pooled data	0.886	0.991	0.974	**0.156**	0.020
ISCED level 3					
Croatia	0.889	0.995	0.984	**0.118**	0.015
Denmark	0.825	0.991	0.974	0.095	0.020
Flemish Community (Belgium)	0.796	0.965	**0.896**	**0.201**	0.039
Portugal	0.831	0.993	0.980	0.090	0.015

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.949	0.999	0.996	0.093	0.006
Slovenia	0.872	0.993	0.978	**0.127**	0.020
Türkiye	0.912	0.997	0.991	0.097	0.011
United Arab Emirates	0.939	0.997	0.992	0.095	0.009
International pooled data	0.894	0.994	0.982	**0.116**	0.015

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.18. Measurement invariance results from MGCFA for scale T4PDGENP with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.994	0.983	0.114	0.017	-	-	-	-
Equal loadings	0.989	0.986	0.102	0.028	-0.006	0.003	-0.012	0.011
Equal loadings and thresholds	0.977	0.988	0.093	0.085	-0.011	0.002	-0.009	0.058

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.19. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDGENP

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G24D	0.863	-0.989	-0.126	0.864
TT4G24H	0.780	-0.873	-0.094	0.748
TT4G24M	0.884	-0.948	-0.040	0.967
TT4G24J	0.811	-1.036	-0.147	0.920

Source: OECD, TALIS 2024 database.

Need for professional development for teaching for diversity (T4PDIV)

A third scale was constructed from statements of TQ 24. Teachers were asked to indicate the extent to which they currently need professional learning activities in different areas, selecting from the following response options: "No need at present", "Low level of need, "Moderate level of need" or "High level of need". Responses to three of the items in this question (TT4G24K, TT4G24L, TT4G24J) were used to derive a scale reflecting teachers' *Need for professional development for teaching for diversity* (T4PDIV). Higher values on these scales indicate a greater need for professional development. Table 11.20 provides the item names, question stem, item statements, response options and scale mid-point for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.21. The fit indices for the T4PDIV scale are not presented here as the scale was measured by just three items. As can be seen, none of the reliabilities for T4PDIV are below the cut-off criterion (0.600) in any population.

Unclassified - Non classifié

Table 11.22 presents the results from the measurement invariance testing for T4PDIV for ISCED level 2. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. In the equal loadings model, the CFI, TLI and SRMR are within the cut-off criteria. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.23 presents the standardised item loadings and thresholds based on pooled data for scale T4PDIV. The loadings for all of the items are high. Results by participating country/territory show a low loading for item TT4G24L in Croatia (ISCED level 2) and in France (ISCED level 1).

Table 11.20. Items and response categories used in the construction of scale T4PDIV

Scale or item	Question or item wording
T4PDSUBMP	For each of the areas listed below, please indicate the extent to which you currently need professional learning activities
	Recoded response categories for scaling: 1=No need at present; 2=Low level of need; 3=Moderate level of need; 4=High level of need
	Scale mid-point: 2.5
TT4G24J	Approaches to individualised learning
TT4G24K	Teaching students with special education needs
TT4G24L	Teaching in a multicultural or multilingual setting

Source: OECD, TALIS 2024 database.

Table 11.21. Reliability coefficient alpha for single countries and pooled model for scale T4PDIV

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.829
Alberta (Canada)	0.807
Australia	0.813
Austria	0.806
Azerbaijan	0.759
Bahrain	0.862
Belgium	0.798
Flemish Community (Belgium)	0.798
French Community (Belgium)	0.807
Brazil	0.801
Bulgaria	0.813
Chile	0.756
Colombia	0.818
Costa Rica	0.861
Croatia	0.774
Cyprus	0.879
Czechia	0.802
Denmark	0.748
Estonia	0.835
Finland	0.798

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
France	0.779
Hungary	0.744
Iceland	0.845
Israel	0.826
Italy	0.818
Japan	0.840
Kazakhstan	0.821
Korea	0.913
Kosovo	0.827
Latvia	0.804
Lithuania	0.813
Malta	0.867
Montenegro	0.830
Morocco	0.772
Netherlands	0.756
New Zealand	0.862
North Macedonia	0.789
Norway	0.758
Poland	0.792
Portugal	0.804
Romania	0.832
Saudi Arabia	0.859
Serbia	0.822
Shanghai (China)	0.846
Singapore	0.747
Slovak Republic	0.814
Slovenia	0.784
South Africa	0.821
Spain	0.816
Sweden	0.835
Türkiye	0.862
United Arab Emirates	0.914
United States	0.830
Uzbekistan	0.793
Viet Nam	0.801
International pooled data	0.824
ISCED level 1	
Australia	0.813
Belgium	0.760
Flemish Community (Belgium)	0.771
French Community (Belgium)	0.762

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Brazil	0.789
France	0.713
Japan	0.843
Korea	0.915
Morocco	0.725
Netherlands	0.670
New Zealand	0.850
Saudi Arabia	0.868
Slovenia	0.722
Spain	0.785
Türkiye	0.860
United Arab Emirates	0.898
International pooled data	0.811
ISCED level 3	
Croatia	0.819
Denmark	0.818
Flemish Community (Belgium)	0.807
Portugal	0.810
Saudi Arabia	0.854
Slovenia	0.823
Türkiye	0.855
United Arab Emirates	0.907
International pooled data	0.843

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.22. Measurement invariance results from MGCFA for scale T4PDIV with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.985	0.977	0.126	0.025	-0.015	-0.023	0.126	0.025
Equal loadings and thresholds	0.941	0.974	0.133	0.113	-0.044	-0.003	0.007	0.088

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.23. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDIV

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G24K	0.877	-1.176	-0.381	0.617
TT4G24L	0.695	-0.817	-0.034	0.868
TT4G24J	0.777	-1.036	-0.147	0.920

Source: OECD, TALIS 2024 database.

Barriers to professional development: lack of support in access (T4PDBR)

TQ-25 contained items regarding challenges to participating in professional development. Teachers were asked to indicate how strongly they agreed or disagreed with different statements regarding barriers to their participation in professional learning. For each item, teachers selected one of the following response options: “Strongly disagree”, “Disagree”, “Agree” or “Strongly agree”. Responses to three items from this question (TT4G25B, TT4G25C, TT4G25D) were used to construct a scale reflecting *Barriers to professional development: lack of support in access* (T4PDBR). Higher values on this scale indicate greater perceived barriers. Table 11.24 provides the item names, question stem, item statements and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.25. The fit indices for the T4PDBR scale are not presented here as the scale was measured by just three items. The reliabilities for T4PDBR are high (above 0.700) in approximately one-third of the ISCED level 2 participants and half of the participants in ISCED levels 1 and 3, respectively. Most of the reliabilities are acceptable, with the exception of the ISCED level 2 population in Costa Rica, Iceland, Kosovo and Norway and the ISCED level 1 population in the Flemish Community of Belgium, where the reliabilities are below the cut-off criterion.

Table 11.26 presents the results from the measurement invariance testing for T4PDBR for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all four model fit indices. The equal loadings and thresholds model also exceeds the cut-off for acceptable model fit for the CFI, RMSEA and SRMR while the TLI is within the acceptable range. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.27 presents the standardised item loadings and thresholds based on pooled data for scale T4PDBR. Item TT4G25D shows an acceptable loading and the loadings for both other items are high. Results by participating country/territory show a low loading for item TT4G25D in Finland (ISCED level 2), Singapore (ISCED level 2) and Denmark (ISCED level 3); a low loading for item TT4G25B in Costa Rica (ISCED level 2), the Slovak Republic (ISCED level 2) and Kosovo (ISCED level 2); and a low loading for item TT4G25C in New Zealand (ISCED level 1).

Table 11.24. Items and response categories used in the construction of scale T4PDBR

Scale or item	Question or item wording
T4PDBR	How strongly do you agree or disagree that the following present barriers to your participation in professional learning?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G25B	Professional learning is too expensive.
TT4G25C	There is a lack of employer support.
TT4G25D	Professional learning conflicts with my work schedule.

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.25. Reliability coefficient alpha for single countries and pooled model for scale T4PDBR

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.656
Alberta (Canada)	0.715
Australia	0.698
Austria	0.686
Azerbaijan	0.677
Bahrain	0.732
Belgium	0.641
Flemish Community (Belgium)	0.632
French Community (Belgium)	0.659
Brazil	0.689
Bulgaria	0.634
Chile	0.601
Colombia	0.686
Costa Rica	**0.592**
Croatia	0.671
Cyprus	0.714
Czechia	0.674
Denmark	0.726
Estonia	0.671
Finland	0.669
France	0.680
Hungary	0.724
Iceland	**0.572**
Israel	0.785
Italy	0.667
Japan	0.769
Kazakhstan	0.749
Korea	0.741
Kosovo	**0.533**
Latvia	0.699
Lithuania	0.679
Malta	0.636
Montenegro	0.780
Morocco	0.675
Netherlands	0.695
New Zealand	0.661
North Macedonia	0.642
Norway	**0.596**
Poland	0.748

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Portugal	0.706
Romania	0.618
Saudi Arabia	0.754
Serbia	0.654
Shanghai (China)	0.843
Singapore	0.649
Slovak Republic	0.621
Slovenia	0.675
South Africa	0.664
Spain	0.641
Sweden	0.668
Türkiye	0.701
United Arab Emirates	0.770
United States	0.710
Uzbekistan	0.715
Viet Nam	0.806
International pooled data	0.687
ISCED level 1	
Australia	0.718
Belgium	0.601
Flemish Community (Belgium)	**0.572**
French Community (Belgium)	0.642
Brazil	0.641
France	0.729
Japan	0.758
Korea	0.744
Morocco	0.649
Netherlands	0.710
New Zealand	0.627
Saudi Arabia	0.796
Slovenia	0.684
Spain	0.624
Türkiye	0.733
United Arab Emirates	0.777
International pooled data	0.671
ISCED level 3	
Croatia	0.729
Denmark	0.652
Flemish Community (Belgium)	0.684
Portugal	0.660
Saudi Arabia	0.773

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Slovenia	0.683
Türkiye	0.725
United Arab Emirates	0.808
International pooled data	0.731

Note: Coefficients in **bold** exceed the cut-off criterion. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.26. Measurement invariance results from MGCFA for scale T4PDBR with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.980	0.969	0.083	0.024	-0.020	-0.031	0.083	0.024
Equal loadings and thresholds	0.776	0.902	0.154	0.148	-0.204	-0.067	0.071	0.124

Note: Albania, Alberta (Canada), Austria, the Flemish Community (Belgium), the French Community (Belgium), Hungary, Kazakhstan, Kosovo, Morocco, the Netherlands, New Zealand, North Macedonia, Norway, Romania, Serbia and Uzbekistan are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.27. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDBR

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G25B	0.635	-0.891	0.169	1.293
TT4G25C	0.735	-0.542	0.606	1.443
TT4G25D	0.595	-1.079	-0.044	1.083

Source: OECD, TALIS 2024 database.

Exchange of information and ideas among teachers (T4EXINF)

The degree of *Exchange of information and ideas among teachers* (T4EXINF) was measured by three items (TT4G26D, TT4G26E, TT4G26F) from TQ-26. The item information is presented in Table 11.28. In this question, teachers were asked to indicate the frequency in which they did different activities. For each activity, teachers could select from the following response options: "Never", "Once a year or less", "2-4 times a year", "5-10 times a year", "1-3 times a month" or "Once a week or more". Higher values on this scale indicate more frequent exchange of information and ideas.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.29. The fit indices for the T4EXINF scale are not presented here as the scale was measured by just three items. The reliabilities for T4EXINF are generally high (above 0.700) across populations.

Table 11.30 presents the results from the measurement invariance testing for T4EXINF for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all four model fit indices. The equal loadings and thresholds model also exceeds the cut-off for acceptable model fit for the CFI, RMSEA and SRMR while the TLI is within the

Unclassified - Non classifié

acceptable range. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.31 presents the standardised item loadings and thresholds based on pooled data for scale T4EXINF. The loadings for all of the items are high. Results by participating country/territory show a low item loading for item TT4G26D in the ISCED level 2 population in Belgium and the Netherlands.

Table 11.28. Items and response categories used in the construction of scale T4EXINF

Scale or item	Question or item wording
T4EXINF	On average, how often do you do the following in this school?
	Recoded response categories for scaling: 1=Never; 2=Once a year or less; 3=2-4 times a year; 4=5-10 times a year; 5=1-3 times a month; 6=Once a week or more
	Scale mid-point: 3.5
TT4G26D	Exchange teaching materials with colleagues
TT4G26E	Engage in discussions about the learning development of specific students
TT4G26F	Work with other teachers in this school to ensure common standards in evaluations for assessing student progress

Source: OECD, TALIS 2024 database.

Table 11.29. Reliability coefficient alpha for single countries and pooled model for scale T4EXINF

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.782
Alberta (Canada)	0.802
Australia	0.771
Austria	0.792
Azerbaijan	0.739
Bahrain	0.835
Belgium	0.640
Flemish Community (Belgium)	0.683
French Community (Belgium)	0.751
Brazil	0.807
Bulgaria	0.776
Chile	0.815
Colombia	0.796
Costa Rica	0.750
Croatia	0.779
Cyprus	0.823
Czechia	0.797
Denmark	0.748
Estonia	0.687
Finland	0.744
France	0.717
Hungary	0.672
Iceland	0.769

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Israel	0.859
Italy	0.775
Japan	0.777
Kazakhstan	0.794
Korea	0.791
Kosovo	0.798
Latvia	0.757
Lithuania	0.747
Malta	0.799
Montenegro	0.821
Morocco	0.790
Netherlands	0.658
New Zealand	0.792
North Macedonia	0.799
Norway	0.726
Poland	0.773
Portugal	0.814
Romania	0.821
Saudi Arabia	0.855
Serbia	0.798
Shanghai (China)	0.854
Singapore	0.823
Slovak Republic	0.770
Slovenia	0.770
South Africa	0.837
Spain	0.744
Sweden	0.737
Türkiye	0.825
United Arab Emirates	0.855
United States	0.813
Uzbekistan	0.765
Viet Nam	0.748
International pooled data	0.783
ISCED level 1	
Australia	0.814
Belgium	0.684
Flemish Community (Belgium)	0.682
French Community (Belgium)	0.761
Brazil	0.813
France	0.770
Japan	0.795

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Korea	0.837
Morocco	0.784
Netherlands	0.726
New Zealand	0.789
Saudi Arabia	0.857
Slovenia	0.762
Spain	0.778
Türkiye	0.838
United Arab Emirates	0.841
International pooled data	0.802
ISCED level 3	
Croatia	0.780
Denmark	0.709
Flemish Community (Belgium)	0.667
Portugal	0.813
Saudi Arabia	0.848
Slovenia	0.763
Türkiye	0.823
United Arab Emirates	0.832
International pooled data	0.788

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.30. Measurement invariance results from MGCFA for scale T4EXINF with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.993	0.989	0.075	0.013	-0.007	-0.011	0.075	0.013
Equal loadings and thresholds	0.835	0.961	0.139	0.133	-0.158	-0.028	0.064	0.120

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.31. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4EXINF

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G26D	0.654	-1.422	-0.918	-0.347
TT4G26E	0.760	-1.726	-1.235	-0.616
TT4G26F	0.818	-1.446	-0.915	-0.278

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Professional collaboration in lessons among teachers (T4COLES)

The degree of *Professional collaboration in lessons among teachers* (T4COLES) was measured by four items (TT4G26A, TT4G26B, TT4G26C, TT4G26G), also from TQ-26. In this question, teachers were asked to indicate the frequency in which they carried out different activities. For each activity, teachers could select from the following response options: "Never", "Once a year or less", "2-4 times a year", "5-10 times a year", "1-3 times a month" or "Once a week or more". Higher values on this scale indicate more frequent professional collaboration among teachers. Table 11.32 provides the item names, question stem, item statements and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.33. The reliabilities for T4COLES are generally acceptable (above 0.600) in all populations, except for the ISCED level 2 population in Austria, the French Community of Belgium and the Netherlands and the ISCED level 1 population in New Zealand. In terms of model fit, CFI and SRMR do not exceed the cut-off criteria in any of the participants. The TLI is acceptable for most participants, except for the ISCED level 2 population in Bulgaria, Denmark, France, Shanghai (People's Republic of China, hereafter "China") and Spain, the ISCED level 1 population in France, and the ISCED level 3 population in Denmark. The RMSEA exceeds the cut-off criterion in Cyprus, Montenegro, Saudi Arabia Shanghai (China) and Spain for ISCED level 2, in Saudi Arabia also for ISCED level 1 and in the ISCED level 3 population in Croatia and Denmark. The SRMR is within the cut-off criterion in all participants.

Table 11.34 presents the results from the measurement invariance testing for T4COLES for the ISCED level 2 population. The baseline model shows an acceptable model fit. The difference between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all indices. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.35 presents the standardised item loadings and thresholds based on pooled data for the scale T4COLES. Items TT4G26A and TT4G26G show acceptable loadings and the loadings for both other items are high. Results by participating country/territory show a low item loading for item TT4G26G in the ISCED level 2 population in Albania, Alberta (Canada), Australia, Austria, Belgium, Denmark, the French Community of Belgium, Malta, the Netherlands, New Zealand, Norway, Serbia, Singapore, Sweden and the United States; and in the ISCED level 1 population in the French Community of Belgium, the Netherlands, New Zealand and Spain. Additionally, item TT4G26A has a low loading in Kazakhstan and Uzbekistan (ISCED level 2), and item TT4G26B in the Netherlands (ISCED levels 1 and 2) and in New Zealand (ISCED level 1).

Table 11.32. Items and response categories used in the construction of scale T4COLES

Scale or item	Question or item wording
T4COLES	On average, how often do you do the following in this school?
	Recoded response categories for scaling: 1=Never; 2=Once a year or less; 3=2-4 times a year; 4=5-10 times a year; 5=1-3 times a month; 6=Once a week or more
	Scale mid-point: 3.5
TT4G26A	Teach jointly as a team in the same class
TT4G26B	Observe other teachers' classes and provide feedback
TT4G26C	Engage in joint activities across different classes and age groups (e.g. projects)
TT4G26G	Take part in collaborative professional learning

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.33. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4COLES

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.628	0.981	0.942	0.071	0.016
Alberta (Canada)	0.669	0.994	0.983	0.029	0.012
Australia	0.655	0.995	0.984	0.043	0.010
Austria	**0.573**	0.997	0.991	0.020	0.007
Azerbaijan	0.718	1.000	1.000	0.008	0.003
Bahrain	0.734	0.995	0.984	0.053	0.010
Belgium	0.627	0.973	0.919	0.060	0.015
Flemish Community (Belgium)	0.666	0.971	0.913	0.077	0.017
French Community (Belgium)	**0.573**	0.969	0.906	0.054	0.018
Brazil	0.779	0.998	0.994	0.035	0.008
Bulgaria	0.659	0.966	**0.897**	0.098	0.021
Chile	0.738	0.982	0.947	0.061	0.018
Colombia	0.770	0.999	0.997	0.021	0.007
Costa Rica	0.753	0.998	0.994	0.025	0.009
Croatia	0.685	0.983	0.950	0.063	0.015
Cyprus	0.763	0.972	0.917	**0.133**	0.022
Czechia	0.704	0.988	0.964	0.069	0.014
Denmark	0.655	0.966	**0.897**	0.096	0.022
Estonia	0.677	0.991	0.974	0.052	0.011
Finland	0.732	0.985	0.955	0.071	0.017
France	0.645	0.957	**0.870**	0.096	0.025
Hungary	0.703	0.995	0.984	0.045	0.009
Iceland	0.651	0.994	0.982	0.036	0.011
Israel	0.659	0.989	0.968	0.047	0.011
Italy	0.717	0.985	0.954	0.079	0.021
Japan	0.689	0.993	0.978	0.052	0.012
Kazakhstan	0.684	0.999	0.997	0.017	0.005
Korea	0.690	0.993	0.978	0.054	0.011
Kosovo	0.766	0.991	0.972	0.072	0.013
Latvia	0.689	0.998	0.995	0.021	0.005
Lithuania	0.714	0.981	0.944	0.083	0.015
Malta	0.742	0.993	0.980	0.057	0.013
Montenegro	0.759	0.979	0.938	**0.134**	0.019
Morocco	0.832	0.978	0.935	0.073	0.021
Netherlands	**0.557**	1.000	1.019	0.000	0.004
New Zealand	0.651	1.000	1.000	0.003	0.007
North Macedonia	0.757	0.992	0.976	0.069	0.012
Norway	0.624	1.000	1.007	0.000	0.005

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.709	0.984	0.953	0.062	0.015
Portugal	0.665	0.979	0.938	0.071	0.016
Romania	0.712	0.999	0.997	0.020	0.005
Saudi Arabia	0.819	0.986	0.959	**0.125**	0.017
Serbia	0.689	0.986	0.957	0.080	0.015
Shanghai (China)	0.749	0.944	**0.831**	**0.207**	0.037
Singapore	0.600	0.998	0.993	0.021	0.006
Slovak Republic	0.649	0.999	0.996	0.018	0.005
Slovenia	0.645	0.979	0.938	0.068	0.015
South Africa	0.765	0.990	0.970	0.066	0.013
Spain	0.726	0.950	**0.849**	**0.105**	0.030
Sweden	0.611	0.999	0.997	0.013	0.007
Türkiye	0.767	0.995	0.984	0.057	0.011
United Arab Emirates	0.709	0.993	0.978	0.044	0.013
United States	0.667	1.000	0.999	0.006	0.007
Uzbekistan	0.683	0.991	0.972	0.063	0.014
Viet Nam	0.670	0.993	0.978	0.048	0.011
International pooled data	0.693	0.992	0.977	0.048	0.011
ISCED level 1					
Australia	0.677	0.996	0.989	0.032	0.009
Belgium	0.624	0.988	0.964	0.043	0.013
Flemish Community (Belgium)	0.635	0.981	0.942	0.062	0.017
French Community (Belgium)	0.623	0.986	0.959	0.043	0.015
Brazil	0.745	0.989	0.968	0.059	0.016
France	0.627	0.965	**0.894**	0.072	0.022
Japan	0.643	0.991	0.974	0.046	0.011
Korea	0.648	0.990	0.970	0.050	0.013
Morocco	0.777	0.986	0.959	0.060	0.016
Netherlands	**0.469**	0.953	**0.858**	0.060	0.022
New Zealand	**0.587**	0.981	0.943	0.052	0.015
Saudi Arabia	0.809	0.986	0.958	**0.121**	0.016
Slovenia	0.613	0.998	0.994	0.020	0.006
Spain	0.727	0.988	0.965	0.050	0.016
Türkiye	0.816	0.997	0.992	0.048	0.008
United Arab Emirates	0.715	1.000	1.002	0.000	0.001
International pooled data	0.674	0.996	0.987	0.035	0.008
ISCED level 3					
Croatia	0.719	0.972	0.915	**0.108**	0.022
Denmark	0.633	0.934	**0.802**	**0.118**	0.026
Flemish Community (Belgium)	0.667	0.981	0.942	0.071	0.017
Portugal	0.700	0.991	0.972	0.057	0.012

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.803	0.992	0.976	0.086	0.012
Slovenia	0.694	0.989	0.967	0.061	0.013
Türkiye	0.777	0.995	0.984	0.058	0.010
United Arab Emirates	0.746	0.997	0.992	0.029	0.009
International pooled data	0.730	0.996	0.987	0.042	0.009

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.34. Measurement invariance results from MGCFA for scale T4COLES with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.986	0.959	0.071	0.014	-	-	-	-
Equal loadings	0.968	0.961	0.069	0.025	-0.019	0.002	-0.002	0.012
Equal loadings and thresholds	0.032	0.704	0.190	0.222	-0.935	-0.256	0.121	0.197

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.35. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4COLES

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G26A	0.561	-0.340	0.110	0.473
TT4G26B	0.683	-0.377	0.186	0.778
TT4G26C	0.645	-0.974	-0.284	0.520
TT4G26G	0.560	-1.174	-0.483	0.209

Source: OECD, TALIS 2024 database.

Self-efficacy in classroom management (T4SECLS)

Three scales relating to various aspects of teacher self-efficacy were constructed from the items in TQ-27. In this question, teachers had to indicate to what extent they could do different tasks, using the following response options: "Not at all", "To some extent", "Quite a bit" or "A lot" (see Table 11.36). Four items (TT4G27D, TT4G27F, TT4G27H, TT4G27I) were used to construct the scale *Self-efficacy in classroom management* (T4SECLS). Higher values on this scale indicate higher self-efficacy.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.37. The scale T4SECLS has high reliability (above 0.700) in all populations. As can be observed from Table 11.37, the CFI, TLI and SRMR for T4SECLS are all within the acceptable cut-off criteria for all populations. However, the RMSEA is greater than 0.100 in 13 ISCED level 2 participants, namely Belgium, Bulgaria, Estonia, Finland, France, the French Community of Belgium, Hungary, Korea, Saudi Arabia, Serbia, Shanghai (China), Singapore and the Slovak Republic; 5 ISCED level 1 participants:

Unclassified - Non classifié

the Flemish Community (Belgium), France, Japan, Korea and Saudi Arabia; and in the ISCED level 3 population in Saudi Arabia.

Table 11.38 presents the results from the measurement invariance testing for T4SECLS for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all indices. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the cut-off criteria for the TLI and RMSEA and does not meet the cut-offs for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.39 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4SECLS. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.36. Items and response categories used in the construction of scale T4SECLS

Scale or item	Question or item wording
T4SECLS	In your teaching, to what extent can you do the following?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G27D	Control disruptive behaviour in the classroom
TT4G27F	Make my expectations about student behaviour clear
TT4G27H	Get students to follow classroom rules
TT4G27I	Calm a student who is disruptive or noisy

Source: OECD, TALIS 2024 database.

Table 11.37. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SECLS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.839	0.999	0.996	0.026	0.009
Alberta (Canada)	0.897	0.992	0.976	0.090	0.023
Australia	0.901	0.997	0.990	0.092	0.015
Austria	0.856	0.999	0.998	0.033	0.007
Azerbaijan	0.743	0.996	0.987	0.043	0.011
Bahrain	0.917	0.998	0.995	0.060	0.009
Belgium	0.910	0.996	0.988	**0.115**	0.017
Flemish Community (Belgium)	0.915	0.999	0.998	0.048	0.008
French Community (Belgium)	0.894	0.989	0.966	**0.182**	0.029
Brazil	0.872	0.999	0.997	0.034	0.010
Bulgaria	0.860	0.986	0.958	**0.109**	0.026
Chile	0.887	0.999	0.998	0.031	0.009
Colombia	0.882	1.000	1.001	0.000	0.002
Costa Rica	0.869	0.995	0.986	0.073	0.013
Croatia	0.918	0.998	0.993	0.086	0.013
Cyprus	0.913	0.998	0.993	0.078	0.011

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Czechia	0.883	0.999	0.998	0.042	0.007
Denmark	0.884	0.999	0.996	0.042	0.009
Estonia	0.864	0.993	0.978	**0.104**	0.017
Finland	0.858	0.990	0.969	**0.109**	0.022
France	0.911	0.994	0.983	**0.128**	0.018
Hungary	0.908	0.994	0.982	**0.102**	0.020
Iceland	0.860	0.998	0.995	0.060	0.013
Israel	0.931	1.000	1.000	0.024	0.004
Italy	0.864	0.998	0.993	0.066	0.013
Japan	0.903	0.998	0.995	0.097	0.012
Kazakhstan	0.834	0.999	0.996	0.033	0.007
Korea	0.931	0.997	0.991	**0.133**	0.013
Kosovo	0.853	0.994	0.982	0.066	0.016
Latvia	0.879	0.993	0.980	0.096	0.019
Lithuania	0.915	0.998	0.993	0.084	0.015
Malta	0.880	0.995	0.986	0.095	0.015
Montenegro	0.915	0.999	0.997	0.061	0.009
Morocco	0.803	1.000	1.000	0.006	0.006
Netherlands	0.885	1.000	1.000	0.000	0.006
New Zealand	0.901	0.996	0.987	0.086	0.018
North Macedonia	0.906	0.997	0.991	0.090	0.011
Norway	0.885	0.998	0.994	0.058	0.012
Poland	0.901	0.998	0.995	0.047	0.011
Portugal	0.916	0.999	0.997	0.076	0.011
Romania	0.889	0.998	0.994	0.057	0.010
Saudi Arabia	0.917	0.995	0.986	**0.101**	0.016
Serbia	0.905	0.996	0.989	**0.108**	0.016
Shanghai (China)	0.936	0.998	0.993	**0.129**	0.011
Singapore	0.911	0.996	0.987	**0.118**	0.015
Slovak Republic	0.901	0.995	0.986	**0.103**	0.015
Slovenia	0.885	0.996	0.989	0.082	0.016
South Africa	0.905	1.000	1.000	0.000	0.003
Spain	0.879	1.000	0.999	0.023	0.005
Sweden	0.887	1.000	1.000	0.008	0.004
Türkiye	0.916	0.999	0.998	0.047	0.006
United Arab Emirates	0.900	1.000	1.000	0.000	0.003
United States	0.903	0.997	0.992	0.050	0.015
Uzbekistan	0.826	0.994	0.982	0.059	0.015
Viet Nam	0.868	0.995	0.986	0.082	0.015
International pooled data	0.894	0.998	0.994	0.057	0.009
ISCED level 1					

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Australia	0.907	0.996	0.988	0.098	0.015
Belgium	0.898	0.996	0.988	0.100	0.016
Flemish Community (Belgium)	0.906	0.999	0.996	0.059	0.010
French Community (Belgium)	0.883	0.991	0.974	**0.140**	0.025
Brazil	0.870	1.000	0.999	0.018	0.008
France	0.895	0.990	0.970	**0.146**	0.024
Japan	0.907	0.997	0.992	**0.104**	0.013
Korea	0.924	0.993	0.979	**0.185**	0.021
Morocco	0.800	0.999	0.998	0.014	0.007
Netherlands	0.889	0.997	0.992	0.052	0.018
New Zealand	0.896	0.994	0.983	0.089	0.019
Saudi Arabia	0.927	0.995	0.985	**0.109**	0.018
Slovenia	0.885	0.994	0.983	0.100	0.017
Spain	0.891	1.000	1.000	0.003	0.002
Türkiye	0.907	1.000	1.000	0.000	0.002
United Arab Emirates	0.898	0.999	0.998	0.024	0.007
International pooled data	0.906	0.998	0.995	0.064	0.010
ISCED level 3					
Croatia	0.922	0.999	0.997	0.061	0.009
Denmark	0.876	1.000	1.000	0.000	0.004
Flemish Community (Belgium)	0.917	0.999	0.997	0.059	0.009
Portugal	0.901	0.999	0.998	0.051	0.008
Saudi Arabia	0.915	0.995	0.985	**0.104**	0.018
Slovenia	0.883	0.998	0.995	0.059	0.010
Türkiye	0.901	1.000	1.000	0.000	0.001
United Arab Emirates	0.919	0.999	0.996	0.038	0.009
International pooled data	0.903	0.999	0.997	0.048	0.007

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.38. Measurement invariance results from MGCFA for scale T4SECLS with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.997	0.992	0.074	0.012	-	-	-	-
Equal loadings	0.994	0.993	0.073	0.022	-0.003	0.000	-0.001	0.010
Equal loadings and thresholds	0.979	0.989	0.088	0.126	-0.015	-0.003	0.015	0.104

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Iceland, the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.39. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SECLS

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G27D	0.845	-2.454	-1.090	0.172
TT4G27F	0.708	-2.653	-1.372	-0.048
TT4G27H	0.877	-2.626	-1.264	0.078
TT4G27I	0.871	-2.447	-1.043	0.198

Source: OECD, TALIS 2024 database.

Self-efficacy in instruction (T4SEINS)

Another scale constructed from TQ-27 is *Self-efficacy in instruction* (T4SEINS), based on four items (TT4G27C, TT4G27J, TT4G27K, TT4G27L). In this question, teachers had to indicate to what extent they could do different tasks, using the following response options: “Not at all”, “To some extent”, “Quite a bit” or “A lot” (see Table 11.40). Higher values on this scale indicate higher self-efficacy.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.41. The reliabilities for T4SEINS are above 0.700 in all populations. As can be seen in Table 11.41, the scale T4SEINS has a generally good model fit across all participating countries/territories; the CFI, TLI and SRMR are all within the cut-off criteria, while the RMSEA is slightly high in the ISCED level 2 population in Bulgaria, Finland, the French Community of Belgium, Iceland and Korea; the ISCED level 1 population in Korea and Slovenia, and in the ISCED level 3 population in the Flemish Community of Belgium.

Table 11.42 presents the results from the measurement invariance testing for T4SEINS for the ISCED level 2 population. The baseline model shows a good model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all indices. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the cut-off criteria for the TLI and RMSEA and does not meet the cut-offs for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.43 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for scale T4SEINS. Loadings for all items are high for the pooled model as well as in single countries/territories.

Table 11.40. Items and response categories used in the construction of scale T4SEINS

Scale or item	Question or item wording
T4SEINS	In your teaching, to what extent can you do the following?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G27C	Craft good questions for students
TT4G27J	Use a variety of assessment strategies
TT4G27K	Provide an alternative explanation, for example when students are confused
TT4G27L	Vary instructional strategies in my classroom

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.41. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEINS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.859	0.998	0.993	0.032	0.012
Alberta (Canada)	0.841	0.992	0.977	0.064	0.021
Australia	0.835	0.996	0.988	0.064	0.014
Austria	0.750	0.998	0.995	0.028	0.008
Azerbaijan	0.793	0.997	0.991	0.046	0.011
Bahrain	0.905	0.999	0.997	0.042	0.008
Belgium	0.784	0.990	0.971	0.079	0.020
Flemish Community (Belgium)	0.783	0.995	0.984	0.059	0.016
French Community (Belgium)	0.729	0.969	0.908	**0.119**	0.030
Brazil	0.855	0.997	0.991	0.046	0.014
Bulgaria	0.862	0.988	0.965	**0.108**	0.023
Chile	0.857	1.000	0.999	0.012	0.006
Colombia	0.875	0.997	0.991	0.056	0.012
Costa Rica	0.875	0.999	0.996	0.040	0.008
Croatia	0.855	0.999	0.996	0.038	0.008
Cyprus	0.862	0.999	0.996	0.041	0.009
Czechia	0.789	1.000	0.999	0.015	0.005
Denmark	0.762	0.992	0.975	0.058	0.017
Estonia	0.819	1.000	0.999	0.021	0.006
Finland	0.772	0.979	0.937	**0.111**	0.025
France	0.787	0.995	0.985	0.060	0.014
Hungary	0.812	0.995	0.985	0.050	0.014
Iceland	0.820	0.985	0.955	**0.128**	0.026
Israel	0.882	0.995	0.984	0.089	0.017
Italy	0.833	0.993	0.980	0.084	0.019
Japan	0.876	0.998	0.993	0.069	0.009
Kazakhstan	0.876	0.998	0.994	0.051	0.010
Korea	0.918	0.997	0.992	0.100	0.012
Kosovo	0.889	1.000	1.000	0.010	0.004
Latvia	0.820	0.998	0.995	0.031	0.009
Lithuania	0.878	0.999	0.998	0.029	0.007
Malta	0.849	0.997	0.992	0.059	0.011
Montenegro	0.885	0.999	0.997	0.043	0.009
Morocco	0.778	1.000	1.000	0.000	0.005
Netherlands	0.760	0.991	0.973	0.059	0.021
New Zealand	0.806	0.999	0.996	0.029	0.010
North Macedonia	0.898	0.999	0.996	0.059	0.008
Norway	0.776	0.995	0.986	0.050	0.014

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.863	0.999	0.998	0.026	0.008
Portugal	0.859	0.999	0.998	0.027	0.007
Romania	0.890	0.999	0.996	0.044	0.009
Saudi Arabia	0.935	1.000	0.999	0.035	0.005
Serbia	0.861	0.996	0.987	0.069	0.013
Shanghai (China)	0.934	1.000	1.000	0.026	0.003
Singapore	0.895	0.998	0.994	0.061	0.013
Slovak Republic	0.849	1.000	1.000	0.000	0.002
Slovenia	0.817	0.993	0.979	0.077	0.017
South Africa	0.886	1.000	1.000	0.012	0.005
Spain	0.839	0.998	0.994	0.034	0.009
Sweden	0.823	0.995	0.984	0.071	0.014
Türkiye	0.885	0.999	0.997	0.046	0.007
United Arab Emirates	0.901	1.000	1.000	0.010	0.005
United States	0.869	1.000	1.001	0.000	0.004
Uzbekistan	0.773	0.997	0.990	0.038	0.012
Viet Nam	0.884	1.000	1.000	0.016	0.004
International pooled data	0.863	0.999	0.996	0.039	0.007
ISCED level 1					
Australia	0.862	0.996	0.987	0.082	0.017
Belgium	0.808	0.994	0.982	0.066	0.016
Flemish Community (Belgium)	0.810	0.993	0.979	0.071	0.017
French Community (Belgium)	0.775	0.995	0.986	0.055	0.014
Brazil	0.859	0.999	0.996	0.027	0.010
France	0.805	0.996	0.987	0.057	0.013
Japan	0.898	1.000	0.999	0.031	0.005
Korea	0.917	0.996	0.988	**0.119**	0.015
Morocco	0.826	0.997	0.992	0.032	0.012
Netherlands	0.804	1.000	1.000	0.000	0.011
New Zealand	0.848	0.998	0.995	0.041	0.010
Saudi Arabia	0.945	1.000	0.999	0.032	0.004
Slovenia	0.828	0.988	0.963	**0.110**	0.020
Spain	0.856	0.999	0.996	0.031	0.008
Türkiye	0.911	0.999	0.996	0.057	0.008
United Arab Emirates	0.889	0.997	0.992	0.047	0.014
International pooled data	0.885	0.997	0.992	0.068	0.010
ISCED level 3					
Croatia	0.849	0.991	0.973	0.099	0.020
Denmark	0.783	0.995	0.984	0.043	0.013
Flemish Community (Belgium)	0.796	0.972	0.916	**0.140**	0.035
Portugal	0.840	1.000	1.001	0.000	0.001

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.936	0.999	0.998	0.045	0.007
Slovenia	0.815	0.992	0.976	0.083	0.016
Türkiye	0.881	0.996	0.987	0.086	0.014
United Arab Emirates	0.894	0.998	0.994	0.030	0.010
International pooled data	0.870	0.998	0.994	0.048	0.009

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.42. Measurement invariance results from MGCFA for scale T4SEINS with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.998	0.993	0.053	0.010	-	-	-	-
Equal loadings	0.995	0.993	0.051	0.019	-0.003	0.000	-0.001	0.008
Equal loadings and thresholds	0.966	0.983	0.084	0.133	-0.029	-0.011	0.032	0.114

Note: Alberta (Canada), Australia, the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand, Norway, Singapore and Viet Nam are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.43. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SEINS

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G27C	0.703	-2.634	-1.284	0.123
TT4G27J	0.792	-2.380	-0.977	0.299
TT4G27K	0.825	-2.767	-1.463	-0.090
TT4G27L	0.849	-2.564	-1.092	0.204

Source: OECD, TALIS 2024 database.

Self-efficacy in student engagement (T4SEENG)

The third scale constructed from four items from TQ-27 (TT4G27A, TT4G27B, TT4G27E, TT4G27G) is *Self-efficacy in student engagement* (T4SEENG). In this question, teachers had to indicate to what extent they could do different tasks, using the following response options: "Not at all", "To some extent", "Quite a bit" or "A lot" (see Table 11.44). Higher values on this scale indicate higher self-efficacy.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.45. The reliabilities for T4SEENG are above 0.700 in all populations. In terms of model fit, the CFI, TLI and SRMR for T4SEENG are within the acceptable cut-off criteria for all participating countries or territories. The RMSEA exceeds the cut-off criterion in 19 ISCED level 2 participants, 8 ISCED level 1 participants and 3 ISCED level 3 participants. RMSEA is particularly high, above 0.200, in the ISCED levels 1 and 2 populations in Korea.

Unclassified - Non classifié

Table 11.46 presents the results from the measurement invariance testing for T4SEENG for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all indices. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the cut-off criteria for the TLI and RMSEA and exceeds the cut-offs for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.47 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4SEENG. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.44. Items and response categories used in the construction of scale T4SEENG

Scale or item	Question or item wording
T4SEENG	In your teaching, to what extent can you do the following?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G27A	Get students to believe they can do well in schoolwork
TT4G27B	Help students value learning
TT4G27E	Motivate students who show low interest in schoolwork
TT4G27G	Help students think critically

Source: OECD, TALIS 2024 database.

Table 11.45. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEENG

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.794	0.994	0.983	0.043	0.016
Alberta (Canada)	0.882	0.994	0.983	0.095	0.021
Australia	0.882	0.997	0.991	0.089	0.014
Austria	0.790	0.999	0.996	0.035	0.010
Azerbaijan	0.770	1.000	0.999	0.012	0.004
Bahrain	0.906	0.997	0.991	0.074	0.010
Belgium	0.838	0.994	0.982	0.093	0.018
Flemish Community (Belgium)	0.841	0.993	0.978	0.098	0.021
French Community (Belgium)	0.828	0.996	0.988	0.088	0.017
Brazil	0.879	0.994	0.983	0.086	0.018
Bulgaria	0.850	0.987	0.960	**0.115**	0.025
Chile	0.863	0.989	0.968	**0.111**	0.028
Colombia	0.882	0.995	0.984	0.096	0.017
Costa Rica	0.885	0.991	0.973	**0.124**	0.021
Croatia	0.870	0.998	0.994	0.054	0.012
Cyprus	0.881	0.992	0.977	**0.123**	0.020
Czechia	0.813	0.996	0.989	0.066	0.015
Denmark	0.825	0.998	0.993	0.051	0.013
Estonia	0.845	0.992	0.975	**0.117**	0.023

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Finland	0.822	0.996	0.988	0.071	0.018
France	0.841	0.999	0.997	0.045	0.009
Hungary	0.844	0.997	0.990	0.057	0.013
Iceland	0.863	0.990	0.969	**0.147**	0.026
Israel	0.891	0.994	0.982	**0.120**	0.021
Italy	0.869	1.000	1.000	0.000	0.003
Japan	0.862	0.996	0.987	0.097	0.017
Kazakhstan	0.860	0.991	0.974	0.094	0.018
Korea	0.895	0.984	0.951	**0.256**	0.035
Kosovo	0.780	0.986	0.957	0.083	0.026
Latvia	0.834	0.997	0.992	0.045	0.013
Lithuania	0.875	0.996	0.988	0.080	0.017
Malta	0.887	0.995	0.985	**0.126**	0.019
Montenegro	0.900	0.994	0.983	**0.138**	0.021
Morocco	0.829	0.995	0.984	0.050	0.017
Netherlands	0.769	0.991	0.974	0.056	0.021
New Zealand	0.882	1.000	1.001	0.000	0.002
North Macedonia	0.867	0.996	0.987	**0.103**	0.013
Norway	0.819	1.000	1.001	0.000	0.005
Poland	0.875	0.995	0.985	0.080	0.017
Portugal	0.893	0.993	0.978	**0.126**	0.022
Romania	0.877	0.995	0.984	0.099	0.016
Saudi Arabia	0.928	0.993	0.980	**0.132**	0.017
Serbia	0.886	0.994	0.983	**0.116**	0.019
Shanghai (China)	0.935	0.995	0.986	**0.169**	0.017
Singapore	0.901	0.996	0.987	**0.115**	0.016
Slovak Republic	0.870	0.993	0.978	**0.120**	0.020
Slovenia	0.845	0.995	0.986	0.076	0.016
South Africa	0.913	0.996	0.987	0.095	0.014
Spain	0.866	0.994	0.983	0.084	0.019
Sweden	0.832	0.994	0.983	0.077	0.016
Türkiye	0.911	0.996	0.987	**0.125**	0.018
United Arab Emirates	0.902	0.996	0.989	0.056	0.012
United States	0.894	0.998	0.994	0.060	0.012
Uzbekistan	0.735	0.997	0.990	0.033	0.010
Viet Nam	0.891	0.990	0.971	**0.132**	0.023
International pooled data	0.881	0.996	0.987	0.093	0.014
ISCED level 1					
Australia	0.880	0.989	0.968	**0.166**	0.027
Belgium	0.827	0.983	0.949	**0.135**	0.030
Flemish Community (Belgium)	0.829	0.983	0.949	**0.135**	0.029

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
French Community (Belgium)	0.830	0.990	0.970	**0.135**	0.032
Brazil	0.865	0.997	0.991	0.051	0.016
France	0.839	0.992	0.975	**0.108**	0.024
Japan	0.867	0.998	0.993	0.076	0.014
Korea	0.900	0.988	0.965	**0.215**	0.036
Morocco	0.843	0.994	0.981	0.053	0.018
Netherlands	0.787	0.982	0.947	0.098	0.033
New Zealand	0.903	0.997	0.990	0.095	0.018
Saudi Arabia	0.938	0.997	0.992	0.087	0.012
Slovenia	0.851	0.988	0.964	**0.137**	0.027
Spain	0.875	0.993	0.980	0.090	0.021
Türkiye	0.914	0.995	0.985	**0.127**	0.019
United Arab Emirates	0.898	0.987	0.962	0.099	0.020
International pooled data	0.898	0.994	0.983	**0.134**	0.019
ISCED level 3					
Croatia	0.879	0.997	0.990	0.084	0.015
Denmark	0.818	0.999	0.998	0.028	0.008
Flemish Community (Belgium)	0.834	0.995	0.985	0.078	0.018
Portugal	0.880	0.996	0.988	**0.102**	0.020
Saudi Arabia	0.933	0.995	0.985	**0.122**	0.017
Slovenia	0.856	0.995	0.986	0.090	0.016
Türkiye	0.902	0.995	0.985	**0.139**	0.020
United Arab Emirates	0.903	0.993	0.980	0.076	0.019
International pooled data	0.903	0.996	0.989	0.100	0.015

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.46. Measurement invariance results from MGCFA for scale T4SEENG with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.995	0.985	0.094	0.017	-	-	-	-
Equal loadings	0.993	0.991	0.072	0.026	-0.002	0.006	-0.022	0.009
Equal loadings and thresholds	0.971	0.985	0.092	0.141	-0.022	-0.006	0.020	0.116

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand, Norway, Sweden and Viet Nam are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.47. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SEENG

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G27A	0.869	-2.648	-1.118	0.160
TT4G27B	0.922	-2.519	-0.967	0.213
TT4G27E	0.762	-2.134	-0.623	0.458
TT4G27G	0.698	-2.309	-0.970	0.308

Source: OECD, TALIS 2024 database.

Self-efficacy in multicultural classrooms (T4SEMUL)

TQ-28 contained items regarding teachers' *Self-efficacy in multicultural classrooms* (T4SEMUL). Teachers were asked to indicate to what extent they could do different activities in their teaching, with the following possible response options: "Not at all", "To some extent", "Quite a bit" or "A lot" (see Table 11.48). Four items in this question (TT4G28A, TT4G28C, TT4G28D, TT4G28E) were used to create the T4SEMUL scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.49. The scale T4SEMUL has high reliability (above 0.700) in all populations. As can be observed from Table 11.49, the CFI for T4SEMUL is within the acceptable cut-off in all populations. The TLI is also within the cut-off criterion, except for the ISCED level 2 population in Azerbaijan. The RMSEA is greater than 0.100 in more than half of the ISCED level 2 participants, particularly in the ISCED level 2 population in Australia, Azerbaijan, Finland, Iceland, Malta, Saudi Arabia, Shanghai (China), Türkiye and Viet Nam; half of the ISCED level 1 population, particularly in Japan, Saudi Arabia and Türkiye; and all ISCED level 3 participants, particularly in Croatia, Saudi Arabia and Türkiye. The SRMR is within the cut-off criterion across populations.

Table 11.50 presents the results from the measurement invariance testing for T4SEMUL for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI and close to the cut-off criteria for the TLI and RMSEA and exceeds the cut-offs for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.51 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for scale T4SEMUL. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.48. Items and response categories used in the construction of scale T4SEMUL

Scale or item	Question or item wording
T4SEMUL	In your teaching, to what extent can you do the following?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G28A	Adapt my teaching to the cultural diversity of students
TT4G28C	Raise awareness for cultural differences amongst students
TT4G28D	Reduce ethnic stereotyping amongst students
TT4G28E	Ensure that students with different cultural or ethnic backgrounds work together

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.49. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEMUL

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.856	0.995	0.984	0.056	0.014
Alberta (Canada)	0.882	0.984	0.952	**0.135**	0.022
Australia	0.908	0.993	0.980	**0.155**	0.017
Austria	0.863	0.988	0.964	**0.140**	0.020
Azerbaijan	0.798	0.966	**0.897**	**0.175**	0.033
Bahrain	0.932	0.998	0.993	**0.101**	0.010
Belgium	0.878	0.999	0.998	0.042	0.007
Flemish Community (Belgium)	0.879	0.999	0.997	0.047	0.008
French Community (Belgium)	0.877	0.999	0.996	0.059	0.009
Brazil	0.909	0.994	0.981	0.078	0.014
Bulgaria	0.898	0.992	0.976	**0.148**	0.018
Chile	0.918	1.000	0.999	0.042	0.007
Colombia	0.885	0.997	0.990	0.096	0.017
Costa Rica	0.910	0.997	0.991	0.096	0.011
Croatia	0.923	0.998	0.994	**0.112**	0.015
Cyprus	0.906	0.997	0.992	0.098	0.012
Czechia	0.887	0.993	0.980	**0.129**	0.016
Denmark	0.868	0.989	0.966	**0.132**	0.024
Estonia	0.857	0.986	0.958	**0.147**	0.026
Finland	0.857	0.984	0.953	**0.165**	0.026
France	0.885	0.997	0.992	0.084	0.011
Hungary	0.887	0.997	0.990	0.099	0.014
Iceland	0.868	0.986	0.957	**0.169**	0.028
Israel	0.906	0.999	0.998	0.046	0.006
Italy	0.862	0.992	0.976	**0.102**	0.021
Japan	0.931	0.998	0.993	**0.142**	0.011
Kazakhstan	0.854	0.992	0.977	0.098	0.016
Korea	0.950	0.999	0.997	0.099	0.006
Kosovo	0.885	0.995	0.986	0.085	0.014
Latvia	0.893	0.997	0.992	0.086	0.015
Lithuania	0.924	0.999	0.996	0.087	0.012
Malta	0.925	0.996	0.988	**0.161**	0.014
Montenegro	0.940	0.998	0.994	**0.130**	0.011
Morocco	0.863	0.987	0.962	0.096	0.023
Netherlands	0.863	0.986	0.957	**0.141**	0.024
New Zealand	0.869	0.998	0.994	0.057	0.012
North Macedonia	0.924	0.996	0.989	**0.145**	0.015
Norway	0.862	0.989	0.967	**0.126**	0.026

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.924	0.995	0.985	**0.113**	0.020
Portugal	0.896	0.998	0.994	0.074	0.011
Romania	0.905	0.996	0.989	**0.113**	0.016
Saudi Arabia	0.911	0.990	0.971	**0.153**	0.020
Serbia	0.923	0.997	0.991	**0.122**	0.013
Shanghai (China)	0.928	0.994	0.982	**0.228**	0.021
Singapore	0.937	0.998	0.994	**0.103**	0.010
Slovak Republic	0.900	0.998	0.994	0.083	0.010
Slovenia	0.863	0.990	0.970	**0.147**	0.024
South Africa	0.898	0.997	0.990	0.080	0.014
Spain	0.883	0.996	0.989	0.077	0.015
Sweden	0.876	0.995	0.984	0.093	0.015
Türkiye	0.909	0.991	0.972	**0.174**	0.019
United Arab Emirates	0.913	0.994	0.982	**0.101**	0.018
United States	0.913	0.999	0.996	0.056	0.010
Uzbekistan	0.830	0.985	0.956	**0.123**	0.024
Viet Nam	0.901	0.990	0.969	**0.213**	0.023
International pooled data	0.906	0.995	0.986	**0.114**	0.013
ISCED level 1					
Australia	0.917	0.998	0.995	0.088	0.010
Belgium	0.893	0.996	0.988	0.100	0.014
Flemish Community (Belgium)	0.889	0.994	0.983	**0.113**	0.019
French Community (Belgium)	0.901	0.997	0.991	0.099	0.013
Brazil	0.862	0.992	0.976	0.076	0.020
France	0.879	0.996	0.987	0.100	0.014
Japan	0.931	0.996	0.989	**0.186**	0.018
Korea	0.939	0.999	0.996	**0.110**	0.012
Morocco	0.876	0.994	0.982	0.077	0.020
Netherlands	0.896	0.992	0.976	**0.152**	0.025
New Zealand	0.905	0.997	0.991	0.090	0.013
Saudi Arabia	0.909	0.987	0.962	**0.155**	0.021
Slovenia	0.859	0.997	0.990	0.085	0.014
Spain	0.891	0.998	0.994	0.063	0.013
Türkiye	0.918	0.994	0.982	**0.151**	0.017
United Arab Emirates	0.901	0.996	0.987	0.073	0.017
International pooled data	0.915	0.997	0.990	**0.106**	0.012
ISCED level 3					
Croatia	0.923	0.996	0.989	**0.153**	0.016
Denmark	0.857	0.993	0.980	**0.106**	0.017
Flemish Community (Belgium)	0.895	0.996	0.987	**0.116**	0.015
Portugal	0.906	0.997	0.990	**0.112**	0.016

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.909	0.987	0.961	**0.173**	0.023
Slovenia	0.868	0.995	0.985	**0.112**	0.017
Türkiye	0.909	0.992	0.976	**0.173**	0.019
United Arab Emirates	0.915	0.988	0.963	**0.109**	0.019
International pooled data	0.910	0.995	0.986	**0.111**	0.013

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.50. Measurement invariance results from MGCFA for scale T4SEMUL with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.995	0.986	0.121	0.016	-	-	-	-
Equal loadings	0.994	0.993	0.085	0.023	-0.001	0.007	-0.035	0.007
Equal loadings and thresholds	0.982	0.991	0.098	0.111	-0.012	-0.002	0.013	0.088

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.51. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SEMUL

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G28A	0.752	-1.854	-0.528	0.622
TT4G28C	0.882	-1.892	-0.691	0.429
TT4G28D	0.898	-1.860	-0.725	0.365
TT4G28E	0.859	-1.817	-0.775	0.319

Source: OECD, TALIS 2024 database.

Growth mindset (T4GROMST)

TQ-30 asked teachers to express their agreement or disagreement with items related to fixed mindset. In Table 11.52, the items and response options are shown. All three items were reverse coded, to reflect *Growth mindset* instead of fixed mindset. Higher values on the scale express higher beliefs in growth mindset.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.53. The fit indices for the T4GROMST scale are not presented here as the scale was measured by just three items. The reliabilities for T4GROMST are above 0.700 in all populations.

Table 11.54 presents the results from the measurement invariance testing for T4GROMST for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. In the equal loadings model, the CFI, TLI and SRMR are within the cut-off criteria, whereas the RMSEA exceeds the cut-off. The degree of change between the equal loadings and the equal thresholds

Unclassified - Non classifié

and loadings models is within the cut-off criteria for the CFI, TLI and RMSEA for ISCED level 2. No special caution is required when comparing scale score results across countries/territories.

Table 11.55 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4GROMST. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.52. Items and response categories used in the construction of scale T4GROMST

Scale or item	Question or item wording
T4GROMST	How strongly do you agree or disagree with the following statements about intelligence and learning?
	Recoded response categories for scaling: 1=Strongly agree; 2=Agree; 3=Disagree; 4=Strongly disagree
	Scale mid-point: 2.5
TT4G30A	Everyone has certain amount of intelligence
TT4G30B	People's intelligence is something about them that they can't change
TT4G30C	Someone can learn new things but can't change their intelligence

Source: OECD, TALIS 2024 database.

Table 11.53. Reliability coefficient alpha for single countries and pooled model for scale T4GROMST

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.890
Alberta (Canada)	0.930
Australia	0.945
Austria	0.915
Azerbaijan	0.765
Bahrain	0.903
Belgium	0.895
Flemish Community (Belgium)	0.835
French Community (Belgium)	0.939
Brazil	0.911
Bulgaria	0.923
Chile	0.923
Colombia	0.925
Costa Rica	0.922
Croatia	0.920
Cyprus	0.919
Czechia	0.870
Denmark	0.922
Estonia	0.909
Finland	0.940
France	0.945
Hungary	0.926

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Iceland	0.899
Israel	0.933
Italy	0.930
Japan	0.892
Kazakhstan	0.829
Korea	0.942
Kosovo	0.898
Latvia	0.924
Lithuania	0.911
Malta	0.927
Montenegro	0.919
Morocco	0.842
Netherlands	0.905
New Zealand	0.939
North Macedonia	0.914
Norway	0.873
Poland	0.947
Portugal	0.919
Romania	0.922
Saudi Arabia	0.903
Serbia	0.917
Shanghai (China)	0.931
Singapore	0.937
Slovak Republic	0.884
Slovenia	0.940
South Africa	0.893
Spain	0.932
Sweden	0.931
Türkiye	0.910
United Arab Emirates	0.922
United States	0.923
Uzbekistan	0.801
Viet Nam	0.871
International pooled data	0.915
ISCED level 1	
Australia	0.937
Belgium	0.894
Flemish Community (Belgium)	0.858
French Community (Belgium)	0.919
Brazil	0.911
France	0.947

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Japan	0.899
Korea	0.942
Morocco	0.872
Netherlands	0.901
New Zealand	0.959
Saudi Arabia	0.902
Slovenia	0.934
Spain	0.927
Türkiye	0.918
United Arab Emirates	0.909
International pooled data	0.922
ISCED level 3	
Croatia	0.915
Denmark	0.922
Flemish Community (Belgium)	0.860
Portugal	0.916
Saudi Arabia	0.902
Slovenia	0.936
Türkiye	0.901
United Arab Emirates	0.917
International pooled data	0.911

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.54. Measurement invariance results from MGCFA for scale T4GROMST with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.998	0.996	0.107	0.011	-0.002	-0.004	0.107	0.011
Equal loadings and thresholds	0.996	0.998	0.076	0.072	-0.002	0.002	-0.031	0.061

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.55. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4GROMST

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G30A	0.873	-1.556	-0.494	0.874
TT4G30B	0.934	-1.691	-0.568	0.840
TT4G30C	0.847	-1.420	-0.289	1.019

Source: OECD, TALIS 2024 database.

Self-efficacy in special education needs (T4SESEN)

Teachers were asked to answer five statements measuring *Self-efficacy in special education needs* (T4SESEN). These were TT4G31A, TT4G31B, TT4G31C, TT4G31D and TT4G31E. All items were answered on a four-point scale, with response categories of “Not at all”, “To some extent”, “Quite a bit” and “A lot” (see Table 11.56).

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.57. The scale T4SESEN has high reliability (above 0.700) in all populations. As can be observed from Table 11.57, the CFI for T4SESEN is acceptable across all populations. The TLI is also acceptable in most participating countries or territories, except for the ISCED level 2 population in Belgium and the ISCED level 1 population in the Netherlands. The RMSEA exceeds the cut-off criterion in approximately half of each ISCED level populations, particularly in the ISCED level 2 population in Shanghai (China) and the ISCED levels 1 and 2 populations in Korea. The SRMR does not exceed the cut-off criterion in any of the populations.

Table 11.58 presents the results from the measurement invariance testing for T4SESEN for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for TLI and exceeds the cut-off criteria for the CFI, RMSEA and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.59 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4SESEN. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.56. Items and response categories used in the construction of scale T4SESEN

Scale or item	Question or item wording
T4SESEN	In your work as a teacher, to what extent can you do the following practices?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G31A	Work jointly with other professionals and staff (e.g. aides, other teachers) to teach students with special education needs in the classroom
TT4G31B	Get parents/guardians involved in school activities of their children with special education needs
TT4G31C	Collaborate with other professionals (e.g. specialist teachers, speech pathologists) in designing educational plans for students with special education needs
TT4G31D	Inform others who know little about laws and policies relating to the inclusion of students with special education needs
TT4G31E	Design learning tasks to accommodate students with special education needs

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.57. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SESEN

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.900	0.988	0.977	0.089	0.022
Alberta (Canada)	0.879	0.990	0.979	0.068	0.029
Australia	0.880	0.991	0.982	0.088	0.022
Austria	0.857	0.992	0.984	0.073	0.018
Azerbaijan	0.885	0.986	0.973	**0.107**	0.022
Bahrain	0.932	0.994	0.989	**0.119**	0.016
Belgium	0.832	0.939	**0.878**	**0.173**	0.051
Flemish Community (Belgium)	0.847	0.963	0.926	**0.141**	0.043
French Community (Belgium)	0.825	0.955	0.909	**0.153**	0.042
Brazil	0.908	0.989	0.978	**0.109**	0.024
Bulgaria	0.881	0.966	0.932	**0.171**	0.038
Chile	0.903	0.988	0.976	0.081	0.026
Colombia	0.920	0.992	0.984	0.095	0.019
Costa Rica	0.909	0.989	0.978	**0.116**	0.023
Croatia	0.873	0.989	0.977	0.086	0.022
Cyprus	0.904	0.986	0.971	**0.132**	0.025
Czechia	0.852	0.985	0.970	0.095	0.027
Denmark	0.863	0.987	0.975	0.088	0.025
Estonia	0.872	0.979	0.957	**0.135**	0.032
Finland	0.839	0.976	0.953	0.095	0.029
France	0.830	0.992	0.985	0.059	0.019
Hungary	0.889	0.970	0.940	**0.160**	0.039
Iceland	0.857	0.976	0.951	**0.129**	0.035
Israel	0.924	0.984	0.968	**0.160**	0.026
Italy	0.883	0.987	0.974	**0.102**	0.027
Japan	0.904	0.988	0.975	**0.135**	0.027
Kazakhstan	0.886	0.993	0.985	0.069	0.016
Korea	0.940	0.985	0.969	**0.229**	0.032
Kosovo	0.910	0.988	0.976	**0.120**	0.022
Latvia	0.907	0.993	0.987	0.081	0.018
Lithuania	0.877	0.986	0.971	0.093	0.027
Malta	0.867	0.992	0.984	0.087	0.022
Montenegro	0.914	0.990	0.980	**0.136**	0.022
Morocco	0.925	0.989	0.978	**0.104**	0.020
Netherlands	0.850	0.965	0.929	**0.123**	0.041
New Zealand	0.856	0.992	0.985	0.064	0.020
North Macedonia	0.931	0.990	0.980	**0.143**	0.021
Norway	0.861	0.982	0.963	**0.104**	0.030

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.906	0.989	0.978	0.088	0.025
Portugal	0.859	0.987	0.975	0.094	0.025
Romania	0.930	0.992	0.984	**0.120**	0.021
Saudi Arabia	0.938	0.990	0.980	**0.164**	0.019
Serbia	0.896	0.982	0.963	**0.146**	0.025
Shanghai (China)	0.962	0.992	0.983	**0.260**	0.024
Singapore	0.921	0.987	0.974	**0.127**	0.024
Slovak Republic	0.849	0.968	0.936	**0.134**	0.036
Slovenia	0.835	0.987	0.973	0.079	0.024
South Africa	0.928	0.994	0.989	0.083	0.017
Spain	0.861	0.991	0.982	0.063	0.019
Sweden	0.865	0.993	0.986	0.060	0.015
Türkiye	0.927	0.985	0.970	**0.172**	0.026
United Arab Emirates	0.925	0.997	0.994	0.046	0.015
United States	0.891	0.993	0.986	0.055	0.023
Uzbekistan	0.877	0.993	0.987	0.063	0.015
Viet Nam	0.924	0.994	0.988	**0.111**	0.016
International pooled data	0.896	0.990	0.979	0.095	0.021
ISCED level 1					
Australia	0.879	0.987	0.974	**0.103**	0.029
Belgium	0.857	0.980	0.959	**0.113**	0.032
Flemish Community (Belgium)	0.867	0.988	0.976	0.094	0.027
French Community (Belgium)	0.839	0.983	0.966	0.094	0.028
Brazil	0.882	0.987	0.975	0.086	0.023
France	0.829	0.992	0.984	0.059	0.022
Japan	0.893	0.979	0.957	**0.157**	0.034
Korea	0.929	0.977	0.954	**0.248**	0.045
Morocco	0.914	0.988	0.977	**0.104**	0.020
Netherlands	0.831	0.968	0.935	**0.121**	0.044
New Zealand	0.845	0.982	0.964	0.093	0.036
Saudi Arabia	0.949	0.993	0.986	**0.152**	0.016
Slovenia	0.843	0.982	0.964	0.100	0.029
Spain	0.884	0.993	0.986	0.061	0.019
Türkiye	0.939	0.985	0.969	**0.181**	0.023
United Arab Emirates	0.906	0.990	0.980	0.076	0.022
International pooled data	0.883	0.986	0.973	**0.106**	0.026
ISCED level 3					
Croatia	0.903	0.993	0.985	0.097	0.019
Denmark	0.884	0.990	0.979	0.086	0.025
Flemish Community (Belgium)	0.843	0.973	0.945	**0.126**	0.035
Portugal	0.881	0.984	0.968	**0.130**	0.027

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.955	0.993	0.987	**0.168**	0.016
Slovenia	0.862	0.988	0.976	0.090	0.022
Türkiye	0.936	0.987	0.975	**0.178**	0.024
United Arab Emirates	0.933	0.996	0.993	0.061	0.015
International pooled data	0.911	0.992	0.984	0.097	0.019

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.58. Measurement invariance results from MGCFA for scale T4SESEN with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.989	0.978	0.118	0.024	-	-	-	-
Equal loadings	0.988	0.987	0.092	0.031	-0.001	0.008	-0.026	0.007
Equal loadings and thresholds	0.950	0.972	0.133	0.135	-0.038	-0.015	0.041	0.104

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.59. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SESEN

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G31A	0.768	-1.633	-0.520	0.495
TT4G31B	0.809	-1.225	-0.039	0.926
TT4G31C	0.860	-1.275	-0.257	0.696
TT4G31D	0.821	-0.991	0.088	1.022
TT4G31E	0.773	-1.527	-0.344	0.734

Source: OECD, TALIS 2024 database.

Comfort with social and emotional aspects of teaching (T4COMSEL)

The scale of *Comfort with social and emotional aspects of teaching* (T4COMSEL) was measured by a set of three statements (TT4G32A, TT4G32B, TT4G32C), described in Table 11.60. Teachers had to indicate their level of agreement with these statements, using the following response categories: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher values on this scale indicate a greater comfort with social and emotional aspects of teaching.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.61. The fit indices for T4COMSEL are not presented here as the scale was measured by just three items. The scale T4COMSEL has high reliability (above 0.700) in all populations.

Table 11.62 presents the results from the measurement invariance testing for T4COMSEL for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just

Unclassified - Non classifié

identified. The equal loadings model fit is within the acceptable cut-off criteria for the CFI, TLI and SRMR. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA, close to the cut-off for the CFI and exceeds the cut-off criterium for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.63 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4COMSEL. All items show high loadings. Results by participating country/territory show a low item loading for item TT4G32C in Chile and Colombia (ISCED level 2).

Table 11.60. Items and response categories used in the construction of scale T4COMSEL

Scale or item	Question or item wording
T4COMSEL	How strongly do you agree or disagree with the following statements about your teaching?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G32A	I am comfortable providing instruction on social and emotional skills to students.
TT4G32B	Taking care of students' social and emotional needs comes naturally to me.
TT4G32C	<Informal lessons> in social and emotional learning are part of my regular teaching practice.

Source: OECD, TALIS 2024 database.

Table 11.61. Reliability coefficient alpha for single countries and pooled model for scale T4COMSEL

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.808
Alberta (Canada)	0.908
Australia	0.901
Austria	0.847
Azerbaijan	0.779
Bahrain	0.889
Belgium	0.886
Flemish Community (Belgium)	0.885
French Community (Belgium)	0.897
Brazil	0.905
Bulgaria	0.891
Chile	0.736
Colombia	0.738
Costa Rica	0.853
Croatia	0.894
Cyprus	0.898
Czechia	0.905
Denmark	0.908
Estonia	0.893
Finland	0.883

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
France	0.915
Hungary	0.875
Iceland	0.902
Israel	0.934
Italy	0.912
Japan	0.887
Kazakhstan	0.792
Korea	0.945
Kosovo	0.848
Latvia	0.852
Lithuania	0.877
Malta	0.911
Montenegro	0.897
Morocco	0.824
Netherlands	0.898
New Zealand	0.886
North Macedonia	0.874
Norway	0.886
Poland	0.899
Portugal	0.906
Romania	0.922
Saudi Arabia	0.884
Serbia	0.870
Shanghai (China)	0.965
Singapore	0.923
Slovak Republic	0.823
Slovenia	0.855
South Africa	0.903
Spain	0.860
Sweden	0.890
Türkiye	0.864
United Arab Emirates	0.905
United States	0.895
Uzbekistan	0.790
Viet Nam	0.856
International pooled data	0.877
ISCED level 1	
Australia	0.925
Belgium	0.892
Flemish Community (Belgium)	0.884
French Community (Belgium)	0.899

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Brazil	0.886
France	0.872
Japan	0.846
Korea	0.940
Morocco	0.817
Netherlands	0.916
New Zealand	0.910
Saudi Arabia	0.878
Slovenia	0.864
Spain	0.848
Türkiye	0.881
United Arab Emirates	0.897
International pooled data	0.881
ISCED level 3	
Croatia	0.905
Denmark	0.880
Flemish Community (Belgium)	0.897
Portugal	0.904
Saudi Arabia	0.897
Slovenia	0.858
Türkiye	0.867
United Arab Emirates	0.889
International pooled data	0.899

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.62. Measurement invariance results from MGCFA for scale T4COMSEL with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.994	0.991	0.113	0.019	-0.006	-0.009	0.113	0.019
Equal loadings and thresholds	0.983	0.993	0.105	0.125	-0.011	0.001	-0.008	0.106

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.63. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4COMSEL

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G32A	0.860	-2.144	-1.226	0.466
TT4G32B	0.920	-2.274	-1.284	0.349
TT4G32C	0.734	-1.851	-0.870	0.605

Source: OECD, TALIS 2024 database.

Self-efficacy in using digital resources and tools (T4SEDRT)

In TQ-33, teachers were asked to indicate to what extent they could do certain tasks involving the use of digital resources and tools. For each task, they could select one of the following response options: “Not at all”, “To some extent”, “Quite a bit” or “A lot”. Responses to five of the items in this question (TT4G33A, TT4G33B, TT4G33C, TT4G33D, TT4G33G) were used to derive a scale reflecting teachers’ *Self-efficacy in using digital resources and tools* (T4SEDRT). Higher values on this scale indicate a higher self-efficacy. Table 11.64 provides the item names, question stem, item statements and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.65. As can be observed, reliability for T4SEDRT is high for all populations. In terms of model fit, the CFI, TLI and SRMR for T4SEDRT are all within the acceptable cut-off criteria across populations. However, the RMSEA exceeded the cut-off criterion in 17 of the ISCED level 2 participants, ranging from 0.102 in Lithuania to 0.152 in Shanghai (China). The RMSEA also exceeded the cut-off in five ISCED level 1 participants (Australia, Brazil, Korea, Slovenia and Türkiye) and in three ISCED level 3 participants (the Flemish Community of Belgium, Portugal and Türkiye), with the highest values for both Türkiye populations, with 0.120 and 0.129, respectively.

Table 11.66 presents the results from the measurement invariance testing for T4SEDRT for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI and RMSEA and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.67 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4SEDRT. All items show high loadings. Results by participating country/territory show a low loading for item TT4G33G in Brazil (ISCED level 1).

Table 11.64. Items and response categories used in the construction of scale T4SEDRT

Scale or item	Question or item wording
T4SEDRT	To what extent can you do the following tasks with <digital resources and tools>?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G33A	Identify <digital resources and tools> to support the subject(s) I teach
TT4G33B	Use <digital resources and tools> to present concepts in a different way to my students
TT4G33C	Choose <digital resources and tools> that enhance students’ learning
TT4G33D	Adapt the use of <digital resources and tools> to different teaching activities
TT4G33G	Learn to use technology that is new to me

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.65. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEDRT

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.910	0.999	0.999	0.034	0.009
Alberta (Canada)	0.950	0.999	0.998	0.065	0.012
Australia	0.942	0.999	0.998	0.074	0.010
Austria	0.938	0.998	0.996	0.078	0.011
Azerbaijan	0.910	0.995	0.991	0.086	0.015
Bahrain	0.952	0.998	0.996	0.098	0.010
Belgium	0.940	0.998	0.997	0.079	0.009
Flemish Community (Belgium)	0.932	0.999	0.997	0.061	0.009
French Community (Belgium)	0.934	0.997	0.993	**0.122**	0.016
Brazil	0.920	0.997	0.994	**0.125**	0.012
Bulgaria	0.950	1.000	0.999	0.052	0.006
Chile	0.933	0.998	0.996	0.083	0.012
Colombia	0.929	0.998	0.996	0.090	0.010
Costa Rica	0.943	0.997	0.994	**0.125**	0.012
Croatia	0.952	0.998	0.996	**0.114**	0.013
Cyprus	0.949	0.998	0.996	**0.128**	0.010
Czechia	0.943	0.998	0.996	0.090	0.014
Denmark	0.940	0.998	0.995	0.086	0.013
Estonia	0.923	0.998	0.996	0.071	0.012
Finland	0.888	0.993	0.987	0.085	0.019
France	0.929	0.998	0.996	0.085	0.011
Hungary	0.943	0.999	0.999	0.049	0.007
Iceland	0.940	0.998	0.997	**0.109**	0.008
Israel	0.961	0.999	0.999	0.091	0.007
Italy	0.939	0.997	0.995	**0.112**	0.013
Japan	0.970	0.999	0.999	**0.120**	0.009
Kazakhstan	0.930	0.997	0.995	0.061	0.011
Korea	0.975	1.000	0.999	0.070	0.007
Kosovo	0.945	0.998	0.996	0.086	0.011
Latvia	0.935	0.997	0.993	**0.106**	0.014
Lithuania	0.951	0.998	0.996	**0.102**	0.013
Malta	0.935	0.998	0.996	**0.113**	0.012
Montenegro	0.956	0.999	0.998	0.094	0.010
Morocco	0.934	0.999	0.997	0.059	0.007
Netherlands	0.935	0.997	0.994	0.092	0.014
New Zealand	0.935	0.999	0.999	0.054	0.009
North Macedonia	0.955	0.999	0.998	0.087	0.007
Norway	0.937	0.994	0.989	**0.144**	0.020

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.956	0.999	0.997	0.090	0.010
Portugal	0.932	0.999	0.998	0.082	0.010
Romania	0.945	0.998	0.996	**0.107**	0.010
Saudi Arabia	0.963	0.999	0.998	0.071	0.007
Serbia	0.933	0.999	0.997	**0.112**	0.009
Shanghai (China)	0.973	0.999	0.998	**0.152**	0.007
Singapore	0.946	0.999	0.998	0.085	0.007
Slovak Republic	0.922	0.994	0.989	**0.118**	0.014
Slovenia	0.916	0.997	0.994	**0.103**	0.013
South Africa	0.931	0.999	0.998	0.057	0.009
Spain	0.931	0.998	0.996	0.080	0.010
Sweden	0.922	0.998	0.996	0.073	0.014
Türkiye	0.956	0.999	0.998	0.090	0.011
United Arab Emirates	0.948	0.997	0.994	0.077	0.008
United States	0.946	0.999	0.998	0.066	0.011
Uzbekistan	0.892	0.999	0.997	0.033	0.008
Viet Nam	0.948	0.999	0.998	0.074	0.007
International pooled data	0.942	0.998	0.997	0.079	0.008
ISCED level 1					
Australia	0.940	0.999	0.998	**0.104**	0.012
Belgium	0.940	0.998	0.997	0.081	0.009
Flemish Community (Belgium)	0.937	0.998	0.997	0.074	0.009
French Community (Belgium)	0.932	0.999	0.997	0.080	0.011
Brazil	0.900	0.995	0.990	**0.111**	0.014
France	0.899	0.997	0.995	0.075	0.013
Japan	0.972	1.000	0.999	0.083	0.006
Korea	0.977	1.000	0.999	**0.107**	0.008
Morocco	0.937	0.999	0.997	0.064	0.009
Netherlands	0.932	0.997	0.995	0.089	0.016
New Zealand	0.937	0.999	0.998	0.074	0.009
Saudi Arabia	0.959	0.998	0.997	0.086	0.007
Slovenia	0.911	0.996	0.992	**0.117**	0.013
Spain	0.945	0.998	0.997	0.079	0.010
Türkiye	0.962	0.998	0.997	**0.120**	0.015
United Arab Emirates	0.938	0.998	0.997	0.058	0.008
International pooled data	0.947	0.998	0.996	0.100	0.008
ISCED level 3					
Croatia	0.948	0.999	0.998	0.073	0.008
Denmark	0.925	0.999	0.997	0.060	0.013
Flemish Community (Belgium)	0.944	0.997	0.995	**0.106**	0.013
Portugal	0.930	0.998	0.996	**0.106**	0.010

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.960	0.999	0.999	0.059	0.007
Slovenia	0.925	0.998	0.997	0.083	0.010
Türkiye	0.953	0.998	0.996	**0.129**	0.012
United Arab Emirates	0.945	1.000	0.999	0.030	0.006
International pooled data	0.948	0.999	0.998	0.082	0.008

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.66. Measurement invariance results from MGCFA for scale T4SEDRT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.999	0.997	0.089	0.010	-	-	-	-
Equal loadings	0.998	0.997	0.087	0.026	-0.001	0.000	-0.002	0.016
Equal loadings and thresholds	0.996	0.998	0.080	0.095	-0.002	0.000	-0.007	0.070

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.67. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SEDRT

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G33A	0.891	-2.093	-0.716	0.461
TT4G33B	0.933	-1.954	-0.624	0.507
TT4G33C	0.955	-1.965	-0.634	0.507
TT4G33D	0.921	-1.908	-0.551	0.575
TT4G33G	0.684	-1.937	-0.670	0.429

Source: OECD, TALIS 2024 database.

Beliefs in digital resources and tools (T4BLFDRT)

The scale *Beliefs in digital resources and tools* (T4BLFDRT) was measured by a set of four items from TQ-34 (TT4G34A, TT4G34B, TT4G34C, TT4G34H), as described in Table 11.68. Teachers had to indicate their level of agreement with these items, using the following response categories: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher values on this scale indicate more positive beliefs about the use of digital resources and tools.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.69. The scale T4BLFDRT has high reliability (above 0.700) in all populations. As can be observed from Table 11.69, the CFI, TLI and SRMR for T4BLFDRT are all within the acceptable cut-off criteria across all populations. However, the RMSEA exceeds the cut-off in the ISCED level 2 population in Japan, Korea, Romania and Viet Nam, as well as in the ISCED level 1 population in France and Korea.

Unclassified - Non classifié

Table 11.70 presents the results from the measurement invariance testing for T4BLFDRT for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI, close to the cut-off criteria for the CFI and RMSEA and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.71 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4BLFDRT. All items show high loadings. Results by participating country/territory indicate low loadings for item TT4G34H in the Netherlands (ISCED level 2) and in the Flemish Community of Belgium (ISCED level 3).

Table 11.68. Items and response categories used in the construction of scale T4BLFDRT

Scale or item	Question or item wording
T4BLFDRT	Thinking about the use of <digital resources and tools> for student learning, how strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G34A	The use of <digital resources and tools> helps students develop greater interest in learning.
TT4G34B	The use of <digital resources and tools> helps students develop skills to plan and monitor their work.
TT4G34C	The use of <digital resources and tools> helps improve students' academic performance.
TT4G34H	The use of <digital resources and tools> helps students collaborate on tasks efficiently.

Source: OECD, TALIS 2024 database.

Table 11.69. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4BLFDRT

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.886	0.999	0.997	0.049	0.008
Alberta (Canada)	0.874	1.000	1.001	0.000	0.003
Australia	0.867	1.000	0.999	0.031	0.007
Austria	0.818	1.000	0.999	0.018	0.005
Azerbaijan	0.865	1.000	0.999	0.035	0.006
Bahrain	0.917	0.999	0.998	0.071	0.008
Belgium	0.850	0.997	0.990	0.067	0.013
Flemish Community (Belgium)	0.841	0.999	0.996	0.041	0.010
French Community (Belgium)	0.848	1.000	1.001	0.000	0.002
Brazil	0.920	1.000	0.999	0.034	0.004
Bulgaria	0.892	1.000	1.000	0.021	0.004
Chile	0.930	0.999	0.997	0.063	0.008
Colombia	0.898	0.996	0.988	0.087	0.012
Costa Rica	0.909	0.999	0.997	0.061	0.009
Croatia	0.900	0.998	0.995	0.073	0.009
Cyprus	0.893	1.000	0.999	0.031	0.007
Czechia	0.877	0.999	0.998	0.038	0.007

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Denmark	0.841	0.998	0.995	0.042	0.011
Estonia	0.813	0.999	0.996	0.040	0.009
Finland	0.832	0.996	0.988	0.065	0.014
France	0.832	1.000	0.999	0.023	0.005
Hungary	0.880	0.996	0.989	0.089	0.015
Iceland	0.873	1.000	1.000	0.021	0.006
Israel	0.895	0.999	0.998	0.044	0.007
Italy	0.878	1.000	1.000	0.016	0.004
Japan	0.880	0.989	0.967	**0.155**	0.021
Kazakhstan	0.884	0.998	0.993	0.070	0.013
Korea	0.908	0.997	0.990	**0.133**	0.016
Kosovo	0.883	0.999	0.997	0.043	0.008
Latvia	0.832	1.000	1.000	0.000	0.004
Lithuania	0.896	0.999	0.998	0.038	0.007
Malta	0.886	0.999	0.998	0.051	0.008
Montenegro	0.916	0.999	0.998	0.078	0.009
Morocco	0.902	1.000	1.000	0.015	0.004
Netherlands	0.771	0.988	0.965	0.095	0.026
New Zealand	0.866	1.000	1.002	0.000	0.001
North Macedonia	0.918	0.999	0.997	0.077	0.007
Norway	0.853	0.999	0.997	0.042	0.008
Poland	0.870	0.997	0.990	0.070	0.018
Portugal	0.909	0.999	0.998	0.053	0.007
Romania	0.906	0.997	0.990	**0.114**	0.015
Saudi Arabia	0.944	1.000	1.000	0.032	0.004
Serbia	0.912	0.999	0.997	0.073	0.008
Shanghai (China)	0.948	0.999	0.998	0.099	0.008
Singapore	0.866	0.995	0.985	0.100	0.018
Slovak Republic	0.861	0.998	0.993	0.061	0.011
Slovenia	0.855	0.998	0.994	0.061	0.013
South Africa	0.907	1.000	1.000	0.000	0.003
Spain	0.889	1.000	0.999	0.022	0.004
Sweden	0.851	1.000	1.001	0.000	0.003
Türkiye	0.906	0.999	0.998	0.066	0.008
United Arab Emirates	0.918	0.998	0.993	0.091	0.012
United States	0.887	0.998	0.995	0.066	0.013
Uzbekistan	0.888	0.998	0.993	0.063	0.008
Viet Nam	0.932	0.997	0.991	**0.131**	0.015
International pooled data	0.899	1.000	0.999	0.036	0.005
ISCED level 1					
Australia	0.874	0.999	0.997	0.046	0.010

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Belgium	0.829	0.997	0.990	0.059	0.011
Flemish Community (Belgium)	0.830	1.000	1.000	0.008	0.005
French Community (Belgium)	0.810	0.994	0.982	0.072	0.015
Brazil	0.897	0.999	0.998	0.052	0.009
France	0.768	0.975	0.926	**0.124**	0.030
Japan	0.871	1.000	1.000	0.000	0.002
Korea	0.918	0.997	0.991	**0.117**	0.013
Morocco	0.907	0.999	0.998	0.045	0.008
Netherlands	0.815	0.985	0.956	**0.118**	0.026
New Zealand	0.848	0.999	0.998	0.026	0.007
Saudi Arabia	0.949	1.000	0.999	0.064	0.006
Slovenia	0.862	0.998	0.993	0.060	0.010
Spain	0.895	0.999	0.998	0.033	0.007
Türkiye	0.905	0.999	0.996	0.099	0.016
United Arab Emirates	0.920	1.000	0.999	0.031	0.005
International pooled data	0.893	1.000	0.999	0.023	0.003
ISCED level 3					
Croatia	0.907	0.998	0.995	0.076	0.010
Denmark	0.824	0.990	0.970	0.099	0.023
Flemish Community (Belgium)	0.812	1.000	1.001	0.000	0.003
Portugal	0.917	0.999	0.997	0.065	0.009
Saudi Arabia	0.942	1.000	1.000	0.049	0.005
Slovenia	0.865	1.000	1.000	0.000	0.003
Türkiye	0.913	1.000	1.000	0.023	0.004
United Arab Emirates	0.916	0.999	0.998	0.042	0.007
International pooled data	0.911	0.999	0.998	0.045	0.006

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.70. Measurement invariance results from MGCFA for scale T4BLFDRT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.999	0.996	0.065	0.009	-	-	-	-
Equal loadings	0.997	0.997	0.062	0.020	-0.002	0.000	-0.003	0.010
Equal loadings and thresholds	0.990	0.995	0.077	0.103	-0.007	-0.002	0.015	0.083

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.71. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4BLFDRT

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G34A	0.876	-2.221	-1.188	0.600
TT4G34B	0.908	-2.068	-0.860	0.792
TT4G34C	0.888	-1.963	-0.717	0.853
TT4G34H	0.678	-2.060	-0.812	1.063

Source: OECD, TALIS 2024 database.

Adversity to digital resources and tools (T4ADVDRT)

The scale of *Adversity to digital resources and tools* (T4ADVDRT) was measured by a set of four items, TT4G34D, TT4G34E, TT4G34F and TT4G34G, described in Table 11.72. Teachers were asked to indicate their level of agreement with each item using the following response categories: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale reflect greater agreement with statements critical of the use of digital resources and tools.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.73. The scale T4ADVDRT has high reliability (above 0.700) in all populations. As can be observed from Table 11.73, the CFI, TLI and SRMR for T4ADVDRT are all within the acceptable cut-off criteria for all populations. However, the RMSEA exceeds the cut-off in the ISCED level 2 population in Albania, Australia, Bahrain, Costa Rica, Kosovo, Montenegro, New Zealand, North Macedonia, Saudi Arabia, South Africa, Türkiye, Uzbekistan and Viet Nam; the ISCED level 1 population in Brazil, Saudi Arabia, Türkiye and the United Arab Emirates; and the ISCED level 3 population in Saudi Arabia.

Table 11.74 presents the results from the measurement invariance testing for T4ADVDRT for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR and very close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models is close the acceptable range for the TLI and RMSEA and exceeds the cut-off criteria for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.75 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4ADVDRT. All items show high loadings. Results by participating country/territory indicate low loadings for item TT4G34G in Japan (ISCED levels 1 and 2) and Morocco (ISCED level 1).

Table 11.72. Items and response categories used in the construction of scale T4ADVDRT

Scale or item	Question or item wording
T4ADVDRT	Thinking about the use of <digital resources and tools> for student learning, how strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G34D	The use of <digital resources and tools> distracts students from learning.
TT4G34E	The use of <digital resources and tools> limits the amount of face-to-face communication among students.
TT4G34F	Frequent use of <digital resources and tools> negatively impacts students’ well-being.
TT4G34G	The use of <digital resources and tools> results in students submitting Internet content as their own work.

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.73. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4ADVDRT

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.834	0.989	0.967	**0.117**	0.018
Alberta (Canada)	0.835	0.996	0.987	0.057	0.015
Australia	0.833	0.990	0.971	**0.108**	0.017
Austria	0.824	0.998	0.995	0.044	0.009
Azerbaijan	0.830	0.997	0.992	0.055	0.010
Bahrain	0.861	0.990	0.969	**0.166**	0.025
Belgium	0.785	0.999	0.997	0.026	0.006
Flemish Community (Belgium)	0.769	1.000	1.001	0.000	0.003
French Community (Belgium)	0.828	0.999	0.998	0.027	0.006
Brazil	0.858	0.996	0.987	0.089	0.013
Bulgaria	0.835	0.999	0.998	0.034	0.007
Chile	0.850	0.994	0.982	0.070	0.014
Colombia	0.859	0.998	0.995	0.044	0.007
Costa Rica	0.857	0.993	0.978	**0.105**	0.017
Croatia	0.872	1.000	1.001	0.000	0.002
Cyprus	0.844	1.000	1.001	0.000	0.003
Czechia	0.801	0.993	0.980	0.075	0.016
Denmark	0.798	0.996	0.988	0.064	0.014
Estonia	0.814	1.000	1.000	0.009	0.004
Finland	0.763	0.997	0.990	0.047	0.010
France	0.838	1.000	1.000	0.011	0.004
Hungary	0.828	0.998	0.995	0.040	0.007
Iceland	0.780	0.995	0.985	0.068	0.015
Israel	0.876	1.000	0.999	0.027	0.005
Italy	0.830	1.000	1.000	0.014	0.004
Japan	0.752	0.999	0.998	0.027	0.007
Kazakhstan	0.829	0.999	0.997	0.034	0.007
Korea	0.890	0.999	0.997	0.051	0.006
Kosovo	0.818	0.979	0.936	**0.149**	0.026
Latvia	0.783	0.989	0.966	0.082	0.020
Lithuania	0.816	0.997	0.992	0.053	0.012
Malta	0.830	1.000	1.000	0.002	0.004
Montenegro	0.891	0.996	0.988	**0.109**	0.015
Morocco	0.783	0.992	0.976	0.064	0.013
Netherlands	0.819	0.993	0.978	0.083	0.019
New Zealand	0.810	0.985	0.955	**0.123**	0.023
North Macedonia	0.861	0.995	0.985	**0.104**	0.013
Norway	0.738	0.997	0.991	0.039	0.013

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.861	0.999	0.996	0.036	0.008
Portugal	0.834	1.000	0.999	0.021	0.005
Romania	0.853	0.998	0.993	0.063	0.008
Saudi Arabia	0.853	0.974	0.923	**0.218**	0.030
Serbia	0.868	0.997	0.991	0.079	0.010
Shanghai (China)	0.901	0.998	0.995	0.075	0.007
Singapore	0.805	0.997	0.992	0.045	0.009
Slovak Republic	0.826	0.999	0.998	0.027	0.006
Slovenia	0.764	0.998	0.994	0.034	0.010
South Africa	0.833	0.986	0.958	**0.118**	0.024
Spain	0.852	0.998	0.994	0.044	0.009
Sweden	0.823	0.997	0.991	0.052	0.011
Türkiye	0.841	0.986	0.958	**0.131**	0.020
United Arab Emirates	0.884	0.994	0.983	0.072	0.011
United States	0.819	1.000	1.004	0.000	0.001
Uzbekistan	0.824	0.991	0.973	**0.110**	0.018
Viet Nam	0.884	0.991	0.972	**0.173**	0.017
International pooled data	0.826	0.998	0.994	0.043	0.007
ISCED level 1					
Australia	0.842	0.997	0.991	0.063	0.010
Belgium	0.778	0.998	0.993	0.041	0.009
Flemish Community (Belgium)	0.776	1.000	1.002	0.000	0.003
French Community (Belgium)	0.797	0.999	0.997	0.029	0.007
Brazil	0.830	0.985	0.955	**0.127**	0.022
France	0.774	0.995	0.986	0.056	0.013
Japan	0.753	0.996	0.989	0.057	0.013
Korea	0.896	1.000	0.999	0.032	0.004
Morocco	0.747	0.993	0.980	0.055	0.015
Netherlands	0.777	1.000	0.999	0.016	0.012
New Zealand	0.798	0.998	0.994	0.039	0.010
Saudi Arabia	0.872	0.986	0.957	**0.173**	0.021
Slovenia	0.769	0.997	0.990	0.052	0.012
Spain	0.848	0.999	0.997	0.027	0.006
Türkiye	0.830	0.988	0.963	**0.111**	0.017
United Arab Emirates	0.865	0.992	0.977	**0.104**	0.016
International pooled data	0.807	0.995	0.986	0.066	0.011
ISCED level 3					
Croatia	0.877	0.999	0.998	0.039	0.006
Denmark	0.866	0.999	0.998	0.037	0.007
Flemish Community (Belgium)	0.803	0.998	0.995	0.040	0.009
Portugal	0.829	1.000	1.000	0.000	0.002

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.864	0.979	0.937	**0.205**	0.031
Slovenia	0.782	1.000	1.000	0.000	0.004
Türkiye	0.831	0.994	0.981	0.089	0.014
United Arab Emirates	0.873	0.993	0.978	0.096	0.017
International pooled data	0.841	0.995	0.985	0.076	0.012

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) are excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.74. Measurement invariance results from MGCFA for scale T4ADVDRT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.995	0.986	0.080	0.011	-	-	-	-
Equal loadings	0.990	0.988	0.073	0.023	-0.005	0.002	-0.006	0.012
Equal loadings and thresholds	0.949	0.974	0.108	0.116	-0.041	-0.014	0.034	0.092

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.75. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4ADVDRT

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G34D	0.735	-1.536	-0.005	1.178
TT4G34E	0.828	-1.728	-0.334	0.969
TT4G34F	0.800	-1.624	-0.283	1.003
TT4G34G	0.610	-2.000	-0.677	0.927

Source: OECD, TALIS 2024 database.

Student engagement in environmental and sustainability education (T4STESE)

Teachers answered four items measuring *Student engagement in environmental and sustainability education* (T4STESE). These items were TT4G39C, TT4G39D, TT4G39E and TT4G39G. Each item (described in Table 11.76) had four response categories: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher values on this scale reflect higher student engagement, as reported by teachers.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.77. The reliability coefficient is above 0.800 across all populations. As can be seen in Table 11.77, the scale T4STESE has a generally good model fit, with the CFI, TLI and SRMR all within the cut-off criteria for all participants. The RMSEA exceeds 0.100 in the ISCED level 2 population in Bulgaria, Chile, Costa Rica, Israel, Shanghai (China), Singapore and Viet Nam; in the ISCED level 1 population in Japan and Slovenia, and in the ISCED level 3 population in Türkiye.

Unclassified - Non classifié

Table 11.78 presents the results from the measurement invariance testing for T4STESE for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all indices. The degree of change between the equal loadings and the equal loadings and thresholds models is close the acceptable range for the CFI, TLI and RMSEA and exceeds the cut-off criterion for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.79 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4STESE. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.76. Items and response categories used in the construction of scale T4STESE

Scale or item	Question or item wording
T4STESE	To what extent can you do the following activities related to environmental sustainability?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G39C	Empower students to adopt pro-environmental behaviours (e.g. reduced consumption, ethical consumption, reusing, recycling)
TT4G39D	Empower students to participate in activities in favour of environmental protection (e.g. writing letters to newspapers, posting on social media, signing petitions, talking with peers and parents)
TT4G39E	Help students identify misconceptions and disinformation about environmental sustainability issues
TT4G39G	Help students translate their knowledge on climate change into actions

Source: OECD, TALIS 2024 database.

Table 11.77. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4STESE

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.877	0.996	0.989	0.070	0.012
Alberta (Canada)	0.944	1.000	0.999	0.026	0.004
Australia	0.934	0.999	0.998	0.058	0.005
Austria	0.873	0.997	0.990	0.073	0.011
Azerbaijan	0.827	0.993	0.978	0.087	0.014
Bahrain	0.911	0.998	0.993	0.087	0.010
Belgium	0.890	0.999	0.998	0.039	0.006
Flemish Community (Belgium)	0.880	0.999	0.998	0.038	0.007
French Community (Belgium)	0.888	0.996	0.987	0.093	0.015
Brazil	0.934	1.000	0.999	0.037	0.004
Bulgaria	0.929	0.996	0.988	**0.133**	0.013
Chile	0.948	0.997	0.990	**0.131**	0.014
Colombia	0.933	0.999	0.997	0.067	0.007
Costa Rica	0.947	0.996	0.987	**0.177**	0.013
Croatia	0.919	1.000	0.999	0.041	0.005
Cyprus	0.928	0.998	0.994	0.097	0.009
Czechia	0.879	1.000	0.999	0.025	0.004
Denmark	0.886	0.997	0.990	0.080	0.011

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Estonia	0.864	1.000	1.000	0.009	0.004
Finland	0.844	0.996	0.987	0.065	0.016
France	0.896	0.999	0.996	0.061	0.008
Hungary	0.906	1.000	1.000	0.000	0.002
Iceland	0.924	0.999	0.997	0.070	0.007
Israel	0.937	0.996	0.989	**0.135**	0.014
Italy	0.918	1.000	1.000	0.011	0.003
Japan	0.910	1.000	0.999	0.041	0.004
Kazakhstan	0.848	0.996	0.987	0.066	0.012
Korea	0.947	0.999	0.998	0.076	0.006
Kosovo	0.900	0.997	0.992	0.077	0.011
Latvia	0.881	1.000	0.999	0.024	0.005
Lithuania	0.890	1.000	1.000	0.000	0.001
Malta	0.931	0.999	0.998	0.068	0.006
Montenegro	0.942	1.000	0.999	0.038	0.003
Morocco	0.917	0.999	0.998	0.036	0.005
Netherlands	0.891	0.995	0.984	0.093	0.016
New Zealand	0.915	0.998	0.993	0.091	0.011
North Macedonia	0.924	0.998	0.995	0.083	0.008
Norway	0.890	0.999	0.997	0.044	0.007
Poland	0.916	1.000	1.000	0.010	0.003
Portugal	0.924	0.999	0.997	0.058	0.007
Romania	0.936	0.999	0.997	0.071	0.007
Saudi Arabia	0.927	0.999	0.997	0.065	0.005
Serbia	0.914	1.000	0.999	0.042	0.005
Shanghai (China)	0.955	0.998	0.995	**0.158**	0.007
Singapore	0.938	0.995	0.985	**0.163**	0.013
Slovak Republic	0.895	0.998	0.995	0.062	0.008
Slovenia	0.867	0.999	0.996	0.044	0.008
South Africa	0.928	0.999	0.997	0.063	0.007
Spain	0.922	0.997	0.992	0.083	0.010
Sweden	0.893	0.999	0.996	0.052	0.007
Türkiye	0.911	0.998	0.995	0.083	0.009
United Arab Emirates	0.947	0.999	0.996	0.062	0.006
United States	0.945	0.999	0.996	0.070	0.009
Uzbekistan	0.812	0.993	0.979	0.076	0.016
Viet Nam	0.887	0.986	0.958	**0.203**	0.023
International pooled data	0.923	0.999	0.998	0.041	0.004
ISCED level 1					
Australia	0.921	1.000	1.000	0.022	0.003
Belgium	0.860	0.997	0.991	0.069	0.012

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Flemish Community (Belgium)	0.848	0.994	0.983	0.091	0.016
French Community (Belgium)	0.861	0.997	0.991	0.068	0.014
Brazil	0.913	0.998	0.995	0.055	0.009
France	0.860	0.995	0.986	0.078	0.014
Japan	0.916	0.996	0.988	**0.118**	0.013
Korea	0.934	0.999	0.998	0.067	0.007
Morocco	0.884	0.999	0.998	0.029	0.006
Netherlands	0.881	0.996	0.989	0.092	0.018
New Zealand	0.901	0.999	0.997	0.047	0.008
Saudi Arabia	0.920	0.999	0.996	0.069	0.007
Slovenia	0.868	0.991	0.972	**0.126**	0.020
Spain	0.907	0.999	0.997	0.039	0.006
Türkiye	0.912	0.998	0.994	0.076	0.010
United Arab Emirates	0.939	0.998	0.994	0.078	0.008
International pooled data	0.917	0.999	0.998	0.048	0.005
ISCED level 3					
Croatia	0.938	0.999	0.997	0.078	0.006
Denmark	0.901	1.000	1.000	0.000	0.003
Flemish Community (Belgium)	0.876	0.999	0.996	0.053	0.008
Portugal	0.923	0.999	0.996	0.072	0.008
Saudi Arabia	0.935	0.998	0.995	0.095	0.007
Slovenia	0.902	0.999	0.996	0.055	0.007
Türkiye	0.918	0.998	0.993	**0.105**	0.010
United Arab Emirates	0.958	0.998	0.994	0.097	0.008
International pooled data	0.932	0.999	0.998	0.051	0.005

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.78. Measurement invariance results from MGCFA for scale T4STESE with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.998	0.994	0.080	0.008	-	-	-	-
Equal loadings	0.997	0.996	0.069	0.015	-0.002	0.002	-0.012	0.007
Equal loadings and thresholds	0.981	0.990	0.104	0.099	-0.015	-0.005	0.035	0.084

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.79. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4STESE

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G39C	0.836	-1.735	-0.490	0.566
TT4G39D	0.856	-1.159	-0.099	0.822
TT4G39E	0.890	-1.499	-0.341	0.720
TT4G39G	0.879	-1.376	-0.229	0.745

Source: OECD, TALIS 2024 database.

Confidence to teach about climate change (T4TCHCLC)

The scale of *Confidence to teach about climate change* (T4TCHCLC) was constructed from four items (TT4G40A, TT4G40B, TT4G40D and TT4G40E), which are described in Table 11.80. Teachers had to indicate their level of agreement with these four items, with the following available response categories: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher values on this scale reflect higher teacher confidence in teaching about climate change.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.81. The reliabilities for T4TCHCLC are generally high, mostly above 0.800 in all populations. In terms of model fit, the CFI indicates a good model fit across all populations, whereas the TLI does not reach the cut-off criterion only in the ISCED level 1 population in Slovenia. The RMSEA is greater than 0.100 in 17 of the ISCED level 2 populations, particularly in Hungary, Slovenia and Viet Nam; in 5 of the ISCED level 1 populations, particularly in Slovenia; and in the ISCED level 3 population in Saudi Arabia and Slovenia. The SRMR does not exceed the cut-off criterion in any of the populations.

Table 11.82 presents the results from the measurement invariance testing for T4TCHCLC for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA which is very close to the cut-off. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the RMSEA and SRMR and close to the cut-off criteria for the CFI and TLI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the TLI and RMSEA and exceeds the cut-off criteria for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.83 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4TCHCLC. All items show high loadings, except for item TT4G40E, which has a lower loading but is still within the acceptable range. Results by participating country/territory show a low loading for item TT4G40E in 20 ISCED level 2 participating countries/territories, particularly in Denmark, Finland and Norway; in 4 ISCED level 1 participating countries/territories (Belgium, the Flemish Community of Belgium, France and the Netherlands); and 3 ISCED level 3 participating countries/territories (Denmark, the Flemish Community of Belgium and Portugal).

Table 11.80. Items and response categories used in the construction of scale T4TCHCLC

Scale or item	Question or item wording
T4TCHCLC	Thinking about climate change, how strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G40A	I feel confident in my ability to answer students' questions about climate change.
TT4G40B	I have the resources I need to teach about climate change.
TT4G40D	I am comfortable providing instruction on climate change.
TT4G40E	My <school management team> encourages us to empower students to take action on climate change.

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.81. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4TCHCLC

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.889	0.997	0.991	0.084	0.014
Alberta (Canada)	0.862	0.993	0.980	**0.114**	0.021
Australia	0.831	0.992	0.976	**0.170**	0.029
Austria	0.773	0.993	0.978	0.088	0.021
Azerbaijan	0.781	0.998	0.995	0.032	0.007
Bahrain	0.884	0.991	0.972	**0.165**	0.019
Belgium	0.822	0.999	0.998	0.044	0.009
Flemish Community (Belgium)	0.822	0.998	0.994	0.073	0.015
French Community (Belgium)	0.826	1.000	0.999	0.037	0.007
Brazil	0.855	0.997	0.990	0.090	0.014
Bulgaria	0.839	0.995	0.984	0.092	0.015
Chile	0.845	0.998	0.995	0.048	0.014
Colombia	0.800	0.996	0.988	0.053	0.013
Costa Rica	0.832	0.995	0.986	0.084	0.017
Croatia	0.851	1.000	0.999	0.031	0.007
Cyprus	0.877	1.000	1.000	0.022	0.005
Czechia	0.838	0.999	0.997	0.056	0.010
Denmark	0.807	0.999	0.996	0.074	0.015
Estonia	0.826	0.993	0.979	**0.122**	0.021
Finland	0.819	0.998	0.993	**0.116**	0.020
France	0.824	0.998	0.994	0.084	0.016
Hungary	0.829	0.986	0.958	**0.171**	0.031
Iceland	0.799	0.995	0.986	**0.103**	0.020
Israel	0.877	1.000	1.000	0.000	0.002
Italy	0.840	0.999	0.996	0.069	0.011
Japan	0.841	0.999	0.998	0.066	0.011
Kazakhstan	0.803	0.989	0.968	0.089	0.020
Korea	0.875	0.992	0.977	**0.152**	0.018
Kosovo	0.864	0.991	0.973	**0.138**	0.022
Latvia	0.716	0.998	0.995	0.042	0.011
Lithuania	0.860	0.997	0.992	0.070	0.015
Malta	0.863	1.000	0.999	0.041	0.006
Montenegro	0.885	0.999	0.998	0.048	0.007
Morocco	0.857	0.993	0.980	0.082	0.017
Netherlands	0.817	1.000	1.001	0.000	0.004
New Zealand	0.829	0.985	0.956	**0.173**	0.031
North Macedonia	0.847	0.987	0.962	**0.146**	0.020
Norway	0.753	0.994	0.983	0.092	0.023

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.860	0.998	0.994	0.066	0.011
Portugal	0.845	0.999	0.998	0.057	0.011
Romania	0.856	1.000	0.999	0.024	0.005
Saudi Arabia	0.876	0.993	0.979	**0.123**	0.015
Serbia	0.866	0.994	0.983	**0.112**	0.014
Shanghai (China)	0.922	0.998	0.995	**0.101**	0.008
Singapore	0.862	0.995	0.986	**0.104**	0.018
Slovak Republic	0.849	0.996	0.987	0.080	0.014
Slovenia	0.842	0.977	0.931	**0.168**	0.031
South Africa	0.834	0.995	0.985	0.076	0.016
Spain	0.805	0.998	0.994	0.048	0.011
Sweden	0.836	1.000	1.000	0.019	0.006
Türkiye	0.853	1.000	1.000	0.018	0.004
United Arab Emirates	0.898	0.998	0.994	0.050	0.009
United States	0.850	0.996	0.987	0.086	0.020
Uzbekistan	0.827	0.994	0.982	0.084	0.014
Viet Nam	0.891	0.978	0.935	**0.273**	0.035
International pooled data	0.846	0.999	0.996	0.047	0.008
ISCED level 1					
Australia	0.858	0.993	0.979	**0.141**	0.024
Belgium	0.821	0.999	0.998	0.041	0.008
Flemish Community (Belgium)	0.792	0.997	0.992	0.062	0.013
French Community (Belgium)	0.845	1.000	1.000	0.020	0.005
Brazil	0.848	0.997	0.991	0.062	0.012
France	0.796	0.994	0.981	**0.112**	0.024
Japan	0.835	0.997	0.991	**0.101**	0.020
Korea	0.870	0.996	0.987	0.094	0.014
Morocco	0.801	0.994	0.982	0.060	0.015
Netherlands	0.760	0.961	**0.882**	**0.175**	0.035
New Zealand	0.835	0.996	0.988	0.070	0.016
Saudi Arabia	0.874	0.989	0.968	**0.157**	0.022
Slovenia	0.800	0.964	**0.892**	**0.183**	0.034
Spain	0.799	0.996	0.989	0.053	0.014
Türkiye	0.867	0.999	0.997	0.042	0.007
United Arab Emirates	0.876	0.994	0.981	0.099	0.017
International pooled data	0.844	0.999	0.997	0.036	0.006
ISCED level 3					
Croatia	0.877	1.000	0.999	0.035	0.006
Denmark	0.844	1.000	0.999	0.030	0.007
Flemish Community (Belgium)	0.806	0.997	0.992	0.080	0.017
Portugal	0.857	1.000	0.999	0.038	0.007

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.886	0.993	0.978	**0.140**	0.019
Slovenia	0.821	0.980	0.940	**0.167**	0.028
Türkiye	0.840	0.999	0.998	0.035	0.006
United Arab Emirates	0.906	0.997	0.991	0.078	0.015
International pooled data	0.862	0.999	0.998	0.035	0.006

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.82. Measurement invariance results from MGCFA for scale T4TCHCLC with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.996	0.987	0.101	0.015	-	-	-	-
Equal loadings	0.982	0.979	0.131	0.042	-0.013	-0.009	0.030	0.028
Equal loadings and thresholds	0.962	0.981	0.124	0.139	-0.020	0.002	-0.007	0.097

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.83. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4TCHCLC

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G40A	0.864	-1.924	-0.753	0.886
TT4G40B	0.850	-1.493	-0.182	1.116
TT4G40D	0.839	-1.529	-0.441	0.954
TT4G40E	0.524	-1.244	-0.325	1.087

Source: OECD, TALIS 2024 database.

Clarity of instruction (T4CLAIN)

The scale of *Clarity of instruction* (T4CLAIN) was measured by a set of four items (TT4G51A, TT4G51B, TT4G51C and TT4G51D). Teachers had to indicate the frequency with which they carried out different activities described in Table 11.84, using the following response categories: "Never or almost never", "Occasionally", "Frequently" and "Always". Higher values on this scale indicate a higher frequency of clarity of instruction activities.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.85. As can be seen, reliability for T4CLAIN is high in most participants, with none of them below the established cut-off criterion in any ISCED level. In terms of CFA model fit, the CFI and SRMR for T4CLAIN are all within the acceptable cut-off criteria in all populations. The TLI is acceptable in most countries or territories, except for 12 ISCED level 2 participants (Austria, Belgium, Czechia, Denmark, Finland, Iceland, Italy, the Netherlands, Norway, the Slovak Republic and Slovenia) and the ISCED level 1 population in Morocco. The RMSEA exceeds the cut-off criterion in 28 of the ISCED level 2 participants,

Unclassified - Non classifié

particularly in Finland and Italy; in 6 ISCED level 1 participants (Australia, Belgium, Brazil, the French Community of Belgium, Korea and the Netherlands) and in 5 ISCED level 3 participants (Croatia, Denmark, Portugal, Slovenia and Türkiye).

Table 11.86 presents the results from the measurement invariance testing for T4CLAIN for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the CFI, TLI and RMSEA. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the cut-off criteria for the TLI and RMSEA and exceeds the cut-off criteria for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.87 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4CLAIN. All items show high loadings. Results by participating country/territory indicate low loadings for item TT4G51A in the ISCED level 2 population in Austria, Belgium, Croatia, the Flemish Community of Belgium, Iceland and Morocco; in the ISCED level 1 population in Belgium; and in the ISCED levels 1 and 3 populations in the Flemish Community of Belgium. Item TT4G51D had also a low loading in the Netherlands (ISCED level 2).

Table 11.84. Items and response categories used in the construction of scale T4CLAIN

Scale or item	Question or item wording
T4CLAIN	Thinking about your teaching in the <target class>, how often do you do the following?
	Recoded response categories for scaling: 1=Never or almost never; 2=Occasionally; 3=Frequently; 4=Always
	Scale mid-point: 2.5
TT4G51A	I present a summary of recently learned content.
TT4G51B	I set goals at the beginning of a lesson or a unit.
TT4G51C	I explain what I expect the students to learn.
TT4G51D	I explain how new and old topics are related.

Source: OECD, TALIS 2024 database.

Table 11.85. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLAIN

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.804	0.992	0.975	0.059	0.019
Alberta (Canada)	0.826	0.971	0.913	**0.130**	0.031
Australia	0.820	0.986	0.957	**0.117**	0.027
Austria	0.668	0.937	**0.812**	**0.147**	0.043
Azerbaijan	0.772	0.992	0.975	0.061	0.015
Bahrain	0.850	0.993	0.979	0.070	0.018
Belgium	0.694	0.953	**0.859**	**0.117**	0.036
Flemish Community (Belgium)	0.687	0.979	0.937	0.075	0.024
French Community (Belgium)	0.756	0.940	**0.820**	**0.172**	0.044
Brazil	0.847	0.987	0.962	**0.108**	0.025
Bulgaria	0.795	0.989	0.966	0.076	0.024
Chile	0.813	0.975	0.925	0.091	0.033
Colombia	0.815	0.985	0.954	0.090	0.025

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Costa Rica	0.777	0.975	0.924	**0.111**	0.031
Croatia	0.764	0.987	0.962	0.077	0.022
Cyprus	0.836	0.986	0.957	**0.124**	0.030
Czechia	0.777	0.956	**0.869**	**0.165**	0.044
Denmark	0.715	0.958	**0.873**	**0.126**	0.033
Estonia	0.824	0.981	0.944	**0.130**	0.027
Finland	0.795	0.943	**0.828**	**0.220**	0.057
France	0.757	0.972	0.915	**0.118**	0.030
Hungary	0.805	0.996	0.988	0.050	0.013
Iceland	0.773	0.966	**0.897**	**0.178**	0.039
Israel	0.824	0.988	0.964	0.096	0.024
Italy	0.774	0.938	**0.815**	**0.195**	0.049
Japan	0.772	0.968	0.903	**0.136**	0.032
Kazakhstan	0.826	0.996	0.988	0.044	0.014
Korea	0.878	0.996	0.987	0.087	0.015
Kosovo	0.866	0.987	0.961	**0.104**	0.023
Latvia	0.835	0.996	0.987	0.053	0.016
Lithuania	0.838	0.995	0.985	0.073	0.019
Malta	0.800	0.987	0.962	**0.128**	0.028
Montenegro	0.856	0.988	0.963	**0.121**	0.024
Morocco	0.724	0.987	0.960	0.055	0.021
Netherlands	0.685	0.953	**0.858**	**0.117**	0.043
New Zealand	0.770	0.985	0.956	0.092	0.025
North Macedonia	0.868	0.991	0.972	**0.116**	0.023
Norway	0.707	0.928	**0.783**	**0.172**	0.057
Poland	0.824	0.987	0.962	0.077	0.022
Portugal	0.775	0.974	0.923	**0.113**	0.031
Romania	0.824	0.991	0.974	0.083	0.020
Saudi Arabia	0.934	0.999	0.997	0.051	0.007
Serbia	0.865	0.992	0.975	0.098	0.021
Shanghai (China)	0.924	0.998	0.995	**0.103**	0.011
Singapore	0.851	0.984	0.952	**0.157**	0.031
Slovak Republic	0.799	0.965	**0.896**	**0.161**	0.042
Slovenia	0.775	0.955	**0.865**	**0.163**	0.043
South Africa	0.832	0.993	0.978	0.069	0.018
Spain	0.782	0.971	0.913	0.100	0.033
Sweden	0.786	0.984	0.951	0.097	0.022
Türkiye	0.905	0.996	0.988	0.094	0.014
United Arab Emirates	0.856	0.995	0.985	0.050	0.020
United States	0.829	0.982	0.946	0.099	0.030
Uzbekistan	0.883	0.996	0.987	0.084	0.014

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Viet Nam	0.866	0.988	0.963	**0.142**	0.022
International pooled data	0.817	0.985	0.956	0.097	0.024
ISCED level 1					
Australia	0.841	0.991	0.972	**0.104**	0.022
Belgium	0.741	0.969	0.907	**0.131**	0.030
Flemish Community (Belgium)	0.754	0.989	0.967	0.081	0.018
French Community (Belgium)	0.777	0.975	0.926	**0.133**	0.033
Brazil	0.798	0.982	0.946	0.100	0.026
France	0.784	0.992	0.975	0.078	0.021
Japan	0.814	0.989	0.967	0.088	0.022
Korea	0.877	0.988	0.964	**0.140**	0.026
Morocco	0.718	0.961	**0.884**	0.088	0.034
Netherlands	0.802	0.997	0.990	0.053	0.016
New Zealand	0.783	0.988	0.964	0.090	0.027
Saudi Arabia	0.931	1.000	0.999	0.032	0.005
Slovenia	0.778	0.988	0.963	0.088	0.022
Spain	0.787	0.987	0.960	0.073	0.024
Türkiye	0.896	0.994	0.983	0.098	0.015
United Arab Emirates	0.864	0.998	0.993	0.040	0.016
International pooled data	0.823	0.990	0.969	0.090	0.021
ISCED level 3					
Croatia	0.783	0.984	0.951	**0.102**	0.027
Denmark	0.730	0.970	0.911	**0.105**	0.032
Flemish Community (Belgium)	0.643	0.970	0.909	0.090	0.027
Portugal	0.771	0.967	0.901	**0.131**	0.034
Saudi Arabia	0.931	0.998	0.995	0.067	0.010
Slovenia	0.787	0.973	0.918	**0.135**	0.032
Türkiye	0.884	0.992	0.976	**0.122**	0.020
United Arab Emirates	0.876	0.998	0.993	0.036	0.013
International pooled data	0.826	0.985	0.956	**0.103**	0.025

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.86. Measurement invariance results from MGCFA for scale T4CLAIN with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.986	0.959	0.115	0.026	-	-	-	-

Unclassified - Non classifié

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
Equal loadings	0.983	0.980	0.080	0.034	-0.003	0.021	-0.034	0.008
Equal loadings and thresholds	0.937	0.968	0.101	0.115	-0.046	-0.012	0.021	0.081

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.87. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CLAIN

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G51A	0.612	-2.048	-0.911	0.367
TT4G51B	0.783	-2.132	-1.112	-0.021
TT4G51C	0.833	-2.376	-1.402	-0.104
TT4G51D	0.729	-2.345	-1.256	0.053

Source: OECD, TALIS 2024 database.

Cognitive activation (T4COGAC)

Teachers answered four items measuring *Cognitive activation* (T4COGAC) practices. These items were TT4G51E, TT4G51F, TT4G51G and TT4G51H. Each item (described in Table 11.88) had four response categories: “Never or almost never”, “Occasionally”, “Frequently” and “Always”. Higher values on this scale indicate a higher frequency of cognitive activation practices.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.89. The reliabilities for T4COGAC are generally high, with values mostly above 0.700 across populations. As can be observed from Table 11.89, the CFI is within at least the acceptable range for most participants, apart from the ISCED level 2 population in the Netherlands and Sweden. The TLI, on the other hand, exceeds the cut-off criterion in approximately half of the participants in ISCED level 2 and in one-third each of the ISCED levels 1 and 3 participants. The RMSEA also exceeds the cut-off in most populations, particularly in Japan, Korea, the Netherlands, Portugal and Shanghai (China) for ISCED level 2; the Flemish Community of Belgium, Japan and Korea for ISCED level 1; and Portugal for ISCED level 3. The SRMR is within the cut-off criterion in all populations. Based on the single CFA model fit results, the scale T4COGAC works well across all populations except in the ISCED level 2 population in the Netherlands and Sweden, where the CFI, TLI and RMSEA do not meet the acceptable cut-off criteria.

Table 11.90 presents the results from the measurement invariance testing for T4COGAC for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the RMSEA and SRMR and close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all fit indices. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.91 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4COGAC. All items show high loadings, except item TT4G51E, whose loadings are within the acceptable range. Results by participating country/territory also show a low item loading for item TT4G51E in the ISCED level 2 population in Bulgaria, Kazakhstan and Lithuania, as well as in the ISCED level 1 population in Morocco. Item TT4G51G also has a low loading in the ISCED level 2 population in Belgium, Finland and Sweden and in the ISCED level 3 population in Denmark.

Unclassified - Non classifié

Table 11.88. Items and response categories used in the construction of scale T4COGAC

Scale or item	Question or item wording
T4COGAC	Thinking about your teaching in the <target class>, how often do you do the following?
	Recoded response categories for scaling: 1=Never or almost never; 2=Occasionally; 3=Frequently; 4=Always
	Scale mid-point: 2.5
TT4G51E	I present tasks for which there is no obvious solution.
TT4G51F	I give tasks that require students to think critically.
TT4G51G	I have students work in small groups to come up with a joint solution to a problem or task.
TT4G51H	I ask students to decide on their own procedures for solving complex tasks.

Source: OECD, TALIS 2024 database.

Table 11.89. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4COGAC

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.793	0.984	0.951	**0.105**	0.025
Alberta (Canada)	0.751	0.993	0.979	0.046	0.017
Australia	0.770	0.995	0.985	0.056	0.012
Austria	0.706	0.967	0.902	**0.111**	0.029
Azerbaijan	0.743	0.976	0.927	**0.105**	0.024
Bahrain	0.851	0.994	0.982	0.091	0.017
Belgium	0.707	0.951	**0.854**	**0.143**	0.035
Flemish Community (Belgium)	0.749	0.960	**0.879**	**0.160**	0.038
French Community (Belgium)	0.650	0.961	**0.884**	**0.101**	0.027
Brazil	0.710	0.966	**0.898**	**0.110**	0.032
Bulgaria	0.689	0.957	**0.871**	**0.123**	0.034
Chile	0.791	0.930	**0.789**	**0.178**	0.044
Colombia	0.725	0.953	**0.860**	**0.117**	0.031
Costa Rica	0.784	0.985	0.954	0.086	0.019
Croatia	0.700	0.944	**0.833**	**0.136**	0.037
Cyprus	0.752	0.988	0.963	0.080	0.019
Czechia	0.662	0.959	**0.878**	**0.103**	0.029
Denmark	0.789	0.962	**0.885**	**0.160**	0.033
Estonia	0.720	0.956	**0.869**	**0.134**	0.032
Finland	0.737	0.981	0.942	**0.102**	0.025
France	0.661	0.900	**0.700**	**0.181**	0.045
Hungary	0.741	0.944	**0.832**	**0.165**	0.038
Iceland	0.711	0.959	**0.877**	**0.142**	0.030
Israel	0.795	0.954	**0.861**	**0.194**	0.045
Italy	0.721	0.953	**0.860**	**0.153**	0.034
Japan	0.788	0.922	**0.765**	**0.276**	0.058
Kazakhstan	0.701	0.966	**0.899**	**0.101**	0.031

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Korea	0.811	0.948	**0.843**	**0.245**	0.046
Kosovo	0.775	0.984	0.952	0.097	0.025
Latvia	0.724	0.966	**0.897**	**0.110**	0.028
Lithuania	0.689	0.995	0.986	0.038	0.012
Malta	0.802	0.980	0.939	**0.146**	0.027
Montenegro	0.767	0.967	0.902	**0.152**	0.029
Morocco	0.759	0.963	**0.888**	**0.119**	0.035
Netherlands	0.748	**0.891**	**0.672**	**0.225**	0.051
New Zealand	0.719	0.996	0.988	0.037	0.012
North Macedonia	0.790	0.996	0.987	0.058	0.013
Norway	0.728	0.952	**0.855**	**0.148**	0.037
Poland	0.768	0.963	**0.889**	**0.128**	0.037
Portugal	0.794	0.945	**0.834**	**0.219**	0.045
Romania	0.743	0.978	0.934	0.096	0.026
Saudi Arabia	0.875	0.992	0.975	**0.139**	0.024
Serbia	0.826	0.973	0.919	**0.168**	0.029
Shanghai (China)	0.865	0.982	0.946	**0.226**	0.032
Singapore	0.839	0.987	0.961	**0.122**	0.023
Slovak Republic	0.734	0.991	0.974	0.060	0.014
Slovenia	0.696	0.953	**0.860**	**0.127**	0.037
South Africa	0.818	0.989	0.968	0.095	0.023
Spain	0.746	0.953	**0.859**	**0.130**	0.035
Sweden	0.605	**0.899**	**0.698**	**0.124**	0.035
Türkiye	0.841	0.998	0.995	0.049	0.010
United Arab Emirates	0.826	0.997	0.992	0.037	0.011
United States	0.771	1.000	1.005	0.000	0.004
Uzbekistan	0.850	0.998	0.994	0.049	0.010
Viet Nam	0.810	0.993	0.978	0.091	0.015
International pooled data	0.778	0.978	0.934	**0.112**	0.025
ISCED level 1					
Australia	0.819	0.993	0.978	0.087	0.016
Belgium	0.789	0.951	**0.853**	**0.195**	0.044
Flemish Community (Belgium)	0.807	0.946	**0.839**	**0.235**	0.052
French Community (Belgium)	0.770	0.965	**0.895**	**0.149**	0.036
Brazil	0.728	0.972	0.916	0.097	0.028
France	0.726	0.957	**0.871**	**0.132**	0.033
Japan	0.817	0.952	**0.855**	**0.221**	0.043
Korea	0.854	0.977	0.932	**0.200**	0.042
Morocco	0.715	0.946	**0.839**	**0.137**	0.041
Netherlands	0.849	0.980	0.939	**0.160**	0.031
New Zealand	0.801	0.999	0.996	0.036	0.011

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.876	0.992	0.976	**0.131**	0.024
Slovenia	0.767	0.980	0.939	**0.111**	0.026
Spain	0.805	0.969	0.906	**0.121**	0.031
Türkiye	0.865	0.998	0.995	0.059	0.010
United Arab Emirates	0.792	0.997	0.990	0.044	0.014
International pooled data	0.809	0.979	0.938	**0.129**	0.026
ISCED level 3					
Croatia	0.710	0.969	0.906	**0.111**	0.026
Denmark	0.716	0.985	0.955	0.079	0.022
Flemish Community (Belgium)	0.752	0.964	**0.892**	**0.149**	0.032
Portugal	0.789	0.939	**0.816**	**0.230**	0.046
Saudi Arabia	0.868	0.990	0.970	**0.155**	0.027
Slovenia	0.733	0.948	**0.844**	**0.159**	0.039
Türkiye	0.840	0.997	0.990	0.077	0.013
United Arab Emirates	0.825	0.995	0.985	0.057	0.018
International pooled data	0.817	0.982	0.947	**0.128**	0.023

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.90. Measurement invariance results from MGCFA for scale T4COGAC with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.975	0.925	0.132	0.028	-	-	-	-
Equal loadings	0.965	0.958	0.099	0.038	-0.010	0.033	-0.033	0.009
Equal loadings and thresholds	0.812	0.904	0.149	0.162	-0.153	-0.053	0.050	0.124

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.91. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4COGAC

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G51E	0.588	-0.736	0.229	1.154
TT4G51F	0.729	-1.765	-0.428	0.900
TT4G51G	0.701	-1.593	-0.145	1.089
TT4G51H	0.746	-1.355	-0.027	1.156

Source: OECD, TALIS 2024 database.

Classroom management (T4CLASM)

The scale of *Classroom management (T4CLASM)* was measured by a set of four items (TT4G51I, TT4G51J, TT4G51K and TT4G51L). Teachers had to indicate the frequency with which they carried out

Unclassified - Non classifié

different classroom management practices as described in Table 11.92, using the following response categories: “Never or almost never”, “Occasionally”, “Frequently” and “Always”. Higher values on this scale indicate a higher frequency of classroom management practices.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.93. The reliabilities for T4CLASM are high in all populations, with values mostly above 0.800. As can be observed in Table 11.93, the CFI for T4CLASM are all within the acceptable cut-off criterion for all participants. The TLI exceeds the cut-off criterion only in the ISCED level 2 population in Kazakhstan. The RMSEA of most participants is high, particularly in the ISCED level 2 population in Montenegro, North Macedonia, Norway and Serbia, as well as in the ISCED level 1 population in Korea and the ISCED level 3 population in Croatia. The SRMR is below 0.050 in all populations.

Table 11.94 presents the results from the measurement invariance testing for T4CLASM for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR and close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and exceeds the cut-off criteria for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.95 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4CLASM. All items show high loadings. Results by participating country/territory indicate low loadings for item TT4G51L in Portugal (ISCED levels 2 and 3).

Table 11.92. Items and response categories used in the construction of scale T4CLASM

Scale or item	Question or item wording
T4CLASM	Thinking about your teaching in the <target class>, how often do you do the following?
	Recoded response categories for scaling: 1=Never or almost never; 2=Occasionally; 3=Frequently; 4=Always
	Scale mid-point: 2.5
TT4G51I	I tell students to follow classroom rules.
TT4G51J	I tell students to listen to what I say.
TT4G51K	I calm students who are disruptive.
TT4G51L	When the lesson begins, I tell students to quieten down quickly.

Source: OECD, TALIS 2024 database.

Table 11.93. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLASM

Participating country/territory	Reliability	CFA model fit			
	Cronbach’s alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.877	0.986	0.958	**0.129**	0.030
Alberta (Canada)	0.883	0.999	0.997	0.041	0.008
Australia	0.888	0.996	0.989	**0.101**	0.014
Austria	0.911	1.000	0.999	0.040	0.006
Azerbaijan	0.820	0.972	0.917	**0.158**	0.035
Bahrain	0.937	0.995	0.985	**0.117**	0.015
Belgium	0.862	0.995	0.986	**0.115**	0.025
Flemish Community (Belgium)	0.856	0.999	0.998	0.048	0.011
French Community (Belgium)	0.897	0.994	0.982	**0.111**	0.020

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Brazil	0.861	0.995	0.985	0.070	0.014
Bulgaria	0.888	0.997	0.992	0.075	0.013
Chile	0.897	0.992	0.976	**0.102**	0.023
Colombia	0.865	0.975	0.925	**0.142**	0.025
Costa Rica	0.892	0.991	0.972	**0.110**	0.017
Croatia	0.914	0.992	0.975	**0.180**	0.026
Cyprus	0.891	0.994	0.982	**0.115**	0.020
Czechia	0.873	0.987	0.962	**0.167**	0.024
Denmark	0.928	0.996	0.987	**0.167**	0.019
Estonia	0.914	0.996	0.988	**0.153**	0.021
Finland	0.923	0.997	0.992	**0.121**	0.014
France	0.896	0.996	0.988	**0.107**	0.016
Hungary	0.897	0.989	0.966	**0.152**	0.022
Iceland	0.842	1.000	1.001	0.000	0.003
Israel	0.882	0.987	0.960	**0.144**	0.028
Italy	0.871	0.993	0.978	**0.124**	0.020
Japan	0.931	0.995	0.986	**0.153**	0.016
Kazakhstan	0.807	0.963	**0.889**	**0.173**	0.047
Korea	0.916	0.992	0.977	**0.166**	0.021
Kosovo	0.887	0.982	0.945	**0.155**	0.028
Latvia	0.815	0.980	0.940	**0.119**	0.033
Lithuania	0.930	0.992	0.977	**0.174**	0.022
Malta	0.886	0.993	0.978	**0.141**	0.017
Montenegro	0.885	0.976	0.927	**0.274**	0.046
Morocco	0.855	0.988	0.965	0.090	0.027
Netherlands	0.849	0.999	0.996	0.045	0.015
New Zealand	0.887	0.996	0.988	0.089	0.014
North Macedonia	0.883	0.973	0.919	**0.234**	0.039
Norway	0.928	0.989	0.968	**0.227**	0.020
Poland	0.921	0.991	0.972	**0.152**	0.030
Portugal	0.790	0.999	0.998	0.034	0.010
Romania	0.903	0.984	0.953	**0.164**	0.033
Saudi Arabia	0.920	0.995	0.984	**0.112**	0.016
Serbia	0.905	0.988	0.964	**0.209**	0.029
Shanghai (China)	0.923	0.998	0.993	**0.113**	0.010
Singapore	0.889	0.996	0.988	0.099	0.015
Slovak Republic	0.928	0.992	0.976	**0.199**	0.021
Slovenia	0.861	0.994	0.983	0.099	0.018
South Africa	0.889	0.989	0.966	**0.125**	0.025
Spain	0.880	0.998	0.994	0.067	0.014
Sweden	0.916	0.998	0.993	0.100	0.014
Türkiye	0.887	0.999	0.996	0.060	0.010

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
United Arab Emirates	0.929	0.998	0.995	0.045	0.009
United States	0.907	0.999	0.996	0.044	0.010
Uzbekistan	0.917	0.990	0.970	**0.167**	0.021
Viet Nam	0.826	1.000	0.999	0.024	0.006
International pooled data	0.899	0.991	0.973	**0.129**	0.019
ISCED level 1					
Australia	0.893	0.996	0.989	0.100	0.015
Belgium	0.862	0.990	0.970	**0.126**	0.026
Flemish Community (Belgium)	0.866	0.995	0.985	**0.102**	0.020
French Community (Belgium)	0.872	0.992	0.975	**0.103**	0.021
Brazil	0.819	0.996	0.988	0.056	0.017
France	0.892	0.997	0.992	0.080	0.014
Japan	0.923	0.991	0.973	**0.181**	0.024
Korea	0.924	0.992	0.975	**0.212**	0.022
Morocco	0.870	0.995	0.985	0.055	0.015
Netherlands	0.907	0.998	0.993	0.080	0.015
New Zealand	0.884	0.998	0.994	0.074	0.013
Saudi Arabia	0.936	0.994	0.983	**0.118**	0.015
Slovenia	0.873	0.997	0.992	0.070	0.011
Spain	0.876	1.000	0.999	0.022	0.006
Türkiye	0.897	1.000	0.999	0.020	0.004
United Arab Emirates	0.926	0.994	0.981	0.097	0.017
International pooled data	0.898	0.995	0.985	0.092	0.015
ISCED level 3					
Croatia	0.912	0.988	0.965	**0.231**	0.032
Denmark	0.916	0.994	0.982	**0.152**	0.018
Flemish Community (Belgium)	0.866	0.996	0.989	**0.111**	0.018
Portugal	0.793	0.989	0.968	**0.121**	0.028
Saudi Arabia	0.920	0.996	0.988	0.093	0.014
Slovenia	0.884	0.990	0.970	**0.157**	0.023
Türkiye	0.894	0.999	0.997	0.057	0.007
United Arab Emirates	0.930	0.996	0.989	0.079	0.014
International pooled data	0.917	0.995	0.986	**0.130**	0.016

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.94. Measurement invariance results from MGCFA for scale T4CLASM with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.993	0.978	0.136	0.021	-	-	-	-
Equal loadings	0.982	0.978	0.136	0.038	-0.011	0.000	-0.000	0.017
Equal loadings and thresholds	0.961	0.980	0.130	0.127	-0.021	0.002	-0.006	0.089

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.95. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CLASM

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G51I	0.852	-1.873	-0.905	-0.023
TT4G51J	0.914	-1.823	-0.785	0.053
TT4G51K	0.838	-1.682	-0.641	0.147
TT4G51L	0.748	-1.310	-0.439	0.323

Source: OECD, TALIS 2024 database.

Use of digital resources and tools for whole class instruction (T4DRTWCI)

Teachers answered four items targeting their *Use of digital resources and tools for whole class instruction* (T4DRTWCI). These items were TT4G52A, TT4G52E, TT4G52G and TT4G52K. Each item (described in Table 11.96) had four response categories: “Never or almost never”, “Occasionally”, “Frequently” and “Always”. Higher values on this scale indicate a higher use of digital resources and tools for whole class instruction.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.97. The reliabilities for T4DRTWCI are generally high (above 0.700 in most countries or territories), except for the ISCED level 2 population in Norway. As can be seen in Table 11.97, the CFI meets the cut-off criterion for all participants. This is also mostly the case for the TLI, except for Finland (ISCED level 2). The RMSEA exceeds the cut-off in the ISCED level 2 population in Bahrain, Costa Rica, Finland, Japan, Lithuania, Saudi Arabia, Shanghai (China) and Singapore; in the ISCED level 1 population in Korea and Saudi Arabia; and in the ISCED level 3 population in Saudi Arabia. The SRMR meets the cut-off criterion in all populations.

Table 11.98 presents the results from the measurement invariance testing for T4DRTWCI for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the RMSEA and SRMR and close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all fit indices. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.99 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4DRTWCI. All items show high loadings, with the exception of item TT4G52A, whose loading falls within the acceptable range. Results by participating country/territory show a low item loading for item TT4G52A in the ISCED level 2 population in Malta; in the ISCED level 1 population in France, the Netherlands and Slovenia; and in the ISCED level 3 population in the Flemish Community of Belgium. Item

Unclassified - Non classifié

TT4G52E also has a low loading in Czechia, Finland and Norway (ISCED level 2) and in Denmark (ISCED level 3).

Table 11.96. Items and response categories used in the construction of scale T4DRTWCI

Scale or item	Question or item wording
T4DRTWCI	Thinking about your lessons in the <target class>, how often do you perform the following tasks?
	Recoded response categories for scaling: 1=Never or almost never; 2=Occasionally; 3=Frequently; 4=Always
	Scale mid-point: 2.5
TT4G52A	Use <digital resources and tools> to present information through direct instruction
TT4G52E	Use <digital resources and tools> to enable collaboration with other classrooms, schools or experts outside of this school
TT4G52G	Support collaboration among students using <digital resources and tools>
TT4G52K	Give students problems that can only be solved by using <digital resources and tools>

Source: OECD, TALIS 2024 database.

Table 11.97. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4DRTWCI

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.768	0.996	0.987	0.050	0.012
Alberta (Canada)	0.783	1.000	0.999	0.007	0.009
Australia	0.714	0.997	0.992	0.033	0.011
Austria	0.773	0.987	0.962	0.084	0.023
Azerbaijan	0.870	1.000	0.999	0.022	0.004
Bahrain	0.815	0.988	0.965	**0.105**	0.021
Belgium	0.754	0.991	0.973	0.054	0.018
Flemish Community (Belgium)	0.732	0.992	0.976	0.051	0.018
French Community (Belgium)	0.726	0.997	0.991	0.031	0.013
Brazil	0.832	0.995	0.984	0.069	0.015
Bulgaria	0.767	0.993	0.979	0.060	0.018
Chile	0.791	0.994	0.981	0.053	0.017
Colombia	0.824	0.992	0.977	0.075	0.020
Costa Rica	0.836	0.979	0.937	**0.130**	0.029
Croatia	0.796	1.000	0.999	0.015	0.006
Cyprus	0.785	0.996	0.987	0.058	0.016
Czechia	0.675	0.988	0.963	0.060	0.017
Denmark	0.741	0.991	0.972	0.068	0.019
Estonia	0.763	0.989	0.967	0.077	0.019
Finland	0.685	0.920	**0.761**	**0.169**	0.056
France	0.733	0.996	0.988	0.037	0.013
Hungary	0.766	0.997	0.990	0.044	0.011
Iceland	0.858	1.000	1.001	0.000	0.004
Israel	0.796	0.998	0.994	0.035	0.010
Italy	0.743	0.989	0.968	0.072	0.019

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Japan	0.824	0.989	0.967	**0.124**	0.027
Kazakhstan	0.797	0.995	0.984	0.054	0.013
Korea	0.833	0.997	0.990	0.074	0.016
Kosovo	0.804	0.988	0.963	0.096	0.020
Latvia	0.755	0.990	0.971	0.065	0.018
Lithuania	0.762	0.978	0.934	**0.101**	0.024
Malta	0.747	0.996	0.987	0.059	0.015
Montenegro	0.842	0.999	0.996	0.040	0.008
Morocco	0.820	0.985	0.955	0.067	0.021
Netherlands	0.716	0.998	0.993	0.024	0.015
New Zealand	0.732	0.987	0.960	0.077	0.025
North Macedonia	0.830	0.997	0.990	0.058	0.010
Norway	**0.599**	0.993	0.980	0.036	0.018
Poland	0.768	0.993	0.978	0.059	0.021
Portugal	0.807	0.990	0.969	0.092	0.024
Romania	0.781	0.996	0.988	0.048	0.012
Saudi Arabia	0.839	0.986	0.959	**0.126**	0.026
Serbia	0.829	0.998	0.994	0.044	0.009
Shanghai (China)	0.803	0.990	0.969	**0.132**	0.029
Singapore	0.789	0.979	0.938	**0.120**	0.029
Slovak Republic	0.764	0.988	0.963	0.085	0.023
Slovenia	0.728	0.990	0.971	0.064	0.020
South Africa	0.869	1.000	1.001	0.000	0.003
Spain	0.761	0.994	0.981	0.044	0.016
Sweden	0.673	0.970	0.910	0.084	0.031
Türkiye	0.810	0.998	0.995	0.042	0.009
United Arab Emirates	0.829	0.980	0.939	0.093	0.024
United States	0.775	0.986	0.958	0.073	0.024
Uzbekistan	0.877	0.999	0.998	0.037	0.005
Viet Nam	0.867	0.996	0.989	0.092	0.013
International pooled data	0.802	0.995	0.986	0.057	0.014
ISCED level 1					
Australia	0.765	0.999	0.998	0.022	0.009
Belgium	0.750	0.999	0.996	0.023	0.010
Flemish Community (Belgium)	0.718	1.000	1.001	0.000	0.007
French Community (Belgium)	0.766	0.997	0.992	0.029	0.013
Brazil	0.820	1.000	1.002	0.000	0.002
France	0.645	0.999	0.997	0.012	0.018
Japan	0.816	0.994	0.982	0.077	0.018
Korea	0.791	0.990	0.971	**0.101**	0.026
Morocco	0.765	0.995	0.986	0.040	0.016

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Netherlands	0.778	1.000	1.013	0.000	0.006
New Zealand	0.733	1.000	1.007	0.000	0.004
Saudi Arabia	0.838	0.986	0.957	**0.128**	0.031
Slovenia	0.715	1.000	1.002	0.000	0.004
Spain	0.779	0.990	0.970	0.059	0.020
Türkiye	0.812	0.999	0.998	0.027	0.008
United Arab Emirates	0.789	0.994	0.981	0.061	0.017
International pooled data	0.838	0.999	0.997	0.035	0.008
ISCED level 3					
Croatia	0.800	0.993	0.978	0.077	0.016
Denmark	0.681	0.997	0.990	0.032	0.013
Flemish Community (Belgium)	0.669	0.979	0.938	0.073	0.025
Portugal	0.806	0.992	0.976	0.082	0.020
Saudi Arabia	0.836	0.978	0.935	**0.158**	0.031
Slovenia	0.765	0.994	0.983	0.055	0.015
Türkiye	0.819	0.999	0.998	0.030	0.006
United Arab Emirates	0.813	0.990	0.970	0.066	0.021
International pooled data	0.822	0.998	0.993	0.046	0.011

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.98. Measurement invariance results from MGCFA for scale T4DRTWCI with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.992	0.977	0.077	0.018	-	-	-	-
Equal loadings	0.980	0.976	0.079	0.034	-0.012	-0.001	0.002	0.016
Equal loadings and thresholds	0.839	0.918	0.146	0.147	-0.141	-0.058	0.067	0.114

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.99. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4DRTWCI

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G52A	0.593	-1.544	-0.395	0.799
TT4G52E	0.717	-0.291	0.611	1.461
TT4G52G	0.855	-1.023	0.126	1.209
TT4G52K	0.702	-0.399	0.735	1.630

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Use of digital resources and tools for individualised instruction and assessment (T4DRTIIA)

Teachers answered four items targeting their *Use of digital resources and tools for individualised instruction and assessment* (T4DRTIIA). These items were TT4G52C, TT4G52H, TT4G52I and TT4G52J. Each item (described in Table 11.100) had four response categories: "Never or almost never", "Occasionally", "Frequently" and "Always". Higher values on this scale indicate a higher use of digital resources and tools for individualised instruction and assessment.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.101. The scale T4DRTIIA has high reliability (above 0.700) in all populations. In terms of model fit, the CFI and SRMR are both acceptable in all populations. The TLI is acceptable for most participants, except for Hungary (ISCED level 2). The RMSEA is also acceptable for most participants, except for the ISCED levels 1 and 2 populations in Australia, and the ISCED level 2 population in Belgium, Bulgaria, Croatia, Finland, Hungary, Malta, Montenegro, New Zealand, Norway, Singapore and the Slovak Republic.

Table 11.102 presents the results from the measurement invariance testing for T4DRTIIA for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the acceptable range for the TLI and RMSEA and exceeds the cut-off criteria for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.103 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4DRTIIA. All items show high loadings. Results by participating country/territory show a low item loading for item TT4G52C in Serbia (ISCED level 2) and France (ISCED level 1).

Table 11.100. Items and response categories used in the construction of scale T4DRTIIA

Scale or item	Question or item wording
T4DRTIIA	Thinking about your lessons in the <target class>, how often do you perform the following tasks?
	Recoded response categories for scaling: 1=Never or almost never; 2=Occasionally; 3=Frequently; 4=Always
	Scale mid-point: 2.5
TT4G52C	Provide digital feedback on student work
TT4G52H	Use <digital resources and tools> that provide personalised learning paths for students
TT4G52I	Use <digital resources and tools> to assess student learning
TT4G52J	Provide <digital resources and tools> that allow students to plan and monitor their own learning

Source: OECD, TALIS 2024 database.

Table 11.101. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4DRTIIA

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.840	0.997	0.991	0.061	0.011
Alberta (Canada)	0.882	0.998	0.994	0.044	0.007
Australia	0.822	0.988	0.964	**0.123**	0.021
Austria	0.846	0.993	0.979	0.090	0.016
Azerbaijan	0.911	1.000	0.999	0.039	0.004
Bahrain	0.899	0.999	0.997	0.063	0.008

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Belgium	0.828	0.986	0.958	**0.101**	0.018
Flemish Community (Belgium)	0.799	0.992	0.975	0.078	0.015
French Community (Belgium)	0.807	0.997	0.991	0.041	0.010
Brazil	0.896	0.998	0.993	0.077	0.010
Bulgaria	0.818	0.991	0.973	0.100	0.018
Chile	0.890	0.998	0.994	0.058	0.011
Colombia	0.896	0.999	0.997	0.042	0.007
Costa Rica	0.863	0.999	0.996	0.044	0.007
Croatia	0.846	0.990	0.971	**0.107**	0.018
Cyprus	0.886	1.000	1.000	0.012	0.004
Czechia	0.801	1.000	0.999	0.017	0.004
Denmark	0.836	0.998	0.994	0.050	0.010
Estonia	0.789	0.990	0.969	0.096	0.019
Finland	0.769	0.970	0.909	**0.133**	0.030
France	0.774	1.000	1.002	0.000	0.004
Hungary	0.820	0.965	**0.894**	**0.218**	0.037
Iceland	0.821	0.998	0.993	0.054	0.011
Israel	0.880	0.998	0.995	0.061	0.010
Italy	0.824	0.999	0.996	0.038	0.007
Japan	0.874	1.000	1.000	0.018	0.004
Kazakhstan	0.864	1.000	1.000	0.013	0.003
Korea	0.928	0.999	0.998	0.061	0.006
Kosovo	0.907	1.000	0.999	0.024	0.004
Latvia	0.821	0.995	0.985	0.070	0.014
Lithuania	0.864	0.996	0.988	0.075	0.011
Malta	0.868	0.996	0.987	**0.101**	0.014
Montenegro	0.848	0.991	0.974	**0.140**	0.019
Morocco	0.904	1.000	0.999	0.016	0.004
Netherlands	0.794	0.999	0.997	0.021	0.009
New Zealand	0.831	0.989	0.968	**0.109**	0.020
North Macedonia	0.905	1.000	1.000	0.023	0.003
Norway	0.770	0.970	0.911	**0.134**	0.031
Poland	0.802	0.990	0.969	0.082	0.020
Portugal	0.823	0.999	0.996	0.043	0.008
Romania	0.889	0.999	0.998	0.036	0.005
Saudi Arabia	0.929	1.000	1.000	0.000	0.002
Serbia	0.789	0.994	0.983	0.086	0.020
Shanghai (China)	0.927	0.999	0.997	0.088	0.007
Singapore	0.888	0.992	0.976	**0.132**	0.019
Slovak Republic	0.797	0.982	0.947	**0.132**	0.026
Slovenia	0.803	0.997	0.992	0.047	0.011

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
South Africa	0.930	1.000	0.999	0.040	0.005
Spain	0.839	0.999	0.997	0.030	0.007
Sweden	0.799	1.000	1.000	0.000	0.004
Türkiye	0.905	1.000	1.000	0.000	0.002
United Arab Emirates	0.912	1.000	1.001	0.000	0.001
United States	0.852	0.995	0.984	0.071	0.014
Uzbekistan	0.896	1.000	0.999	0.027	0.004
Viet Nam	0.918	1.000	1.000	0.030	0.004
International pooled data	0.875	0.999	0.997	0.044	0.006
ISCED level 1					
Australia	0.859	0.993	0.978	**0.106**	0.017
Belgium	0.804	0.994	0.983	0.056	0.014
Flemish Community (Belgium)	0.744	0.985	0.954	0.081	0.021
French Community (Belgium)	0.840	1.000	1.003	0.000	0.002
Brazil	0.864	0.999	0.996	0.040	0.008
France	0.744	1.000	1.004	0.000	0.003
Japan	0.863	1.000	0.999	0.025	0.005
Korea	0.929	1.000	0.999	0.033	0.003
Morocco	0.888	0.999	0.998	0.025	0.006
Netherlands	0.777	1.000	1.006	0.000	0.013
New Zealand	0.843	0.998	0.994	0.054	0.010
Saudi Arabia	0.922	1.000	0.999	0.038	0.005
Slovenia	0.844	1.000	1.000	0.006	0.004
Spain	0.846	1.000	1.000	0.010	0.004
Türkiye	0.898	0.999	0.997	0.054	0.007
United Arab Emirates	0.884	1.000	1.001	0.000	0.001
International pooled data	0.896	1.000	0.999	0.034	0.004
ISCED level 3					
Croatia	0.842	0.997	0.991	0.068	0.011
Denmark	0.769	0.989	0.966	0.086	0.022
Flemish Community (Belgium)	0.791	0.999	0.997	0.028	0.008
Portugal	0.832	0.995	0.984	0.084	0.014
Saudi Arabia	0.931	1.000	0.999	0.041	0.004
Slovenia	0.846	0.999	0.998	0.034	0.007
Türkiye	0.911	0.999	0.997	0.062	0.007
United Arab Emirates	0.901	1.000	1.000	0.000	0.003
International pooled data	0.885	0.999	0.998	0.041	0.006

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.102. Measurement invariance results from MGCFA for scale T4DRTIIA with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.997	0.992	0.076	0.011	-	-	-	-
Equal loadings	0.993	0.992	0.075	0.022	-0.004	0.000	-0.001	0.011
Equal loadings and thresholds	0.967	0.983	0.108	0.102	-0.026	-0.009	0.033	0.080

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.103. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4DRTIIA

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G52C	0.704	-0.784	0.304	1.241
TT4G52H	0.829	-0.873	0.249	1.321
TT4G52I	0.803	-0.968	0.074	1.077
TT4G52J	0.873	-0.644	0.371	1.315

Source: OECD, TALIS 2024 database.

Perceived classroom disruption (T4CLSDIS)

The scale of *Perceived classroom disruption* (T4CLSDIS) was measured by a set of four items (TT4G54A, TT4G54B, TT4G54C and TT4G54D), described in Table 11.104. For each of these items, teachers had to indicate the extent to which certain situations occur in the target class, using the following response categories: “Not at all”, “To some extent”, “Quite a bit” and “A lot”. Higher scores on this scale reflect greater perceived classroom disruption.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.105. The reliabilities for T4CLSDIS are high (above 0.800) in all populations. As can be observed from Table 11.105, the CFI, TLI and SRMR for T4CLSDIS are all within the acceptable cut-off criteria for all populations. However, the RMSEA exceeds the cut-off criterion in 18 of the ISCED level 2 participants, particularly in Iceland, where it is greater than 0.200. It also exceeds the cut-off in the ISCED level 1 population in Belgium, the Flemish Community of Belgium, Korea and Türkiye, and the ISCED level 3 population in Croatia, the Flemish Community of Belgium and Türkiye.

Table 11.106 presents the results from the measurement invariance testing for T4CLSDIS for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for all indices but for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.107 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4SECLS. All items show high loadings for the pooled model as well as in single countries/territories.

Unclassified - Non classifié

Table 11.104. Items and response categories used in the construction of scale T4SECLS

Scale or item	Question or item wording
T4CLSDIS	To what extent do these situations happen in the <target class>?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G54A	There is much disruptive noise and disorder.
TT4G54B	I have to wait a long time for students to quiet down.
TT4G54C	Many students don't start working for a long time after the lesson begins.
TT4G54D	I lose quite a lot of time because students interrupt the lesson.

Source: OECD, TALIS 2024 database.

Table 11.105. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLSDIS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.911	0.994	0.981	0.095	0.022
Alberta (Canada)	0.949	0.999	0.996	0.082	0.012
Australia	0.961	0.999	0.998	0.095	0.008
Austria	0.955	0.999	0.996	**0.112**	0.010
Azerbaijan	0.892	1.000	1.000	0.000	0.002
Bahrain	0.922	0.994	0.983	**0.132**	0.015
Belgium	0.950	0.998	0.995	**0.109**	0.010
Flemish Community (Belgium)	0.959	0.999	0.998	0.078	0.006
French Community (Belgium)	0.938	0.997	0.992	**0.119**	0.014
Brazil	0.941	0.998	0.993	**0.116**	0.012
Bulgaria	0.942	0.998	0.994	0.082	0.013
Chile	0.956	0.998	0.994	**0.108**	0.013
Colombia	0.935	0.999	0.998	0.042	0.008
Costa Rica	0.932	0.996	0.988	**0.119**	0.014
Croatia	0.950	0.998	0.995	0.100	0.014
Cyprus	0.943	0.999	0.996	0.086	0.011
Czechia	0.939	0.999	0.996	0.074	0.011
Denmark	0.938	0.999	0.996	0.095	0.010
Estonia	0.955	0.999	0.997	0.085	0.010
Finland	0.947	0.999	0.996	**0.103**	0.010
France	0.936	0.999	0.997	0.072	0.011
Hungary	0.950	0.997	0.992	**0.141**	0.015
Iceland	0.955	0.997	0.991	**0.209**	0.017
Israel	0.960	0.999	0.997	0.087	0.007
Italy	0.951	0.999	0.997	0.088	0.008
Japan	0.960	0.999	0.998	0.065	0.008
Kazakhstan	0.929	0.995	0.985	0.096	0.016
Korea	0.954	0.998	0.995	**0.117**	0.010

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Kosovo	0.934	0.997	0.991	0.088	0.012
Latvia	0.948	0.999	0.997	0.069	0.009
Lithuania	0.957	0.999	0.997	0.075	0.009
Malta	0.961	0.999	0.997	**0.116**	0.010
Montenegro	0.952	1.000	0.999	0.031	0.004
Morocco	0.915	0.995	0.986	0.075	0.014
Netherlands	0.946	0.998	0.995	0.099	0.013
New Zealand	0.964	0.999	0.997	0.098	0.009
North Macedonia	0.941	0.999	0.996	0.061	0.009
Norway	0.959	1.000	1.000	0.034	0.005
Poland	0.951	0.998	0.993	**0.115**	0.017
Portugal	0.947	0.997	0.991	**0.144**	0.013
Romania	0.953	0.999	0.997	0.072	0.007
Saudi Arabia	0.934	1.000	1.000	0.007	0.003
Serbia	0.945	0.996	0.988	**0.142**	0.018
Shanghai (China)	0.962	1.000	0.999	0.051	0.006
Singapore	0.957	0.999	0.997	**0.101**	0.009
Slovak Republic	0.959	0.999	0.997	0.086	0.008
Slovenia	0.944	0.998	0.994	0.100	0.011
South Africa	0.932	1.000	1.000	0.000	0.003
Spain	0.958	0.999	0.997	0.078	0.006
Sweden	0.951	0.998	0.994	**0.130**	0.012
Türkiye	0.946	0.999	0.996	0.094	0.009
United Arab Emirates	0.929	0.998	0.994	0.065	0.014
United States	0.944	1.000	0.999	0.038	0.006
Uzbekistan	0.896	0.999	0.996	0.052	0.008
Viet Nam	0.940	0.995	0.985	**0.177**	0.018
International pooled data	0.949	0.999	0.996	0.083	0.008
ISCED level 1					
Australia	0.954	1.000	0.999	0.063	0.006
Belgium	0.933	0.997	0.992	**0.119**	0.015
Flemish Community (Belgium)	0.938	0.997	0.991	**0.146**	0.016
French Community (Belgium)	0.930	0.998	0.995	0.081	0.011
Brazil	0.922	0.999	0.997	0.058	0.007
France	0.933	0.999	0.998	0.047	0.008
Japan	0.955	0.999	0.997	0.076	0.008
Korea	0.950	0.998	0.995	**0.104**	0.011
Morocco	0.888	0.995	0.984	0.074	0.016
Netherlands	0.921	0.999	0.998	0.043	0.010
New Zealand	0.944	0.999	0.998	0.054	0.008
Saudi Arabia	0.913	1.000	0.999	0.025	0.004
Slovenia	0.945	0.999	0.998	0.072	0.008

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Spain	0.951	0.999	0.998	0.053	0.006
Türkiye	0.939	0.996	0.989	**0.126**	0.015
United Arab Emirates	0.901	0.998	0.995	0.049	0.008
International pooled data	0.936	0.999	0.997	0.060	0.007
ISCED level 3					
Croatia	0.956	0.998	0.995	**0.101**	0.012
Denmark	0.942	0.999	0.997	0.070	0.011
Flemish Community (Belgium)	0.959	0.999	0.996	**0.119**	0.010
Portugal	0.951	0.999	0.997	0.088	0.009
Saudi Arabia	0.919	0.999	0.996	0.050	0.008
Slovenia	0.946	0.999	0.997	0.067	0.008
Türkiye	0.942	0.997	0.992	**0.116**	0.012
United Arab Emirates	0.940	0.998	0.993	0.076	0.011
International pooled data	0.949	0.999	0.996	0.082	0.009

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.106. Measurement invariance results from MGCFA for scale T4CLSDIS with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.998	0.995	0.095	0.011	-	-	-	-
Equal loadings	0.998	0.997	0.074	0.017	-0.001	0.002	-0.021	0.006
Equal loadings and thresholds	0.994	0.997	0.075	0.070	-0.004	-0.000	0.001	0.053

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.107. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CLSDIS

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G54A	0.902	-0.374	0.888	1.706
TT4G54B	0.934	-0.027	1.099	1.845
TT4G54C	0.863	-0.077	1.069	1.857
TT4G54D	0.930	0.001	1.031	1.735

Source: OECD, TALIS 2024 database.

Adaptive learning (T4ADLE)

In TQ-55, teachers were asked to indicate how frequently they performed different actions related to adapting their teaching to the needs of their students. For each action, they selected from the following response options: "Never or almost never", "Occasionally", "Frequently" or "Always". Responses to the

Unclassified - Non classifié

five items (TT4G55A, TT4G55B, TT4G55C, TT4G55D, TT4G55E) in this question were used to derive a scale reflecting teachers' *Adaptive learning* (T4ADLE) practices. Higher values on these scales indicate a higher frequency of such practices. Table 11.108 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.109, except for Slovenia (all ISCED levels), where not all items in the scale were administered. Therefore, no scale results or scores are provided for any ISCED level in Slovenia. The scale T4ADLE has high reliability (above 0.700) in all populations. As can be observed from Table 11.109, the CFI, TLI and SRMR for T4ADLE are all within the acceptable cut-off criteria for all participants. However, the RMSEA is above the cut-off in 12 ISCED level 2 participants (Brazil, Costa Rica, Croatia, Estonia, Iceland, Japan, Korea, Malta, Montenegro, North Macedonia, Saudi Arabia and Viet Nam), 6 ISCED level 1 participants (Japan, Korea, New Zealand, Saudi Arabia, Türkiye and the United Arab Emirates), and the ISCED level 3 population in Croatia and Saudi Arabia.

Table 11.110 presents the results from the measurement invariance testing for T4ADLE for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the cut-off criteria for the TLI and RMSEA and exceeds the acceptable range for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.111 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4ADLE. All items show high loadings. Results by participating country/territory indicate low loadings for item TT4G55A in the Netherlands (ISCED level 2) and for item TT4G55B in Denmark (ISCED level 3).

Table 11.108. Items and response categories used in the construction of scale T4ADLE

Scale or item	Question or item wording
T4ADLE	Thinking about your teaching in the <target class>, how often do you perform the following actions?
	Recoded response categories for scaling: Recoded response categories for scaling: 1=Never or almost never; 2=Occasionally; 3=Frequently; 4=Always
	Scale mid-point: 2.5
TT4G55A	I consider students' prior knowledge and needs when planning a lesson.
TT4G55B	I point students to different materials for learning depending on their needs.
TT4G55C	I change my way of explaining when a student has difficulties understanding a topic or task.
TT4G55D	I adapt my teaching methods to students' needs.
TT4G55E	I ask questions at various difficulty levels to check students' understanding of the subject matter.

Table 11.109. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4ADLE

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.881	0.986	0.973	0.086	0.026
Alberta (Canada)	0.880	0.995	0.990	0.054	0.020
Australia	0.897	0.994	0.988	0.078	0.020
Austria	0.810	0.988	0.976	0.065	0.021
Azerbaijan	0.852	0.987	0.974	0.080	0.022
Bahrain	0.925	0.993	0.986	0.095	0.020
Belgium	0.805	0.987	0.974	0.064	0.022

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Flemish Community (Belgium)	0.806	0.991	0.982	0.055	0.020
French Community (Belgium)	0.807	0.985	0.970	0.070	0.023
Brazil	0.897	0.983	0.965	**0.129**	0.035
Bulgaria	0.881	0.988	0.976	0.092	0.026
Chile	0.887	0.988	0.976	0.077	0.028
Colombia	0.913	0.993	0.986	0.077	0.019
Costa Rica	0.909	0.964	0.928	**0.168**	0.039
Croatia	0.895	0.988	0.977	**0.104**	0.028
Cyprus	0.884	0.990	0.979	0.097	0.028
Czechia	0.847	0.988	0.977	0.078	0.024
Denmark	0.778	0.983	0.965	0.068	0.028
Estonia	0.884	0.985	0.969	**0.116**	0.026
Finland	0.860	0.994	0.988	0.062	0.017
France	0.803	0.991	0.982	0.056	0.020
Hungary	0.827	0.989	0.979	0.062	0.021
Iceland	0.834	0.982	0.964	**0.106**	0.027
Israel	0.887	0.994	0.988	0.073	0.019
Italy	0.869	0.991	0.981	0.074	0.021
Japan	0.873	0.990	0.979	**0.111**	0.026
Kazakhstan	0.876	0.994	0.989	0.050	0.014
Korea	0.848	0.970	0.941	**0.137**	0.032
Kosovo	0.879	0.986	0.973	0.086	0.024
Latvia	0.875	0.986	0.973	0.090	0.028
Lithuania	0.892	0.994	0.987	0.062	0.017
Malta	0.887	0.987	0.973	**0.116**	0.029
Montenegro	0.925	0.995	0.989	**0.111**	0.018
Morocco	0.847	0.983	0.966	0.063	0.028
Netherlands	0.729	0.995	0.990	0.028	0.019
New Zealand	0.886	0.992	0.984	0.081	0.027
North Macedonia	0.905	0.989	0.979	**0.112**	0.024
Norway	0.824	0.995	0.990	0.045	0.021
Poland	0.902	0.994	0.987	0.062	0.020
Portugal	0.874	0.994	0.987	0.066	0.022
Romania	0.907	0.995	0.991	0.065	0.015
Saudi Arabia	0.934	0.988	0.977	**0.125**	0.022
Serbia	0.912	0.993	0.987	0.089	0.018
Shanghai (China)	0.967	0.999	0.998	0.084	0.008
Singapore	0.909	0.996	0.991	0.069	0.016
Slovak Republic	0.830	0.996	0.991	0.046	0.016
Slovenia	-	-	-	-	-
South Africa	0.881	0.988	0.977	0.089	0.029

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Spain	0.887	0.991	0.983	0.067	0.022
Sweden	0.833	0.997	0.993	0.042	0.018
Türkiye	0.921	0.996	0.992	0.081	0.014
United Arab Emirates	0.916	0.991	0.982	0.082	0.025
United States	0.897	0.999	0.997	0.024	0.012
Uzbekistan	0.895	0.990	0.980	0.093	0.019
Viet Nam	0.891	0.992	0.984	**0.101**	0.020
International pooled data	0.878	0.994	0.987	0.062	0.016
ISCED level 1					
Australia	0.929	0.998	0.996	0.066	0.014
Belgium	0.849	0.992	0.985	0.060	0.018
Flemish Community (Belgium)	0.866	0.990	0.980	0.079	0.019
French Community (Belgium)	0.831	0.992	0.984	0.058	0.022
Brazil	0.904	0.987	0.973	0.099	0.024
France	0.861	0.991	0.982	0.069	0.024
Japan	0.873	0.986	0.973	**0.117**	0.029
Korea	0.865	0.975	0.950	**0.137**	0.035
Morocco	0.843	0.971	0.941	0.091	0.034
Netherlands	0.862	0.995	0.989	0.057	0.021
New Zealand	0.916	0.993	0.986	**0.104**	0.023
Saudi Arabia	0.940	0.990	0.980	**0.124**	0.019
Slovenia	-	-	-	-	-
Spain	0.915	0.991	0.982	0.075	0.024
Türkiye	0.934	0.993	0.986	**0.109**	0.017
United Arab Emirates	0.914	0.982	0.964	**0.114**	0.031
International pooled data	0.884	0.994	0.989	0.066	0.016
ISCED level 3					
Croatia	0.890	0.987	0.973	**0.114**	0.024
Denmark	0.731	0.982	0.963	0.057	0.026
Flemish Community (Belgium)	0.776	0.981	0.962	0.073	0.028
Portugal	0.875	0.994	0.987	0.070	0.024
Saudi Arabia	0.942	0.993	0.986	**0.112**	0.017
Slovenia	-	-	-	-	-
Türkiye	0.914	0.996	0.991	0.082	0.015
United Arab Emirates	0.915	0.994	0.988	0.062	0.022
International pooled data	0.873	0.994	0.987	0.066	0.020

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand, Norway and Slovenia are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Slovenia are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) and Slovenia are excluded from the pooled ISCED level 3 model. Slovenia (ISCED levels 1, 2, and 3) was excluded from this scale because not all items that comprise the scale were administered.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.110. Measurement invariance results from MGCFA for scale T4ADLE with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.993	0.985	0.084	0.022	-	-	-	-
Equal loadings	0.991	0.990	0.071	0.030	-0.002	0.004	-0.013	0.008
Equal loadings and thresholds	0.961	0.978	0.102	0.131	-0.029	-0.011	0.032	0.101

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand, Norway and Slovenia are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.111. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4ADLE

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G55A	0.732	-2.368	-1.282	0.110
TT4G55B	0.699	-1.699	-0.563	0.665
TT4G55C	0.806	-2.611	-1.312	0.024
TT4G55D	0.878	-2.493	-1.293	0.097
TT4G55E	0.780	-2.213	-1.132	0.192

Source: OECD, TALIS 2024 database.

Progression-based learning (T4PBLE)

The scale of *Progression-based learning* (T4PBLE) was measured by a set of four items (TT4G56A, TT4G56B, TT4G56C, TT4G56D), described in Table 11.112. For each of these items, teachers had to indicate the frequency with which they performed different actions in their teaching of the target class, using the following response categories: “Never or almost never”, “Occasionally”, “Frequently” and “Always”. Higher scores on this scale reflect a higher frequency of progression-based learning practices.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.113. The reliabilities for T4PBLE are generally high and greater than 0.700 in all populations. As can be seen in Table 11.113, the CFI of T4PBLE is within the cut-off criterion for across populations. The TLI is also acceptable for almost all participants, except for the ISCED level 2 population in Estonia. The RMSEA exceeds the cut-off criterion in ten ISCED level 2 participants (Colombia, Estonia, Hungary, Iceland, Kosovo, Norway, Saudi Arabia, Singapore, Türkiye and the United Arab Emirates), as well as in both the ISCED levels 1 and 3 populations in Saudi Arabia. Model fit based on the SRMR is good for all populations.

Table 11.114 presents the results from the measurement invariance testing for T4PBLE for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR and close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the cut-off criteria for the TLI and RMSEA and exceeds the acceptable range for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.115 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4PBLE. All items show high loadings for the pooled model as well as in single countries/territories.

Unclassified - Non classifié

Table 11.112. Items and response categories used in the construction of scale T4PBLE

Scale or item	Question or item wording
T4PBLE	Thinking about your teaching in the <target class>, how often do you perform the following actions?
	Recoded response categories for scaling: 1=Never or almost never; 2=Occasionally; 3=Frequently; 4=Always
	Scale mid-point: 2.5
TT4G56A	I let students review multiple examples to practice the steps involved in a procedure or skill.
TT4G56B	I select tasks for student practice that gradually increase in difficulty.
TT4G56C	I prepare students for difficulties that can occur while practicing a procedure or skill.
TT4G56D	I let students practise similar tasks until I know that every student has understood the subject matter.

Source: OECD, TALIS 2024 database.

Table 11.113. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PBLE

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.860	0.995	0.986	0.076	0.014
Alberta (Canada)	0.855	1.000	0.999	0.020	0.007
Australia	0.850	0.995	0.984	0.091	0.015
Austria	0.789	0.998	0.993	0.044	0.010
Azerbaijan	0.771	0.997	0.990	0.043	0.010
Bahrain	0.906	1.000	0.999	0.038	0.005
Belgium	0.833	0.999	0.997	0.035	0.007
Flemish Community (Belgium)	0.831	0.999	0.997	0.032	0.007
French Community (Belgium)	0.833	1.000	1.000	0.007	0.004
Brazil	0.888	0.996	0.989	0.085	0.013
Bulgaria	0.851	0.998	0.994	0.048	0.011
Chile	0.915	0.999	0.997	0.038	0.007
Colombia	0.874	0.989	0.967	**0.128**	0.023
Costa Rica	0.891	0.996	0.989	0.072	0.009
Croatia	0.842	0.994	0.982	0.081	0.015
Cyprus	0.849	0.993	0.980	0.095	0.018
Czechia	0.865	0.999	0.996	0.051	0.009
Denmark	0.716	0.999	0.996	0.021	0.008
Estonia	0.764	0.964	**0.893**	**0.159**	0.032
Finland	0.818	0.999	0.998	0.024	0.006
France	0.778	1.000	0.999	0.018	0.006
Hungary	0.874	0.993	0.978	**0.107**	0.016
Iceland	0.794	0.987	0.960	**0.113**	0.020
Israel	0.905	0.998	0.993	0.075	0.011
Italy	0.842	0.994	0.981	0.095	0.020
Japan	0.862	1.000	1.000	0.011	0.003
Kazakhstan	0.818	0.999	0.996	0.028	0.007

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Korea	0.895	0.999	0.997	0.054	0.007
Kosovo	0.842	0.985	0.955	**0.126**	0.026
Latvia	0.847	0.998	0.993	0.049	0.010
Lithuania	0.829	0.998	0.993	0.039	0.008
Malta	0.863	0.996	0.989	0.082	0.012
Montenegro	0.871	0.998	0.995	0.065	0.011
Morocco	0.850	0.994	0.982	0.064	0.015
Netherlands	0.790	0.989	0.966	0.076	0.018
New Zealand	0.817	0.991	0.972	0.089	0.018
North Macedonia	0.900	1.000	0.999	0.031	0.005
Norway	0.838	0.980	0.940	**0.151**	0.029
Poland	0.858	0.997	0.992	0.045	0.011
Portugal	0.868	0.998	0.995	0.048	0.009
Romania	0.872	1.000	0.999	0.021	0.005
Saudi Arabia	0.918	0.995	0.986	**0.126**	0.015
Serbia	0.891	0.998	0.994	0.060	0.008
Shanghai (China)	0.933	0.999	0.997	0.093	0.008
Singapore	0.897	0.996	0.987	**0.102**	0.013
Slovak Republic	0.833	0.998	0.994	0.053	0.010
Slovenia	0.872	1.000	1.001	0.000	0.002
South Africa	0.856	0.999	0.996	0.037	0.008
Spain	0.870	0.999	0.996	0.034	0.007
Sweden	0.795	1.000	0.999	0.016	0.006
Türkiye	0.914	0.997	0.990	**0.109**	0.011
United Arab Emirates	0.885	0.989	0.967	**0.103**	0.019
United States	0.866	0.995	0.986	0.072	0.017
Uzbekistan	0.852	0.998	0.993	0.055	0.009
Viet Nam	0.880	0.999	0.996	0.056	0.008
International pooled data	0.861	0.996	0.988	0.070	0.012
ISCED level 1					
Australia	0.857	0.997	0.991	0.069	0.011
Belgium	0.832	1.000	1.000	0.000	0.002
Flemish Community (Belgium)	0.831	1.000	1.002	0.000	0.001
French Community (Belgium)	0.837	0.999	0.997	0.033	0.008
Brazil	0.863	0.994	0.982	0.089	0.015
France	0.750	1.000	1.000	0.007	0.007
Japan	0.837	0.998	0.993	0.054	0.008
Korea	0.901	1.000	1.000	0.021	0.004
Morocco	0.839	0.992	0.977	0.075	0.018
Netherlands	0.813	0.998	0.995	0.037	0.012
New Zealand	0.825	0.998	0.993	0.054	0.012

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.905	0.995	0.985	**0.116**	0.016
Slovenia	0.837	0.996	0.989	0.067	0.012
Spain	0.869	0.999	0.996	0.034	0.008
Türkiye	0.922	0.999	0.996	0.071	0.009
United Arab Emirates	0.837	0.993	0.980	0.081	0.018
International pooled data	0.854	0.998	0.993	0.053	0.009
ISCED level 3					
Croatia	0.860	0.999	0.997	0.043	0.008
Denmark	0.665	0.990	0.971	0.046	0.017
Flemish Community (Belgium)	0.811	0.999	0.997	0.029	0.007
Portugal	0.855	0.996	0.988	0.073	0.013
Saudi Arabia	0.930	0.995	0.986	**0.148**	0.014
Slovenia	0.857	0.996	0.988	0.076	0.013
Türkiye	0.905	1.000	1.000	0.016	0.003
United Arab Emirates	0.881	0.997	0.992	0.053	0.012
International pooled data	0.864	0.994	0.982	0.087	0.015

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.114. Measurement invariance results from MGCFA for scale T4PBLE with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.997	0.992	0.068	0.011	-	-	-	-
Equal loadings	0.991	0.989	0.076	0.023	-0.006	-0.002	0.009	0.012
Equal loadings and thresholds	0.962	0.980	0.103	0.114	-0.030	-0.009	0.027	0.091

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.115. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PBLE

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G56A	0.764	-1.932	-0.663	0.729
TT4G56B	0.806	-2.014	-0.866	0.520
TT4G56C	0.854	-2.111	-0.827	0.613
TT4G56D	0.717	-1.866	-0.728	0.644

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Autonomy of teaching (T4AUTCH)

Teachers answered four items measuring *Autonomy of teaching* (T4AUTCH). These items were TT4G57A, TT4G57B, TT4G57C and TT4G57E. Each item had four response categories: “No autonomy”, “Limited autonomy”, “Substantial autonomy” and “Full autonomy”. Higher values on this scale indicate a higher autonomy of teaching. Table 11.116 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.117. The scale T4AUTCH has high reliability (above 0.700) in all populations. As can be observed from Table 11.117, the CFI, TLI and SRMR for T4AUTCH are all within the acceptable cut-off criteria for all participants. However, the RMSEA exceeds the cut-off criterion in 20 of the ISCED level 2 participants (Albania, Australia, Austria, Azerbaijan, Chile, Colombia, Iceland, Israel, Japan, Korea, Latvia, Malta, New Zealand, Poland, Portugal, Serbia, Shanghai (China), Singapore, Spain and Türkiye), 4 ISCED level 1 participants (France, Japan, Korea and the Netherlands) and 3 ISCED level 3 participants (Portugal, Slovenia and Türkiye).

Table 11.118 presents the results from the measurement invariance testing for T4AUTCH for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA which is very close to the cut-off. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR and close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA, close for the CFI and exceeds the acceptable range for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.119 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4AUTCH. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.116. Items and response categories used in the construction of scale T4AUTCH

Scale or item	Question or item wording
T4AUTCH	How much autonomy do you have over the following aspects of planning and teaching in the <target class>?
	Recoded response categories for scaling: 1=No autonomy; 2=Limited autonomy; 3=Substantial autonomy; 4=Full autonomy
	Scale mid-point: 2.5
TT4G57A	Implementing the curriculum in a flexible way
TT4G57B	Selecting teaching methods and strategies
TT4G57C	Choosing assessment activities
TT4G57E	Designing and preparing lessons

Source: OECD, TALIS 2024 database.

Table 11.117. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4AUTCH

Participating country/territory	Reliability	CFA model fit			
	Cronbach’s alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.840	0.988	0.964	**0.107**	0.023
Alberta (Canada)	0.933	1.000	1.000	0.009	0.004
Australia	0.884	0.980	0.941	**0.232**	0.038
Austria	0.840	0.986	0.958	**0.125**	0.028

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Azerbaijan	0.851	0.991	0.973	**0.104**	0.017
Bahrain	0.890	1.000	1.000	0.017	0.004
Belgium	0.872	0.998	0.993	0.061	0.011
Flemish Community (Belgium)	0.860	0.994	0.983	0.090	0.020
French Community (Belgium)	0.883	1.000	1.000	0.005	0.003
Brazil	0.897	1.000	0.999	0.021	0.005
Bulgaria	0.902	0.999	0.997	0.046	0.008
Chile	0.919	0.992	0.977	**0.120**	0.017
Colombia	0.892	0.994	0.982	**0.113**	0.017
Costa Rica	0.864	0.999	0.997	0.033	0.007
Croatia	0.886	0.999	0.998	0.044	0.008
Cyprus	0.831	0.995	0.985	0.087	0.016
Czechia	0.851	0.998	0.993	0.061	0.012
Denmark	0.912	1.000	1.001	0.000	0.001
Estonia	0.864	0.995	0.984	0.093	0.017
Finland	0.861	0.993	0.980	0.091	0.020
France	0.901	0.996	0.989	0.093	0.015
Hungary	0.875	0.997	0.992	0.065	0.012
Iceland	0.850	0.995	0.984	**0.106**	0.021
Israel	0.876	0.993	0.978	**0.121**	0.025
Italy	0.905	1.000	0.999	0.023	0.005
Japan	0.916	0.997	0.992	**0.115**	0.012
Kazakhstan	0.867	0.998	0.994	0.052	0.009
Korea	0.906	0.990	0.970	**0.222**	0.032
Kosovo	0.907	0.998	0.993	0.070	0.010
Latvia	0.830	0.985	0.956	**0.133**	0.029
Lithuania	0.893	0.997	0.991	0.077	0.012
Malta	0.831	0.983	0.949	**0.148**	0.030
Montenegro	0.901	1.000	0.999	0.036	0.005
Morocco	0.849	0.998	0.994	0.038	0.008
Netherlands	0.854	0.994	0.983	0.081	0.023
New Zealand	0.891	0.988	0.963	**0.159**	0.028
North Macedonia	0.909	0.999	0.996	0.069	0.009
Norway	0.921	0.999	0.996	0.080	0.008
Poland	0.822	0.990	0.971	**0.104**	0.029
Portugal	0.828	0.986	0.959	**0.136**	0.037
Romania	0.896	0.998	0.994	0.065	0.013
Saudi Arabia	0.921	1.000	1.000	0.000	0.002
Serbia	0.892	0.995	0.985	**0.105**	0.016
Shanghai (China)	0.937	0.996	0.989	**0.181**	0.010
Singapore	0.874	0.984	0.953	**0.193**	0.032

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Slovak Republic	0.869	0.998	0.995	0.064	0.015
Slovenia	0.828	0.989	0.966	0.096	0.022
South Africa	0.882	0.993	0.980	0.094	0.018
Spain	0.860	0.983	0.950	**0.127**	0.028
Sweden	0.908	0.997	0.990	0.094	0.016
Türkiye	0.912	0.994	0.982	**0.136**	0.014
United Arab Emirates	0.895	1.000	1.000	0.011	0.004
United States	0.950	0.999	0.998	0.051	0.005
Uzbekistan	0.893	0.998	0.994	0.069	0.008
Viet Nam	0.925	0.999	0.998	0.043	0.004
International pooled data	0.880	0.997	0.992	0.063	0.010
ISCED level 1					
Australia	0.920	1.000	0.999	0.025	0.004
Belgium	0.868	0.998	0.994	0.056	0.010
Flemish Community (Belgium)	0.832	0.998	0.995	0.044	0.010
French Community (Belgium)	0.910	0.998	0.995	0.073	0.009
Brazil	0.905	0.995	0.984	0.089	0.018
France	0.900	0.994	0.983	**0.112**	0.017
Japan	0.897	0.997	0.991	**0.106**	0.014
Korea	0.913	0.994	0.983	**0.155**	0.019
Morocco	0.859	0.999	0.996	0.036	0.008
Netherlands	0.897	0.993	0.979	**0.131**	0.027
New Zealand	0.857	1.000	0.999	0.026	0.008
Saudi Arabia	0.922	0.999	0.997	0.059	0.007
Slovenia	0.847	0.998	0.993	0.054	0.011
Spain	0.898	0.999	0.998	0.029	0.007
Türkiye	0.914	1.000	1.000	0.018	0.003
United Arab Emirates	0.897	1.000	0.999	0.021	0.004
International pooled data	0.883	0.999	0.997	0.043	0.006
ISCED level 3					
Croatia	0.890	0.999	0.998	0.038	0.006
Denmark	0.891	1.000	1.000	0.018	0.005
Flemish Community (Belgium)	0.873	0.995	0.986	0.086	0.017
Portugal	0.805	0.978	0.935	**0.160**	0.041
Saudi Arabia	0.925	1.000	1.000	0.009	0.002
Slovenia	0.853	0.989	0.968	**0.118**	0.023
Türkiye	0.894	0.997	0.990	0.100	0.012
United Arab Emirates	0.887	1.000	0.999	0.020	0.006
International pooled data	0.875	0.995	0.986	0.082	0.014

Unclassified - Non classifié

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.118. Measurement invariance results from MGCFA for scale T4AUTCH with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.995	0.986	0.102	0.015	-	-	-	-
Equal loadings	0.988	0.985	0.105	0.032	-0.008	-0.001	0.003	0.017
Equal loadings and thresholds	0.970	0.985	0.106	0.124	-0.017	-0.000	0.000	0.092

Note: Alberta (Canada), Bulgaria, the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.119. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4AUTCH

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G57A	0.723	-1.818	-0.647	0.604
TT4G57B	0.908	-2.349	-1.302	0.113
TT4G57C	0.766	-1.978	-0.862	0.358
TT4G57E	0.829	-2.277	-1.351	-0.116

Source: OECD, TALIS 2024 database.

Fulfilment of lesson aims (complexity of teaching) (T4FULFIL)

The scale of *Fulfilment of lesson aims (complexity of teaching)* (T4FULFIL) was measured by a set of five items (TT4G58A, TT4G58B, TT4G58C, TT4G58D and TT4G58E). These items assessed the extent to which teachers believed they had achieved various instructional goals, reflecting the complexity of the teaching activity, in their recently taught lessons. For each goal, they selected from the following response options: “Not at all”, “To some extent”, “Quite a bit” and “A lot” (see Table 11.120). Higher scores indicate a greater perceived fulfilment of lesson aims by teachers.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.121. The scale T4FULFIL has good reliability (above 0.700) in all populations. In terms of model fit of the scale T4FULFIL, the CFI is within the cut-off criterion for all participants. The TLI is also within the cut-off for all participants except for the ISCED level 2 population in Finland. The RMSEA exceeds the cut-off criterion in 11 ISCED level 2 participants (Australia, Austria, Czechia, Estonia, Finland, Iceland, Malta, Montenegro, New Zealand, North Macedonia and South Africa), 4 ISCED level 1 participants (Australia, Brazil, New Zealand and Slovenia) and in the ISCED level 3 population in Slovenia. The SRMR is at least within the acceptable range in all populations.

Table 11.122 presents the results from the measurement invariance testing for T4FULFIL for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and exceeds the cut-offs for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Unclassified - Non classifié

Table 11.123 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4FULFIL. All items show high loadings. Results by participating country/territory show a low loading for item TT4G58A in Finland (ISCED level 2).

Table 11.120. Items and response categories used in the construction of scale T4FULFIL

Scale or item	Question or item wording
T4FULFIL	Teaching is a complex activity with often competing goals. To what extent have the lessons you taught over the past week in the <target class> achieved the following aims?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G58A	Presenting the content in a comprehensible way
TT4G58B	Engaging students in work that challenges them
TT4G58C	Providing students with feedback to support their learning
TT4G58D	Offering students opportunities to practise what they learned
TT4G58E	Adapting teaching to meet the different needs of students

Source: OECD, TALIS 2024 database.

Table 11.121. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4FULFIL

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.855	0.993	0.985	0.046	0.020
Alberta (Canada)	0.867	0.988	0.977	0.069	0.025
Australia	0.867	0.983	0.967	**0.103**	0.025
Austria	0.782	0.961	0.922	**0.103**	0.036
Azerbaijan	0.822	0.995	0.991	0.041	0.012
Bahrain	0.933	0.996	0.993	0.056	0.013
Belgium	0.786	0.977	0.954	0.079	0.029
Flemish Community (Belgium)	0.772	0.962	0.924	0.095	0.037
French Community (Belgium)	0.784	0.989	0.979	0.057	0.020
Brazil	0.883	0.987	0.975	0.086	0.024
Bulgaria	0.881	0.996	0.993	0.045	0.013
Chile	0.872	0.994	0.987	0.050	0.019
Colombia	0.887	0.993	0.986	0.062	0.019
Costa Rica	0.916	0.994	0.988	0.072	0.014
Croatia	0.870	0.988	0.976	0.090	0.023
Cyprus	0.883	0.997	0.994	0.046	0.012
Czechia	0.821	0.970	0.941	**0.106**	0.033
Denmark	0.776	0.974	0.947	0.077	0.028
Estonia	0.839	0.969	0.939	**0.124**	0.033
Finland	0.740	0.943	**0.887**	**0.112**	0.038
France	0.779	0.993	0.986	0.044	0.017
Hungary	0.822	0.967	0.934	0.087	0.037
Iceland	0.856	0.972	0.943	**0.145**	0.035
Israel	0.877	0.989	0.977	0.080	0.023
Italy	0.846	0.990	0.980	0.068	0.021
Japan	0.869	0.996	0.992	0.055	0.011
Kazakhstan	0.874	0.995	0.989	0.055	0.014
Korea	0.918	0.999	0.997	0.049	0.008

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Kosovo	0.884	0.992	0.985	0.065	0.018
Latvia	0.825	0.997	0.995	0.026	0.011
Lithuania	0.892	0.989	0.978	0.090	0.023
Malta	0.873	0.981	0.963	**0.121**	0.027
Montenegro	0.916	0.992	0.984	**0.109**	0.024
Morocco	0.841	0.989	0.979	0.053	0.019
Netherlands	0.880	0.991	0.982	0.067	0.020
New Zealand	0.830	0.957	0.913	**0.129**	0.041
North Macedonia	0.911	0.984	0.968	**0.145**	0.028
Norway	0.807	0.977	0.954	0.084	0.027
Poland	0.882	0.991	0.983	0.061	0.019
Portugal	0.870	0.995	0.991	0.052	0.015
Romania	0.903	0.995	0.990	0.064	0.017
Saudi Arabia	0.943	0.997	0.994	0.069	0.011
Serbia	0.901	0.994	0.987	0.082	0.018
Shanghai (China)	0.953	0.999	0.998	0.074	0.008
Singapore	0.906	0.995	0.991	0.066	0.013
Slovak Republic	0.859	0.994	0.988	0.055	0.016
Slovenia	0.835	0.987	0.974	0.068	0.023
South Africa	0.894	0.984	0.968	**0.103**	0.029
Spain	0.859	0.988	0.976	0.063	0.021
Sweden	0.817	0.983	0.966	0.075	0.024
Türkiye	0.871	0.989	0.979	0.097	0.019
United Arab Emirates	0.904	0.993	0.986	0.051	0.019
United States	0.881	0.992	0.983	0.053	0.021
Uzbekistan	0.893	0.998	0.995	0.042	0.011
Viet Nam	0.902	0.997	0.995	0.058	0.011
International pooled data	0.881	0.994	0.988	0.061	0.015
ISCED level 1					
Australia	0.907	0.985	0.970	**0.122**	0.025
Belgium	0.843	0.988	0.977	0.067	0.021
Flemish Community (Belgium)	0.846	0.980	0.960	0.089	0.029
French Community (Belgium)	0.813	0.991	0.983	0.055	0.018
Brazil	0.879	0.971	0.942	**0.114**	0.039
France	0.811	0.989	0.978	0.060	0.021
Japan	0.870	0.998	0.996	0.037	0.009
Korea	0.933	0.996	0.992	0.088	0.013
Morocco	0.848	0.984	0.967	0.064	0.024
Netherlands	0.936	0.995	0.989	0.092	0.018
New Zealand	0.891	0.978	0.956	**0.125**	0.035
Saudi Arabia	0.949	0.996	0.992	0.083	0.011
Slovenia	0.854	0.976	0.952	**0.110**	0.031
Spain	0.887	0.988	0.976	0.071	0.022
Türkiye	0.897	0.992	0.984	0.098	0.018
United Arab Emirates	0.897	1.000	1.000	0.005	0.006
International pooled data	0.905	0.995	0.991	0.060	0.012
ISCED level 3					
Croatia	0.875	0.990	0.980	0.084	0.022
Denmark	0.761	0.959	0.919	0.082	0.034
Flemish Community (Belgium)	0.784	0.975	0.949	0.082	0.031
Portugal	0.864	0.997	0.994	0.044	0.012

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.945	0.999	0.998	0.045	0.007
Slovenia	0.845	0.971	0.942	**0.117**	0.035
Türkiye	0.863	0.991	0.983	0.087	0.018
United Arab Emirates	0.904	0.998	0.996	0.028	0.012
International pooled data	0.877	0.993	0.987	0.061	0.016

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.122. Measurement invariance results from MGCFA for scale T4FULFIL with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.992	0.985	0.077	0.020	-	-	-	-
Equal loadings	0.988	0.987	0.072	0.029	-0.004	0.002	-0.005	0.009
Equal loadings and thresholds	0.970	0.983	0.081	0.113	-0.019	-0.004	0.010	0.084

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.123. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4FULFIL

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G58A	0.746	-2.605	-1.390	0.191
TT4G58B	0.756	-2.230	-0.851	0.547
TT4G58C	0.832	-2.349	-1.027	0.353
TT4G58D	0.807	-2.286	-1.104	0.223
TT4G58E	0.764	-2.199	-0.827	0.474

Source: OECD, TALIS 2024 database.

Empathy with students (T4EMPS)

The *Empathy with students* (T4EMPS) scale was measured using a set of four items (TT4G60A, TT4G60B, TT4G60C and TT4G60D). For each item, teachers were asked to indicate the extent to which they felt capable of performing different empathy-related behaviours, using the following response categories: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher values on this scale indicate a greater perceived capacity to demonstrate empathy toward students. Table 11.124 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.125. The reliabilities for T4EMPS are high (above 0.800) in all populations. As can be seen in Table 11.125, the CFI, TLI and SRMR of T4EMPS meet the cut-off criteria in all of the participating countries/territories. The RMSEA is above the cut-off criterion in 13 ISCED level 2 participants (Brazil, Costa Rica, Finland, Hungary, Japan, Kazakhstan, Latvia, Montenegro, North Macedonia, the

Unclassified - Non classifié

Slovak Republic, Sweden, Uzbekistan and Viet Nam), in the ISCED level 1 population in Japan and in the ISCED level 3 population in Portugal.

Table 11.126 presents the results from the measurement invariance testing for T4EMPS for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI and TLI, close for the RMSEA and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.127 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4EMPS. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.124. Items and response categories used in the construction of scale T4EMPS

Scale or item	Question or item wording
T4EMPS	In your practice in the <target class>, to what extent can you do the following?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G60A	Be aware of my students' feelings
TT4G60B	Show warmth to my students
TT4G60C	Care about the problems of my students
TT4G60D	Be empathetic towards my students

Source: OECD, TALIS 2024 database.

Table 11.125. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4EMPS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.889	1.000	1.000	0.000	0.004
Alberta (Canada)	0.952	1.000	0.999	0.051	0.007
Australia	0.954	1.000	0.999	0.060	0.006
Austria	0.909	0.998	0.995	0.068	0.011
Azerbaijan	0.883	1.000	0.999	0.033	0.005
Bahrain	0.941	0.999	0.996	0.066	0.010
Belgium	0.925	0.999	0.997	0.062	0.008
Flemish Community (Belgium)	0.925	0.999	0.998	0.051	0.008
French Community (Belgium)	0.926	0.998	0.993	0.096	0.010
Brazil	0.874	0.985	0.956	**0.111**	0.023
Bulgaria	0.919	0.998	0.995	0.072	0.011
Chile	0.938	1.000	0.999	0.030	0.005
Colombia	0.919	0.996	0.989	0.097	0.014
Costa Rica	0.939	0.996	0.989	**0.113**	0.013
Croatia	0.942	0.999	0.998	0.079	0.010
Cyprus	0.921	1.000	0.999	0.028	0.006

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Czechia	0.924	0.999	0.997	0.056	0.008
Denmark	0.953	0.999	0.998	0.061	0.008
Estonia	0.905	0.999	0.996	0.095	0.016
Finland	0.906	0.997	0.991	**0.123**	0.021
France	0.893	0.999	0.998	0.040	0.008
Hungary	0.915	0.994	0.981	**0.116**	0.019
Iceland	0.939	1.000	1.000	0.039	0.007
Israel	0.929	1.000	0.999	0.060	0.011
Italy	0.895	1.000	1.000	0.010	0.004
Japan	0.962	0.999	0.997	**0.118**	0.007
Kazakhstan	0.901	0.994	0.982	**0.107**	0.018
Korea	0.941	0.999	0.998	0.082	0.009
Kosovo	0.889	1.000	0.999	0.029	0.007
Latvia	0.877	0.994	0.983	**0.102**	0.022
Lithuania	0.894	0.999	0.996	0.059	0.009
Malta	0.951	0.999	0.998	0.095	0.009
Montenegro	0.926	0.998	0.994	0.100	0.009
Morocco	0.879	0.995	0.986	0.073	0.018
Netherlands	0.905	1.000	0.999	0.025	0.008
New Zealand	0.941	0.999	0.998	0.071	0.011
North Macedonia	0.938	0.998	0.994	**0.101**	0.010
Norway	0.940	0.999	0.997	0.098	0.012
Poland	0.904	1.000	1.000	0.000	0.003
Portugal	0.930	0.999	0.997	0.069	0.008
Romania	0.939	0.999	0.998	0.060	0.005
Saudi Arabia	0.943	0.999	0.998	0.055	0.006
Serbia	0.925	0.998	0.995	0.090	0.013
Shanghai (China)	0.972	1.000	1.000	0.075	0.004
Singapore	0.958	1.000	0.999	0.069	0.006
Slovak Republic	0.912	0.994	0.983	**0.153**	0.022
Slovenia	0.915	1.000	1.000	0.026	0.006
South Africa	0.932	0.999	0.996	0.076	0.009
Spain	0.925	0.998	0.993	0.085	0.015
Sweden	0.942	0.997	0.992	**0.128**	0.013
Türkiye	0.937	0.999	0.996	0.085	0.010
United Arab Emirates	0.936	1.000	1.000	0.017	0.004
United States	0.955	0.998	0.995	0.080	0.010
Uzbekistan	0.918	0.994	0.982	**0.134**	0.019
Viet Nam	0.945	0.998	0.993	**0.148**	0.014
International pooled data	0.924	0.998	0.995	0.072	0.008
ISCED level 1					

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Australia	0.966	1.000	1.000	0.037	0.003
Belgium	0.945	1.000	0.999	0.034	0.005
Flemish Community (Belgium)	0.945	1.000	1.000	0.000	0.003
French Community (Belgium)	0.943	0.999	0.997	0.066	0.008
Brazil	0.871	0.995	0.985	0.057	0.015
France	0.914	1.000	1.000	0.014	0.006
Japan	0.964	0.999	0.997	**0.126**	0.009
Korea	0.951	1.000	0.999	0.049	0.005
Morocco	0.874	0.998	0.994	0.045	0.013
Netherlands	0.959	1.000	0.999	0.033	0.009
New Zealand	0.966	0.999	0.998	0.077	0.013
Saudi Arabia	0.960	0.998	0.994	0.098	0.008
Slovenia	0.919	1.000	1.000	0.024	0.004
Spain	0.942	0.999	0.998	0.054	0.010
Türkiye	0.948	0.999	0.997	0.066	0.007
United Arab Emirates	0.937	1.000	0.999	0.029	0.007
International pooled data	0.943	0.999	0.998	0.047	0.005
ISCED level 3					
Croatia	0.938	0.998	0.995	0.099	0.013
Denmark	0.933	0.999	0.998	0.053	0.008
Flemish Community (Belgium)	0.921	0.998	0.994	0.086	0.013
Portugal	0.929	0.997	0.991	**0.114**	0.016
Saudi Arabia	0.945	1.000	1.000	0.027	0.003
Slovenia	0.897	1.000	0.999	0.036	0.006
Türkiye	0.935	1.000	0.999	0.057	0.006
United Arab Emirates	0.939	0.999	0.998	0.038	0.008
International pooled data	0.931	0.999	0.998	0.046	0.005

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.126. Measurement invariance results from MGCFA for scale T4EMPS with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.999	0.996	0.086	0.010	-	-	-	-
Equal loadings	0.994	0.993	0.109	0.027	-0.004	-0.003	0.023	0.016
Equal loadings and thresholds	0.991	0.995	0.089	0.138	-0.003	0.002	-0.020	0.112

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Iceland, the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.

Unclassified - Non classifié

Source: OECD, TALIS 2024 database.

Table 11.127. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4EMPS

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G60A	0.794	-2.445	-0.929	0.393
TT4G60B	0.896	-2.561	-1.290	0.024
TT4G60C	0.904	-2.505	-1.160	0.085
TT4G60D	0.871	-2.416	-1.404	-0.063

Source: OECD, TALIS 2024 database.

Social and emotional skill development (T4SESDEV)

The scale *Social and emotional skill development* (T4SESDEV) was measured using a set of four items, for which teachers had to indicate the frequency with which they focus on developing different aspects of students' social and emotional skills. These items were TT4G61B, TT4G61D, TT4G61E and TT4G61F, and had four response categories: "Never or almost never", "Occasionally", "Frequently" and "Always". Higher values on this scale indicate a higher focus on students' social and emotional skill development. Table 11.128 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.129. The scale T4SESDEV has high reliability (above 0.700) in all populations. As can be observed from Table 11.129, the CFI, TLI and SRMR for T4SESDEV are all within the acceptable cut-off criteria across all populations. The RMSEA exceed the cut-off criterion in 23 of the ISCED level 2 participants, 7 of the ISCED level 1 participants, and 6 of the ISCED level 3 participants. Most of the exceeding RMSEA values are between 0.100 and 0.150, except for the following ISCED level 2 participants: Costa Rica, Italy, Lithuania, Montenegro, Shanghai (China) and Türkiye.

Table 11.130 presents the results from the measurement invariance testing for T4SESDEV for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA which is very close to the cut-off. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI and TLI, close for the RMSEA and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.131 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4SESDEV. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.128. Items and response categories used in the construction of scale T4SESDEV

Scale or item	Question or item wording
T4SESDEV	Thinking about your teaching in the <target class>, how often do you focus on developing the following student skills?
	Recoded response categories for scaling: 1=Never or almost never; 2=Occasionally; 3=Frequently; 4=Always
	Scale mid-point: 2.5
TT4G61B	Managing their own emotions, thoughts or behaviour
TT4G61D	Empathising with others
TT4G61E	Establishing and maintaining healthy relationships with others
TT4G61F	Making caring and constructive choices about their personal actions

Unclassified - Non classifié

Source: OECD, TALIS 2024 database.

Table 11.129. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SESDEV

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.910	0.996	0.989	0.083	0.013
Alberta (Canada)	0.921	1.000	0.999	0.034	0.006
Australia	0.943	0.999	0.996	**0.106**	0.009
Austria	0.872	0.997	0.991	0.077	0.012
Azerbaijan	0.865	1.000	1.000	0.000	0.002
Bahrain	0.953	0.999	0.998	0.070	0.006
Belgium	0.921	0.998	0.994	**0.101**	0.012
Flemish Community (Belgium)	0.926	0.999	0.996	0.090	0.011
French Community (Belgium)	0.918	0.999	0.997	0.074	0.009
Brazil	0.918	0.998	0.994	0.085	0.012
Bulgaria	0.906	0.996	0.988	**0.108**	0.015
Chile	0.938	0.997	0.992	**0.110**	0.015
Colombia	0.886	0.997	0.991	0.081	0.013
Costa Rica	0.928	0.995	0.985	**0.161**	0.018
Croatia	0.915	0.997	0.991	**0.106**	0.015
Cyprus	0.927	0.997	0.992	**0.109**	0.012
Czechia	0.911	0.998	0.993	0.097	0.013
Denmark	0.908	0.999	0.998	0.042	0.007
Estonia	0.892	0.998	0.993	0.089	0.012
Finland	0.921	0.999	0.996	0.072	0.009
France	0.902	0.995	0.984	**0.135**	0.019
Hungary	0.914	0.997	0.990	**0.115**	0.015
Iceland	0.943	0.999	0.998	0.096	0.009
Israel	0.932	0.998	0.993	**0.106**	0.013
Italy	0.929	0.996	0.987	**0.151**	0.017
Japan	0.947	1.000	0.999	0.061	0.005
Kazakhstan	0.893	0.999	0.997	0.051	0.008
Korea	0.957	0.999	0.997	**0.108**	0.007
Kosovo	0.914	0.996	0.988	0.093	0.014
Latvia	0.899	0.998	0.993	0.070	0.009
Lithuania	0.918	0.992	0.976	**0.167**	0.024
Malta	0.945	0.999	0.997	0.098	0.008
Montenegro	0.891	0.994	0.983	**0.178**	0.030
Morocco	0.886	0.989	0.967	0.100	0.023
Netherlands	0.880	0.995	0.984	0.088	0.019
New Zealand	0.930	0.997	0.991	**0.132**	0.014
North Macedonia	0.912	1.000	0.999	0.039	0.004
Norway	0.925	0.998	0.994	0.089	0.011
Poland	0.910	0.996	0.988	0.093	0.020
Portugal	0.925	0.998	0.994	**0.119**	0.019
Romania	0.937	0.996	0.989	**0.124**	0.016

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.951	0.999	0.997	0.075	0.006
Serbia	0.923	0.997	0.991	**0.143**	0.016
Shanghai (China)	0.960	0.999	0.997	**0.174**	0.010
Singapore	0.949	1.000	1.000	0.032	0.004
Slovak Republic	0.914	0.997	0.991	**0.128**	0.017
Slovenia	0.916	0.999	0.997	0.062	0.009
South Africa	0.942	0.998	0.995	0.089	0.012
Spain	0.937	0.997	0.992	0.100	0.012
Sweden	0.923	0.996	0.988	**0.119**	0.014
Türkiye	0.949	0.998	0.993	**0.160**	0.014
United Arab Emirates	0.956	0.999	0.997	0.056	0.006
United States	0.939	0.999	0.997	0.065	0.007
Uzbekistan	0.912	0.998	0.993	0.080	0.009
Viet Nam	0.919	0.999	0.997	0.070	0.008
International pooled data	0.925	0.999	0.996	0.069	0.008
ISCED level 1					
Australia	0.965	0.999	0.998	0.098	0.006
Belgium	0.935	0.998	0.995	0.098	0.010
Flemish Community (Belgium)	0.936	0.999	0.997	0.075	0.009
French Community (Belgium)	0.937	0.999	0.997	**0.101**	0.011
Brazil	0.905	0.995	0.984	**0.114**	0.020
France	0.916	0.998	0.993	0.092	0.016
Japan	0.945	1.000	0.999	0.051	0.004
Korea	0.956	0.999	0.998	0.082	0.006
Morocco	0.892	0.995	0.984	0.082	0.016
Netherlands	0.953	1.000	1.000	0.000	0.007
New Zealand	0.964	0.999	0.998	**0.119**	0.009
Saudi Arabia	0.959	0.997	0.991	**0.139**	0.012
Slovenia	0.917	0.996	0.989	**0.111**	0.013
Spain	0.954	0.999	0.998	0.048	0.006
Türkiye	0.957	0.998	0.995	**0.123**	0.010
United Arab Emirates	0.945	0.997	0.992	0.084	0.010
International pooled data	0.940	0.998	0.995	0.086	0.009
ISCED level 3					
Croatia	0.904	0.996	0.987	**0.147**	0.023
Denmark	0.892	0.995	0.985	**0.109**	0.017
Flemish Community (Belgium)	0.931	0.999	0.998	0.063	0.007
Portugal	0.926	0.998	0.994	**0.131**	0.019
Saudi Arabia	0.952	0.997	0.992	**0.120**	0.008
Slovenia	0.915	0.994	0.983	**0.143**	0.016
Türkiye	0.946	0.998	0.995	**0.134**	0.010
United Arab Emirates	0.959	0.999	0.997	0.068	0.008
International pooled data	0.940	0.999	0.996	0.085	0.008

Note: Coefficients in bold exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.

Unclassified - Non classifié

Source: OECD, TALIS 2024 database.

Table 11.130. Measurement invariance results from MGCFA for scale T4SESDEV with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.998	0.994	0.101	0.012	-	-	-	-
Equal loadings	0.996	0.995	0.098	0.023	-0.003	0.000	-0.004	0.011
Equal loadings and thresholds	0.993	0.996	0.079	0.098	-0.002	0.002	-0.019	0.074

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.131. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4SESDEV

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G61B	0.786	-1.959	-0.641	0.675
TT4G61D	0.876	-2.247	-1.019	0.354
TT4G61E	0.925	-2.307	-1.137	0.250
TT4G61F	0.891	-2.223	-0.969	0.413

Source: OECD, TALIS 2024 database.

Opportunities to participate in school decisions (T4OPPART)

Teachers were asked to answer three items measuring *Opportunities to participate in school decisions* (T4OPPART). These items were TT4G64A, TT4G64B and TT4G64C. All items were answered on a four-point scale, with response categories of “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale indicate greater perceived opportunities given to various stakeholders to participate in school decision making. Table 11.132 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.133. The fit indices for T4OPPART are not presented here as the scale was measured by just three items. The reliabilities for T4OPPART are above 0.700 in all populations.

Table 11.134 presents the results from the measurement invariance testing for T4OPPART for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is showing an acceptable model fit with the exception of the RMSEA. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA, close for the CFI and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.135 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4OPPART. All items show high loadings for the pooled model as well as in single countries/territories.

Unclassified - Non classifié

Table 11.132. Items and response categories used in the construction of scale T4OPPART

Scale or item	Question or item wording
T4OPPART	How strongly do you agree or disagree with these statements, as applied to this school?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G64A	This school provides staff with opportunities to actively participate in school decisions.
TT4G64B	This school provides parents or guardians with opportunities to actively participate in school decisions.
TT4G64C	This school provides students with opportunities to actively participate in school decisions.

Source: OECD, TALIS 2024 database.

Table 11.133. Reliability coefficient alpha for single countries and pooled model for scale T4OPPART

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.928
Alberta (Canada)	0.880
Australia	0.903
Austria	0.847
Azerbaijan	0.886
Bahrain	0.915
Belgium	0.880
Flemish Community (Belgium)	0.891
French Community (Belgium)	0.844
Brazil	0.922
Bulgaria	0.905
Chile	0.902
Colombia	0.923
Costa Rica	0.911
Croatia	0.897
Cyprus	0.885
Czechia	0.878
Denmark	0.786
Estonia	0.921
Finland	0.845
France	0.894
Hungary	0.916
Iceland	0.879
Israel	0.849
Italy	0.839
Japan	0.836
Kazakhstan	0.810
Korea	0.911

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Kosovo	0.929
Latvia	0.912
Lithuania	0.941
Malta	0.878
Montenegro	0.914
Morocco	0.911
Netherlands	0.890
New Zealand	0.898
North Macedonia	0.924
Norway	0.845
Poland	0.909
Portugal	0.913
Romania	0.890
Saudi Arabia	0.929
Serbia	0.907
Shanghai (China)	0.969
Singapore	0.877
Slovak Republic	0.882
Slovenia	0.876
South Africa	0.921
Spain	0.924
Sweden	0.841
Türkiye	0.927
United Arab Emirates	0.900
United States	0.915
Uzbekistan	0.882
Viet Nam	0.870
International pooled data	0.898
ISCED level 1	
Australia	0.907
Belgium	0.801
Flemish Community (Belgium)	0.841
French Community (Belgium)	0.736
Brazil	0.888
France	0.866
Japan	0.855
Korea	0.905
Morocco	0.886
Netherlands	0.818
New Zealand	0.907
Saudi Arabia	0.939

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Slovenia	0.883
Spain	0.902
Türkiye	0.931
United Arab Emirates	0.903
International pooled data	0.874
ISCED level 3	
Croatia	0.939
Denmark	0.738
Flemish Community (Belgium)	0.871
Portugal	0.917
Saudi Arabia	0.945
Slovenia	0.903
Türkiye	0.929
United Arab Emirates	0.928
International pooled data	0.900

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.134. Measurement invariance results from MGCFA for scale T4OPPART with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.997	0.995	0.111	0.014	-0.003	-0.005	0.111	0.014
Equal loadings and thresholds	0.991	0.996	0.096	0.094	-0.006	0.001	-0.015	0.080

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.135. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4OPPART

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G64A	0.816	-1.734	-0.867	0.757
TT4G64B	0.879	-1.887	-0.829	0.856
TT4G64C	0.902	-1.812	-0.691	0.955

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Teacher leadership (T4TLEAD)

The scale of *Teacher leadership* (T4TLEAD) was measured by a set of four items: TT4G64I, TT4G64J, TT4G64K and TT4G64L. Teachers were asked to indicate their level of agreement with each of these items using the following response categories: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale reflect greater perceived teacher leadership. Table 11.136 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.137. The reliabilities for T4TLEAD are high in all populations, with values mostly above 0.800. In terms of model fit, the scale T4TLEAD has generally a good model fit, with CFI values greater than 0.98 across all populations. The TLI is also above 0.950 in most populations, except for the ISCED level 2 population in Croatia. The RMSEA exceeds the cut-off criterion in 18 of the ISCED level 2 participants, 5 of the ISCED level 1 participants, and 3 of the ISCED level 3 participants. RMSEA values are particularly high, above 0.190, in both the ISCED levels 2 and 3 populations in Croatia, as well as in the ISCED level 2 population in Montenegro and Serbia. The SRMR does not exceed the cut-off criterion in any of the populations.

Table 11.138 presents the results from the measurement invariance testing for T4TLEAD for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices except the CFI, whose change is very close to the acceptable range. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI, close for the RMSEA and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.139 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4TLEAD. All items show high loadings. Results by participating country/territory show a low loading for item TT4G64L in Uzbekistan (ISCED level 2).

Table 11.136. Items and response categories used in the construction of scale T4TLEAD

Scale or item	Question or item wording
T4TLEAD	How strongly do you agree or disagree with these statements, as applied to this school?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G64I	Teachers take leadership roles in promoting a professional learning community.
TT4G64J	Teachers initiate and lead collaborative activities.
TT4G64K	Teachers lead their professional growth and development activities whenever possible.
TT4G64L	Teachers participate in non-teaching school events and projects.

Source: OECD, TALIS 2024 database.

Table 11.137. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4TLEAD

Participating country/territory	Reliability	CFA model fit			
	Cronbach’s alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.925	0.999	0.997	0.052	0.007
Alberta (Canada)	0.873	0.999	0.996	0.052	0.010
Australia	0.877	0.999	0.996	0.062	0.010
Austria	0.795	0.986	0.957	**0.112**	0.026

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Azerbaijan	0.900	0.999	0.997	0.050	0.007
Bahrain	0.937	1.000	0.999	0.064	0.005
Belgium	0.828	0.999	0.997	0.032	0.007
Flemish Community (Belgium)	0.871	0.999	0.998	0.038	0.008
French Community (Belgium)	0.753	0.999	0.997	0.023	0.007
Brazil	0.898	0.999	0.997	0.064	0.009
Bulgaria	0.924	0.999	0.996	0.074	0.010
Chile	0.883	0.996	0.989	0.083	0.014
Colombia	0.892	0.995	0.984	**0.112**	0.017
Costa Rica	0.916	0.996	0.989	**0.116**	0.013
Croatia	0.904	0.981	0.944	**0.237**	0.041
Cyprus	0.906	1.000	1.000	0.023	0.004
Czechia	0.853	0.994	0.982	0.087	0.016
Denmark	0.835	0.995	0.984	0.098	0.023
Estonia	0.879	0.999	0.996	0.051	0.009
Finland	0.820	0.985	0.956	**0.121**	0.028
France	0.826	0.995	0.986	0.075	0.013
Hungary	0.889	0.997	0.991	0.083	0.013
Iceland	0.874	0.998	0.994	0.078	0.014
Israel	0.915	0.999	0.998	0.056	0.007
Italy	0.869	0.991	0.974	**0.134**	0.022
Japan	0.855	0.991	0.974	**0.132**	0.022
Kazakhstan	0.892	0.987	0.961	**0.153**	0.022
Korea	0.940	0.997	0.991	**0.179**	0.015
Kosovo	0.914	0.999	0.998	0.044	0.005
Latvia	0.883	0.989	0.968	**0.140**	0.030
Lithuania	0.870	0.989	0.966	**0.170**	0.031
Malta	0.888	0.999	0.997	0.054	0.008
Montenegro	0.949	0.996	0.989	**0.197**	0.020
Morocco	0.895	0.999	0.998	0.035	0.005
Netherlands	0.817	0.990	0.969	0.083	0.022
New Zealand	0.862	0.999	0.998	0.041	0.010
North Macedonia	0.912	0.994	0.983	**0.167**	0.018
Norway	0.871	0.996	0.988	**0.106**	0.019
Poland	0.918	0.998	0.993	0.082	0.012
Portugal	0.884	0.999	0.996	0.060	0.010
Romania	0.895	0.994	0.982	**0.117**	0.016
Saudi Arabia	0.965	1.000	1.000	0.047	0.004
Serbia	0.913	0.991	0.972	**0.198**	0.027
Shanghai (China)	0.908	1.000	1.000	0.032	0.003
Singapore	0.897	1.000	1.000	0.020	0.004
Slovak Republic	0.887	0.997	0.991	0.081	0.014
Slovenia	0.866	0.987	0.962	**0.170**	0.033
South Africa	0.918	0.999	0.997	0.081	0.009
Spain	0.882	0.996	0.989	0.066	0.011
Sweden	0.832	0.997	0.990	0.067	0.014
Türkiye	0.944	0.998	0.995	**0.123**	0.010
United Arab Emirates	0.930	0.999	0.996	0.079	0.011
United States	0.894	1.000	0.999	0.035	0.007
Uzbekistan	0.842	0.999	0.998	0.042	0.007

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Viet Nam	0.902	0.999	0.998	0.071	0.009
International pooled data	0.888	0.997	0.991	0.088	0.012
ISCED level 1					
Australia	0.900	0.999	0.997	0.072	0.010
Belgium	0.814	0.995	0.985	0.069	0.015
Flemish Community (Belgium)	0.858	0.996	0.988	0.089	0.018
French Community (Belgium)	0.750	0.992	0.975	0.064	0.016
Brazil	0.905	0.999	0.998	0.050	0.006
France	0.841	0.997	0.990	0.066	0.012
Japan	0.851	0.997	0.991	0.079	0.015
Korea	0.952	0.999	0.996	**0.151**	0.009
Morocco	0.884	0.997	0.992	0.064	0.011
Netherlands	0.899	0.991	0.973	**0.198**	0.033
New Zealand	0.909	1.000	0.999	0.028	0.006
Saudi Arabia	0.960	1.000	0.999	0.076	0.004
Slovenia	0.885	0.996	0.987	0.100	0.016
Spain	0.888	0.998	0.994	0.055	0.010
Türkiye	0.949	0.998	0.995	**0.136**	0.011
United Arab Emirates	0.931	0.998	0.994	**0.126**	0.015
International pooled data	0.894	0.999	0.998	0.047	0.006
ISCED level 3					
Croatia	0.904	0.984	0.951	**0.226**	0.031
Denmark	0.858	0.989	0.967	**0.151**	0.029
Flemish Community (Belgium)	0.859	0.996	0.989	0.080	0.015
Portugal	0.871	0.996	0.987	0.096	0.015
Saudi Arabia	0.961	1.000	0.999	0.054	0.004
Slovenia	0.875	0.993	0.978	**0.128**	0.023
Türkiye	0.942	0.999	0.998	0.082	0.007
United Arab Emirates	0.942	0.998	0.995	0.085	0.009
International pooled data	0.917	0.997	0.990	**0.115**	0.015

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.138. Measurement invariance results from MGCFA for scale T4TLEAD with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.997	0.991	0.110	0.014	-	-	-	-
Equal loadings	0.992	0.990	0.115	0.030	-0.005	-0.001	0.005	0.016
Equal loadings and thresholds	0.987	0.994	0.092	0.106	-0.004	0.004	-0.023	0.076

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.139. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4TLEAD

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G64I	0.866	-2.041	-0.916	0.804
TT4G64J	0.924	-2.158	-1.098	0.736
TT4G64K	0.842	-2.134	-1.111	0.741
TT4G64L	0.666	-2.021	-1.095	0.660

Source: OECD, TALIS 2024 database.

Teacher-student relations (T4STUD)

The scale of *Teacher-student relations* (T4STUD) was measured by a set of four items: TT4G65A, TT4G65B, TT4G65C and TT4G65D. Teachers were asked to indicate their level of agreement with each of these items using the following response categories: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale reflect more positive teacher-student relations. Table 11.140 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.141. The reliabilities for T4STUD are above 0.800 for most participating countries/territories, across all populations. As can be seen in Table 11.141, the scale T4STUD has a good model fit across all populations. The CFI, TLI and SRMR values are all within the established cut-off criteria. The RMSEA is also within the cut-off for most populations, with the exception of the ISCED level 2 population in Colombia, Korea, Portugal, Shanghai (China) and the United States; the ISCED level 1 population in Korea and Saudi Arabia; and the ISCED level 3 population in Croatia, Saudi Arabia and Türkiye.

Table 11.142 presents the results from the measurement invariance testing for T4STUD for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the RMSEA and SRMR and close for the CFI and TLI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for all fit indices but the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.143 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4STUD. All items show high loadings. Results by participating country/territory show a low loading for item TT4G65D in Sweden (ISCED level 2).

Table 11.140. Items and response categories used in the construction of scale T4STUD

Scale or item	Question or item wording
T4STUD	How strongly do you agree or disagree with the following statements about what happens in this school?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G65A	Teachers and students usually get on well with each other.
TT4G65B	Most teachers believe that the students’ well-being is important.
TT4G65C	Most teachers are interested in what students have to say.
TT4G65D	If a student needs extra assistance, the school provides it.

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.141. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4STUD

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.869	0.997	0.991	0.057	0.012
Alberta (Canada)	0.915	1.000	0.999	0.040	0.011
Australia	0.897	0.999	0.997	0.057	0.012
Austria	0.829	1.000	0.999	0.019	0.006
Azerbaijan	0.829	0.999	0.997	0.028	0.006
Bahrain	0.905	0.998	0.995	0.066	0.006
Belgium	0.871	0.999	0.998	0.042	0.009
Flemish Community (Belgium)	0.877	1.000	1.000	0.019	0.007
French Community (Belgium)	0.853	0.995	0.985	0.097	0.018
Brazil	0.885	0.998	0.993	0.082	0.012
Bulgaria	0.915	0.999	0.998	0.046	0.008
Chile	0.881	0.999	0.997	0.035	0.008
Colombia	0.886	0.994	0.982	**0.113**	0.020
Costa Rica	0.876	0.999	0.998	0.037	0.007
Croatia	0.911	1.000	0.999	0.038	0.007
Cyprus	0.898	0.999	0.997	0.054	0.008
Czechia	0.892	0.996	0.988	0.091	0.017
Denmark	0.869	0.997	0.991	0.080	0.019
Estonia	0.890	1.000	0.999	0.031	0.006
Finland	0.866	1.000	1.000	0.016	0.006
France	0.843	0.997	0.990	0.085	0.019
Hungary	0.917	0.998	0.995	0.086	0.011
Iceland	0.871	1.000	1.000	0.025	0.009
Israel	0.891	0.999	0.997	0.054	0.010
Italy	0.885	0.997	0.992	0.088	0.013
Japan	0.925	0.999	0.996	0.089	0.010
Kazakhstan	0.890	1.000	0.999	0.020	0.003
Korea	0.941	0.997	0.992	**0.143**	0.013
Kosovo	0.881	0.994	0.983	0.097	0.016
Latvia	0.912	1.000	0.999	0.031	0.007
Lithuania	0.918	0.998	0.995	0.069	0.011
Malta	0.886	0.999	0.998	0.045	0.009
Montenegro	0.935	1.000	0.999	0.045	0.005
Morocco	0.829	0.989	0.966	0.086	0.018
Netherlands	0.864	1.000	1.002	0.000	0.001
New Zealand	0.915	1.000	0.999	0.030	0.009
North Macedonia	0.899	0.998	0.994	0.071	0.009
Norway	0.887	0.998	0.993	0.079	0.021
Poland	0.910	0.997	0.990	0.089	0.018
Portugal	0.863	0.995	0.985	**0.101**	0.022
Romania	0.914	0.997	0.992	0.083	0.014
Saudi Arabia	0.942	0.999	0.996	0.065	0.005
Serbia	0.905	1.000	0.999	0.027	0.005
Shanghai (China)	0.962	0.997	0.992	**0.220**	0.015
Singapore	0.911	0.999	0.997	0.050	0.008
Slovak Republic	0.882	0.999	0.997	0.046	0.009

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Slovenia	0.866	0.999	0.997	0.040	0.010
South Africa	0.860	1.000	1.001	0.000	0.001
Spain	0.875	0.999	0.997	0.044	0.010
Sweden	0.812	0.998	0.995	0.053	0.017
Türkiye	0.927	0.999	0.997	0.082	0.008
United Arab Emirates	0.927	0.999	0.997	0.048	0.008
United States	0.904	0.997	0.990	**0.108**	0.023
Uzbekistan	0.765	0.992	0.976	0.067	0.016
Viet Nam	0.849	0.994	0.981	0.100	0.016
International pooled data	0.880	0.998	0.995	0.054	0.008
ISCED level 1					
Australia	0.923	1.000	0.999	0.044	0.008
Belgium	0.900	0.999	0.998	0.050	0.009
Flemish Community (Belgium)	0.893	0.999	0.997	0.069	0.015
French Community (Belgium)	0.910	0.998	0.994	0.088	0.014
Brazil	0.892	0.998	0.994	0.069	0.009
France	0.913	0.999	0.996	0.091	0.016
Japan	0.940	1.000	0.999	0.045	0.007
Korea	0.951	0.996	0.988	**0.168**	0.014
Morocco	0.847	0.997	0.991	0.054	0.012
Netherlands	0.918	1.000	1.000	0.016	0.012
New Zealand	0.910	0.999	0.997	0.074	0.016
Saudi Arabia	0.952	0.998	0.994	**0.101**	0.008
Slovenia	0.880	0.999	0.997	0.044	0.009
Spain	0.908	0.999	0.998	0.037	0.007
Türkiye	0.939	0.999	0.996	0.092	0.010
United Arab Emirates	0.921	1.000	0.999	0.026	0.005
International pooled data	0.913	0.999	0.998	0.047	0.007
ISCED level 3					
Croatia	0.906	0.997	0.991	**0.101**	0.016
Denmark	0.864	0.999	0.997	0.042	0.012
Flemish Community (Belgium)	0.883	0.999	0.998	0.044	0.010
Portugal	0.876	0.998	0.994	0.070	0.012
Saudi Arabia	0.955	0.995	0.985	**0.150**	0.013
Slovenia	0.865	0.998	0.993	0.066	0.014
Türkiye	0.923	0.998	0.995	**0.104**	0.012
United Arab Emirates	0.929	0.992	0.977	0.060	0.009
International pooled data	0.909	0.999	0.996	0.059	0.009

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.142. Measurement invariance results from MGCFA for scale T4STUD with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR

Unclassified - Non classifié

ISCED level 2								
Baseline	0.998	0.994	0.075	0.011	-	-	-	-
Equal loadings	0.991	0.990	0.103	0.028	-0.007	-0.005	0.028	0.018
Equal loadings and thresholds	0.988	0.994	0.079	0.115	-0.004	0.004	-0.024	0.086

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Iceland, the Netherlands, New Zealand, Norway and Sweden are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.143. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4STUD

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G65A	0.771	-2.531	-1.707	0.534
TT4G65B	0.892	-2.627	-1.790	0.193
TT4G65C	0.876	-2.501	-1.448	0.489
TT4G65D	0.690	-2.338	-1.508	0.255

Source: OECD, TALIS 2024 database.

Relational leadership (T4RELEAD)

The scale of *Relational leadership* (T4RELEAD) was measured by a set of four items (TT4G66A, TT4G66E, TT4G66F and TT4G66G), in which teachers were asked to indicate their level of agreement with different statements about the principal. For each item, the following response categories were available: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale reflect greater perceived relational leadership. Table 11.144 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.145. The reliabilities for T4RELEAD are above 0.700 in all populations. In terms of the model fit of the scale T4RELEAD, the CFI, TLI and SRMR are all within the acceptable cut-off criteria for all participants. However, the RMSEA exceeds the cut-off criterion in 22 of the ISCED level 2 participants, with half of these exceeding 0.120. The RMSEA also exceeds the cut-off in the ISCED level 1 population in Brazil, Korea, Morocco and Saudi Arabia, as well as in the ISCED level 3 population in Croatia, Portugal and Türkiye.

Table 11.146 presents the results from the measurement invariance testing results for T4RELEAD for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI and RMSEA and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.147 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4RELEAD. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.144. Items and response categories used in the construction of scale T4RELEAD

Scale or item	Question or item wording
T4RELEAD	Thinking about the principal at this school, how strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5

Unclassified - Non classifié

TT4G66A	The principal has a clear vision for this school.
TT4G66E	The principal encourages all staff to have a say on important decisions.
TT4G66F	The principal has good professional relationships with staff.
TT4G66G	The principal has good professional relationships with parents or guardians.

Source: OECD, TALIS 2024 database.

Table 11.145. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4RELEAD

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.951	1.000	0.999	0.034	0.004
Alberta (Canada)	0.947	0.998	0.995	0.096	0.012
Australia	0.931	0.999	0.997	0.094	0.011
Austria	0.892	0.998	0.995	0.066	0.010
Azerbaijan	0.922	0.998	0.994	0.084	0.008
Bahrain	0.949	0.997	0.990	**0.164**	0.013
Belgium	0.904	0.998	0.994	0.075	0.011
Flemish Community (Belgium)	0.901	0.998	0.994	0.078	0.012
French Community (Belgium)	0.907	0.998	0.995	0.073	0.010
Brazil	0.945	0.998	0.995	**0.157**	0.016
Bulgaria	0.966	1.000	0.999	0.056	0.004
Chile	0.932	0.999	0.997	0.059	0.008
Colombia	0.931	0.998	0.994	0.098	0.014
Costa Rica	0.945	0.996	0.988	**0.169**	0.018
Croatia	0.952	0.999	0.996	**0.117**	0.009
Cyprus	0.917	0.996	0.987	**0.123**	0.014
Czechia	0.920	0.997	0.991	**0.107**	0.013
Denmark	0.920	0.998	0.995	0.100	0.013
Estonia	0.923	0.997	0.992	**0.110**	0.014
Finland	0.929	1.000	0.999	0.038	0.005
France	0.916	0.998	0.993	0.099	0.011
Hungary	0.953	1.000	1.000	0.045	0.004
Iceland	0.932	0.998	0.995	0.099	0.010
Israel	0.927	0.999	0.996	0.071	0.010
Italy	0.933	0.998	0.995	**0.112**	0.012
Japan	0.917	0.999	0.997	0.084	0.010
Kazakhstan	0.943	1.000	0.999	0.047	0.006
Korea	0.954	0.999	0.997	**0.114**	0.007
Kosovo	0.943	0.998	0.995	**0.114**	0.012
Latvia	0.949	0.999	0.998	0.059	0.009
Lithuania	0.939	0.999	0.998	0.057	0.007
Malta	0.924	0.998	0.993	**0.112**	0.014

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Montenegro	0.975	1.000	1.000	0.050	0.003
Morocco	0.951	0.996	0.988	**0.143**	0.015
Netherlands	0.840	0.997	0.990	0.064	0.017
New Zealand	0.907	0.998	0.993	0.094	0.017
North Macedonia	0.967	1.000	0.999	0.078	0.005
Norway	0.936	0.996	0.988	**0.135**	0.015
Poland	0.941	0.997	0.991	**0.128**	0.013
Portugal	0.930	0.997	0.991	**0.120**	0.016
Romania	0.966	0.999	0.997	**0.106**	0.008
Saudi Arabia	0.970	0.999	0.996	**0.127**	0.008
Serbia	0.960	0.998	0.995	**0.153**	0.011
Shanghai (China)	0.979	1.000	0.999	**0.151**	0.007
Singapore	0.940	1.000	0.999	0.050	0.007
Slovak Republic	0.934	0.999	0.997	0.083	0.010
Slovenia	0.929	0.999	0.996	0.081	0.009
South Africa	0.948	1.000	0.999	0.042	0.005
Spain	0.939	0.998	0.994	0.091	0.012
Sweden	0.910	0.997	0.991	**0.115**	0.017
Türkiye	0.958	0.998	0.995	**0.132**	0.008
United Arab Emirates	0.955	0.999	0.998	0.071	0.008
United States	0.946	0.999	0.997	0.075	0.010
Uzbekistan	0.940	1.000	1.000	0.000	0.001
Viet Nam	0.957	0.999	0.998	0.084	0.007
International pooled data	0.939	0.999	0.996	0.086	0.009
ISCED level 1					
Australia	0.938	0.999	0.996	0.095	0.010
Belgium	0.919	0.998	0.995	0.078	0.012
Flemish Community (Belgium)	0.909	0.998	0.994	0.089	0.014
French Community (Belgium)	0.935	0.999	0.998	0.063	0.007
Brazil	0.942	0.996	0.988	**0.193**	0.020
France	0.948	0.999	0.998	0.061	0.007
Japan	0.916	0.999	0.996	0.097	0.013
Korea	0.952	0.997	0.991	**0.178**	0.016
Morocco	0.945	0.996	0.988	**0.136**	0.014
Netherlands	0.905	0.993	0.980	**0.130**	0.030
New Zealand	0.928	0.999	0.998	0.062	0.011
Saudi Arabia	0.975	1.000	0.999	**0.106**	0.007
Slovenia	0.932	0.999	0.996	0.089	0.010
Spain	0.947	0.998	0.995	0.076	0.010
Türkiye	0.966	1.000	0.999	0.074	0.004
United Arab Emirates	0.957	0.999	0.997	0.077	0.008

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
International pooled data	0.940	0.999	0.997	0.080	0.008
ISCED level 3					
Croatia	0.957	0.998	0.995	**0.156**	0.011
Denmark	0.840	0.996	0.989	0.066	0.016
Flemish Community (Belgium)	0.888	0.998	0.994	0.070	0.011
Portugal	0.932	0.995	0.985	**0.171**	0.022
Saudi Arabia	0.972	1.000	1.000	0.039	0.003
Slovenia	0.935	0.999	0.996	0.083	0.010
Türkiye	0.960	0.999	0.998	**0.126**	0.008
United Arab Emirates	0.960	0.999	0.998	0.084	0.009
International pooled data	0.941	0.999	0.997	0.067	0.007

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.146. Measurement invariance results from MGCFA for scale T4RELEAD with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.999	0.996	0.098	0.010	-	-	-	-
Equal loadings	0.997	0.997	0.094	0.017	-0.001	0.000	-0.004	0.008
Equal loadings and thresholds	0.997	0.998	0.066	0.070	-0.000	0.002	-0.028	0.053

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.147. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4RELEAD

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G66A	0.849	-1.996	-1.264	0.235
TT4G66E	0.851	-1.737	-0.893	0.467
TT4G66F	0.968	-1.931	-1.238	0.253
TT4G66G	0.925	-2.204	-1.486	0.319

Source: OECD, TALIS 2024 database.

Instructional leadership (T4INSTLE)

The scale of *Instructional leadership* (T4INSTLE) was measured by a set of three items: TT4G66B, TT4G66C and TT4G66D. Teachers were asked to indicate their level of agreement with each of these items using the following response categories: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher values on this scale reflect greater perceived instructional leadership. Table 11.148

Unclassified - Non classifié

provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.149. The fit indices for T4INSTLE are not presented here as the scale was measured by just three items. The reliabilities for T4INSTLE are above 0.700 in all populations.

Table 11.150 presents the results from the measurement invariance testing for T4INSTLE for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The model fit of the equal loadings model shows a good fit with the exception of the RMSEA. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI and RMSEA and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.151 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4INSTLE. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.148. Items and response categories used in the construction of scale T4INSTLE

Scale or item	Question or item wording
T4INSTLE	Thinking about the principal at this school, how strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G66B	The principal encourages co-operation among teachers to develop new teaching practices.
TT4G66C	The principal ensures that teachers take responsibility for improving their teaching skills.
TT4G66D	The principal ensures that teachers feel responsible for their students' learning outcomes.

Source: OECD, TALIS 2024 database.

Table 11.149. Reliability coefficient alpha for single countries and pooled model for scale T4INSTLE

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.926
Alberta (Canada)	0.926
Australia	0.914
Austria	0.846
Azerbaijan	0.929
Bahrain	0.963
Belgium	0.845
Flemish Community (Belgium)	0.875
French Community (Belgium)	0.811
Brazil	0.933
Bulgaria	0.958
Chile	0.905
Colombia	0.918
Costa Rica	0.919
Croatia	0.938

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Cyprus	0.916
Czechia	0.865
Denmark	0.891
Estonia	0.858
Finland	0.861
France	0.851
Hungary	0.942
Iceland	0.891
Israel	0.920
Italy	0.927
Japan	0.913
Kazakhstan	0.934
Korea	0.966
Kosovo	0.924
Latvia	0.929
Lithuania	0.914
Malta	0.924
Montenegro	0.961
Morocco	0.930
Netherlands	0.867
New Zealand	0.910
North Macedonia	0.955
Norway	0.911
Poland	0.948
Portugal	0.908
Romania	0.923
Saudi Arabia	0.962
Serbia	0.935
Shanghai (China)	0.983
Singapore	0.928
Slovak Republic	0.917
Slovenia	0.892
South Africa	0.937
Spain	0.916
Sweden	0.886
Türkiye	0.970
United Arab Emirates	0.958
United States	0.929
Uzbekistan	0.930
Viet Nam	0.960
International pooled data	0.921

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
ISCED level 1	
Australia	0.919
Belgium	0.871
Flemish Community (Belgium)	0.897
French Community (Belgium)	0.841
Brazil	0.926
France	0.880
Japan	0.898
Korea	0.980
Morocco	0.935
Netherlands	0.911
New Zealand	0.932
Saudi Arabia	0.966
Slovenia	0.896
Spain	0.914
Türkiye	0.970
United Arab Emirates	0.963
International pooled data	0.921
ISCED level 3	
Croatia	0.944
Denmark	0.879
Flemish Community (Belgium)	0.874
Portugal	0.917
Saudi Arabia	0.961
Slovenia	0.902
Türkiye	0.969
United Arab Emirates	0.963
International pooled data	0.938

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.150. Measurement invariance results from MGCFA for scale T4INSTLE with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.998	0.997	0.146	0.017	-0.002	-0.003	0.146	0.017
Equal loadings and thresholds	0.998	0.999	0.073	0.085	0.000	0.003	-0.073	0.068

Unclassified - Non classifié

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.151. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4INSTLE

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G66B	0.881	-2.004	-1.216	0.298
TT4G66C	0.974	-2.056	-1.202	0.407
TT4G66D	0.839	-2.144	-1.281	0.430

Source: OECD, TALIS 2024 database.

School climate regarding bullying (T4CLIBUL)

Teachers answered four items measuring *School climate regarding bullying* (T4CLIBUL). These items were TT4G70A, TT4G70B, TT4G70C and TT4G70D. Teachers were asked to indicate their level of agreement with each of these items using the following response categories: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale reflect a more positive school climate regarding bullying. Table 11.152 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.153. The scale T4CLIBUL has high reliability (above 0.700) in all populations. As can be observed from Table 11.153, the CFI, TLI and SRMR for T4CLIBUL are all within the acceptable cut-off criteria for all populations. The RMSEA is above the cut-off criterion in ten ISCED level 2 participants (Australia, Japan, Korea, New Zealand, Saudi Arabia, Shanghai (China), Türkiye, United States, Uzbekistan and Viet Nam), six ISCED level 1 participants (Australia, Brazil, Japan, Korea, New Zealand and Saudi Arabia) and in the ISCED level 3 population in Denmark, Slovenia and Türkiye.

Table 11.154 presents the results from the measurement invariance testing for T4CLIBUL for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the RMSEA and SRMR and close for the CFI and TLI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and exceeds the cut-offs for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.155 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4CLIBUL. All items show high loadings. Results by participating country/territory show a low item loading for item TT4G70C in Morocco (ISCED level 1).

Table 11.152. Items and response categories used in the construction of scale T4CLIBUL

Scale or item	Question or item wording
T4CLIBUL	How strongly do you agree or disagree with the following statements about student bullying at this school?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G70A	Teachers at this school make it clear to students that bullying is not tolerated.
TT4G70B	At this school, students tell teachers when other students are being bullied.
TT4G70C	There are adults at this school students could turn to if they had a personal problem.
TT4G70D	The teachers at this school are genuinely concerned about the students.

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.153. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLIBUL

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.765	1.000	1.001	0.000	0.005
Alberta (Canada)	0.875	0.994	0.981	0.084	0.023
Australia	0.832	0.984	0.952	**0.133**	0.033
Austria	0.795	0.994	0.983	0.051	0.015
Azerbaijan	0.861	0.995	0.985	0.082	0.013
Bahrain	0.905	0.996	0.987	0.089	0.009
Belgium	0.815	0.999	0.997	0.023	0.008
Flemish Community (Belgium)	0.833	0.999	0.996	0.029	0.010
French Community (Belgium)	0.789	1.000	0.999	0.010	0.007
Brazil	0.899	0.997	0.990	0.068	0.009
Bulgaria	0.847	1.000	0.999	0.019	0.006
Chile	0.919	1.000	0.999	0.015	0.005
Colombia	0.864	0.995	0.985	0.066	0.012
Costa Rica	0.894	1.000	0.999	0.021	0.005
Croatia	0.911	0.999	0.996	0.057	0.009
Cyprus	0.859	0.995	0.986	0.076	0.015
Czechia	0.875	0.999	0.997	0.037	0.009
Denmark	0.856	0.998	0.995	0.046	0.012
Estonia	0.849	0.995	0.986	0.077	0.017
Finland	0.792	0.992	0.977	0.075	0.022
France	0.838	0.999	0.997	0.030	0.011
Hungary	0.884	0.999	0.998	0.032	0.008
Iceland	0.835	1.000	1.001	0.000	0.008
Israel	0.865	0.990	0.971	0.088	0.020
Italy	0.846	0.998	0.995	0.045	0.010
Japan	0.910	0.993	0.979	**0.137**	0.025
Kazakhstan	0.796	0.989	0.966	0.078	0.017
Korea	0.937	0.993	0.979	**0.196**	0.014
Kosovo	0.815	0.995	0.985	0.061	0.014
Latvia	0.797	1.000	1.001	0.000	0.003
Lithuania	0.878	1.000	0.999	0.025	0.006
Malta	0.854	0.997	0.992	0.062	0.016
Montenegro	0.903	0.999	0.997	0.040	0.006
Morocco	0.825	0.996	0.988	0.038	0.009
Netherlands	0.809	1.000	1.007	0.000	0.005
New Zealand	0.854	0.986	0.957	**0.112**	0.030
North Macedonia	0.862	0.996	0.988	0.077	0.011
Norway	0.854	0.995	0.984	0.088	0.025

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.857	0.998	0.995	0.033	0.010
Portugal	0.825	0.994	0.983	0.064	0.017
Romania	0.890	1.000	0.999	0.025	0.005
Saudi Arabia	0.924	0.992	0.977	**0.133**	0.015
Serbia	0.875	0.996	0.987	0.083	0.012
Shanghai (China)	0.964	0.998	0.994	**0.133**	0.008
Singapore	0.872	0.999	0.996	0.049	0.014
Slovak Republic	0.835	1.000	1.001	0.000	0.001
Slovenia	0.851	0.998	0.994	0.052	0.014
South Africa	0.830	0.989	0.968	0.089	0.022
Spain	0.851	0.994	0.983	0.055	0.017
Sweden	0.829	0.999	0.998	0.027	0.011
Türkiye	0.912	0.995	0.984	**0.104**	0.011
United Arab Emirates	0.910	0.996	0.988	0.064	0.011
United States	0.879	0.984	0.952	**0.112**	0.023
Uzbekistan	0.852	0.990	0.969	**0.110**	0.018
Viet Nam	0.883	0.996	0.987	**0.105**	0.013
International pooled data	0.850	0.996	0.989	0.053	0.010
ISCED level 1					
Australia	0.890	0.984	0.953	**0.156**	0.024
Belgium	0.836	0.996	0.987	0.062	0.016
Flemish Community (Belgium)	0.850	0.992	0.977	0.089	0.024
French Community (Belgium)	0.822	0.998	0.994	0.040	0.012
Brazil	0.906	0.994	0.981	**0.105**	0.011
France	0.883	0.998	0.994	0.055	0.017
Japan	0.935	0.997	0.992	**0.108**	0.019
Korea	0.956	0.996	0.988	**0.138**	0.013
Morocco	0.797	0.996	0.989	0.057	0.016
Netherlands	0.801	0.968	0.903	**0.141**	0.054
New Zealand	0.894	0.983	0.949	**0.186**	0.033
Saudi Arabia	0.927	0.994	0.983	**0.106**	0.012
Slovenia	0.869	0.998	0.995	0.053	0.011
Spain	0.886	0.994	0.983	0.061	0.018
Türkiye	0.925	0.998	0.995	0.069	0.007
United Arab Emirates	0.895	0.996	0.989	0.065	0.012
International pooled data	0.870	0.996	0.988	0.066	0.011
ISCED level 3					
Croatia	0.891	1.000	0.999	0.023	0.005
Denmark	0.817	0.975	0.925	**0.135**	0.038
Flemish Community (Belgium)	0.778	0.992	0.975	0.067	0.020
Portugal	0.820	0.994	0.983	0.073	0.017

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.913	0.998	0.993	0.069	0.009
Slovenia	0.832	0.981	0.942	**0.109**	0.021
Türkiye	0.901	0.994	0.983	**0.106**	0.012
United Arab Emirates	0.894	0.998	0.994	0.051	0.010
International pooled data	0.857	0.992	0.975	0.089	0.016

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.154. Measurement invariance results from MGCFA for scale T4CLIBUL with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.997	0.991	0.068	0.012	-	-	-	-
Equal loadings	0.984	0.980	0.098	0.032	-0.013	-0.010	0.030	0.020
Equal loadings and thresholds	0.958	0.979	0.102	0.124	-0.026	-0.002	0.004	0.092

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand, Norway and Sweden are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.155. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CLIBUL

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G70A	0.816	-2.367	-1.841	-0.306
TT4G70B	0.687	-2.358	-1.325	0.510
TT4G70C	0.772	-2.314	-1.725	-0.038
TT4G70D	0.817	-2.507	-1.824	-0.052

Source: OECD, TALIS 2024 database.

Student harassment in school (T4STUHAR)

The scale of *Student harassment in school* (T4STUHAR) was measured by a set of three items: TT4G71A, TT4G71B and TT4G71C. Teachers were asked to indicate their level of agreement with each of these items using the following response categories: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher values on this scale reflect greater perceived student harassment in school. Table 11.156 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.157. The fit indices for T4STUHAR are not presented here as the scale was measured by just three items. The reliabilities for T4STUHAR are high, above 0.800, in all populations. In some participating countries/territories, it was not possible to assess reliability or model fit because not all items in the scale were administered. Specifically, this was the case for the ISCED level 2 population in Azerbaijan, Bahrain, Israel, Kazakhstan, Morocco, Singapore, Türkiye, the United Arab Emirates and Uzbekistan; the ISCED

Unclassified - Non classifié

level 1 population in Morocco, Türkiye and the United Arab Emirates; and the ISCED level 3 population in Türkiye and the United Arab Emirates. No scale scores are provided for these participating countries/territories.

Table 11.158 presents the results from the measurement invariance testing for T4STUHAR for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI and RMSEA and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.159 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4STUHAR. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.156. Items and response categories used in the construction of scale T4STUHAR

Scale or item	Question or item wording
T4STUHAR	How strongly do you agree or disagree with the following statements about student harassment at this school?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G71A	Students at this school get teased about their clothing or physical appearance.
TT4G71B	Students at this school get put down because of their ethnicity.
TT4G71C	Students at this school get teased about their gender expression and sexuality (e.g. comments about students not acting “masculine” or "feminine” enough, homophobic or transphobic remarks).

Source: OECD, TALIS 2024 database.

Table 11.157. Reliability coefficient alpha for single countries and pooled model for scale T4STUHAR

Participating country/territory	Reliability Cronbach’s alpha
ISCED level 2	
Albania	0.901
Alberta (Canada)	0.931
Australia	0.882
Austria	0.802
Azerbaijan	-
Bahrain	-
Belgium	0.834
Flemish Community (Belgium)	0.829
French Community (Belgium)	0.842
Brazil	0.920
Bulgaria	0.908
Chile	0.891
Colombia	0.908
Costa Rica	0.912
Croatia	0.847

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Cyprus	0.896
Czechia	0.886
Denmark	0.854
Estonia	0.847
Finland	0.819
France	0.874
Hungary	0.881
Iceland	0.859
Israel	-
Italy	0.888
Japan	0.828
Kazakhstan	-
Korea	0.884
Kosovo	0.878
Latvia	0.858
Lithuania	0.879
Malta	0.883
Montenegro	0.903
Morocco	-
Netherlands	0.874
New Zealand	0.876
North Macedonia	0.862
Norway	0.891
Poland	0.882
Portugal	0.916
Romania	0.902
Saudi Arabia	0.935
Serbia	0.863
Shanghai (China)	0.939
Singapore	-
Slovak Republic	0.836
Slovenia	0.814
South Africa	0.904
Spain	0.924
Sweden	0.873
Türkiye	-
United Arab Emirates	-
United States	0.918
Uzbekistan	-
Viet Nam	0.934
International pooled data	0.901

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
ISCED level 1	
Australia	0.909
Belgium	0.825
Flemish Community (Belgium)	0.816
French Community (Belgium)	0.841
Brazil	0.921
France	0.839
Japan	0.853
Korea	0.903
Morocco	-
Netherlands	0.847
New Zealand	0.904
Saudi Arabia	0.949
Slovenia	0.843
Spain	0.930
Türkiye	-
United Arab Emirates	-
International pooled data	0.882
ISCED level 3	
Croatia	0.899
Denmark	0.914
Flemish Community (Belgium)	0.833
Portugal	0.916
Saudi Arabia	0.951
Slovenia	0.903
Türkiye	-
United Arab Emirates	-
International pooled data	0.914

Note: Alberta (Canada), Azerbaijan, Bahrain, the Flemish Community (Belgium), the French Community (Belgium), Israel, Kazakhstan, Morocco, the Netherlands, New Zealand, Norway, Singapore, Türkiye, the United Arab Emirates and Uzbekistan are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), Morocco, the Netherlands, New Zealand, Türkiye and the United Arab Emirates are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium), Türkiye and the United Arab Emirates are excluded from the pooled ISCED level 3 model. The following participating countries/territories were excluded from this scale because not all scale items were administered: for ISCED level 2, Azerbaijan, Bahrain, Israel, Kazakhstan, Morocco, Singapore, Türkiye, the United Arab Emirates and Uzbekistan; for ISCED level 1, Morocco, Türkiye and the United Arab Emirates; for ISCED level 3, Türkiye and the United Arab Emirates.
Source: OECD, TALIS 2024 database.

Table 11.158. Measurement invariance results from MGCFA for scale T4STUHAR with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								

Unclassified - Non classifié

Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.997	0.995	0.084	0.011	-0.003	-0.005	0.084	0.011
Equal loadings and thresholds	0.988	0.995	0.087	0.094	-0.009	-0.000	0.003	0.083

Note: Alberta (Canada), Azerbaijan, Bahrain, the Flemish Community (Belgium), the French Community (Belgium), Israel, Kazakhstan, Morocco, the Netherlands, New Zealand, Norway, Singapore, Türkiye, the United Arab Emirates and Uzbekistan are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.159. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4STUHAR

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G71A	0.831	-0.895	0.507	1.929
TT4G71B	0.883	-0.499	0.946	2.053
TT4G71C	0.871	-0.622	0.734	1.909

Source: OECD, TALIS 2024 database.

Change fatigue (T4CHFAT)

Teachers were asked to answer four items measuring *Change fatigue* (T4CHFAT). These items were TT4G72B, TT4G72C, TT4G72D and TT4G72F. All items were answered on a four-point scale, with response categories of “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale indicate greater perceived fatigue related to changes in the school. Table 11.160 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.161. The reliabilities for T4CHFAT are high (above 0.700) in all populations. As can be observed from Table 11.161, the CFI, TLI and SRMR for T4CHFAT are all within the acceptable cut-off criteria for all participants. However, the RMSEA is above the cut-off criterion in 29 of the ISCED level 2 participants, 10 of the ISCED level 1 participants, and 6 of the ISCED level 3 participants. The RMSEA is particularly high in all three ISCED levels in Saudi Arabia, as well as in the ISCED level 1 population in France and the ISCED level 2 population in Shanghai (China).

Table 11.162 presents the results from the measurement invariance testing for T4CHFAT for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI and RMSEA and exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.163 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4CHFAT. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.160. Items and response categories used in the construction of scale T4CHFAT

Scale or item	Question or item wording
T4CHFAT	How strongly do you agree or disagree with the following statements about changes in this school, regardless of whether these were initiated by the school or externally?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G72B	I am tired of all the changes in this school.

Unclassified - Non classifié

Scale or item	Question or item wording
TT4G72C	We are asked to change too many things in this school.
TT4G72D	It feels like we are always being asked to change something around here.
TT4G72F	I am asked to implement change initiatives without the necessary resources.

Source: OECD, TALIS 2024 database.

Table 11.161. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CHFAT

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.834	0.989	0.967	**0.115**	0.022
Alberta (Canada)	0.952	0.999	0.998	**0.121**	0.011
Australia	0.952	1.000	0.999	0.094	0.006
Austria	0.922	0.999	0.997	0.092	0.010
Azerbaijan	0.889	0.999	0.997	0.049	0.005
Bahrain	0.904	0.994	0.983	**0.177**	0.019
Belgium	0.930	1.000	0.999	0.071	0.006
Flemish Community (Belgium)	0.930	1.000	0.999	0.087	0.008
French Community (Belgium)	0.938	1.000	1.000	0.032	0.003
Brazil	0.939	0.999	0.998	0.087	0.006
Bulgaria	0.946	0.998	0.995	**0.132**	0.012
Chile	0.925	0.999	0.996	0.099	0.010
Colombia	0.899	1.000	1.000	0.000	0.002
Costa Rica	0.918	1.000	1.000	0.000	0.001
Croatia	0.947	0.999	0.998	**0.104**	0.007
Cyprus	0.901	0.998	0.994	**0.140**	0.018
Czechia	0.940	0.998	0.995	**0.145**	0.010
Denmark	0.955	1.000	0.999	**0.106**	0.008
Estonia	0.934	1.000	1.000	0.038	0.003
Finland	0.940	1.000	1.000	0.045	0.004
France	0.942	0.999	0.998	**0.173**	0.012
Hungary	0.941	0.997	0.992	**0.193**	0.014
Iceland	0.946	1.000	0.999	**0.140**	0.008
Israel	0.906	0.992	0.975	**0.174**	0.020
Italy	0.938	0.999	0.996	**0.156**	0.011
Japan	0.909	0.997	0.991	**0.125**	0.011
Kazakhstan	0.913	0.998	0.995	0.084	0.010
Korea	0.944	0.999	0.997	**0.142**	0.009
Kosovo	0.814	0.970	0.911	**0.188**	0.036
Latvia	0.941	0.999	0.996	**0.109**	0.011
Lithuania	0.941	0.999	0.998	0.070	0.007
Malta	0.960	1.000	1.000	0.055	0.003

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Montenegro	0.926	0.997	0.992	**0.173**	0.014
Morocco	0.815	0.988	0.963	**0.109**	0.027
Netherlands	0.906	1.000	1.000	0.000	0.004
New Zealand	0.941	1.000	0.999	**0.103**	0.009
North Macedonia	0.899	0.998	0.994	0.082	0.008
Norway	0.932	0.999	0.996	**0.143**	0.014
Poland	0.963	0.999	0.997	**0.115**	0.007
Portugal	0.950	1.000	1.000	0.000	0.001
Romania	0.941	0.999	0.998	0.095	0.009
Saudi Arabia	0.906	0.988	0.965	**0.232**	0.024
Serbia	0.922	0.999	0.996	**0.106**	0.010
Shanghai (China)	0.909	0.990	0.970	**0.248**	0.026
Singapore	0.939	1.000	1.000	0.017	0.003
Slovak Republic	0.922	0.999	0.998	0.066	0.008
Slovenia	0.936	1.000	0.999	0.057	0.005
South Africa	0.900	0.998	0.994	0.088	0.009
Spain	0.945	0.999	0.997	**0.103**	0.007
Sweden	0.928	0.999	0.997	0.089	0.009
Türkiye	0.927	0.999	0.997	0.095	0.009
United Arab Emirates	0.916	0.990	0.971	**0.173**	0.022
United States	0.958	0.999	0.998	**0.112**	0.011
Uzbekistan	0.863	1.000	1.000	0.000	0.002
Viet Nam	0.912	0.997	0.992	**0.123**	0.009
International pooled data	0.922	0.999	0.997	0.077	0.007
ISCED level 1					
Australia	0.961	1.000	0.999	**0.102**	0.005
Belgium	0.940	1.000	0.999	0.090	0.007
Flemish Community (Belgium)	0.928	1.000	0.999	0.062	0.006
French Community (Belgium)	0.953	0.999	0.998	**0.130**	0.008
Brazil	0.928	1.000	1.000	0.000	0.001
France	0.950	0.998	0.993	**0.261**	0.018
Japan	0.911	0.997	0.991	**0.108**	0.010
Korea	0.942	0.998	0.993	**0.163**	0.011
Morocco	0.822	0.995	0.985	0.087	0.020
Netherlands	0.866	0.989	0.968	**0.159**	0.023
New Zealand	0.951	0.999	0.998	**0.152**	0.010
Saudi Arabia	0.916	0.992	0.976	**0.197**	0.018
Slovenia	0.941	1.000	1.000	0.045	0.004
Spain	0.952	0.999	0.996	**0.133**	0.011
Türkiye	0.929	1.000	0.999	0.045	0.005
United Arab Emirates	0.913	0.991	0.974	**0.178**	0.025

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
International pooled data	0.922	0.999	0.996	0.091	0.009
ISCED level 3					
Croatia	0.938	0.999	0.997	**0.131**	0.010
Denmark	0.941	0.999	0.998	**0.107**	0.011
Flemish Community (Belgium)	0.923	1.000	1.000	0.008	0.002
Portugal	0.941	1.000	1.000	0.050	0.004
Saudi Arabia	0.913	0.988	0.965	**0.268**	0.027
Slovenia	0.947	0.999	0.998	**0.106**	0.007
Türkiye	0.927	0.999	0.998	0.084	0.007
United Arab Emirates	0.917	0.985	0.956	**0.191**	0.022
International pooled data	0.928	0.999	0.996	**0.108**	0.010

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.162. Measurement invariance results from MGCFA for scale T4CHFAT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.999	0.996	0.121	0.011	-	-	-	-
Equal loadings	0.998	0.997	0.105	0.023	-0.001	0.001	-0.016	0.012
Equal loadings and thresholds	0.996	0.998	0.094	0.095	-0.002	0.001	-0.011	0.071

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.163. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4CHFAT

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G72B	0.840	-0.831	0.906	1.725
TT4G72C	0.940	-1.015	0.737	1.724
TT4G72D	0.944	-0.984	0.648	1.683
TT4G72F	0.736	-0.948	0.577	1.499

Source: OECD, TALIS 2024 database.

Personal utility motivations to teach (T4MOPU)

Teachers answered three items measuring their *Personal utility motivations to teach* (T4MOPU). These items were TT4G73B, TT4G73C and TT4G73D. For each item, teachers could choose one of the following response categories: "Not important at all", "Of low importance", "Of moderate importance" and "Of high importance". Higher values on this scale indicate a higher importance given to personal utility motivations.

Unclassified - Non classifié

Table 11.164 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.165. The model fit indices for T4MOPU are not presented here as the scale was measured by just three items. The reliabilities for T4MOPU are high (above 0.700) in all populations.

Table 11.166 presents the results from the measurement invariance testing for T4MOPU for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the RMSEA, close to the cut-off for the TLI and exceeds the cut-offs for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.167 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4MOPU. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.164. Items and response categories used in the construction of scale T4MOPU

Scale or item	Question or item wording
T4MOPU	How important are the following factors for you as a teacher?
	Recoded response categories for scaling: 1=Not important at all; 2=Of low importance; 3=Of moderate importance; 4=Of high importance
	Scale mid-point: 2.5
TT4G73B	Teaching is a secure job.
TT4G73C	Working hours fit with my family responsibilities.
TT4G73D	Teaching has commitment flexibility (travel, part-time, family commitments).

Source: OECD, TALIS 2024 database.

Table 11.165. Reliability coefficient alpha for single countries and pooled model for scale T4MOPU

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.750
Alberta (Canada)	0.800
Australia	0.818
Austria	0.822
Azerbaijan	0.810
Bahrain	0.846
Belgium	0.783
Flemish Community (Belgium)	0.786
French Community (Belgium)	0.789
Brazil	0.794
Bulgaria	0.787
Chile	0.851
Colombia	0.834
Costa Rica	0.823
Croatia	0.783

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Cyprus	0.754
Czechia	0.751
Denmark	0.744
Estonia	0.800
Finland	0.755
France	0.779
Hungary	0.838
Iceland	0.835
Israel	0.855
Italy	0.822
Japan	0.781
Kazakhstan	0.735
Korea	0.850
Kosovo	0.800
Latvia	0.806
Lithuania	0.805
Malta	0.813
Montenegro	0.801
Morocco	0.823
Netherlands	0.746
New Zealand	0.773
North Macedonia	0.807
Norway	0.790
Poland	0.798
Portugal	0.789
Romania	0.840
Saudi Arabia	0.861
Serbia	0.827
Shanghai (China)	0.878
Singapore	0.813
Slovak Republic	0.799
Slovenia	0.833
South Africa	0.816
Spain	0.833
Sweden	0.813
Türkiye	0.861
United Arab Emirates	0.833
United States	0.831
Uzbekistan	0.755
Viet Nam	0.815
International pooled data	0.811

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
ISCED level 1	
Australia	0.835
Belgium	0.789
Flemish Community (Belgium)	0.796
French Community (Belgium)	0.781
Brazil	0.763
France	0.761
Japan	0.779
Korea	0.872
Morocco	0.818
Netherlands	0.781
New Zealand	0.800
Saudi Arabia	0.854
Slovenia	0.847
Spain	0.848
Türkiye	0.843
United Arab Emirates	0.819
International pooled data	0.819
ISCED level 3	
Croatia	0.816
Denmark	0.798
Flemish Community (Belgium)	0.767
Portugal	0.776
Saudi Arabia	0.853
Slovenia	0.793
Türkiye	0.842
United Arab Emirates	0.853
International pooled data	0.812

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.166. Measurement invariance results from MGCFA for scale T4MOPU with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.994	0.991	0.062	0.016	-0.006	-0.009	0.062	0.016
Equal loadings and thresholds	0.949	0.978	0.100	0.083	-0.045	-0.013	0.037	0.067

Unclassified - Non classifié

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.167. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4MOPU

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G73B	0.651	-2.057	-1.277	-0.111
TT4G73C	0.886	-1.931	-1.248	-0.159
TT4G73D	0.786	-1.676	-0.876	0.201

Source: OECD, TALIS 2024 database.

Social utility motivations to teach (T4MOSU)

The scale of *Social utility motivations to teach* (T4MOSU) was measured by a set of three items: TT4G73E, TT4G73F and TT4G73G. For each item, teachers had to indicate the importance of different factors, using the following response categories: “Not important at all”, “Of low importance”, “Of moderate importance” and “Of high importance”. Higher values on this scale indicate a higher importance given to social utility motivations. Table 11.168 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.169. The model fit indices for T4MOSU are not presented here as the scale was measured by just three items. The scale T4MOSU has high reliability (above 0.700) in all populations.

Table 11.170 presents the results from the measurement invariance testing for T4MOSU for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and close for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.171 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4MOSU. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.168. Items and response categories used in the construction of scale T4MOSU

Scale or item	Question or item wording
T4MOSU	How important are the following factors for you as a teacher?
	Recoded response categories for scaling: 1=Not important at all; 2=Of low importance; 3=Of moderate importance; 4=Of high importance
	Scale mid-point: 2.5
TT4G73E	Teaching allows me to influence the next generation.
TT4G73F	Teaching allows me to work against social disadvantage.
TT4G73G	Teaching makes a worthwhile social contribution.

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.169. Reliability coefficient alpha for single countries and pooled model for scale T4MOSU

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.752
Alberta (Canada)	0.844
Australia	0.867
Austria	0.847
Azerbaijan	0.853
Bahrain	0.853
Belgium	0.820
Flemish Community (Belgium)	0.834
French Community (Belgium)	0.846
Brazil	0.922
Bulgaria	0.856
Chile	0.915
Colombia	0.903
Costa Rica	0.869
Croatia	0.901
Cyprus	0.883
Czechia	0.860
Denmark	0.836
Estonia	0.883
Finland	0.872
France	0.859
Hungary	0.878
Iceland	0.889
Israel	0.875
Italy	0.838
Japan	0.861
Kazakhstan	0.814
Korea	0.858
Kosovo	0.777
Latvia	0.903
Lithuania	0.900
Malta	0.898
Montenegro	0.925
Morocco	0.855
Netherlands	0.847
New Zealand	0.821
North Macedonia	0.841
Norway	0.898
Poland	0.892

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Portugal	0.848
Romania	0.886
Saudi Arabia	0.896
Serbia	0.884
Shanghai (China)	0.803
Singapore	0.889
Slovak Republic	0.876
Slovenia	0.856
South Africa	0.888
Spain	0.884
Sweden	0.903
Türkiye	0.900
United Arab Emirates	0.863
United States	0.872
Uzbekistan	0.828
Viet Nam	0.841
International pooled data	0.863
ISCED level 1	
Australia	0.863
Belgium	0.845
Flemish Community (Belgium)	0.862
French Community (Belgium)	0.865
Brazil	0.898
France	0.866
Japan	0.894
Korea	0.869
Morocco	0.835
Netherlands	0.864
New Zealand	0.857
Saudi Arabia	0.895
Slovenia	0.849
Spain	0.898
Türkiye	0.881
United Arab Emirates	0.842
International pooled data	0.868
ISCED level 3	
Croatia	0.896
Denmark	0.819
Flemish Community (Belgium)	0.842
Portugal	0.873
Saudi Arabia	0.900

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Slovenia	0.845
Türkiye	0.893
United Arab Emirates	0.868
International pooled data	0.868

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.170. Measurement invariance results from MGCFA for scale T4MOSU with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.994	0.991	0.073	0.016	-0.006	-0.009	0.073	0.016
Equal loadings and thresholds	0.977	0.990	0.079	0.085	-0.018	-0.002	0.006	0.069

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.171. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4MOSU

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G73E	0.813	-2.376	-1.628	-0.398
TT4G73F	0.814	-1.911	-1.087	0.032
TT4G73G	0.851	-2.429	-1.658	-0.453

Source: OECD, TALIS 2024 database.

Workplace well-being and stress (T4WELS)

The scale *Workplace well-being and stress* (T4WELS) was measured using a set of four items (TT4G76A, TT4G76B, TT4G76C and TT4G76D). These items assessed the extent to which different situations related to well-being and stress occur. For each item, teachers selected one of the following response options: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores reflect lower perceived well-being (and greater perceived stress). Item TT4G76B was reverse coded, as it was the only positive statement about well-being, to ensure it had the same direction as the rest of the items. Table 11.172 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.173, except for Viet Nam (ISCED level 2) due to a translation error with item TT4G76B. As a result, no scale results or scores are provided for Viet Nam. The scale T4WELS has high reliability (above 0.700) across populations. As can be observed from Table 11.173, the CFI, TLI and SRMR for T4WELS are all within the acceptable cut-off across all populations. The RMSEA is greater than 0.100 in ten populations, mainly from ISCED level 2. Specifically, these include Australia, Austria, Cyprus, Estonia, Israel, Malta, Singapore and Sweden, the ISCED level 1 population in the Flemish Community of Belgium and the ISCED level 3 population in Denmark.

Unclassified - Non classifié

Table 11.174 presents the results from the measurement invariance testing for T4WELS for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices but for the CFI for which it is close. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the acceptable range for the TLI and exceeds the cut-offs for the CFI, RMSEA and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.175 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4WELS. All items show high loadings, with the exception of item TT4G76B which shows a low loading. Results by country/territory show a low loading for item TT4G76B across most participants (36 at ISCED level 2, 12 at ISCED level 1 and 3 at ISCED level 3).

Table 11.172. Items and response categories used in the construction of scale T4WELS

Scale or item	Question or item wording
T4WELS	In your experience as a teacher at this school, to what extent do the following occur?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G76A	I experience stress in my work.
TT4G76B*	My job leaves me time for my personal life.
TT4G76C	My job negatively impacts my mental health.
TT4G76D	My job negatively impacts my physical health.

Note: * Item was reverse coded.
Source: OECD, TALIS 2024 database.

Table 11.173. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4WELS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.788	1.000	1.000	0.000	0.004
Alberta (Canada)	0.878	0.997	0.991	0.072	0.015
Australia	0.866	0.995	0.985	**0.117**	0.018
Austria	0.863	0.991	0.973	**0.156**	0.025
Azerbaijan	0.761	1.000	1.000	0.000	0.002
Bahrain	0.827	0.999	0.998	0.043	0.007
Belgium	0.832	0.997	0.991	0.077	0.014
Flemish Community (Belgium)	0.858	0.996	0.987	0.099	0.017
French Community (Belgium)	0.806	0.998	0.994	0.065	0.013
Brazil	0.808	0.998	0.994	0.084	0.015
Bulgaria	0.844	0.999	0.996	0.064	0.011
Chile	0.845	0.999	0.997	0.046	0.008
Colombia	0.793	1.000	1.000	0.015	0.005
Costa Rica	0.869	0.999	0.998	0.047	0.009
Croatia	0.845	0.998	0.995	0.066	0.012
Cyprus	0.824	0.996	0.989	**0.113**	0.020
Czechia	0.817	0.995	0.984	0.097	0.018
Denmark	0.841	0.996	0.987	0.093	0.016
Estonia	0.835	0.993	0.978	**0.121**	0.022
Finland	0.850	0.995	0.985	0.092	0.018
France	0.803	0.997	0.990	0.085	0.018
Hungary	0.844	0.999	0.998	0.040	0.008

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Iceland	0.788	0.998	0.995	0.063	0.014
Israel	0.820	0.988	0.965	**0.168**	0.034
Italy	0.808	0.997	0.991	0.078	0.016
Japan	0.864	0.999	0.997	0.070	0.010
Kazakhstan	0.764	1.000	1.000	0.016	0.005
Korea	0.799	0.999	0.996	0.082	0.014
Kosovo	0.796	1.000	0.999	0.019	0.006
Latvia	0.824	0.997	0.990	0.073	0.014
Lithuania	0.844	0.997	0.991	0.084	0.015
Malta	0.813	0.991	0.974	**0.136**	0.024
Montenegro	0.807	0.999	0.997	0.053	0.010
Morocco	0.807	0.999	0.998	0.023	0.007
Netherlands	0.819	0.997	0.991	0.058	0.015
New Zealand	0.857	0.998	0.995	0.058	0.012
North Macedonia	0.780	1.000	1.000	0.012	0.004
Norway	0.845	0.998	0.994	0.054	0.010
Poland	0.844	0.997	0.992	0.064	0.014
Portugal	0.837	0.999	0.996	0.062	0.011
Romania	0.817	0.997	0.990	0.069	0.016
Saudi Arabia	0.793	1.000	0.999	0.041	0.008
Serbia	0.842	0.999	0.997	0.064	0.011
Shanghai (China)	0.754	1.000	1.000	0.029	0.004
Singapore	0.817	0.995	0.984	**0.113**	0.017
Slovak Republic	0.793	0.999	0.996	0.050	0.009
Slovenia	0.865	0.997	0.991	0.092	0.015
South Africa	0.734	1.000	1.000	0.000	0.004
Spain	0.845	0.997	0.990	0.071	0.016
Sweden	0.858	0.991	0.972	**0.127**	0.022
Türkiye	0.790	0.998	0.995	0.054	0.011
United Arab Emirates	0.818	0.998	0.995	0.058	0.012
United States	0.868	0.995	0.986	0.087	0.017
Uzbekistan	0.676	0.999	0.998	0.031	0.008
Viet Nam	-	-	-	-	-
International pooled data	0.819	0.998	0.995	0.056	0.011
ISCED level 1					
Australia	0.865	0.997	0.991	0.096	0.014
Belgium	0.813	0.997	0.991	0.071	0.014
Flemish Community (Belgium)	0.839	0.989	0.968	**0.137**	0.026
French Community (Belgium)	0.798	0.999	0.997	0.041	0.009
Brazil	0.742	0.999	0.996	0.062	0.014
France	0.823	0.997	0.990	0.072	0.015
Japan	0.844	0.999	0.996	0.081	0.014
Korea	0.792	1.000	0.999	0.054	0.010
Morocco	0.810	0.999	0.997	0.027	0.007
Netherlands	0.847	0.995	0.984	**0.106**	0.023
New Zealand	0.862	0.995	0.986	0.099	0.017
Saudi Arabia	0.795	0.998	0.994	0.087	0.018
Slovenia	0.859	0.998	0.993	0.082	0.013
Spain	0.837	0.999	0.997	0.036	0.008
Türkiye	0.792	1.000	0.999	0.026	0.006
United Arab Emirates	0.833	0.999	0.998	0.041	0.009

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
International pooled data	0.821	0.998	0.994	0.057	0.012
ISCED level 3					
Croatia	0.858	0.999	0.996	0.065	0.011
Denmark	0.870	0.994	0.982	**0.102**	0.017
Flemish Community (Belgium)	0.854	0.997	0.992	0.074	0.012
Portugal	0.856	0.999	0.997	0.057	0.009
Saudi Arabia	0.794	0.999	0.998	0.046	0.009
Slovenia	0.877	0.997	0.992	0.092	0.014
Türkiye	0.787	0.998	0.994	0.055	0.012
United Arab Emirates	0.809	1.000	0.999	0.018	0.005
International pooled data	0.831	0.996	0.989	0.087	0.016

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand, Norway and Viet Nam are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model. Viet Nam was excluded from this scale due to a translation issue that resulted in one item being treated as not administered.
Source: OECD, TALIS 2024 database.

Table 11.174. Measurement invariance results from MGCFA for scale T4WELS with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.998	0.993	0.076	0.013	-	-	-	-
Equal loadings	0.992	0.990	0.091	0.039	-0.006	-0.003	0.015	0.026
Equal loadings and thresholds	0.957	0.978	0.133	0.135	-0.035	-0.012	0.042	0.097

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand, Norway and Viet Nam are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.175. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4WELS

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G76A	0.781	-0.973	0.165	0.957
TT4G76B	0.352	-1.195	-0.048	1.359
TT4G76C	0.960	-0.376	0.647	1.329
TT4G76D	0.859	-0.251	0.744	1.402

Source: OECD, TALIS 2024 database.

Workload stress (T4WLOADT)

The scale of *Workload stress* (T4WLOADT) was measured by a set of four items (TT4G77A, TT4G77B, TT4G77C and TT4G77D), for which teachers had to indicate to what extent they experienced different sources of stress in their work. For each item, teachers selected one of the following response options: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores indicate greater perceived stress related to workload. Table 11.176 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Unclassified - Non classifié

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.177. The scale T4WLOADT has high reliability (above 0.700) across populations. In terms of model fit, the CFI and SRMR are within the cut-off criteria across all populations. The TLI exceeds the cut-off criterion only in the ISCED level 1 population in Belgium and the Flemish Community of Belgium, and in the ISCED level 3 population in Denmark, while the RMSEA exceeds the cut-off criterion in 19 ISCED level 2 participants – particularly in Azerbaijan and North Macedonia – as well as in 7 ISCED level 1 participants and 4 ISCED level 3 participants.

Table 11.178 presents the results from the measurement invariance testing for T4WLOADT for the ISCED level 2 population. The baseline model shows an acceptable model fit with the exception of the RMSEA which is very close to the cut-off. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices except for the CFI, for which it is close. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the acceptable range for the TLI and exceeds the cut-offs for the CFI, RMSEA and SRMR. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Table 11.179 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4WLOADT. All items show high loadings, except for TT4G77D for which the loadings are still within the acceptable range. Results by country/territory show a low loading for item TT4G77D in Finland and Portugal (ISCED level 2) as well as in Denmark (ISCED level 3).

Table 11.176. Items and response categories used in the construction of scale T4WLOADT

Scale or item	Question or item wording
T4WLOADT	Thinking about your job at this school, to what extent are the following sources of stress in your work?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G77A	Having too much lesson preparation
TT4G77B	Having too many lessons to teach
TT4G77C	Having too much marking
TT4G77D	Having too much administrative work to do (e.g. filling out forms)

Source: OECD, TALIS 2024 database.

Table 11.177. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4WLOADT

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.843	0.998	0.993	0.049	0.011
Alberta (Canada)	0.794	0.999	0.997	0.026	0.012
Australia	0.808	0.995	0.986	0.066	0.013
Austria	0.755	0.984	0.953	0.090	0.021
Azerbaijan	0.879	0.974	0.923	**0.223**	0.041
Bahrain	0.900	0.998	0.994	0.084	0.009
Belgium	0.792	0.977	0.932	**0.131**	0.027
Flemish Community (Belgium)	0.793	0.980	0.940	**0.122**	0.026
French Community (Belgium)	0.788	0.981	0.944	**0.128**	0.029
Brazil	0.887	0.999	0.998	0.040	0.007

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Bulgaria	0.884	0.999	0.997	**0.106**	0.019
Chile	0.884	0.988	0.963	**0.117**	0.020
Colombia	0.881	0.997	0.992	0.066	0.013
Costa Rica	0.844	0.992	0.977	0.088	0.023
Croatia	0.838	0.998	0.993	0.048	0.010
Cyprus	0.827	0.999	0.998	0.030	0.008
Czechia	0.778	0.990	0.971	0.084	0.020
Denmark	0.747	0.996	0.987	0.051	0.014
Estonia	0.851	0.996	0.988	0.083	0.014
Finland	0.723	0.983	0.950	0.080	0.022
France	0.804	0.992	0.975	0.092	0.019
Hungary	0.865	0.999	0.997	0.041	0.008
Iceland	0.818	0.996	0.988	0.063	0.013
Israel	0.815	1.000	1.001	0.000	0.004
Italy	0.838	0.993	0.978	**0.179**	0.033
Japan	0.853	0.990	0.970	**0.127**	0.022
Kazakhstan	0.878	0.999	0.998	0.030	0.006
Korea	0.862	0.999	0.996	0.052	0.010
Kosovo	0.807	0.974	0.923	**0.137**	0.034
Latvia	0.813	0.993	0.980	0.075	0.018
Lithuania	0.820	0.993	0.979	0.076	0.016
Malta	0.839	0.985	0.956	**0.147**	0.023
Montenegro	0.877	0.996	0.987	0.093	0.017
Morocco	0.856	0.997	0.992	0.051	0.014
Netherlands	0.750	0.985	0.954	0.079	0.023
New Zealand	0.836	0.993	0.978	0.087	0.018
North Macedonia	0.893	0.981	0.942	**0.236**	0.040
Norway	0.800	0.982	0.946	**0.122**	0.026
Poland	0.809	0.994	0.983	0.054	0.015
Portugal	0.828	0.995	0.984	**0.131**	0.025
Romania	0.878	0.996	0.987	**0.135**	0.024
Saudi Arabia	0.924	0.998	0.995	0.093	0.011
Serbia	0.871	0.991	0.973	**0.132**	0.025
Shanghai (China)	0.866	0.999	0.998	0.048	0.007
Singapore	0.812	0.997	0.991	0.058	0.012
Slovak Republic	0.819	1.000	1.001	0.000	0.002
Slovenia	0.800	1.000	1.001	0.000	0.004
South Africa	0.881	0.991	0.973	**0.114**	0.021
Spain	0.827	0.990	0.969	0.095	0.023
Sweden	0.759	0.991	0.974	0.070	0.020
Türkiye	0.830	0.987	0.961	**0.109**	0.022

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
United Arab Emirates	0.894	0.999	0.998	0.032	0.007
United States	0.839	1.000	0.999	0.015	0.007
Uzbekistan	0.850	0.990	0.969	**0.120**	0.020
Viet Nam	0.925	0.997	0.991	**0.136**	0.013
International pooled data	0.838	0.994	0.983	0.079	0.015
ISCED level 1					
Australia	0.842	0.995	0.985	0.079	0.014
Belgium	0.778	0.962	**0.885**	**0.157**	0.035
Flemish Community (Belgium)	0.752	0.959	**0.876**	**0.150**	0.035
French Community (Belgium)	0.807	0.982	0.946	**0.126**	0.029
Brazil	0.890	0.994	0.983	**0.127**	0.020
France	0.802	0.998	0.994	0.043	0.012
Japan	0.890	0.994	0.982	**0.127**	0.018
Korea	0.856	0.999	0.998	0.034	0.007
Morocco	0.872	0.999	0.998	0.034	0.010
Netherlands	0.758	0.967	0.901	**0.126**	0.048
New Zealand	0.842	0.996	0.989	0.061	0.014
Saudi Arabia	0.931	0.998	0.993	**0.124**	0.012
Slovenia	0.799	1.000	1.000	0.009	0.005
Spain	0.827	0.991	0.972	0.083	0.022
Türkiye	0.823	0.987	0.960	0.099	0.024
United Arab Emirates	0.895	0.994	0.983	**0.109**	0.018
International pooled data	0.824	0.996	0.987	0.075	0.015
ISCED level 3					
Croatia	0.852	0.995	0.986	0.079	0.014
Denmark	0.676	0.957	**0.871**	**0.113**	0.031
Flemish Community (Belgium)	0.772	0.983	0.948	**0.104**	0.024
Portugal	0.843	0.994	0.982	**0.140**	0.026
Saudi Arabia	0.933	0.998	0.994	**0.130**	0.014
Slovenia	0.785	0.999	0.996	0.030	0.008
Türkiye	0.826	0.997	0.990	0.057	0.011
United Arab Emirates	0.906	0.997	0.990	0.076	0.013
International pooled data	0.840	0.994	0.981	0.085	0.016

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.178. Measurement invariance results from MGCFA for scale T4WLOADT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.994	0.983	0.104	0.017	-	-	-	-
Equal loadings	0.985	0.981	0.109	0.036	-0.010	-0.002	0.005	0.020
Equal loadings and thresholds	0.928	0.964	0.151	0.144	-0.056	-0.018	0.043	0.108

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.179. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4WLOADT

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G77A	0.802	-0.749	0.348	1.219
TT4G77B	0.824	-0.433	0.462	1.201
TT4G77C	0.834	-0.672	0.238	0.989
TT4G77D	0.590	-0.876	0.048	0.805

Source: OECD, TALIS 2024 database.

Student behaviour stress (T4STBEH)

The scale *Student behaviour stress* (T4STBEH) was measured using a set of three items (TT4G77F, TT4G77G and TT4G77H). These items assessed the extent to which various factors were sources of stress in teachers' work. For each item, teachers selected one of the following response options: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores indicate greater perceived stress related to student behaviour. Table 11.180 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.181. The fit indices for the T4STBEH scale are not presented here as the scale was measured by just three items. The reliabilities for T4STBEH are generally high in all populations, except for the ISCED level 2 population in Serbia.

Table 11.182 presents the results from the measurement invariance testing for T4STBEH for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is within the cut-off criteria for all fit indices but for the RMSEA. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the RMSEA and exceeds the cut-offs for the CFI, TLI and SRMR. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.183 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4STBEH. All items show high loadings. Results by participating country/territory show a low loading for item TT4G77F in the ISCED level 2 population in Belgium, Czechia, the Flemish Community of Belgium, Latvia, Lithuania and Slovenia; the ISCED level 1 population in Belgium, the Flemish Community of Belgium, the French Community of Belgium, the Netherlands and Slovenia; and the ISCED level 2 population in Croatia, the Flemish Community of Belgium, Portugal and Slovenia. Item

Unclassified - Non classifié

TT4G77H also shows low loadings in Bahrain, Israel and Serbia (ISCED level 2), and in Morocco and Saudi Arabia (ISCED level 1).

Table 11.180. Items and response categories used in the construction of scale T4STBEH

Scale or item	Question or item wording
T4STBEH	Thinking about your job at this school, to what extent are the following sources of stress in your work?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TT4G77F	Being held responsible for students' achievement
TT4G77G	Maintaining classroom discipline
TT4G77H	Being intimidated or verbally abused by students

Source: OECD, TALIS 2024 database.

Table 11.181. Reliability coefficient alpha for single countries and pooled model for scale T4STBEH

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.794
Alberta (Canada)	0.742
Australia	0.753
Austria	0.732
Azerbaijan	0.781
Bahrain	0.720
Belgium	0.693
Flemish Community (Belgium)	0.673
French Community (Belgium)	0.719
Brazil	0.788
Bulgaria	0.763
Chile	0.747
Colombia	0.779
Costa Rica	0.779
Croatia	0.738
Cyprus	0.730
Czechia	0.662
Denmark	0.707
Estonia	0.658
Finland	0.739
France	0.715
Hungary	0.745
Iceland	0.717
Israel	0.685
Italy	0.729
Japan	0.743
Kazakhstan	0.789
Korea	0.784
Kosovo	0.789

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Latvia	0.643
Lithuania	0.681
Malta	0.770
Montenegro	0.768
Morocco	0.719
Netherlands	0.710
New Zealand	0.754
North Macedonia	0.784
Norway	0.742
Poland	0.690
Portugal	0.722
Romania	0.764
Saudi Arabia	0.757
Serbia	**0.524**
Shanghai (China)	0.751
Singapore	0.736
Slovak Republic	0.726
Slovenia	0.648
South Africa	0.758
Spain	0.725
Sweden	0.751
Türkiye	0.742
United Arab Emirates	0.767
United States	0.781
Uzbekistan	0.720
Viet Nam	0.774
International pooled data	0.737
ISCED level 1	
Australia	0.765
Belgium	0.660
Flemish Community (Belgium)	0.677
French Community (Belgium)	0.655
Brazil	0.780
France	0.688
Japan	0.773
Korea	0.767
Morocco	0.616
Netherlands	0.719
New Zealand	0.732
Saudi Arabia	0.768
Slovenia	0.668
Spain	0.683
Türkiye	0.737
United Arab Emirates	0.800
International pooled data	0.713
ISCED level 3	

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Croatia	0.685
Denmark	0.731
Flemish Community (Belgium)	0.691
Portugal	0.696
Saudi Arabia	0.781
Slovenia	0.678
Türkiye	0.745
United Arab Emirates	0.811
International pooled data	0.753

Note: Coefficients in **bold** exceed the cut-off criterion. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.182. Measurement invariance results from MGCFA for scale T4STBEH with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.971	0.955	0.112	0.036	-0.029	-0.045	0.112	0.036
Equal loadings and thresholds	0.835	0.928	0.142	0.119	-0.136	-0.027	0.030	0.083

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.183. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4STBEH

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G77F	0.610	-0.926	0.042	0.914
TT4G77G	0.892	-0.829	0.103	0.891
TT4G77H	0.608	0.205	0.951	1.515

Source: OECD, TALIS 2024 database.

Job satisfaction with work environment (T4JSENVT)

The scale *Job satisfaction with work environment* (T4JSENVT) was measured using a set of three items (TT4G78C, TT4G78E and TT4G78G). These items assessed the level of agreement with different statements related to how teachers feel about their job. For each item, teachers selected one of the following response options: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher scores reflect greater satisfaction with the work environment. Item TT4G78C was reverse coded due to its negative statement about satisfaction with the work environment and to ensure it had the same direction as the rest of the items. Table 11.184 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Unclassified - Non classifié

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.185. The fit indices for the T4JSENVT scale are not presented here as the scale was measured by just three items. The scale reliabilities for T4JSENVT are high (above 0.700) in all populations.

Table 11.186 presents the results from the measurement invariance testing for T4JSENVT for the ISCED level 2 population. As a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is within the cut-off criteria for all fit indices but for the RMSEA. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the RMSEA and close to the cut-offs for the CFI, TLI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.187 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4JSENVT. All items show high loadings. Results by participating country/territory show a low loading for item TT4G78C in Azerbaijan, Uzbekistan and Viet Nam (ISCED level 2) and in Morocco (ISCED level 1).

Table 11.184. Items and response categories used in the construction of scale T4JSENVT

Scale or item	Question or item wording
T4JSENVT	We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G78C*	I would like to change to another school if that were possible.
TT4G78E	I enjoy working at this school.
TT4G78G	I would recommend this school as a good place to work.

Note: * Item was reverse coded.
Source: OECD, TALIS 2024 database.

Table 11.185. Reliability coefficient alpha for single countries and pooled model for scale T4JSENVT

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.749
Alberta (Canada)	0.897
Australia	0.886
Austria	0.881
Azerbaijan	0.718
Bahrain	0.825
Belgium	0.900
Flemish Community (Belgium)	0.896
French Community (Belgium)	0.907
Brazil	0.866
Bulgaria	0.855
Chile	0.845
Colombia	0.809
Costa Rica	0.797

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Croatia	0.872
Cyprus	0.854
Czechia	0.867
Denmark	0.887
Estonia	0.869
Finland	0.839
France	0.849
Hungary	0.867
Iceland	0.877
Israel	0.885
Italy	0.878
Japan	0.794
Kazakhstan	0.777
Korea	0.842
Kosovo	0.772
Latvia	0.806
Lithuania	0.843
Malta	0.857
Montenegro	0.818
Morocco	0.741
Netherlands	0.853
New Zealand	0.896
North Macedonia	0.769
Norway	0.863
Poland	0.816
Portugal	0.857
Romania	0.860
Saudi Arabia	0.806
Serbia	0.779
Shanghai (China)	0.800
Singapore	0.862
Slovak Republic	0.834
Slovenia	0.834
South Africa	0.845
Spain	0.863
Sweden	0.863
Türkiye	0.881
United Arab Emirates	0.848
United States	0.894
Uzbekistan	0.708
Viet Nam	0.746

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
International pooled data	0.841
ISCED level 1	
Australia	0.896
Belgium	0.899
Flemish Community (Belgium)	0.910
French Community (Belgium)	0.887
Brazil	0.849
France	0.889
Japan	0.800
Korea	0.847
Morocco	0.732
Netherlands	0.912
New Zealand	0.884
Saudi Arabia	0.781
Slovenia	0.836
Spain	0.882
Türkiye	0.882
United Arab Emirates	0.836
International pooled data	0.864
ISCED level 3	
Croatia	0.888
Denmark	0.880
Flemish Community (Belgium)	0.903
Portugal	0.872
Saudi Arabia	0.802
Slovenia	0.848
Türkiye	0.878
United Arab Emirates	0.830
International pooled data	0.854

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.186. Measurement invariance results from MGCFA for scale T4JSENVT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.991	0.987	0.110	0.020	-0.009	-0.013	0.110	0.020

Unclassified - Non classifié

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
Equal loadings and thresholds	0.980	0.991	0.088	0.081	-0.011	0.005	-0.022	0.061

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.187. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4JSENVT

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G78C	0.642	-1.562	-0.791	0.395
TT4G78E	0.881	-2.007	-1.240	0.327
TT4G78G	0.869	-1.802	-1.004	0.455

Source: OECD, TALIS 2024 database.

Job satisfaction with profession (T4JSPROT)

The scale *Job satisfaction with profession* (T4JSPROT) was measured using a set of four items (TT4G78A, TT4G78B, TT4G78D and TT4G78J). These items assessed teachers' level of agreement with different statements related to the teaching profession. For each item, teachers selected one of the following response options: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher scores reflect greater satisfaction with the profession. Item TT4G78D was reverse coded due to its negative statement about satisfaction with the profession and to ensure it had the same direction as the rest of the items.

Table 11.188 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.189. The scale T4JSPROT has high reliability (above 0.700) in all populations. As can be observed from Table 11.189, the CFI, TLI and SRMR for T4JSPROT are all within the acceptable cut-off criteria for all participants. However, the RMSEA exceeds the cut-off criterion in 20 of the ISCED level 2 participants, 3 of the ISCED level 1 participants, and 6 of the ISCED level 3 participants. Across all populations, the largest RMSEA values were observed in the ISCED level 2 population in Denmark, Iceland and New Zealand, with values above 0.160.

Table 11.190 presents the results from the measurement invariance testing for T4JSPROT for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR and close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and exceeds the cut-offs for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.191 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4JSPROT. All items show high loadings, except for TT4G78A for which the loading falls within the acceptable range. Results by participating country/territory show a low loading for item TT4G78D in Azerbaijan.

Unclassified - Non classifié

Table 11.188. Items and response categories used in the construction of scale T4JSPROT

Scale or item	Question or item wording
T4JSPROT	We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G78A	The advantages of being a teacher clearly outweigh the disadvantages.
TT4G78B	If I could decide again, I would still choose to work as a teacher.
TT4G78D*	I regret that I decided to become a teacher.
TT4G78J	All in all, I am satisfied with my job.

Note: * Item was reverse coded.
Source: OECD, TALIS 2024 database.

Table 11.189. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4JSPROT

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.795	0.992	0.977	0.080	0.019
Alberta (Canada)	0.907	0.990	0.969	**0.149**	0.026
Australia	0.896	0.994	0.981	**0.128**	0.015
Austria	0.868	0.996	0.989	0.075	0.013
Azerbaijan	0.729	0.996	0.989	0.045	0.011
Bahrain	0.849	0.990	0.970	**0.120**	0.016
Belgium	0.850	0.992	0.977	**0.110**	0.021
Flemish Community (Belgium)	0.851	0.988	0.963	**0.146**	0.027
French Community (Belgium)	0.845	1.000	0.999	0.018	0.005
Brazil	0.818	0.992	0.976	0.085	0.015
Bulgaria	0.862	0.999	0.996	0.042	0.008
Chile	0.798	0.994	0.981	0.054	0.017
Colombia	0.837	0.987	0.961	**0.107**	0.020
Costa Rica	0.770	0.988	0.963	0.086	0.021
Croatia	0.877	0.994	0.983	0.099	0.014
Cyprus	0.859	0.998	0.993	0.062	0.009
Czechia	0.844	0.994	0.981	0.091	0.016
Denmark	0.904	0.989	0.968	**0.165**	0.017
Estonia	0.831	0.995	0.986	0.073	0.014
Finland	0.904	0.996	0.989	0.100	0.013
France	0.855	0.993	0.980	**0.109**	0.017
Hungary	0.831	0.996	0.987	0.075	0.014
Iceland	0.879	0.989	0.967	**0.160**	0.017
Israel	0.856	0.989	0.966	**0.110**	0.017
Italy	0.829	0.995	0.985	0.076	0.015
Japan	0.867	0.995	0.984	0.094	0.013

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Kazakhstan	0.758	0.996	0.987	0.046	0.012
Korea	0.903	0.993	0.980	**0.143**	0.014
Kosovo	0.768	0.995	0.984	0.060	0.017
Latvia	0.782	0.997	0.990	0.045	0.012
Lithuania	0.848	0.997	0.991	0.064	0.012
Malta	0.872	0.992	0.975	**0.136**	0.017
Montenegro	0.843	0.994	0.981	0.098	0.013
Morocco	0.857	0.996	0.988	0.058	0.014
Netherlands	0.892	0.992	0.975	0.098	0.015
New Zealand	0.883	0.987	0.960	**0.179**	0.025
North Macedonia	0.783	0.989	0.966	0.097	0.022
Norway	0.900	0.991	0.972	**0.155**	0.021
Poland	0.875	0.999	0.996	0.039	0.006
Portugal	0.805	0.997	0.990	0.069	0.014
Romania	0.815	0.994	0.983	0.073	0.016
Saudi Arabia	0.850	0.983	0.949	**0.157**	0.022
Serbia	0.844	0.997	0.991	0.069	0.011
Shanghai (China)	0.834	0.989	0.968	**0.139**	0.017
Singapore	0.872	0.994	0.981	**0.106**	0.015
Slovak Republic	0.859	0.995	0.985	0.089	0.014
Slovenia	0.891	0.995	0.984	**0.113**	0.014
South Africa	0.780	0.992	0.977	0.066	0.014
Spain	0.860	0.997	0.990	0.053	0.012
Sweden	0.874	0.994	0.982	**0.103**	0.015
Türkiye	0.866	0.992	0.976	**0.118**	0.017
United Arab Emirates	0.846	0.997	0.992	0.041	0.009
United States	0.894	0.994	0.981	0.097	0.016
Uzbekistan	0.789	0.995	0.985	0.066	0.013
Viet Nam	0.766	0.983	0.949	**0.133**	0.021
International pooled data	0.844	0.994	0.981	0.079	0.014
ISCED level 1					
Australia	0.904	0.993	0.978	**0.146**	0.017
Belgium	0.841	0.995	0.986	0.089	0.020
Flemish Community (Belgium)	0.851	0.995	0.986	0.096	0.022
French Community (Belgium)	0.807	0.998	0.993	0.051	0.012
Brazil	0.807	0.994	0.981	0.068	0.015
France	0.861	0.994	0.983	0.092	0.016
Japan	0.881	0.997	0.992	0.071	0.009
Korea	0.918	0.996	0.988	**0.125**	0.012
Morocco	0.846	0.992	0.975	0.087	0.016
Netherlands	0.872	0.999	0.998	0.029	0.008

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
New Zealand	0.863	0.994	0.983	0.087	0.015
Saudi Arabia	0.838	0.988	0.963	**0.116**	0.017
Slovenia	0.891	0.996	0.988	0.095	0.010
Spain	0.853	0.998	0.994	0.036	0.009
Türkiye	0.860	0.994	0.981	0.093	0.014
United Arab Emirates	0.827	0.993	0.978	0.077	0.015
International pooled data	0.864	0.994	0.982	0.090	0.014
ISCED level 3					
Croatia	0.893	0.997	0.990	0.087	0.011
Denmark	0.900	0.987	0.962	**0.158**	0.022
Flemish Community (Belgium)	0.861	0.992	0.976	**0.110**	0.019
Portugal	0.830	0.997	0.991	0.079	0.016
Saudi Arabia	0.856	0.985	0.956	**0.149**	0.020
Slovenia	0.872	0.994	0.981	**0.112**	0.015
Türkiye	0.857	0.993	0.980	**0.102**	0.015
United Arab Emirates	0.838	0.976	0.927	**0.112**	0.024
International pooled data	0.860	0.992	0.975	**0.105**	0.015

Note: Coefficients in **bold** do not meet the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.190. Measurement invariance results from MGCFA for scale T4JSPROT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.994	0.982	0.088	0.015	-	-	-	-
Equal loadings	0.982	0.978	0.097	0.031	-0.012	-0.004	0.010	0.016
Equal loadings and thresholds	0.961	0.980	0.093	0.101	-0.021	0.002	-0.004	0.070

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.191. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4JSPROT

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G78A	0.687	-1.696	-0.663	0.815
TT4G78B	0.886	-1.516	-0.674	0.551
TT4G78D	0.727	-1.861	-1.182	0.077
TT4G78J	0.729	-2.157	-1.295	0.465

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Perceptions of value and policy influence (T4VALP)

Teachers answered three items measuring their *Perceptions of value and policy influence* (T4VALP). These items were TT4G79E, TT4G79F and TT4G79G. For each item, they had to indicate their level of agreement, using the following response categories: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale indicate more positive perceptions of value and policy influence. Table 11.192 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.193. The fit indices for the T4VALP scale are not presented here as the scale was measured by just three items. The scale T4VALP has generally high reliability (above 0.700) across all populations.

Table 11.194 presents the results from the measurement invariance testing for T4VALP for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is within the cut-off criteria for the CFI, TLI and SRMR and exceeds the cut-off for the RMSEA. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and exceeds the cut-offs for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.195 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4VALP. All items show high loadings. Results by participating country/territory show a low loading for item TT4G79F in Brazil (ISCED level 1).

Table 11.192. Items and response categories used in the construction of scale T4VALP

Scale or item	Question or item wording
T4VALP	How strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G79E	Teachers’ views are valued by policymakers in this <country/region>.
TT4G79F	Teachers can influence educational policy in this <country/region>.
TT4G79G	Teachers are valued in the media in this <country/region>.

Source: OECD, TALIS 2024 database.

Table 11.193. Reliability coefficient alpha for single countries and pooled model for scale T4VALP

Participating country/territory	Reliability Cronbach’s alpha
ISCED level 2	
Albania	0.719
Alberta (Canada)	0.894
Australia	0.875
Austria	0.852
Azerbaijan	0.864
Bahrain	0.891
Belgium	0.817
Flemish Community (Belgium)	0.778
French Community (Belgium)	0.852

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Brazil	0.757
Bulgaria	0.892
Chile	0.730
Colombia	0.760
Costa Rica	0.857
Croatia	0.897
Cyprus	0.874
Czechia	0.861
Denmark	0.873
Estonia	0.790
Finland	0.855
France	0.825
Hungary	0.914
Iceland	0.823
Israel	0.802
Italy	0.814
Japan	0.934
Kazakhstan	0.858
Korea	0.930
Kosovo	0.775
Latvia	0.868
Lithuania	0.847
Malta	0.855
Montenegro	0.934
Morocco	0.796
Netherlands	0.829
New Zealand	0.851
North Macedonia	0.853
Norway	0.862
Poland	0.905
Portugal	0.679
Romania	0.857
Saudi Arabia	0.890
Serbia	0.901
Shanghai (China)	0.924
Singapore	0.899
Slovak Republic	0.825
Slovenia	0.834
South Africa	0.814
Spain	0.836
Sweden	0.894

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Türkiye	0.850
United Arab Emirates	0.910
United States	0.833
Uzbekistan	0.901
Viet Nam	0.888
International pooled data	0.879
ISCED level 1	
Australia	0.889
Belgium	0.808
Flemish Community (Belgium)	0.758
French Community (Belgium)	0.842
Brazil	0.679
France	0.816
Japan	0.929
Korea	0.929
Morocco	0.763
Netherlands	0.807
New Zealand	0.871
Saudi Arabia	0.888
Slovenia	0.838
Spain	0.827
Türkiye	0.853
United Arab Emirates	0.918
International pooled data	0.884
ISCED level 3	
Croatia	0.919
Denmark	0.867
Flemish Community (Belgium)	0.824
Portugal	0.683
Saudi Arabia	0.886
Slovenia	0.848
Türkiye	0.849
United Arab Emirates	0.918
International pooled data	0.901

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.194. Measurement invariance results from MGCFA for scale T4VALP with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.989	0.983	0.141	0.023	-0.011	-0.017	0.141	0.023
Equal loadings and thresholds	0.962	0.983	0.138	0.138	-0.027	0.001	-0.003	0.116

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.195. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4VALP

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G79E	0.906	-0.552	0.540	1.628
TT4G79F	0.757	-0.684	0.350	1.425
TT4G79G	0.866	-0.608	0.472	1.652

Source: OECD, TALIS 2024 database.

Joy of teaching (T4JOYTCH)

The scale *Joy of teaching* (T4JOYTCH) was measured using a set of four items (TT4G80A, TT4G80B, TT4G80C and TT4G80D). These items assessed the level of agreement with different statements about their experiences as teachers. For each item, teachers selected one of the following response options: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher scores reflect greater joy of teaching.

Table 11.196 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.197. The scale T4JOYTCH has high reliability (above 0.700) in all populations. As can be seen in Table 11.197, the CFI, TLI and SRMR of T4JOYTCH are within the cut-off criteria for all participants. The RMSEA exceeds the cut-off criterion in 17 ISCED level 2 participants, 3 ISCED level 1 participants (Brazil, Japan and Saudi Arabia) and in the ISCED level 3 population in Saudi Arabia.

Table 11.198 presents the results from the measurement invariance testing for T4JOYTCH for the ISCED level 2 population. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR and close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI and TLI, close for the RMSEA and exceeds the cut-off SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.199 presents the standardised item loadings and thresholds based on pooled data from ISCED level 2 for the scale T4JOYTCH. All items show high loadings for the pooled model as well as in single countries/territories.

Unclassified - Non classifié

Table 11.196. Items and response categories used in the construction of scale T4JOYTCH

Scale or item	Question or item wording
T4JOYTCH	How strongly do you agree or disagree with these statements about your experiences as a teacher?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
TT4G80A	I like the subject(s) that I teach.
TT4G80B	I often feel happy while I teach.
TT4G80C	I generally teach with enthusiasm.
TT4G80D	The interesting challenges of teaching give me satisfaction.

Source: OECD, TALIS 2024 database.

Table 11.197. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4JOYTCH

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.932	1.000	0.999	0.031	0.006
Alberta (Canada)	0.892	1.000	0.999	0.023	0.008
Australia	0.893	1.000	0.999	0.027	0.007
Austria	0.864	1.000	0.999	0.018	0.007
Azerbaijan	0.944	0.999	0.997	0.073	0.006
Bahrain	0.952	0.998	0.995	**0.109**	0.006
Belgium	0.891	0.998	0.993	0.078	0.018
Flemish Community (Belgium)	0.895	0.999	0.996	0.058	0.015
French Community (Belgium)	0.890	0.996	0.989	**0.115**	0.021
Brazil	0.902	0.987	0.961	**0.185**	0.028
Bulgaria	0.925	1.000	0.999	0.047	0.008
Chile	0.911	1.000	1.000	0.019	0.008
Colombia	0.948	0.996	0.988	**0.106**	0.009
Costa Rica	0.928	0.996	0.989	**0.119**	0.018
Croatia	0.936	0.999	0.997	0.071	0.010
Cyprus	0.941	0.996	0.989	**0.157**	0.016
Czechia	0.896	0.999	0.997	0.056	0.011
Denmark	0.899	1.000	1.001	0.000	0.003
Estonia	0.912	0.999	0.998	0.052	0.010
Finland	0.873	0.999	0.997	0.045	0.012
France	0.885	1.000	0.999	0.027	0.009
Hungary	0.928	1.000	1.000	0.022	0.006
Iceland	0.895	1.000	0.999	0.028	0.007
Israel	0.924	0.998	0.993	0.090	0.011
Italy	0.930	1.000	0.999	0.037	0.005
Japan	0.934	0.997	0.992	**0.145**	0.016
Kazakhstan	0.944	0.998	0.994	0.090	0.011

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Korea	0.926	0.997	0.990	**0.112**	0.012
Kosovo	0.915	0.994	0.981	**0.123**	0.026
Latvia	0.907	0.995	0.985	**0.111**	0.021
Lithuania	0.909	0.996	0.987	**0.103**	0.018
Malta	0.902	1.000	0.999	0.029	0.007
Montenegro	0.949	0.998	0.993	**0.129**	0.015
Morocco	0.895	0.998	0.994	0.068	0.016
Netherlands	0.896	1.000	1.002	0.000	0.003
New Zealand	0.898	0.999	0.998	0.043	0.013
North Macedonia	0.937	0.997	0.990	**0.134**	0.013
Norway	0.905	0.998	0.993	0.081	0.015
Poland	0.926	0.999	0.998	0.062	0.013
Portugal	0.907	0.998	0.994	0.074	0.016
Romania	0.952	0.999	0.997	0.074	0.009
Saudi Arabia	0.957	0.997	0.991	**0.156**	0.010
Serbia	0.925	0.998	0.993	**0.116**	0.018
Shanghai (China)	0.951	0.998	0.995	**0.134**	0.009
Singapore	0.923	0.999	0.997	0.081	0.012
Slovak Republic	0.911	1.000	0.999	0.040	0.008
Slovenia	0.909	0.999	0.997	0.050	0.010
South Africa	0.917	0.993	0.979	**0.114**	0.015
Spain	0.916	0.999	0.998	0.042	0.010
Sweden	0.886	0.999	0.998	0.035	0.010
Türkiye	0.934	0.999	0.998	0.083	0.010
United Arab Emirates	0.951	0.999	0.998	0.042	0.006
United States	0.909	0.999	0.997	0.047	0.014
Uzbekistan	0.939	0.998	0.994	0.080	0.009
Viet Nam	0.955	1.000	1.000	0.027	0.003
International pooled data	0.917	0.998	0.995	0.069	0.010
ISCED level 1					
Australia	0.904	0.998	0.993	0.092	0.012
Belgium	0.919	0.999	0.998	0.054	0.008
Flemish Community (Belgium)	0.934	1.000	0.999	0.048	0.007
French Community (Belgium)	0.905	1.000	1.000	0.024	0.005
Brazil	0.937	0.995	0.986	**0.155**	0.018
France	0.934	1.000	0.999	0.048	0.008
Japan	0.928	0.994	0.982	**0.191**	0.020
Korea	0.922	0.998	0.995	0.083	0.009
Morocco	0.908	0.999	0.997	0.046	0.008
Netherlands	0.962	0.999	0.998	0.076	0.010
New Zealand	0.937	1.000	1.000	0.005	0.005

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Saudi Arabia	0.957	0.997	0.992	**0.180**	0.011
Slovenia	0.918	0.999	0.997	0.068	0.009
Spain	0.920	0.999	0.998	0.043	0.009
Türkiye	0.938	1.000	1.000	0.019	0.004
United Arab Emirates	0.945	0.999	0.997	0.052	0.007
International pooled data	0.929	0.999	0.996	0.069	0.007
ISCED level 3					
Croatia	0.931	0.999	0.998	0.056	0.007
Denmark	0.903	0.996	0.989	0.077	0.017
Flemish Community (Belgium)	0.916	0.998	0.994	0.083	0.015
Portugal	0.897	0.997	0.991	0.077	0.013
Saudi Arabia	0.961	0.998	0.995	**0.127**	0.009
Slovenia	0.917	0.999	0.998	0.050	0.009
Türkiye	0.933	1.000	0.999	0.047	0.006
United Arab Emirates	0.949	0.999	0.996	0.050	0.008
International pooled data	0.926	1.000	0.999	0.025	0.003

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.198. Measurement invariance results from MGCFA for scale T4JOYTCH with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.998	0.995	0.082	0.012	-	-	-	-
Equal loadings	0.993	0.992	0.108	0.030	-0.005	-0.003	0.026	0.018
Equal loadings and thresholds	0.990	0.995	0.088	0.128	-0.004	0.003	-0.020	0.098

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Hungary, Montenegro, the Netherlands, New Zealand, Norway and Sweden are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.199. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4JOYTCH

Item	Loading	Threshold 1	Threshold 2	Threshold 3
TT4G80A	0.785	-2.659	-2.170	-0.403
TT4G80B	0.919	-2.532	-1.620	0.068
TT4G80C	0.927	-2.664	-1.831	0.031
TT4G80D	0.824	-2.332	-1.356	0.238

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Complex scales from the principal questionnaire

Instructional leadership (principal) (T4PLEADS)

The principal scale of *Instructional leadership* (T4PLEADS) was measured by a set of three items (TC4G27D, TC4G27E and TC4G27F), described in Table 11.200. Principals had to report the frequency with which they performed different activities over the past year, using the following response categories: "Never or rarely", "Sometimes", "Often" and "Very often". Higher values on this scale indicate more frequent instructional leadership activities, as perceived by principals.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.201. The model fit indices for T4PLEADS are not presented here as the scale was measured by just three items. As can be seen, scale reliabilities for T4PLEADS are greater than 0.700 in all populations.

Table 11.202 presents the results from the measurement invariance testing for T4PLEADS for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criterion for the RMSEA and is very close to the acceptable range for the CFI, TLI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.203 presents the standardised item loadings and thresholds based on pooled data for the scale T4PLEADS. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.200. Items and response categories used in the construction of scale T4PLEADS

Scale or item	Question or item wording
T4PLEADS	Please indicate how frequently you engaged in the following activities in this school during the last 12 months.
	Recoded response categories for scaling: 1=Never, rarely or sometimes; 2=Often; 3=Very often
	Scale mid-point: 2
TC4G27D	I took actions to support co-operation among teachers to develop new teaching practices.
TC4G27E	I took actions to ensure that teachers take responsibility for improving their teaching skills.
TC4G27F	I took actions to ensure that teachers feel responsible for their students' learning outcomes.

Source: OECD, TALIS 2024 database.

Table 11.201. Reliability coefficient alpha for single countries and pooled model for scale T4PLEADS

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.840
Alberta (Canada)	0.910
Australia	0.970
Austria	0.848
Azerbaijan	0.744
Bahrain	0.947
Belgium	0.894
Flemish Community (Belgium)	0.892

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
French Community (Belgium)	0.895
Brazil	0.925
Bulgaria	0.850
Chile	0.943
Colombia	0.916
Costa Rica	0.886
Croatia	0.895
Cyprus	0.961
Czechia	0.820
Denmark	0.893
Estonia	0.887
Finland	0.865
France	0.937
Hungary	0.819
Iceland	0.824
Israel	0.878
Italy	0.901
Japan	0.914
Kazakhstan	0.805
Korea	0.869
Kosovo	0.869
Latvia	0.787
Lithuania	0.879
Malta	0.940
Montenegro	0.933
Morocco	0.894
Netherlands	0.716
New Zealand	0.801
North Macedonia	0.909
Norway	0.906
Poland	0.886
Portugal	0.898
Romania	0.884
Saudi Arabia	0.905
Serbia	0.874
Shanghai (China)	0.947
Singapore	0.953
Slovak Republic	0.837
Slovenia	0.869
South Africa	0.890

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Spain	0.858
Sweden	0.899
Türkiye	0.913
United Arab Emirates	0.928
United States	0.884
Uzbekistan	0.706
Viet Nam	0.923
International pooled data	0.898
ISCED level 1	
Australia	0.912
Belgium	0.918
Flemish Community (Belgium)	0.912
French Community (Belgium)	0.931
Brazil	0.835
France	0.888
Japan	0.919
Korea	0.940
Morocco	0.836
Netherlands	0.734
New Zealand	0.913
Saudi Arabia	0.909
Slovenia	0.821
Spain	0.851
Türkiye	0.907
United Arab Emirates	0.923
International pooled data	0.901
ISCED level 3	
Croatia	0.945
Denmark	0.866
Flemish Community (Belgium)	0.880
Portugal	0.797
Saudi Arabia	0.912
Slovenia	0.864
Türkiye	0.933
United Arab Emirates	0.931
International pooled data	0.917

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.202. Measurement invariance results from MGCFA for scale T4PLEADS with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.998	0.997	0.067	0.022	-0.002	-0.003	0.067	0.022
Equal loadings and thresholds	0.989	0.992	0.108	0.086	-0.009	-0.005	0.042	0.064

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.203. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PLEADS

Item	Slope	Threshold 1	Threshold 2
TC4G27D	0.792	-0.480	0.805
TC4G27E	0.962	-0.527	0.794
TC4G27F	0.851	-0.661	0.688

Source: OECD, TALIS 2024 database.

Teacher leadership (principal) (T4PTLEAD)

The scale of *Teacher leadership* (T4PTLEAD), as reported by principals, consisted of four items (TC4G29A, TC4G29B, TC4G29C and TC4G29D), which measured principals' agreement with different statements about leadership roles and practices of teachers at their school. Responses were provided on a four-point scale: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher values on this scale reflect a greater extent of teacher leadership within the school, as perceived by principals. Table 11.204 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.205. As can be seen, reliability for T4PTLEAD is high in most countries/territories, with none of them below the established cut-off criteria in any ISCED level. In terms of model fit, the CFI is at least within the acceptable range in almost all populations, except for the ISCED level 2 population in Latvia, where it is particularly low. The TLI exceeds the cut-off criterion in six participating countries/territories: the ISCED level 2 population in Austria, Israel, Kazakhstan, Latvia and the Slovak Republic, and in the ISCED level 3 population in Slovenia. The RMSEA exceeds the cut-off criterion in 20 of the ISCED level 2 participants, particularly in Colombia, Israel and Latvia; in 5 ISCED level 1 participants (Belgium, the Flemish Community of Belgium, Slovenia, Spain and Türkiye); and in 3 ISCED level 3 participants (Croatia, Slovenia and Türkiye). The RMSEA of the international pooled data for ISCED level 3 also exceeds the cut-off. Finally, the SRMR exceeds the cut-off only in the ISCED level 2 population in Latvia. Based on the single CFA model fit results, the scale T4PTLEAD works well across all populations except in Latvia (ISCED level 2), where none of the fit indices reach the acceptable criteria.

Table 11.206 presents the results from the measurement invariance testing for T4PTLEAD for the ISCED level 2 population. The baseline model shows an acceptable model fit, as the CFI, TLI and SRMR are within the cut-off criteria and the RMSEA is very close. The degree of change between the baseline and the equal loadings model is within the cut-off criteria for the RMSEA and SRMR, very close for the TLI and close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds

Unclassified - Non classifié

models is within the cut-off criteria for the TLI and RMSEA, close to the acceptable range for the CFI, but exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.207 presents the standardised item loadings and thresholds based on pooled data for the scale T4PTLEAD. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.204. Items and response categories used in the construction of scale T4PTLEAD

Scale or item	Question or item wording
T4PTLEAD	How strongly do you agree or disagree with these statements about teachers at this school?
	Recoded response categories for scaling: 1=Strongly disagree or disagree; 2=Agree; 3=Strongly agree
	Scale mid-point: 2
TC4G29A	Teachers take leadership roles in promoting a professional learning community.
TC4G29B	Teachers initiate and lead collaborative activities.
TC4G29C	Teachers lead their professional growth and development activities whenever possible.
TC4G29D	Teachers participate in non-teaching school events and projects.

Source: OECD, TALIS 2024 database.

Table 11.205. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PTLEAD

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.834	1.000	1.007	0.000	0.012
Alberta (Canada)	0.937	0.991	0.972	**0.161**	0.033
Australia	0.882	0.989	0.966	**0.160**	0.048
Austria	0.750	0.955	**0.864**	**0.155**	0.054
Azerbaijan	0.705	0.999	0.996	0.018	0.022
Bahrain	0.947	1.000	1.003	0.000	0.012
Belgium	0.724	0.990	0.970	0.061	0.031
Flemish Community (Belgium)	0.786	0.981	0.943	**0.107**	0.041
French Community (Belgium)	0.732	1.000	1.046	0.000	0.022
Brazil	0.826	0.998	0.995	0.067	0.027
Bulgaria	0.856	0.985	0.955	**0.146**	0.047
Chile	0.927	0.998	0.995	0.100	0.024
Colombia	0.897	0.994	0.981	**0.249**	0.043
Costa Rica	0.935	0.995	0.984	**0.143**	0.022
Croatia	0.874	0.991	0.973	**0.108**	0.039
Cyprus	0.843	0.979	0.937	**0.194**	0.056
Czechia	0.730	0.997	0.992	0.031	0.022
Denmark	0.879	0.993	0.979	0.099	0.034
Estonia	0.871	1.000	1.008	0.000	0.008
Finland	0.751	0.991	0.974	0.068	0.033
France	0.768	0.995	0.986	0.051	0.027
Hungary	0.826	1.000	1.004	0.000	0.016

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Iceland	0.897	1.000	1.006	0.000	0.011
Israel	0.804	0.957	**0.870**	**0.211**	0.061
Italy	0.806	0.979	0.937	**0.133**	0.035
Japan	0.760	0.997	0.992	0.051	0.029
Kazakhstan	0.701	0.935	**0.805**	**0.104**	0.079
Korea	0.985	1.000	1.000	0.000	0.010
Kosovo	0.877	0.991	0.974	**0.116**	0.029
Latvia	0.689	**0.414**	**-0.757**	**0.469**	**0.158**
Lithuania	0.814	0.989	0.967	0.085	0.042
Malta	0.926	0.995	0.985	**0.174**	0.018
Montenegro	0.910	0.996	0.988	**0.126**	0.024
Morocco	0.867	0.996	0.987	0.063	0.030
Netherlands	0.710	0.992	0.975	**0.156**	0.063
New Zealand	0.880	0.992	0.977	0.066	0.038
North Macedonia	0.903	1.000	1.004	0.000	0.003
Norway	0.831	1.000	1.000	0.004	0.022
Poland	0.839	0.990	0.971	0.090	0.031
Portugal	0.813	0.997	0.992	0.037	0.026
Romania	0.818	1.000	1.007	0.000	0.012
Saudi Arabia	0.923	0.993	0.978	**0.160**	0.026
Serbia	0.838	0.992	0.977	0.093	0.032
Shanghai (China)	0.898	1.000	0.999	0.067	0.020
Singapore	0.919	0.999	0.998	0.084	0.022
Slovak Republic	0.750	0.952	**0.856**	**0.149**	0.051
Slovenia	0.826	0.996	0.989	0.061	0.025
South Africa	0.889	0.997	0.991	0.085	0.023
Spain	0.853	0.980	0.939	**0.104**	0.044
Sweden	0.859	0.993	0.979	0.100	0.035
Türkiye	0.949	0.999	0.997	0.065	0.015
United Arab Emirates	0.899	1.000	1.003	0.000	0.008
United States	0.941	1.000	1.003	0.000	0.003
Uzbekistan	0.717	1.000	1.037	0.000	0.009
Viet Nam	0.827	1.000	1.001	0.000	0.018
International pooled data	0.846	0.992	0.977	0.089	0.021
ISCED level 1					
Australia	0.913	0.995	0.984	0.099	0.031
Belgium	0.775	0.984	0.951	**0.112**	0.037
Flemish Community (Belgium)	0.830	0.987	0.961	**0.137**	0.046
French Community (Belgium)	0.677	0.974	0.921	0.092	0.043
Brazil	0.854	0.998	0.995	0.054	0.023
France	0.787	0.996	0.988	0.056	0.021

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Japan	0.822	1.000	1.008	0.000	0.015
Korea	0.977	1.000	1.002	0.000	0.001
Morocco	0.890	0.999	0.997	0.040	0.016
Netherlands	0.836	1.000	1.006	0.000	0.014
New Zealand	0.843	0.993	0.979	0.097	0.037
Saudi Arabia	0.897	0.996	0.987	0.099	0.025
Slovenia	0.816	0.987	0.961	**0.107**	0.036
Spain	0.867	0.989	0.966	**0.120**	0.037
Türkiye	0.942	0.992	0.975	**0.270**	0.044
United Arab Emirates	0.931	1.000	1.001	0.000	0.006
International pooled data	0.860	0.996	0.987	0.086	0.017
ISCED level 3					
Croatia	0.866	0.988	0.965	**0.129**	0.054
Denmark	0.872	0.998	0.993	0.083	0.034
Flemish Community (Belgium)	0.889	0.999	0.997	0.039	0.020
Portugal	0.850	0.995	0.985	0.071	0.023
Saudi Arabia	0.928	0.999	0.996	0.060	0.015
Slovenia	0.808	0.952	**0.857**	**0.212**	0.089
Türkiye	0.922	0.991	0.972	**0.206**	0.048
United Arab Emirates	0.922	0.997	0.990	0.100	0.025
International pooled data	0.894	0.993	0.978	**0.121**	0.027

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.206. Measurement invariance results from MGCFA for scale T4PTLEAD with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.996	0.987	0.107	0.032	-	-	-	-
Equal loadings	0.985	0.982	0.127	0.067	-0.011	-0.005	0.020	0.035
Equal loadings and thresholds	0.972	0.978	0.138	0.153	-0.013	-0.003	0.011	0.087

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Bulgaria, the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.207. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PTLEAD

Item	Slope	Threshold 1	Threshold 2
TC4G29A	0.783	-1.102	0.693
TC4G29B	0.896	-1.417	0.552
TC4G29C	0.799	-1.306	0.552
TC4G29D	0.601	-1.201	0.503

Source: OECD, TALIS 2024 database.

Opportunities to participate in school decisions (principal) (T4POPPART)

Principals were asked to answer three items measuring *Opportunities to participate in school decisions* (T4POPPART). These items were TC4G38A, TC4G38B and TC4G38C. All items were answered on a four-point scale, with response categories of "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher values on this scale indicate greater perceived opportunities given to various stakeholders to participate in school decision making.

Table 11.208 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.209. The model fit indices for T4POPPART are not presented here as the scale was measured by just three items. Scale reliabilities for T4POPPART are generally high (above 0.700), except for the ISCED level 1 population in the Netherlands, where it does not reach the acceptable cut-off criterion.

Table 11.210 presents the results from the measurement invariance testing for T4POPPART for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models meets the cut-off criterion for the RMSEA, is close to the acceptable range for the TLI and CFI, but exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.211 presents the standardised item loadings and thresholds based on pooled data for the scale T4POPPART. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.208. Items and response categories used in the construction of scale T4POPPART

Scale or item	Question or item wording
T4POPPART	How strongly do you agree or disagree with these statements as applied to this school?
	Recoded response categories for scaling: 1=Strongly disagree or disagree; 2=Agree; 3=Strongly agree
	Scale mid-point: 2
TC4G38A	This school provides staff with opportunities to actively participate in school decisions.
TC4G38B	This school provides parents or guardians with opportunities to actively participate in school decisions.
TC4G38C	This school provides students with opportunities to actively participate in school decisions.

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.209. Reliability coefficient alpha for single countries and pooled model for scale T4POPPART

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.895
Alberta (Canada)	0.864
Australia	0.841
Austria	0.868
Azerbaijan	0.778
Bahrain	0.950
Belgium	0.938
Flemish Community (Belgium)	0.937
French Community (Belgium)	0.908
Brazil	0.919
Bulgaria	0.878
Chile	0.933
Colombia	0.924
Costa Rica	0.865
Croatia	0.925
Cyprus	0.915
Czechia	0.809
Denmark	0.768
Estonia	0.786
Finland	0.797
France	0.874
Hungary	0.838
Iceland	0.861
Israel	0.899
Italy	0.718
Japan	0.755
Kazakhstan	0.864
Korea	0.944
Kosovo	0.908
Latvia	0.835
Lithuania	0.975
Malta	0.935
Montenegro	0.904
Morocco	0.852
Netherlands	0.886
New Zealand	0.799
North Macedonia	0.934
Norway	0.925

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Poland	0.953
Portugal	0.942
Romania	0.881
Saudi Arabia	0.900
Serbia	0.962
Shanghai (China)	0.960
Singapore	0.813
Slovak Republic	0.857
Slovenia	0.713
South Africa	0.929
Spain	0.891
Sweden	0.743
Türkiye	0.933
United Arab Emirates	0.942
United States	0.906
Uzbekistan	0.850
Viet Nam	0.827
International pooled data	0.879
ISCED level 1	
Australia	0.867
Belgium	0.742
Flemish Community (Belgium)	0.720
French Community (Belgium)	0.772
Brazil	0.867
France	0.791
Japan	0.781
Korea	0.932
Morocco	0.885
Netherlands	**0.554**
New Zealand	0.976
Saudi Arabia	0.904
Slovenia	0.790
Spain	0.832
Türkiye	0.853
United Arab Emirates	0.934
International pooled data	0.832
ISCED level 3	
Croatia	0.956
Denmark	0.629
Flemish Community (Belgium)	0.886
Portugal	0.912

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Saudi Arabia	0.918
Slovenia	0.960
Türkiye	0.890
United Arab Emirates	0.953
International pooled data	0.885

Note: Coefficients in **bold** exceed the cut-off criterion. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.210. Measurement invariance results from MGCFA for scale T4POPPART with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.996	0.994	0.101	0.035	-0.004	-0.006	0.101	0.035
Equal loadings and thresholds	0.981	0.986	0.150	0.157	-0.014	-0.008	0.049	0.122

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Estonia, Iceland, Korea, Lithuania, the Netherlands, New Zealand, Norway, Serbia and Slovenia are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.211. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4POPPART

Item	Slope	Threshold 1	Threshold 2
TC4G38A	0.751	-2.054	0.144
TC4G38B	0.917	-1.002	0.724
TC4G38C	0.857	-1.104	0.770

Source: OECD, TALIS 2024 database.

Academic rigor (T4PACADT)

The scale of *Academic rigor* (T4PACADT) was measured by a set of three items (TC4G39A, TC4G39B and TC4G39C), shown in Table 11.212. These items assess principals' views on teachers' understanding and implementation of the curriculum, as well as on teachers' expectations of student achievement. Principals were asked to indicate the extent to which these statements apply in their school, using the following response categories: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher values on this scale indicate greater perceived academic rigor.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.213. The model fit indices for T4PACADT are not presented here as the scale was measured by just three items. Scale reliabilities for T4PACADT are generally high, except for the ISCED level 2 population in Croatia and Latvia where the reliability exceeds the cut-off criterion.

Unclassified - Non classifié

Table 11.214 presents the results from the measurement invariance testing for T4PACADT for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is within the cut-off criteria for the CFI, TLI, SRMR and very close for the RMSEA. The degree of change between the equal loadings and the equal loadings and thresholds models is very close to the acceptable cut-off criterion for the RMSEA but exceeds the cut-off criteria for the CFI, TLI and SRMR. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Table 11.215 presents the standardised item loadings and thresholds based on pooled data for the scale T4PACADT. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.212. Items and response categories used in the construction of scale T4PACADT

Scale or item	Question or item wording
T4PACADT	To what extent do the following statements apply to this school?
	Recoded response categories for scaling: 1=Not at all or to some extent; 2=Quite a bit; 3=A lot
	Scale mid-point: 2
TC4G39A	Teachers understand the curricular goals.
TC4G39B	Teachers succeed in implementing the curriculum.
TC4G39C	Teachers hold high expectations for student achievement.

Source: OECD, TALIS 2024 database.

Table 11.213. Reliability coefficient alpha for single countries and pooled model for scale T4PACADT

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.772
Alberta (Canada)	0.797
Australia	0.834
Austria	0.664
Azerbaijan	0.881
Bahrain	0.895
Belgium	0.798
Flemish Community (Belgium)	0.816
French Community (Belgium)	0.706
Brazil	0.850
Bulgaria	0.725
Chile	0.885
Colombia	0.752
Costa Rica	0.898
Croatia	**0.589**
Cyprus	0.888
Czechia	0.683
Denmark	0.771

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Estonia	0.690
Finland	0.778
France	0.738
Hungary	0.673
Iceland	0.870
Israel	0.778
Italy	0.787
Japan	0.645
Kazakhstan	0.814
Korea	0.908
Kosovo	0.822
Latvia	**0.593**
Lithuania	0.815
Malta	0.920
Montenegro	0.779
Morocco	0.873
Netherlands	0.661
New Zealand	0.853
North Macedonia	0.854
Norway	0.810
Poland	0.746
Portugal	0.764
Romania	0.863
Saudi Arabia	0.871
Serbia	0.787
Shanghai (China)	0.931
Singapore	0.831
Slovak Republic	0.767
Slovenia	0.688
South Africa	0.866
Spain	0.814
Sweden	0.879
Türkiye	0.898
United Arab Emirates	0.929
United States	0.938
Uzbekistan	0.747
Viet Nam	0.829
International pooled data	0.830
ISCED level 1	
Australia	0.905
Belgium	0.793

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Flemish Community (Belgium)	0.850
French Community (Belgium)	0.657
Brazil	0.824
France	0.805
Japan	0.812
Korea	0.904
Morocco	0.836
Netherlands	0.772
New Zealand	0.908
Saudi Arabia	0.869
Slovenia	0.664
Spain	0.846
Türkiye	0.819
United Arab Emirates	0.920
International pooled data	0.841
ISCED level 3	
Croatia	0.742
Denmark	0.736
Flemish Community (Belgium)	0.854
Portugal	0.760
Saudi Arabia	0.973
Slovenia	0.699
Türkiye	0.869
United Arab Emirates	0.901
International pooled data	0.864

Note: Coefficients in **bold** exceed the cut-off criterion. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.214. Measurement invariance results from MGCFA for scale T4PACADT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.989	0.983	0.108	0.051	-0.011	-0.017	0.108	0.051
Equal loadings and thresholds	0.949	0.961	0.163	0.146	-0.040	-0.022	0.055	0.095

Note: Albania, Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Latvia, the Netherlands, New Zealand, Norway and Viet Nam are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.215. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PACADT

Item	Slope	Threshold 1	Threshold 2
TC4G39A	0.816	-1.482	0.037
TC4G39B	0.927	-1.376	0.167
TC4G39C	0.633	-0.933	0.401

Source: OECD, TALIS 2024 database.

School delinquency and violence (T4PDELI)

The scale of *School delinquency and violence* (T4PDELI) was measured by four items (TC4G41A, TC4G41B, TC4G41D and TC4G41E). For these items, principals were asked to report how frequently different situations occurred among students, using the following response categories: “Never”, “Less than monthly”, “Monthly”, “Weekly” and “Daily”. Higher scores on this scale indicate more frequent delinquent or violent situations at school, as perceived by principals. Table 11.216 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.217. Scale reliabilities for T4PDELI are high, generally above 0.800, across all countries/territories. As can be observed from Table 11.217, the CFI for T4PDELI is within the acceptable cut-off for all participating countries/territories. The TLI exceeds the cut-off criterion in the ISCED level 2 population in Saudi Arabia, Singapore and Slovenia. The RMSEA is mostly acceptable across all populations, except in 11 ISCED level 2 participants. From these, it particularly exceeds the cut-off criterion in the Flemish Community of Belgium, Japan, Saudi Arabia, Singapore and Slovenia. The SRMR exceeds the cut-off criterion only in the ISCED level 2 population in the Netherlands.

Table 11.218 presents the results from the measurement invariance testing for T4PDELI for the ISCED level 2 population. The baseline model shows an acceptable model fit across all indices. The degree of change between the baseline and the equal loadings model is within the cut-off criteria for all indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-offs for all indices. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Table 11.219 presents the standardised item loadings and thresholds based on pooled data for the scale T4PDELI. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.216. Items and response categories used in the construction of scale T4PDELI

Scale or item	Question or item wording
T4PDELI	In this school, how often do the following occur amongst students?
	Recoded response categories for scaling: 1=Never; 2=Less than monthly; 3=Monthly, weekly or daily
	Scale mid-point: 2
TC4G41A	Vandalism and theft
TC4G41B	Intimidation or bullying among students (or other forms of verbal abuse) on school grounds
TC4G41D	Physical injury caused by violence among students
TC4G41E	Intimidation or verbal abuse of teachers or staff on school grounds

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.217. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PDELI

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.828	1.000	1.037	0.000	0.009
Alberta (Canada)	0.893	1.000	1.007	0.000	0.010
Australia	0.930	0.998	0.994	0.080	0.022
Austria	0.822	0.999	0.996	0.026	0.025
Azerbaijan	0.929	0.993	0.978	0.087	0.032
Bahrain	0.888	1.000	1.004	0.000	0.020
Belgium	0.852	0.986	0.958	0.095	0.035
Flemish Community (Belgium)	0.889	0.970	0.910	**0.152**	0.059
French Community (Belgium)	0.762	0.997	0.992	0.033	0.041
Brazil	0.869	1.000	0.999	0.015	0.014
Bulgaria	0.895	1.000	1.005	0.000	0.011
Chile	0.812	0.973	0.918	0.093	0.050
Colombia	0.928	0.999	0.996	0.059	0.017
Costa Rica	0.838	0.995	0.984	**0.108**	0.039
Croatia	0.886	1.000	1.010	0.000	0.008
Cyprus	0.876	0.994	0.981	**0.106**	0.037
Czechia	0.832	1.000	1.006	0.000	0.013
Denmark	0.871	0.994	0.982	0.088	0.023
Estonia	0.823	1.000	1.020	0.000	0.009
Finland	0.860	1.000	1.032	0.000	0.007
France	0.833	0.993	0.979	0.078	0.034
Hungary	0.847	0.986	0.957	**0.108**	0.034
Iceland	0.822	1.000	1.036	0.000	0.006
Israel	0.880	0.997	0.992	0.057	0.025
Italy	0.813	1.000	1.022	0.000	0.008
Japan	0.844	0.978	0.934	**0.164**	0.047
Kazakhstan	0.862	0.986	0.958	0.076	0.057
Korea	0.869	1.000	1.000	0.010	0.018
Kosovo	0.639	0.969	0.907	0.073	0.058
Latvia	0.860	1.000	0.999	0.018	0.025
Lithuania	0.835	0.997	0.991	0.039	0.027
Malta	0.903	0.999	0.997	0.043	0.042
Montenegro	0.897	1.000	1.015	0.000	0.003
Morocco	0.888	1.000	0.999	0.014	0.020
Netherlands	0.855	1.000	1.073	0.000	**0.164**
New Zealand	0.822	1.000	1.029	0.000	0.012
North Macedonia	0.891	1.000	0.999	0.021	0.023
Norway	0.846	0.979	0.937	**0.113**	0.056

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Poland	0.837	1.000	1.006	0.000	0.018
Portugal	0.856	0.994	0.981	0.076	0.032
Romania	0.882	0.988	0.965	**0.121**	0.049
Saudi Arabia	0.848	0.956	**0.867**	**0.176**	0.065
Serbia	0.894	1.000	1.002	0.000	0.012
Shanghai (China)	0.901	1.000	1.014	0.000	0.007
Singapore	0.798	0.964	**0.893**	**0.138**	0.054
Slovak Republic	0.848	1.000	1.008	0.000	0.011
Slovenia	0.813	0.966	**0.897**	**0.148**	0.065
South Africa	0.806	0.993	0.979	0.058	0.030
Spain	0.865	1.000	1.000	0.004	0.018
Sweden	0.791	1.000	1.011	0.000	0.028
Türkiye	0.870	0.987	0.961	**0.110**	0.037
United Arab Emirates	0.884	1.000	1.005	0.000	0.019
United States	0.800	0.998	0.994	0.030	0.032
Uzbekistan	0.935	0.996	0.989	0.076	0.027
Viet Nam	0.849	0.991	0.972	0.082	0.053
International pooled data	0.902	0.999	0.997	0.034	0.008
ISCED level 1					
Australia	0.863	1.000	1.019	0.000	0.009
Belgium	0.800	0.990	0.971	0.075	0.026
Flemish Community (Belgium)	0.760	0.983	0.949	**0.102**	0.041
French Community (Belgium)	0.828	1.000	1.017	0.000	0.012
Brazil	0.890	1.000	1.008	0.000	0.004
France	0.845	0.992	0.976	0.085	0.029
Japan	0.881	0.996	0.987	0.078	0.022
Korea	0.871	0.995	0.986	0.054	0.028
Morocco	0.823	0.997	0.990	0.041	0.027
Netherlands	0.812	1.000	1.024	0.000	0.015
New Zealand	0.838	0.997	0.992	0.047	0.025
Saudi Arabia	0.875	0.990	0.971	**0.106**	0.058
Slovenia	0.860	0.988	0.963	**0.118**	0.037
Spain	0.869	0.998	0.995	0.031	0.019
Türkiye	0.856	0.992	0.976	0.083	0.032
United Arab Emirates	0.850	1.000	1.012	0.000	0.012
International pooled data	0.872	0.999	0.996	0.036	0.010
ISCED level 3					
Croatia	0.856	0.995	0.986	0.066	0.023
Denmark	0.883	0.994	0.982	0.087	0.038
Flemish Community (Belgium)	0.854	0.988	0.963	**0.113**	0.050
Portugal	0.840	1.000	1.011	0.000	0.013
Saudi Arabia	0.907	1.000	1.005	0.000	0.017

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Slovenia	0.876	1.000	1.002	0.000	0.036
Türkiye	0.927	1.000	1.003	0.000	0.009
United Arab Emirates	0.853	0.999	0.998	0.023	0.024
International pooled data	0.904	0.998	0.993	0.049	0.013

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.218. Measurement invariance results from MGCFA for scale T4PDELI with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.994	0.981	0.076	0.029	-	-	-	-
Equal loadings	0.990	0.988	0.061	0.048	-0.004	0.006	-0.015	0.018
Equal loadings and thresholds	0.929	0.946	0.130	0.141	-0.061	-0.042	0.069	0.093

Note: Albania, Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Finland, Montenegro, the Netherlands, New Zealand, Norway, Shanghai (China), Sweden and Viet Nam are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.219. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDELI

Item	Slope	Threshold 1	Threshold 2
TC4G41A	0.820	-0.241	1.143
TC4G41B	0.880	-0.801	0.518
TC4G41D	0.841	-0.030	1.386
TC4G41E	0.789	0.294	1.353

Source: OECD, TALIS 2024 database.

Diversity beliefs (T4PDIVBF)

The scale of *Diversity beliefs* (T4PDIVBF) was measured by three items (TC4G44B, TC4G44C and TC4G44D). For these items, principals had to indicate how many teachers would agree with different statements about diversity, using the following response categories: "None or almost none", "Some", "Many" and "Almost all or all". Higher values on this scale indicate greater perceived diversity beliefs among teachers, as reported by principals. Table 11.220 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.221. The model fit indices for T4PDIVBF are not presented here as the scale was measured by just three items. As can be seen, scale reliabilities for T4PDIVBF are high, generally greater than 0.900, across all countries/territories.

Table 11.222 presents the results from the measurement invariance testing for T4PDIVBF for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit. The equal loadings

Unclassified - Non classifié

model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the CFI and TLI, close to the acceptable range for the RMSEA, but exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.223 presents the standardised item loadings and thresholds based on pooled data for the scale T4PDIVBF. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.220. Items and response categories used in the construction of scaleT4PDIVBF

Scale or item	Question or item wording
T4PDIVBF	In your view, approximately how many teachers in this school would agree with the following statements?
	Recoded response categories for scaling: 1=None, almost none or some; 2=Many; 3=All or almost all
	Scale mid-point: 2
TC4G44B	It is important for students to learn that people from other cultures can have different values.
TC4G44C	Respecting other cultures is something that children and young people should learn as early as possible.
TC4G44D	Children and young people should learn that people of different cultures have a lot in common.

Source: OECD, TALIS 2024 database.

Table 11.221. Reliability coefficient alpha for single countries and pooled model for scale T4PDIVBF

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.925
Alberta (Canada)	0.962
Australia	0.950
Austria	0.905
Azerbaijan	0.921
Bahrain	0.943
Belgium	0.925
Flemish Community (Belgium)	0.916
French Community (Belgium)	0.943
Brazil	0.943
Bulgaria	0.979
Chile	0.975
Colombia	0.946
Costa Rica	0.955
Croatia	0.970
Cyprus	0.983
Czechia	0.873
Denmark	0.908
Estonia	0.934
Finland	0.953
France	0.914
Hungary	0.950
Iceland	0.904
Israel	0.959

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Italy	0.956
Japan	0.928
Kazakhstan	0.832
Korea	0.962
Kosovo	0.934
Latvia	0.925
Lithuania	0.963
Malta	0.906
Montenegro	0.991
Morocco	0.915
Netherlands	0.947
New Zealand	0.980
North Macedonia	0.881
Norway	0.940
Poland	0.935
Portugal	0.971
Romania	0.957
Saudi Arabia	0.938
Serbia	0.971
Shanghai (China)	0.961
Singapore	0.947
Slovak Republic	0.942
Slovenia	0.959
South Africa	0.937
Spain	0.979
Sweden	0.946
Türkiye	0.942
United Arab Emirates	0.952
United States	0.986
Uzbekistan	0.862
Viet Nam	0.915
International pooled data	0.939
ISCED level 1	
Australia	0.931
Belgium	0.937
Flemish Community (Belgium)	0.932
French Community (Belgium)	0.946
Brazil	0.973
France	0.941
Japan	0.957
Korea	0.965
Morocco	0.924
Netherlands	0.911
New Zealand	0.980
Saudi Arabia	0.944
Slovenia	0.969

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Spain	0.971
Türkiye	0.966
United Arab Emirates	0.937
International pooled data	0.949
ISCED level 3	
Croatia	0.989
Denmark	0.936
Flemish Community (Belgium)	0.880
Portugal	0.985
Saudi Arabia	0.948
Slovenia	0.906
Türkiye	0.958
United Arab Emirates	0.968
International pooled data	0.950

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.222. Measurement invariance results from MGCFA for scale T4PDIVBF with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.999	0.998	0.078	0.017	-0.001	-0.002	0.078	0.017
Equal loadings and thresholds	0.996	0.997	0.100	0.080	-0.003	-0.001	0.021	0.063

Note: Alberta (Canada), Australia, the Flemish Community (Belgium), the French Community (Belgium), Iceland, Lithuania, the Netherlands, New Zealand, Norway and Singapore are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.223. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PDIVBF

Item	Slope	Threshold 1	Threshold 2
TC4G44B	0.858	-1.373	-0.236
TC4G44C	0.951	-1.620	-0.384
TC4G44D	0.930	-1.641	-0.344

Source: OECD, TALIS 2024 database.

Leadership in environmental and sustainability education (T4PLEADESE)

The scale of *Leadership in environmental and sustainability education* (T4PDLEADESE) was measured by a set of four items (TC4G45A, TC4G45B, TC4G45C and TC4G45H), described in Table 11.224. Principals were asked to indicate their level of agreement with these items, which related to their role as principal in supporting education about environmental sustainability. All items were answered on a four-

Unclassified - Non classifié

point scale, with response categories of “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale indicate greater reported leadership in matters related to environmental and sustainability education.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.225. Scale reliabilities for T4PLEADESE are high (generally above 0.700) in most participating countries/territories, except for the ISCED level 2 population in New Zealand where it does not reach the cut-off criterion. In terms of model fit, the CFI for T4PLEADESE is within the acceptable cut-off for most populations, the only exceptions are the ISCED level 2 population in Denmark and the Slovak Republic. The TLI exceeds the cut-off value also for these two populations, as well as for the ISCED level 2 population in Belgium, Estonia, Finland, the Flemish Community of Belgium, Norway and Sweden, and the ISCED level 1 population in New Zealand. The RMSEA is acceptable across all ISCED level 2 participants but exceeds the cut-off criterion in the ISCED level 1 population in Australia, Belgium, France, Saudi Arabia and the United Arab Emirates and in the ISCED level 3 population in Croatia, Denmark and Portugal. The SRMR exceeds the cut-off criterion only in the ISCED level 3 population in Denmark. Based on the single CFA model fit results, the scale T4PDLEADESE works well across all populations except in Denmark (ISCED level 2) and in the Slovak Republic (ISCED level 2), where the CFI, TLI and RMSEA do not reach the acceptable criteria, as well as in New Zealand (ISCED level 1), where the TLI, RMSEA and SRMR do not reach the acceptable criteria.

Table 11.226 presents the results from the measurement invariance testing for T4PLEADESE for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and the equal loadings model is within the cut-off criteria for the RMSEA and SRMR, close for the TLI but exceeds the cut-off for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all indices. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.227 presents the standardised item loadings and thresholds based on pooled data for the scale T4PLEADESE. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.224. Items and response categories used in the construction of scale T4PLEADESE

Scale or item	Question or item wording
T4PLEADESE	Thinking about your role as a principal in supporting education about environmental sustainability, how strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree or disagree; 2=Agree; 3=Strongly agree
	Scale mid-point: 2
TC4G45A	It is important for me as a principal to address environmental sustainability with the curriculum.
TC4G45B	I have the resources I need to develop a school strategy on including environmental sustainability in the curriculum.
TC4G45C	I am confident supporting teachers so that they can teach about environmental sustainability.
TC4G45H	I encourage teachers to teach about climate change across different subjects.

Source: OECD, TALIS 2024 database.

Table 11.225. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PLEADESE

Participating country/territory	Reliability	CFA model fit			
	Cronbach’s alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.850	0.995	0.986	0.060	0.029

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Alberta (Canada)	0.806	1.000	1.020	0.000	0.026
Australia	0.818	0.967	0.901	**0.212**	0.069
Austria	0.796	1.000	1.002	0.000	0.027
Azerbaijan	0.845	1.000	1.003	0.000	0.017
Bahrain	0.886	0.989	0.967	**0.154**	0.034
Belgium	0.673	0.922	**0.767**	**0.151**	0.057
Flemish Community (Belgium)	0.639	0.950	**0.851**	**0.103**	0.046
French Community (Belgium)	0.732	0.998	0.995	0.033	0.040
Brazil	0.824	0.991	0.972	0.098	0.036
Bulgaria	0.834	0.987	0.960	**0.107**	0.045
Chile	0.851	0.997	0.992	0.054	0.020
Colombia	0.679	1.000	1.009	0.000	0.021
Costa Rica	0.838	1.000	1.004	0.000	0.026
Croatia	0.836	1.000	1.002	0.000	0.015
Cyprus	0.857	1.000	1.004	0.000	0.021
Czechia	0.851	0.999	0.997	0.033	0.014
Denmark	0.659	**0.895**	**0.686**	**0.227**	0.087
Estonia	0.773	0.956	**0.867**	**0.150**	0.045
Finland	0.800	0.965	**0.896**	**0.165**	0.046
France	0.765	1.000	1.008	0.000	0.024
Hungary	0.884	0.995	0.984	0.090	0.027
Iceland	0.887	1.000	1.002	0.000	0.021
Israel	0.909	1.000	1.005	0.000	0.010
Italy	0.756	0.986	0.958	0.082	0.035
Japan	0.823	0.970	0.911	**0.145**	0.052
Kazakhstan	0.843	0.997	0.991	0.044	0.021
Korea	0.901	0.989	0.967	**0.135**	0.066
Kosovo	0.833	0.989	0.967	**0.106**	0.036
Latvia	0.788	0.999	0.996	0.027	0.023
Lithuania	0.767	0.988	0.965	0.067	0.043
Malta	0.865	0.992	0.976	**0.130**	0.026
Montenegro	0.921	0.990	0.971	**0.215**	0.038
Morocco	0.778	1.000	1.003	0.000	0.025
Netherlands	0.834	1.000	1.025	0.000	0.022
New Zealand	**0.520**	1.000	1.014	0.000	0.047
North Macedonia	0.822	1.000	1.019	0.000	0.007
Norway	0.761	0.911	**0.733**	**0.231**	0.079
Poland	0.912	0.999	0.998	0.036	0.020
Portugal	0.811	0.991	0.973	0.089	0.031
Romania	0.870	0.996	0.988	0.087	0.034
Saudi Arabia	0.842	0.996	0.989	0.072	0.019

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Serbia	0.896	0.998	0.994	0.067	0.021
Shanghai (China)	0.944	0.999	0.996	**0.108**	0.030
Singapore	0.905	0.997	0.992	**0.120**	0.046
Slovak Republic	0.754	**0.889**	**0.668**	**0.249**	0.078
Slovenia	0.830	0.977	0.932	**0.147**	0.050
South Africa	0.851	0.997	0.991	0.056	0.020
Spain	0.814	0.995	0.985	0.052	0.034
Sweden	0.730	0.908	**0.724**	**0.163**	0.051
Türkiye	0.829	1.000	1.003	0.000	0.017
United Arab Emirates	0.901	0.995	0.984	0.095	0.021
United States	0.911	0.995	0.984	0.092	0.027
Uzbekistan	0.854	1.000	1.014	0.000	0.007
Viet Nam	0.881	0.993	0.980	**0.120**	0.026
International pooled data	0.851	0.989	0.968	0.086	0.022
ISCED level 1					
Australia	0.830	0.948	**0.843**	**0.219**	0.057
Belgium	0.720	0.918	**0.753**	**0.179**	0.060
Flemish Community (Belgium)	0.762	0.983	0.948	0.097	0.041
French Community (Belgium)	0.728	0.970	0.911	0.097	0.043
Brazil	0.854	0.994	0.983	0.090	0.033
France	0.820	0.976	0.927	**0.139**	0.036
Japan	0.851	1.000	1.008	0.000	0.014
Korea	0.884	1.000	1.012	0.000	0.031
Morocco	0.801	1.000	1.016	0.000	0.004
Netherlands	0.880	0.989	0.966	**0.272**	0.079
New Zealand	0.826	0.944	**0.831**	**0.263**	**0.102**
Saudi Arabia	0.784	0.978	0.934	**0.126**	0.040
Slovenia	0.835	0.999	0.997	0.036	0.024
Spain	0.864	0.997	0.992	0.040	0.022
Türkiye	0.860	0.999	0.996	0.036	0.020
United Arab Emirates	0.912	0.992	0.977	**0.156**	0.038
International pooled data	0.867	0.993	0.980	0.081	0.021
ISCED level 3					
Croatia	0.880	0.990	0.969	**0.103**	0.034
Denmark	0.861	0.972	0.916	**0.290**	**0.148**
Flemish Community (Belgium)	0.721	0.996	0.988	0.039	0.032
Portugal	0.871	0.977	0.932	**0.156**	0.057
Saudi Arabia	0.800	0.995	0.986	0.058	0.028
Slovenia	0.824	1.000	1.023	0.000	0.010
Türkiye	0.824	0.989	0.968	0.092	0.036
United Arab Emirates	0.925	0.998	0.994	0.072	0.021

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
International pooled data	0.871	0.980	0.939	**0.142**	0.039

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.226. Measurement invariance results from MGCFA for scale T4PLEADESE with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.991	0.972	0.098	0.033	-	-	-	-
Equal loadings	0.970	0.964	0.112	0.066	-0.021	-0.009	0.014	0.033
Equal loadings and thresholds	0.907	0.929	0.156	0.186	-0.064	-0.035	0.045	0.120

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Hungary, Korea, Kosovo, the Netherlands, New Zealand, North Macedonia, Norway and Shanghai (China) are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.227. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PLEADESE

Item	Slope	Threshold 1	Threshold 2
TC4G45A	0.778	-1.706	0.057
TC4G45B	0.714	-0.393	0.963
TC4G45C	0.853	-1.098	0.511
TC4G45H	0.733	-1.203	0.363

Source: OECD, TALIS 2024 database.

Instructional barriers to teaching climate change (T4PINBRCC)

The scale of *Instructional barriers to teaching climate change* (T4PINBRCC) was constructed using five items (TC4G46D, TC4G46F, TC4G46H, TC4G46I and TC4G46J). For each item, principals were asked to what extent they viewed it as a barrier to teaching about climate change in their school. Response options included: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher values on this scale indicate a greater perceived presence of instructional barriers to teaching climate change.

Table 11.229 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.229. As can be seen, scale reliabilities for T4PINBRCC are acceptable in all countries/territories. The scale T4PINBRCC has a generally good model fit across populations. The CFI is within the cut-off criterion for all participating countries/territories. The TLI is also within the cut-off for most participants, except for the ISCED level 2 population in Sweden and ISCED level 3 population in Portugal. The RMSEA exceeds the cut-off criterion in five ISCED level 2 participants, and three ISCED level 1 and ISCED level 3 participants, respectively. Of these, the RMSEA is particularly high in the ISCED level 2 population in Bahrain and Sweden, the ISCED level 1 population in New Zealand, and the ISCED level 3

Unclassified - Non classifié

population in Portugal. The SRMR is acceptable for most populations but exceeds the cut-off criterion in the ISCED level 2 population in the Netherlands and Malta, as well as in the ISCED level 1 population in New Zealand.

Table 11.230 presents the results from the measurement invariance testing for T4PINBRCC for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and the equal loadings model is within the cut-off criteria for the RMSEA and SRMR, and close to the acceptable range for the TLI and CFI. The degree of change between the equal loadings and the equal loadings exceeds the cut-offs for all indices. No special caution is required when comparing scale score results across countries/territories.

Table 11.231 presents the standardised item loadings and thresholds based on pooled data for the scale T4PINBRCC. Items ITC4G46D and TC4G46F show acceptable loadings, while items TC4G46H, TC4G46I and TC4G46J show high loadings. Results by participating country/territory show low loadings for item ITC4G46D in the ISCED level 2 population in Albania, Australia, Azerbaijan, Croatia, South Africa and Sweden; in the ISCED level 1 population in Belgium, Brazil, the French Community of Belgium and Spain; and in the ISCED level 3 population in Denmark and Portugal. Loadings for item TC4G46F are also low in the ISCED level 2 population in Bulgaria, Chile, Denmark, Israel, Latvia, Portugal, Romania, Singapore, Slovenia, South Africa and the United Arab Emirates; in the ISCED level 1 population in Australia, the Flemish Community of Belgium, France, Slovenia and Spain; and in the ISCED level 3 population in Denmark.

Table 11.228. Items and response categories used in the construction of scale T4PINBRCC

Scale or item	Question or item wording
T4PINBRCC	In your view, to what extent are the following barriers for teaching about climate change in this school?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit or a lot
	Scale mid-point: 2
TC4G46D	Teachers don't have the materials needed to teach the subject.
TC4G46F	Our <school governing board> and/or <local, municipality/regional, state, or national/federal> authority does not allow it.
TC4G46H	The curriculum is not flexible enough.
TC4G46I	The curriculum does not mandate it be taught.
TC4G46J	Assessments do not include it.

Source: OECD, TALIS 2024 database.

Table 11.229. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PINBRCC

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.829	0.983	0.965	0.082	0.041
Alberta (Canada)	0.867	0.990	0.979	0.096	0.061
Australia	0.824	0.981	0.962	**0.104**	0.072
Austria	0.727	1.000	1.016	0.000	0.050
Azerbaijan	0.796	0.984	0.968	0.058	0.045
Bahrain	0.869	0.977	0.954	**0.152**	0.067
Belgium	0.819	0.999	0.997	0.023	0.038
Flemish Community (Belgium)	0.834	1.000	1.009	0.000	0.036

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
French Community (Belgium)	0.779	1.000	1.007	0.000	0.049
Brazil	0.886	1.000	1.002	0.000	0.030
Bulgaria	0.770	0.998	0.995	0.032	0.074
Chile	0.796	0.987	0.973	0.059	0.046
Colombia	0.910	0.996	0.992	0.062	0.034
Costa Rica	0.842	1.000	1.009	0.000	0.034
Croatia	0.791	1.000	1.004	0.000	0.043
Cyprus	0.837	0.998	0.996	0.041	0.053
Czechia	0.781	0.988	0.977	0.043	0.069
Denmark	0.808	1.000	1.002	0.000	0.045
Estonia	0.839	0.995	0.991	0.055	0.054
Finland	0.862	1.000	1.015	0.000	0.031
France	0.805	0.991	0.982	0.066	0.054
Hungary	0.852	0.992	0.985	0.063	0.082
Iceland	0.718	0.961	0.922	**0.103**	0.073
Israel	0.793	1.000	1.027	0.000	0.032
Italy	0.840	0.984	0.968	0.091	0.055
Japan	0.871	0.997	0.995	0.059	0.033
Kazakhstan	0.853	0.981	0.963	0.065	0.040
Korea	0.921	0.994	0.987	0.065	0.039
Kosovo	0.826	0.993	0.986	0.051	0.036
Latvia	0.815	0.992	0.984	0.053	0.041
Lithuania	0.858	1.000	1.003	0.000	0.040
Malta	0.856	1.000	1.013	0.000	**0.172**
Montenegro	0.841	0.984	0.967	**0.109**	0.050
Morocco	0.801	0.996	0.992	0.022	0.036
Netherlands	0.838	0.995	0.990	0.050	**0.189**
New Zealand	0.910				
North Macedonia	0.835	1.000	1.012	0.000	0.015
Norway	0.848	0.995	0.990	0.054	0.053
Poland	0.791	0.995	0.989	0.041	0.053
Portugal	0.813	0.996	0.993	0.043	0.038
Romania	0.814	0.999	0.998	0.042	0.031
Saudi Arabia	0.882	0.995	0.990	0.076	0.037
Serbia	0.834	0.995	0.991	0.058	0.048
Shanghai (China)	0.906	0.996	0.993	0.072	0.041
Singapore	0.874	0.997	0.994	0.055	0.100
Slovak Republic	0.763	0.990	0.980	0.047	0.035
Slovenia	0.807	1.000	1.010	0.000	0.019
South Africa	0.775	1.000	1.001	0.000	0.026
Spain	0.847	0.968	0.937	0.080	0.045

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Sweden	0.764	0.942	**0.883**	**0.136**	0.091
Türkiye	0.888	0.994	0.988	0.064	0.039
United Arab Emirates	0.777	1.000	1.009	0.000	0.050
United States	0.795	1.000	1.006	0.000	0.032
Uzbekistan	0.847	0.986	0.972	0.074	0.039
Viet Nam	0.897	0.995	0.990	0.057	0.032
International pooled data	0.839	0.995	0.990	0.043	0.023
ISCED level 1					
Australia	0.773	0.981	0.962	**0.111**	0.081
Belgium	0.757	0.978	0.956	0.087	0.061
Flemish Community (Belgium)	0.779	0.980	0.960	0.087	0.060
French Community (Belgium)	0.773	0.999	0.998	0.017	0.037
Brazil	0.864	0.999	0.999	0.020	0.026
France	0.719	0.960	0.920	0.080	0.050
Japan	0.846	1.000	1.009	0.000	0.035
Korea	0.958	0.998	0.996	0.067	0.024
Morocco	0.812	0.979	0.957	0.081	0.052
Netherlands	0.781	0.999	0.998	0.019	0.052
New Zealand	0.722	0.965	0.930	**0.130**	**0.115**
Saudi Arabia	0.858	0.978	0.956	**0.110**	0.045
Slovenia	0.818	1.000	1.007	0.000	0.022
Spain	0.740	1.000	1.012	0.000	0.022
Türkiye	0.840	0.994	0.988	0.052	0.036
United Arab Emirates	0.870	0.991	0.981	0.082	0.051
International pooled data	0.826	0.991	0.983	0.058	0.025
ISCED level 3					
Croatia	0.877	0.983	0.966	**0.111**	0.035
Denmark	0.771	0.996	0.993	0.060	0.065
Flemish Community (Belgium)	0.813	0.985	0.970	0.068	0.056
Portugal	0.781	0.929	**0.858**	**0.175**	0.095
Saudi Arabia	0.862	0.994	0.989	0.068	0.034
Slovenia	0.798	1.000	1.010	0.000	0.046
Türkiye	0.878	0.990	0.980	**0.109**	0.060
United Arab Emirates	0.915	0.998	0.995	0.041	0.050
International pooled data	0.843	0.990	0.980	0.076	0.044

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.230. Measurement invariance results from MGCFA for scale T4PINBRCC with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.995	0.990	0.050	0.043	-	-	-	-
Equal loadings	0.982	0.980	0.072	0.075	-0.013	-0.010	0.022	0.032
Equal loadings and thresholds	0.949	0.960	0.101	0.137	-0.033	-0.020	0.029	0.062

Note: Alberta (Canada), Austria, Bulgaria, Denmark, Finland, the Flemish Community (Belgium), the French Community (Belgium), Malta, the Netherlands, New Zealand, Norway and Singapore are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.231. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PINBRCC

Item	Slope	Threshold 1	Threshold 2
TC4G46D	0.555	-0.635	0.556
TC4G46F	0.571	1.110	1.667
TC4G46H	0.787	-0.275	0.809
TC4G46I	0.905	-0.100	0.833
TC4G46J	0.783	-0.336	0.664

Source: OECD, TALIS 2024 database.

Attitudinal barriers to teaching climate change (T4PATBRCC)

The scale of *Attitudinal barriers to teaching climate change* (T4PATBRCC) was constructed using five items (TC4G46A, TC4G46B, TC4G46C, TC4G46E and TC4G46G) also related to principals' views on barriers for teachers to teach about climate change. Response options included: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher values on this scale indicate a greater perceived presence of attitudinal barriers to teaching climate change. Table 11.232 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.233. Scale reliabilities for T4PATBRCC are generally high, above 0.700, across populations. However, the reliability does not reach the cut-off criterion in the ISCED level 2 population in Alberta (Canada) and the Netherlands, and in the ISCED level 3 population in the Flemish Community of Belgium. As can be observed from Table 11.233, the CFI is within the cut-off criterion for almost all participating countries/territories; except for the ISCED level 2 population in France. The TLI is generally acceptable but exceeds the cut-off in four ISCED level 2 participants (France, Iceland, Montenegro and the United States), in the ISCED level 1 population in Slovenia, and in the ISCED level 3 population in the Flemish Community of Belgium. The RMSEA exceeds the cut-off criterion in nine ISCED level 2 participants (particularly in France, Malta and Montenegro), three ISCED level 1 participants (Belgium, the Flemish Community of Belgium and Slovenia), and in the ISCED level 3 population in Türkiye. The SRMR is within the cut-off for most populations, except the ISCED level 2 population in France and the United States. Based on the single CFA model fit results, the scale T4PATBRCC works well across all populations except in France (ISCED level 2), where none of the fit indices reach the acceptable criteria, and in the United States (ISCED level 2), where the TLI, RMSEA and SRMR do not reach the acceptable criteria.

Table 11.234 presents the results from the measurement invariance testing for T4PATBRCC for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and the equal loadings model is within the cut-off criteria for the RMSEA and SRMR, and close to the acceptable range for the TLI and CFI. The degree of change between the equal loadings and the

Unclassified - Non classifié

equal loadings and thresholds models exceeds the cut-off criteria for all indices. No special caution is required when comparing scale score results across countries/territories.

Table 11.235 presents the standardised item loadings and thresholds based on pooled data for the scale T4PATBRCC. Item TC4G46G shows a lower, but still acceptable, loading. All remaining items show high loadings based on the pooled data. Results by participating country/territory show low loadings for items TC4G46C in Israel (ISCED level 2), TC4G46E in Singapore (ISCED level 2) and TC4G46G in the ISCED level 2 population in Albania, Austria, Azerbaijan, Croatia, Czechia, France, Hungary, Israel, Kazakhstan, Romania, Serbia and in the United Arab Emirates; in the ISCED level 1 population in Belgium, the Flemish Community of Belgium, France, the French Community of Belgium, Morocco and the United Arab Emirates; and in the ISCED level 3 population in the United Arab Emirates.

Table 11.232. Items and response categories used in the construction of scale T4PATBRCC

Scale or item	Question or item wording
T4PATBRCC	In your view, to what extent are the following barriers for teaching about climate change in this school?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit or a lot
	Scale mid-point: 2
TC4G46A	Teachers think it is not related to the subject(s) they teach.
TC4G46B	Teachers think students are too young.
TC4G46C	Teachers don't know enough about it.
TC4G46E	Teachers don't believe in it.
TC4G46G	Teachers think students have already learned about it in school.

Source: OECD, TALIS 2024 database.

Table 11.233. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PATBRCC

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.796	0.993	0.985	0.044	0.030
Alberta (Canada)	0.692	1.000	1.105	0.000	0.043
Australia	0.799	0.995	0.991	0.028	0.056
Austria	0.742	1.000	1.000	0.004	0.031
Azerbaijan	0.706	0.957	0.914	0.090	0.056
Bahrain	0.893	0.991	0.982	0.094	0.035
Belgium	0.808	0.971	0.941	0.080	0.049
Flemish Community (Belgium)	0.811	0.956	0.911	**0.110**	0.060
French Community (Belgium)	0.751	1.000	1.063	0.000	0.032
Brazil	0.872	0.997	0.993	0.040	0.027
Bulgaria	0.839	0.994	0.988	0.050	0.047
Chile	0.877	0.976	0.951	0.092	0.057
Colombia	0.924	1.000	1.002	0.000	0.018
Costa Rica	0.884	0.978	0.957	**0.103**	0.046
Croatia	0.820	0.976	0.953	0.089	0.048
Cyprus	0.838	0.992	0.984	0.072	0.044
Czechia	0.749	1.000	1.003	0.000	0.024
Denmark	0.750	1.000	1.080	0.000	0.021

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Estonia	0.859	0.996	0.992	0.042	0.028
Finland	0.834	0.972	0.944	0.083	0.059
France	0.807	**0.870**	**0.740**	**0.202**	**0.104**
Hungary	0.829	0.998	0.997	0.029	0.034
Iceland	0.700	0.912	**0.824**	**0.134**	0.078
Israel	0.750	0.976	0.952	0.059	0.052
Italy	0.906	1.000	0.999	0.020	0.024
Japan	0.832	0.998	0.996	0.027	0.034
Kazakhstan	0.811	1.000	1.009	0.000	0.022
Korea	0.932	0.995	0.991	0.080	0.031
Kosovo	0.816	0.987	0.973	0.070	0.038
Latvia	0.783	1.000	1.012	0.000	0.032
Lithuania	0.884	1.000	1.005	0.000	0.018
Malta	0.863	0.962	0.924	**0.172**	0.099
Montenegro	0.838	0.948	**0.895**	**0.173**	0.066
Morocco	0.852	1.000	1.001	0.000	0.030
Netherlands	0.696	0.982	0.965	0.044	0.082
New Zealand	0.754	1.000	1.016	0.000	0.080
North Macedonia	0.821	0.992	0.984	0.059	0.031
Norway	0.860	0.974	0.948	**0.112**	0.091
Poland	0.813	1.000	1.020	0.000	0.019
Portugal	0.816	0.994	0.988	0.039	0.042
Romania	0.833	0.994	0.987	0.051	0.035
Saudi Arabia	0.871	0.995	0.990	0.053	0.024
Serbia	0.803	0.978	0.956	0.087	0.051
Shanghai (China)	0.880	0.997	0.994	0.068	0.034
Singapore	0.820	0.998	0.996	0.023	0.042
Slovak Republic	0.817	0.957	0.914	**0.118**	0.060
Slovenia	0.833	0.985	0.970	0.080	0.043
South Africa	0.795	0.968	0.936	0.085	0.047
Spain	0.865	0.996	0.992	0.027	0.037
Sweden	0.771	0.999	0.998	0.011	0.061
Türkiye	0.861	1.000	1.009	0.000	0.016
United Arab Emirates	0.864	0.997	0.994	0.039	0.031
United States	0.712	0.931	**0.861**	**0.102**	**0.107**
Uzbekistan	0.849	0.988	0.977	0.070	0.039
Viet Nam	0.874	1.000	1.002	0.000	0.020
International pooled data	0.827	0.987	0.974	0.057	0.026
ISCED level 1					
Australia	0.794	0.985	0.971	0.060	0.047
Belgium	0.761	0.956	0.913	**0.119**	0.065

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Flemish Community (Belgium)	0.751	0.954	0.909	**0.152**	0.074
French Community (Belgium)	0.769	0.983	0.965	0.064	0.052
Brazil	0.887	0.992	0.983	0.074	0.031
France	0.740	1.000	1.011	0.000	0.028
Japan	0.837	0.977	0.953	0.086	0.054
Korea	0.970	0.998	0.997	0.097	0.030
Morocco	0.853	0.994	0.988	0.052	0.028
Netherlands	0.752	1.000	1.014	0.000	0.044
New Zealand	0.778	0.979	0.958	0.054	0.055
Saudi Arabia	0.862	0.998	0.996	0.035	0.022
Slovenia	0.831	0.944	**0.888**	**0.145**	0.064
Spain	0.910	1.000	1.003	0.000	0.016
Türkiye	0.843	0.994	0.989	0.045	0.026
United Arab Emirates	0.852	1.000	1.004	0.000	0.022
International pooled data	0.852	0.991	0.981	0.064	0.024
ISCED level 3					
Croatia	0.854	0.994	0.988	0.051	0.045
Denmark	0.763	0.974	0.948	0.054	0.062
Flemish Community (Belgium)	0.674	0.933	**0.866**	0.081	0.060
Portugal	0.811	0.994	0.988	0.038	0.038
Saudi Arabia	0.849	1.000	1.010	0.000	0.019
Slovenia	0.812	0.978	0.957	0.080	0.066
Türkiye	0.899	0.976	0.952	**0.134**	0.049
United Arab Emirates	0.846	0.999	0.998	0.023	0.046
International pooled data	0.827	0.996	0.991	0.035	0.023

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.234. Measurement invariance results from MGCFA for scale T4PATBRCC with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.991	0.983	0.059	0.038	-	-	-	-
Equal loadings	0.979	0.976	0.069	0.063	-0.012	-0.006	0.010	0.026
Equal loadings and thresholds	0.916	0.935	0.115	0.138	-0.062	-0.042	0.046	0.074

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand, Norway and Sweden are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.235. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PATBRCC

Item	Slope	Threshold 1	Threshold 2
TC4G46A	0.785	-0.496	0.706
TC4G46B	0.785	0.268	1.273
TC4G46C	0.714	-0.514	0.770
TC4G46E	0.770	0.381	1.373
TC4G46G	0.493	-0.056	1.092

Source: OECD, TALIS 2024 database.

Workplace well-being and stress (principal) (T4PWELS)

The principal scale of *Workplace well-being and stress* (T4PWELS) was measured using a set of four items (TC4G50A, TC4G50B, TC4G50C and TC4G50D). These items assessed the extent to which different situations related to well-being and stress occur. For each item, principals selected one of the following response options: “Not at all”, “To some extent”, “Quite a bit” and “A lot”. Item TC4G50B was reverse coded, as it was the only positive statement about well-being, ensuring that higher scores consistently reflected higher levels of stress or lower well-being. Higher scores in this scale reflect lower perceived well-being (and greater perceived stress) among principals. Table 11.236 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.237. Scale reliabilities for T4PWELS are acceptable in most participating countries/territories, except for the ISCED level 2 population in Viet Nam and Uzbekistan. As can be observed from Table 11.237, the CFI, TLI and SRMR for T4PWELS are within the acceptable cut-off criteria across all participating countries/territories. The RMSEA exceeds the cut-off criterion in 12 of the ISCED level 2 participants, particularly in Alberta (Canada), Australia, Austria, the French Community of Belgium, Korea and North Macedonia; and in 7 ISCED level 1 participants, particularly in Belgium, the Flemish Community of Belgium, New Zealand and Saudi Arabia. In all of these populations, the RMSEA is above 0.160. RMSEA also exceeds the cut-off criterion in the ISCED level 3 population in Denmark and Portugal, with values of 0.123 and 0.116, respectively.

Table 11.238 presents the results from the measurement invariance testing for T4PWELS for the ISCED level 2 population. The baseline model shows an acceptable model fit. The degree of change between the baseline and the equal loadings model is within the cut-off criteria for the RMSEA and SRMR, and close to the acceptable range for the TLI and CFI. The degree of change between the equal loadings and the equal loadings exceeds the cut-offs for all indices, although it is close to the acceptable range for the TLI and RMSEA. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Table 11.239 presents the standardised item loadings and thresholds based on pooled data for the scale T4PWELS. All items, except TC4G50B, show acceptable loadings. Item TC4G50B has a low loading in the pooled model and in 25 of the ISCED level 2 participating countries/territories, in 10 ISCED level 1 participating counties/territories and in the ISCED level 3 population in Croatia, Portugal, Türkiye and the United Arab Emirates.

Table 11.236. Items and response categories used in the construction of scale T4PWELS

Scale or item	Question or item wording
T4PWELS	In your experience as a principal at this school, to what extent do the following occur?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5

Unclassified - Non classifié

Scale or item	Question or item wording
TC4G50A	I experience stress in my work.
TC4G50B*	My job leaves me time for my personal life.
TC4G50C	My job negatively impacts my mental health.
TC4G50D	My job negatively impacts my physical health.

Note: * Item was reverse coded.
Source: OECD, TALIS 2024 database.

Table 11.237. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PWELS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.740	1.000	1.013	0.000	0.011
Alberta (Canada)	0.834	0.996	0.989	**0.168**	0.033
Australia	0.801	0.980	0.941	**0.188**	0.048
Austria	0.868	0.984	0.952	**0.176**	0.035
Azerbaijan	0.847	1.000	1.003	0.000	0.017
Bahrain	0.771	0.999	0.998	0.045	0.019
Belgium	0.807	0.999	0.998	0.040	0.017
Flemish Community (Belgium)	0.835	1.000	1.009	0.000	0.012
French Community (Belgium)	0.789	0.990	0.971	**0.189**	0.041
Brazil	0.717	0.995	0.986	0.094	0.025
Bulgaria	0.810	0.992	0.975	**0.131**	0.037
Chile	0.847	0.999	0.997	0.062	0.014
Colombia	0.774	1.000	1.000	0.000	0.020
Costa Rica	0.875	0.998	0.995	0.074	0.018
Croatia	0.832	1.000	0.999	0.035	0.017
Cyprus	0.720	1.000	1.015	0.000	0.015
Czechia	0.764	0.996	0.987	0.072	0.016
Denmark	0.895	0.999	0.997	0.062	0.014
Estonia	0.832	0.997	0.991	0.075	0.022
Finland	0.860	0.994	0.983	0.088	0.027
France	0.787	0.999	0.998	0.040	0.018
Hungary	0.810	1.000	1.007	0.000	0.005
Iceland	0.816	1.000	1.003	0.000	0.004
Israel	0.832	0.997	0.992	0.076	0.030
Italy	0.849	0.998	0.995	0.096	0.017
Japan	0.872	1.000	1.002	0.000	0.004
Kazakhstan	0.703	0.993	0.980	0.075	0.027
Korea	0.737	0.996	0.988	**0.192**	0.036
Kosovo	0.878	0.999	0.997	0.047	0.013
Latvia	0.764	0.991	0.973	0.078	0.024
Lithuania	0.886	0.997	0.991	**0.144**	0.023

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Malta	0.870	1.000	1.006	0.000	0.027
Montenegro	0.774	1.000	1.008	0.000	0.006
Morocco	0.834	0.997	0.991	0.047	0.017
Netherlands	0.897	1.000	1.004	0.000	0.014
New Zealand	0.910	0.992	0.976	**0.121**	0.023
North Macedonia	0.849	0.989	0.967	**0.169**	0.026
Norway	0.839	1.000	1.008	0.000	0.011
Poland	0.798	0.999	0.996	0.043	0.014
Portugal	0.802	1.000	1.003	0.000	0.009
Romania	0.870	0.997	0.991	0.094	0.016
Saudi Arabia	0.863	1.000	1.000	0.000	0.006
Serbia	0.804	1.000	1.002	0.000	0.008
Shanghai (China)	0.793	0.994	0.982	0.077	0.024
Singapore	0.799	1.000	1.011	0.000	0.003
Slovak Republic	0.743	0.999	0.996	0.053	0.014
Slovenia	0.849	1.000	1.002	0.000	0.011
South Africa	0.752	0.996	0.988	**0.111**	0.024
Spain	0.836	0.994	0.982	0.087	0.019
Sweden	0.851	0.986	0.958	**0.160**	0.031
Türkiye	0.702	1.000	1.002	0.000	0.008
United Arab Emirates	0.785	1.000	0.999	0.036	0.017
United States	0.934	1.000	1.000	0.000	0.015
Uzbekistan	0.628	1.000	1.009	0.000	0.003
Viet Nam	**0.595**	0.979	0.937	**0.144**	0.040
International pooled data	0.813	0.999	0.998	0.034	0.008
ISCED level 1					
Australia	0.807	0.994	0.981	**0.125**	0.041
Belgium	0.801	0.983	0.950	**0.195**	0.037
Flemish Community (Belgium)	0.849	0.966	**0.899**	**0.307**	0.043
French Community (Belgium)	0.743	0.998	0.993	0.071	0.023
Brazil	0.775	1.000	1.003	0.000	0.004
France	0.851	1.000	1.002	0.000	0.004
Japan	0.855	0.998	0.993	**0.112**	0.023
Korea	0.747	0.999	0.998	0.092	0.021
Morocco	0.848	0.999	0.996	0.045	0.014
Netherlands	0.869	0.998	0.993	0.080	0.017
New Zealand	0.866	0.983	0.950	**0.197**	0.040
Saudi Arabia	0.828	0.998	0.993	**0.173**	0.037
Slovenia	0.863	1.000	1.002	0.000	0.010
Spain	0.834	1.000	1.001	0.000	0.008
Türkiye	0.764	0.994	0.981	**0.110**	0.021

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
United Arab Emirates	0.807	1.000	1.002	0.000	0.007
International pooled data	0.830	0.998	0.995	0.067	0.013
ISCED level 3					
Croatia	0.790	0.998	0.994	0.067	0.017
Denmark	0.882	0.994	0.982	**0.123**	0.029
Flemish Community (Belgium)	0.829	0.998	0.993	0.077	0.020
Portugal	0.834	0.996	0.988	**0.116**	0.018
Saudi Arabia	0.825	1.000	1.000	0.019	0.012
Slovenia	0.873	0.999	0.997	0.051	0.018
Türkiye	0.796	1.000	1.002	0.000	0.008
United Arab Emirates	0.842	0.995	0.986	0.099	0.025
International pooled data	0.840	0.998	0.994	0.079	0.015

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.238. Measurement invariance results from MGCFA for scale T4PWELS with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.998	0.994	0.076	0.019	-	-	-	-
Equal loadings	0.987	0.985	0.122	0.059	-0.011	-0.009	0.045	0.040
Equal loadings and thresholds	0.959	0.979	0.142	0.186	-0.028	-0.006	0.021	0.127

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), Iceland, Malta, the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.239. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PWELS

Item	Slope	Threshold 1	Threshold 2	Threshold 3
TC4G50A	0.749	-1.280	-0.094	0.735
TC4G50B	0.341	-1.515	-0.409	1.102
TC4G50C	0.932	-0.394	0.696	1.382
TC4G50D	0.884	-0.429	0.668	1.401

Source: OECD, TALIS 2024 database.

Workload stress (principal) (T4PWLOAD)

The principal scale of *Workload stress* (T4PWLOAD) was measured by three items (TC4G51A, TC4G51B and TC4G51C). In these items, principals had to indicate to what extent there were certain sources of stress in their work, using the following response categories: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher values on this scale indicate greater perceived stress related to workload among

Unclassified - Non classifié

principals. Table 11.240 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.241. The model fit indices for T4PWLOAD are not presented here as the scale was measured by just three items. Scale reliabilities for T4PWLOAD are generally above the cut-off criterion, except for the ISCED level 2 population in Czechia, Denmark, France, Italy, Norway, Slovenia and Sweden; the ISCED level 1 population in Belgium, France, New Zealand and Spain; and both the ISCED levels 1 and 3 populations in the Flemish Community of Belgium.

Table 11.242 presents the results from the measurement invariance testing for T4PWLOAD for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit. The equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the RMSEA, but exceeds the cut-offs for the CFI, TLI and SRMR. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.243 presents the standardised item loadings and thresholds based on pooled data for the scale T4PWLOAD. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.240. Items and response categories used in the construction of scale T4PWLOAD

Scale or item	Question or item wording
T4PWLOAD	Thinking about your job at this school, to what extent are the following sources of stress in your work?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
TC4G51A	Having too much teacher appraisal and feedback work to do
TC4G51B	Having too much administrative work to do (e.g. filling out forms)
TC4G51C	Having extra duties due to absent school staff

Source: OECD, TALIS 2024 database.

Table 11.241. Reliability coefficient alpha for single countries and pooled model for scale T4PWLOAD

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.836
Alberta (Canada)	0.762
Australia	0.733
Austria	0.697
Azerbaijan	0.766
Bahrain	0.810
Belgium	0.636
Flemish Community (Belgium)	0.618
French Community (Belgium)	0.663
Brazil	0.818
Bulgaria	0.774

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Chile	0.808
Colombia	0.821
Costa Rica	0.849
Croatia	0.815
Cyprus	0.810
Czechia	**0.573**
Denmark	**0.595**
Estonia	0.619
Finland	0.638
France	**0.492**
Hungary	0.789
Iceland	0.621
Israel	0.728
Italy	**0.491**
Japan	0.769
Kazakhstan	0.738
Korea	0.792
Kosovo	0.778
Latvia	0.610
Lithuania	0.697
Malta	0.676
Montenegro	0.832
Morocco	0.716
Netherlands	0.609
New Zealand	0.714
North Macedonia	0.825
Norway	**0.587**
Poland	0.724
Portugal	0.759
Romania	0.809
Saudi Arabia	0.797
Serbia	0.731
Shanghai (China)	0.727
Singapore	0.818
Slovak Republic	0.643
Slovenia	**0.546**
South Africa	0.719
Spain	0.670
Sweden	**0.592**
Türkiye	0.699
United Arab Emirates	0.799

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
United States	0.621
Uzbekistan	0.775
Viet Nam	0.718
International pooled data	0.720
ISCED level 1	
Australia	0.661
Belgium	**0.540**
Flemish Community (Belgium)	**0.488**
French Community (Belgium)	0.627
Brazil	0.759
France	**0.526**
Japan	0.744
Korea	0.870
Morocco	0.770
Netherlands	0.620
New Zealand	**0.591**
Saudi Arabia	0.739
Slovenia	0.642
Spain	**0.582**
Türkiye	0.781
United Arab Emirates	0.855
International pooled data	0.686
ISCED level 3	
Croatia	0.817
Denmark	0.696
Flemish Community (Belgium)	**0.515**
Portugal	0.697
Saudi Arabia	0.779
Slovenia	0.763
Türkiye	0.774
United Arab Emirates	0.862
International pooled data	0.766

Note: Coefficients in **bold** exceed the cut-off criterion. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.242. Measurement invariance results from MGCFA for scale T4PWLOAD with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.987	0.981	0.071	0.028	-0.013	-0.019	0.071	0.028
Equal loadings and thresholds	0.784	0.905	0.157	0.166	-0.204	-0.076	0.086	0.138

Note: Alberta (Canada), Denmark, the Flemish Community (Belgium), France, the French Community (Belgium), the Netherlands, New Zealand, Norway and Singapore are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.243. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PWLOAD

Item	Slope	Threshold 1	Threshold 2	Threshold 3
TC4G51A	0.615	-0.609	0.663	1.631
TC4G51B	0.802	-1.279	-0.302	0.562
TC4G51C	0.645	-0.757	0.334	1.138

Source: OECD, TALIS 2024 database.

Job satisfaction with work environment (principal) (T4PJSENVT)

The principal scale of *Job satisfaction with work environment* (T4PJSENVT) was measured by a set of three items (TC4G52C, TC4G52E and TC4G52G), described in Table 11.244. Principals had to report their level of agreement to different statements related to their job, with the following available response categories: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Item TC4G52C was reverse coded due to its negative statement about job satisfaction and to ensure it had the same direction as the rest of the items in the scale, with higher values reflecting principals’ higher satisfaction with their work environment.

Scale reliabilities for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.245. The model fit indices for T4PJSENVT are not presented here as the scale was measured by just three items. Scale reliabilities for T4PJSENVT are generally high across all populations, with most values above 0.700. However, the reliability for the ISCED level 2 population in Slovenia is below the cut-off criterion.

Table 11.246 presents the results from the measurement invariance testing for T4PJSENVT for the ISCED level 2 population. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the RMSEA, but exceeds the cut-offs for the CFI, TLI and SRMR, although it is close to the acceptable range for the TLI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.247 presents the standardised item loadings and thresholds based on pooled data for the scale T4PJSENVT. All items show high loadings for the pooled model as well as in single countries/territories.

Unclassified - Non classifié

Table 11.244. Items and response categories used in the construction of scale T4PJSENVT

Scale or item	Question or item wording
T4PJSENVT	We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree or disagree; 2=Agree; 3=Strongly agree
	Scale mid-point: 2
TC4G52C*	I would like to change to another school if that were possible.
TC4G52E	I enjoy working at this school.
TC4G52G	I would recommend this school as a good place to work.

Note: * Item was reverse coded.
Source: OECD, TALIS 2024 database.

Table 11.245. Reliability coefficient alpha for single countries and pooled model for scale T4PJSENVT

Participating country/territory	Reliability Cronbach's alpha
ISCED level 2	
Albania	0.716
Alberta (Canada)	0.863
Australia	0.843
Austria	0.814
Azerbaijan	0.646
Bahrain	0.837
Belgium	0.887
Flemish Community (Belgium)	0.918
French Community (Belgium)	0.845
Brazil	0.836
Bulgaria	0.746
Chile	0.820
Colombia	0.844
Costa Rica	0.851
Croatia	0.821
Cyprus	0.857
Czechia	0.758
Denmark	0.839
Estonia	0.845
Finland	0.891
France	0.782
Hungary	0.825
Iceland	0.829
Israel	0.816
Italy	0.854
Japan	0.816
Kazakhstan	0.666

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Korea	0.834
Kosovo	0.682
Latvia	0.813
Lithuania	0.885
Malta	0.862
Montenegro	0.796
Morocco	0.745
Netherlands	0.738
New Zealand	0.896
North Macedonia	0.777
Norway	0.721
Poland	0.657
Portugal	0.819
Romania	0.846
Saudi Arabia	0.797
Serbia	0.725
Shanghai (China)	0.787
Singapore	0.808
Slovak Republic	0.711
Slovenia	**0.585**
South Africa	0.806
Spain	0.808
Sweden	0.874
Türkiye	0.860
United Arab Emirates	0.776
United States	0.832
Uzbekistan	0.832
Viet Nam	0.775
International pooled data	0.815
ISCED level 1	
Australia	0.838
Belgium	0.874
Flemish Community (Belgium)	0.865
French Community (Belgium)	0.901
Brazil	0.821
France	0.831
Japan	0.727
Korea	0.848
Morocco	0.777
Netherlands	0.751
New Zealand	0.786
Saudi Arabia	0.804

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Slovenia	0.710
Spain	0.871
Türkiye	0.895
United Arab Emirates	0.819
International pooled data	0.831
ISCED level 3	
Croatia	0.823
Denmark	0.861
Flemish Community (Belgium)	0.892
Portugal	0.771
Saudi Arabia	0.787
Slovenia	0.797
Türkiye	0.908
United Arab Emirates	0.788
International pooled data	0.828

Note: Coefficients in **bold** exceed the cut-off criterion. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Table 11.246. Measurement invariance results from MGCFA for scale T4PJSENVT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.993	0.990	0.071	0.034	-0.007	-0.010	0.071	0.034
Equal loadings and thresholds	0.962	0.971	0.119	0.111	-0.031	-0.019	0.048	0.077

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.247. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PJSENVT

Item	Slope	Threshold 1	Threshold 2
TC4G52C	0.623	-1.022	0.029
TC4G52E	0.825	-1.629	-0.111
TC4G52G	0.873	-1.618	-0.074

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Job satisfaction with profession (principal) (T4PJSPROT)

The principal scale of *Job satisfaction with profession* (T4PJSPROT) was measured by a set of four items (TC4G52A, TC4G52B, TC4G52D and TC4G52J), described in Table 11.248. Principals had to report their level of agreement with different statements related to their job, with the following available response categories: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Item TC4G52D was reverse coded due to its negative statement about job satisfaction and to ensure it had the same direction as the rest of the items. Higher values on this scale reflect principals’ higher satisfaction with their profession.

Scale reliabilities and model fit for all populations, as well as for the pooled model per ISCED level, are presented in Table 11.249. Scale reliabilities for T4PJSPROT are generally high across all populations, with most values above 0.800 and none exceeding the cut-off criterion. In terms of model fit for the T4PJSPROT scale, the CFI is at least within the acceptable range across all countries/territories. The TLI is also at least acceptable in most countries/territories, except in the ISCED level 2 population in Kosovo, Montenegro, North Macedonia, Saudi Arabia and Serbia and in the ISCED level 3 population in Türkiye. The RMSEA exceeds the cut-off criterion in 23 of the ISCED level 2 countries/territories (particularly in Denmark, Korea, Lithuania, Malta, Montenegro and Serbia), 4 ISCED level 1 participants (Australia, Morocco, the Netherlands and the United Arab Emirates) and in the ISCED level 3 participants in Croatia, Türkiye and the United Arab Emirates. The SRMR is acceptable across all populations.

Table 11.250 presents the results from the measurement invariance testing for T4PJSPROT for the ISCED level 2 population. The baseline model shows an acceptable model fit across all indices. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all indices, although it is close to the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.251 presents the standardised item loadings and thresholds based on pooled data for the scale T4PJSPROT. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.248. Items and response categories used in the construction of scale T4PJSPROT

Scale or item	Question or item wording
T4PJSPROT	We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree or disagree; 2=Agree; 3=Strongly agree
	Scale mid-point: 2
TC4G52A	The advantages of this profession clearly outweigh the disadvantages.
TC4G52B	If I could decide again, I would still choose this job/position.
TC4G52D*	I regret that I decided to become a principal.
TC4G52J	All in all, I am satisfied with my job.

Note: * Item was reverse coded.
Source: OECD, TALIS 2024 database.

Table 11.249. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PJSPROT

Participating country/territory	Reliability	CFA model fit			
	Cronbach’s alpha	CFI	TLI	RMSEA	SRMR
ISCED level 2					
Albania	0.725	0.991	0.972	0.056	0.034
Alberta (Canada)	0.893	0.985	0.954	**0.174**	0.057

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Australia	0.910	0.996	0.989	0.085	0.029
Austria	0.883	0.986	0.957	**0.130**	0.029
Azerbaijan	0.657	0.992	0.975	0.045	0.039
Bahrain	0.842	0.987	0.962	**0.115**	0.027
Belgium	0.877	0.986	0.959	**0.141**	0.043
Flemish Community (Belgium)	0.891	0.996	0.987	0.095	0.028
French Community (Belgium)	0.845	0.982	0.945	**0.144**	0.061
Brazil	0.715	0.986	0.957	0.077	0.033
Bulgaria	0.867	1.000	1.000	0.015	0.024
Chile	0.873	1.000	1.000	0.000	0.017
Colombia	0.840	0.974	0.921	**0.136**	0.043
Costa Rica	0.777	0.986	0.957	0.093	0.038
Croatia	0.874	1.000	1.006	0.000	0.004
Cyprus	0.853	0.989	0.966	**0.163**	0.047
Czechia	0.887	0.999	0.998	0.036	0.015
Denmark	0.893	0.985	0.954	**0.203**	0.065
Estonia	0.871	0.991	0.973	**0.108**	0.036
Finland	0.927	1.000	1.000	0.000	0.009
France	0.891	0.998	0.995	0.057	0.016
Hungary	0.850	1.000	0.999	0.019	0.019
Iceland	0.919	0.999	0.998	0.053	0.020
Israel	0.877	1.000	0.999	0.018	0.022
Italy	0.863	0.996	0.988	0.098	0.032
Japan	0.904	1.000	1.008	0.000	0.005
Kazakhstan	0.808	0.996	0.988	0.046	0.037
Korea	0.907	0.993	0.978	**0.214**	0.051
Kosovo	0.745	0.966	**0.898**	**0.122**	0.054
Latvia	0.806	0.996	0.989	0.060	0.032
Lithuania	0.877	0.974	0.921	**0.184**	0.056
Malta	0.871	0.968	0.904	**0.389**	**0.102**
Montenegro	0.778	0.947	**0.840**	**0.180**	0.057
Morocco	0.825	0.995	0.985	0.048	0.024
Netherlands	0.917	0.995	0.986	**0.143**	0.051
New Zealand	0.954	1.000	1.004	0.000	0.011
North Macedonia	0.739	0.956	**0.869**	**0.149**	0.063
Norway	0.901	0.993	0.980	**0.131**	0.030
Poland	0.830	0.970	0.910	**0.152**	0.047
Portugal	0.781	1.000	1.013	0.000	0.011
Romania	0.835	0.998	0.994	0.046	0.021
Saudi Arabia	0.802	0.964	**0.891**	**0.175**	0.048
Serbia	0.852	0.966	**0.899**	**0.203**	0.038
Shanghai (China)	0.811	0.992	0.975	0.086	0.031
Singapore	0.916	1.000	1.001	0.000	0.011
Slovak Republic	0.671	0.979	0.937	0.080	0.031
Slovenia	0.885	1.000	1.011	0.000	0.001
South Africa	0.816	0.988	0.964	0.095	0.031

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Spain	0.792	0.981	0.943	0.083	0.033
Sweden	0.882	0.997	0.992	0.062	0.026
Türkiye	0.846	0.989	0.967	**0.105**	0.031
United Arab Emirates	0.855	0.978	0.933	**0.174**	0.036
United States	0.926	0.996	0.988	**0.110**	0.034
Uzbekistan	0.825	1.000	0.999	0.012	0.018
Viet Nam	0.790	0.994	0.983	0.058	0.034
International pooled data	0.851	0.992	0.977	0.080	0.020
ISCED level 1					
Australia	0.908	0.992	0.975	**0.140**	0.039
Belgium	0.842	0.993	0.978	0.085	0.031
Flemish Community (Belgium)	0.873	0.996	0.988	0.076	0.026
French Community (Belgium)	0.801	1.000	1.019	0.000	0.015
Brazil	0.773	1.000	1.001	0.000	0.017
France	0.859	1.000	1.000	0.014	0.013
Japan	0.911	1.000	1.010	0.000	0.094
Korea	0.901	0.999	0.997	0.049	0.016
Morocco	0.810	0.980	0.940	**0.114**	0.039
Netherlands	0.846	0.985	0.954	**0.147**	0.022
New Zealand	0.927	1.000	1.007	0.000	0.003
Saudi Arabia	0.803	1.000	1.005	0.000	0.017
Slovenia	0.903	0.998	0.995	0.059	0.015
Spain	0.807	0.981	0.942	0.083	0.034
Türkiye	0.814	1.000	1.003	0.000	0.017
United Arab Emirates	0.842	0.985	0.954	**0.130**	0.040
International pooled data	0.848	0.997	0.992	0.047	0.012
ISCED level 3					
Croatia	0.864	0.988	0.963	**0.120**	0.040
Denmark	0.884	1.000	0.999	0.024	0.013
Flemish Community (Belgium)	0.901	1.000	1.001	0.000	0.016
Portugal	0.756	1.000	1.019	0.000	0.017
Saudi Arabia	0.824	0.995	0.986	0.073	0.027
Slovenia	0.846	0.998	0.995	0.049	0.025
Türkiye	0.807	0.965	**0.896**	**0.167**	0.062
United Arab Emirates	0.850	0.992	0.975	**0.106**	0.033
International pooled data	0.856	0.994	0.982	0.085	0.023

Note: Coefficients in **bold** exceed the cut-off criteria. Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway are excluded from the pooled ISCED level 2 model; the Flemish Community (Belgium), the French Community (Belgium), the Netherlands and New Zealand are excluded from the pooled ISCED level 1 model; the Flemish Community (Belgium) is excluded from the pooled ISCED level 3 model.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.250. Measurement invariance results from MGCFA for scale T4PJSPROT with differences in model fits across models for ISCED level 2

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 2								
Baseline	0.993	0.979	0.096	0.030	-	-	-	-
Equal loadings	0.983	0.980	0.093	0.057	-0.009	0.001	-0.003	0.027
Equal loadings and thresholds	0.957	0.967	0.119	0.134	-0.027	-0.013	0.026	0.078

Note: Albania, Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand, North Macedonia and Norway are excluded from measurement invariance testing.
Source: OECD, TALIS 2024 database.

Table 11.251. Item loadings and thresholds based on pooled ISCED level 2 data for scale T4PJSPROT

Item	Slope	Threshold 1	Threshold 2
TC4G52A	0.745	-0.725	0.679
TC4G52B	0.902	-0.946	0.442
TC4G52D	0.726	-1.386	-0.149
TC4G52J	0.683	-1.625	0.319

Source: OECD, TALIS 2024 database.

11.4.2. TALIS Starting Strong

Complex scales from the staff questionnaire

Professional development needs: pedagogical (S2PDNPED)

The scale *Professional development needs: pedagogical* (S2PDNPED) was measured by a set of seven items (SS2G19A, SS2G19B, SS2G19C, SS2G19D, SS2G19E, SS2G19F and SS2G19G). In these items, ECEC staff had to indicate the extent to which they need professional development in different areas, using the following response categories: “No need at present”, “Low level of need”, “Moderate level of need” and “High level of need”. Higher values on this scale indicate a greater need for professional development in pedagogical matters. Table 11.252 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.253. The scale S2PDNPED has a high reliability that is above 0.85 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show a good fit across all countries/territories while the RMSEA is at least acceptable with the exception of Denmark and Norway in ISCED level 02 where it slightly exceeds the threshold.

Table 11.254 presents the results from the measurement invariance testing for S2PDNPED for both levels. The baseline model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA, SRMR and slightly exceeds the cut-off for the CFI. The change between the equal loadings and equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Unclassified - Non classifié

For U3, the change between equal loadings and baseline models is within the acceptable range for the RMSEA and SRMR and is close to the cut-off for the CFI and TLI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and close to the cut-off criteria for the CFI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.255 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PDNPED. The loadings for all of the items are high. Results by participating country/territory show a low loading for item SS2G19G in Germany (ISCED level 02).

Table 11.252. Items and response categories used in the construction of scale S2PDNPED

Scale or item	Question or item wording
S2PDNPED	For each of the areas listed below, please indicate the extent to which you currently need professional development
	Recoded response categories for scaling: 1=No need at present; 2=Low level of need; 3=Moderate level of need; 4=High level of need
	Scale mid-point: 2.5
SS2G19A	Theories on the development, well-being and learning of young children
SS2G19B	Child health, personal care and safety (e.g. hygiene, allergy, injury prevention)
SS2G19C	Promoting play and peer interaction
SS2G19D	Supporting children's early learning of content areas (e.g. language, numeracy, science, art, etc.)
SS2G19E	Supporting children's social and emotional development
SS2G19F	Supporting children's interest to care for the environment
SS2G19G	<Classroom/playgroup/group> management

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.253. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PDNPED

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.928	0.994	0.991	0.054	0.019
Colombia	0.946	0.988	0.981	0.086	0.028
Denmark	0.894	0.970	0.955	**0.119**	0.039
Finland	0.916	0.983	0.974	0.084	0.029
Flemish Community (Belgium)	0.892	0.983	0.974	0.076	0.029
Germany	0.854	0.989	0.984	0.057	0.026
Ireland	0.958	0.994	0.990	0.084	0.023
Israel	0.959	0.996	0.994	0.075	0.014
Japan	0.955	0.998	0.997	0.043	0.017
Morocco	0.969	0.998	0.997	0.077	0.011
Norway	0.914	0.986	0.979	**0.102**	0.027
New Zealand	0.939	0.993	0.990	0.083	0.027
Spain	0.895	0.983	0.975	0.063	0.026
Sweden	0.927	0.987	0.981	0.087	0.027
Türkiye	0.957	0.998	0.997	0.048	0.011
International pooled data	0.949	0.995	0.993	0.058	0.013

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
U3					
Canada	0.926	0.988	0.982	0.080	0.028
Flemish Community (Belgium)	0.873	0.971	0.957	0.094	0.041
Germany	0.855	0.977	0.965	0.076	0.032
Ireland	0.955	0.993	0.989	0.084	0.018
Israel	0.958	0.996	0.994	0.071	0.014
Norway	0.924	0.992	0.988	0.081	0.027
New Zealand	0.939	0.993	0.990	0.083	0.027
International pooled data	0.930	0.990	0.985	0.076	0.021

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.254. Measurement invariance results from MGCFA for scale S2PDNPED with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.992	0.989	0.074	0.023	-	-	-	-
Equal loadings	0.987	0.986	0.081	0.042	-0.005	-0.002	0.007	0.018
Equal loadings and thresholds	0.975	0.984	0.089	0.104	-0.012	-0.003	0.008	0.063
U3								
Baseline	0.993	0.989	0.077	0.027	-	-	-	-
Equal loadings	0.983	0.981	0.101	0.049	-0.010	-0.008	0.024	0.022
Equal loadings and thresholds	0.984	0.989	0.079	0.082	0.001	0.007	-0.022	0.033

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.255. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PDNPED

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G19A	0.861	-0.691	0.121	1.024
SS2G19B	0.836	-0.544	0.264	1.029
SS2G19C	0.906	-0.671	0.081	0.953
SS2G19D	0.850	-0.860	-0.077	0.898
SS2G19E	0.886	-0.887	-0.184	0.699
SS2G19F	0.848	-0.685	0.091	0.960
SS2G19G	0.805	-0.534	0.183	1.007

Source: OECD, TALIS Starting Strong 2024 database.

Professional development needs: diversity (S2PDIVR)

The scale *Professional development needs: diversity* (S2PDIVR) was measured by a set of four items (SS2G19J, SS2G19K, SS2G19L and SS2G19M). As with the previous scale, these items asked ECEC staff to indicate the extent to which they need professional development – this time in areas related to

Unclassified - Non classifié

diversity – using the following response categories: “No need at present”, “Low level of need”, “Moderate level of need” and “High level of need”. Higher values on this scale indicate a greater need for professional development in topics related to diversity. Table 11.256 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.257. The scale S2PDIVR has a high reliability that is above 0.79 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show an acceptable or good fit across all countries/territories while the RMSEA exceeds the acceptable range in eight countries/territories.

Table 11.258 presents the results from the measurement invariance testing for S2PDIVR for both levels. The baseline model fit indices are at least acceptable for both levels except for the RMSEA in ISCED level 02. For ISCED level 02, the degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA, SRMR and is close to the cut-off for the CFI. The change between the equal loadings and equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and close to the cut-off for the CFI. No special caution is required when comparing scale score results across countries/territories.

For U3, the change between equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.259 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PDIVR. The loadings for all of the items are high. Results by participating country/territory show a low loading for item SS2G19J in Spain (ISCED level 02).

Table 11.256. Items and response categories used in the construction of scale S2PDIVR

Scale or item	Question or item wording
S2PDIVR	For each of the areas listed below, please indicate the extent to which you currently need professional development
	Recoded response categories for scaling: 1=No need at present; 2=Low level of need; 3=Moderate level of need; 4=High level of need
	Scale mid-point: 2.5
SS2G19J	Working with <dual/second language learners>
SS2G19K	Working with children with special education needs
SS2G19L	Working with children from disadvantaged backgrounds (e.g. economically disadvantaged, refugee)
SS2G19M	Working with children from diverse backgrounds (e.g. multicultural, religious, sexual or gender minority families)

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.257. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PDIVR

Participating country/territory	Reliability	CFA model fit			
	Cronbach’s alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.798	1.000	1.001	0.000	0.007
Colombia	0.918	0.988	0.965	**0.162**	0.028
Denmark	0.881	0.973	0.918	**0.280**	0.047
Finland	0.881	0.999	0.997	0.054	0.009

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Flemish Community (Belgium)	0.891	0.996	0.989	**0.142**	0.020
Germany	0.849	0.999	0.997	0.043	0.010
Ireland	0.892	1.000	1.001	0.000	0.003
Israel	0.898	0.998	0.993	0.087	0.013
Japan	0.893	0.992	0.976	**0.138**	0.034
Morocco	0.869	0.995	0.984	0.100	0.017
Norway	0.902	0.997	0.992	**0.107**	0.012
New Zealand	0.840	0.994	0.982	**0.121**	0.028
Spain	0.800	1.000	0.999	0.029	0.009
Sweden	0.883	0.997	0.992	0.091	0.015
Türkiye	0.908	0.992	0.977	**0.162**	0.027
International pooled data	0.882	0.998	0.994	0.062	0.011
U3					
Canada	0.891	0.999	0.997	0.065	0.011
Flemish Community (Belgium)	0.923	1.000	0.999	0.044	0.006
Germany	0.869	0.999	0.998	0.042	0.009
Ireland	0.913	1.000	1.000	0.020	0.006
Israel	0.924	0.998	0.995	0.070	0.011
Norway	0.914	0.997	0.990	**0.123**	0.018
New Zealand	0.894	0.994	0.982	**0.121**	0.028
International pooled data	0.906	0.999	0.996	0.063	0.008

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.258. Measurement invariance results from MGCFA for scale S2PDIVR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.995	0.984	0.125	0.018	-	-	-	-
Equal loadings	0.985	0.981	0.134	0.042	-0.010	-0.003	0.009	0.024
Equal loadings and thresholds	0.978	0.988	0.106	0.102	-0.007	0.007	-0.028	0.060
U3								
Baseline	0.999	0.997	0.064	0.010	-	-	-	-
Equal loadings	0.996	0.995	0.078	0.024	-0.003	-0.002	0.014	0.014
Equal loadings and thresholds	0.993	0.996	0.072	0.067	-0.003	0.001	-0.006	0.042

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.259. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PDIVR

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G19J	0.691	-0.832	-0.159	0.741
SS2G19K	0.735	-1.102	-0.486	0.383
SS2G19L	0.919	-0.769	-0.109	0.790
SS2G19M	0.908	-0.711	0.030	0.972

Source: OECD, TALIS Starting Strong 2024 database.

Self-efficacy, overall (S2SELF)

The scale *Self-efficacy, overall* (S2SELF) was measured by a set of ten items (SS2G24A, SS2G24B, SS2G24C, SS2G24D, SS2G24E, SS2G24F, SS2G24G, SS2G24H, SS2G24I and SS2G24J). In these items, ECEC staff were asked to what extent they could do different tasks in their work with children. The available response categories were: "Not at all", "To some extent", "Quite a bit" and "A lot". Due to limited variability in responses, the categories "Not at all" and "To some extent" were collapsed into a single category for scaling purposes. Higher values on this scale indicate greater perceived self-efficacy. Table 11.260 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.261. The scale S2SELF has a high reliability that is above 0.85 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable for all fit indices in all countries/territories.

Table 11.262 presents the results from the measurement invariance testing for S2SELF for both levels. The baseline model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the baseline and the equal loadings models is within the cut-off criteria for all fit indices. The change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria. However, the model fit of the equal loadings and thresholds model is within the acceptable range for all fit indices except for the SRMR. No special caution is required when comparing scale score results across countries/territories.

For U3, the degree of change between the baseline and the equal loadings models is within the cut-off criteria for all fit indices. The change between the equal loadings and the equal loadings and thresholds models is close to the cut-off criteria for the TLI and RMSEA. Furthermore, the model fit of the equal loadings and thresholds model is within the acceptable range for all fit indices except for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.263 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2SELF. The loadings for all of the items are high, with the exception of the loading for item SS2G24H that is moderate. Results by participating country/territory show a low loading for item SS2G24H in Germany (ISCED level 02) and Norway (ISCED levels 02 and U3), as well as a low loading for item SS2G24A in Norway (ISCED level 02).

Table 11.260. Items and response categories used in the construction of scale S2SELF

Scale or item	Question or item wording
S2SELF	In your work with children, to what extent do you feel that you can do the following?
	Recoded response categories for scaling: 1=Not at all or to some extent; 2=Quite a bit; 3=A lot
	Scale mid-point: 2
SS2G24A	Support the development of children from disadvantaged backgrounds

Unclassified - Non classifié

Scale or item	Question or item wording
SS2G24B	Adapt your work to individual child needs
SS2G24C	Help children develop their capacity to learn independently
SS2G24D	Help children prepare for transitioning to other <ECEC settings> or to <ISCED 2011 level 1> schools
SS2G24E	Stimulate children's interest in cultural differences and commonalities
SS2G24F	Help children to interact with each other and show good social behaviour (e.g. sharing, helping others)
SS2G24G	Help children develop creativity and problem solving
SS2G24H	Use <digital resources and tools> to facilitate working with children
SS2G24I	Provide all children with a feeling of security
SS2G24J	Use a variety of monitoring and assessment strategies to follow children's development, well-being and learning

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.261. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2SELF

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.917	0.956	0.944	0.082	0.062
Colombia	0.923	0.950	0.935	0.075	0.074
Denmark	0.898	0.965	0.955	0.080	0.054
Finland	0.894	0.948	0.934	0.081	0.057
Flemish Community (Belgium)	0.883	0.956	0.944	0.075	0.061
Germany	0.858	0.938	0.921	0.081	0.066
Ireland	0.932	0.970	0.962	0.064	0.063
Israel	0.945	0.976	0.970	0.100	0.053
Japan	0.947	0.986	0.982	0.068	0.038
Morocco	0.907	0.952	0.938	0.072	0.063
Norway	0.880	0.987	0.984	0.045	0.049
New Zealand	0.911	0.954	0.941	0.092	0.091
Spain	0.912	0.963	0.953	0.069	0.053
Sweden	0.912	0.966	0.957	0.082	0.064
Türkiye	0.934	0.971	0.963	0.083	0.057
International pooled data	0.927	0.976	0.970	0.064	0.046
U3					
Canada	0.922	0.971	0.963	0.068	0.056
Flemish Community (Belgium)	0.916	0.978	0.972	0.063	0.062
Germany	0.852	0.926	0.905	0.078	0.061
Ireland	0.924	0.952	0.939	0.091	0.082
Israel	0.955	0.979	0.973	0.088	0.049
Norway	0.897	0.962	0.951	0.085	0.070
New Zealand	0.913	0.954	0.941	0.092	0.091
International pooled data	0.917	0.963	0.952	0.073	0.056

Note: New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.262. Measurement invariance results from MGCFA for scale S2SELF with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.969	0.960	0.076	0.058	-	-	-	-
Equal loadings	0.973	0.972	0.062	0.068	0.005	0.013	-0.013	0.010
Equal loadings and thresholds	0.924	0.934	0.097	0.121	-0.049	-0.038	0.034	0.053
U3								
Baseline	0.973	0.966	0.080	0.063	-	-	-	-
Equal loadings	0.977	0.975	0.068	0.076	0.003	0.009	-0.012	0.013
Equal loadings and thresholds	0.959	0.963	0.083	0.109	-0.018	-0.012	0.015	0.033

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.263. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2SELF

Item	Loading	Threshold 1	Threshold 2
SS2G24A	0.691	-0.473	0.688
SS2G24B	0.756	-0.795	0.420
SS2G24C	0.841	-1.148	0.172
SS2G24D	0.715	-0.790	0.291
SS2G24E	0.730	-0.394	0.707
SS2G24F	0.902	-1.540	-0.312
SS2G24G	0.882	-1.382	-0.056
SS2G24H	0.585	-0.012	0.869
SS2G24I	0.793	-1.587	-0.427
SS2G24J	0.732	-0.834	0.315

Source: OECD, TALIS Starting Strong 2024 database.

Self-efficacy: children's development, well-being and learning (S2SELFC)

The scale *Self-efficacy: children's development, well-being and learning* (S2SELFC) was measured by six of the ten items used in S2SELFC, specifically items SS2G24B, SS2G24C, SS2G24F, SS2G24G, SS2G24I and SS2G24J. As in the previous scale, ECEC staff were asked to what extent they could do different tasks in their work with children. The available response categories were: "Not at all", "To some extent", "Quite a bit" and "A lot". Due to limited variability in responses, the categories "Not at all" and "To some extent" were collapsed into a single category for scaling purposes. Higher values on this scale indicate greater perceived self-efficacy in tasks related to children's development, well-being and learning. Table 11.264 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.265. The scale S2SELFC has a high reliability that is above 0.83 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show a good fit across all countries/territories while the RMSEA is at least acceptable with the exception of Chile, Colombia, Finland, Israel, New Zealand, Sweden and Türkiye in ISCED level 02 and Canada, Germany, Ireland and New Zealand for U3. In these countries, the RMSEA ranges between 0.10 and 0.12.

Unclassified - Non classifié

Table 11.266 presents the results from the measurement invariance testing for S2SELFC for both levels. The baseline model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The change between the equal loadings and equal loadings and thresholds models is close to the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

For U3, the change between equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and close to the cut-off criteria for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.267 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2SELFC. The loadings for all of the items are high for the pooled model as well as in single countries/territories.

Table 11.264. Items and response categories used in the construction of scale S2SELFC

Scale or item	Question or item wording
S2SELFC	In your work with children, to what extent do you feel that you can do the following?
	Recoded response categories for scaling: 1=Not at all or to some extent; 2=Quite a bit; 3=A lot
	Scale mid-point: 2
SS2G24B	Adapt your work to individual child needs
SS2G24C	Help children develop their capacity to learn independently
SS2G24F	Help children to interact with each other and show good social behaviour (e.g. sharing, helping others)
SS2G24G	Help children develop creativity and problem solving
SS2G24I	Provide all children with a feeling of security
SS2G24J	Use a variety of monitoring and assessment strategies to follow children's development, well-being and learning

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.265. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2SELFC

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.907	0.964	0.940	**0.118**	0.055
Colombia	0.922	0.963	0.939	**0.121**	0.070
Denmark	0.880	0.981	0.968	0.095	0.043
Finland	0.867	0.958	0.929	**0.109**	0.053
Flemish Community (Belgium)	0.872	0.975	0.958	0.093	0.045
Germany	0.847	0.981	0.968	0.077	0.040
Ireland	0.925	0.969	0.949	0.094	0.045
Israel	0.939	0.987	0.979	**0.124**	0.037
Japan	0.940	0.991	0.985	0.096	0.028
Morocco	0.901	0.987	0.978	0.055	0.036
Norway	0.892	0.994	0.990	0.056	0.029
New Zealand	0.904	0.948	0.921	**0.114**	0.092
Spain	0.909	0.977	0.962	0.090	0.044
Sweden	0.899	0.976	0.960	**0.114**	0.058

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Türkiye	0.920	0.978	0.963	**0.121**	0.058
International pooled data	0.919	0.987	0.978	0.081	0.034
U3					
Canada	0.899	0.976	0.960	**0.104**	0.048
Flemish Community (Belgium)	0.920	0.991	0.986	0.068	0.034
Germany	0.836	0.944	0.907	**0.106**	0.050
Ireland	0.912	0.970	0.951	**0.114**	0.060
Israel	0.949	0.991	0.985	0.096	0.026
Norway	0.894	0.986	0.976	0.090	0.038
New Zealand	0.907	0.948	0.921	**0.114**	0.092
International pooled data	0.907	0.978	0.963	0.091	0.036

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.266. Measurement invariance results from MGCFA for scale S2SELFC with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.980	0.967	0.100	0.046	-	-	-	-
Equal loadings	0.981	0.979	0.080	0.056	0.000	0.012	-0.020	0.010
Equal loadings and thresholds	0.956	0.964	0.105	0.103	-0.025	-0.015	0.025	0.047
U3								
Baseline	0.985	0.975	0.098	0.043	-	-	-	-
Equal loadings	0.985	0.983	0.081	0.056	-0.000	0.008	-0.017	0.013
Equal loadings and thresholds	0.977	0.980	0.087	0.087	-0.007	-0.002	0.005	0.032

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.267. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2SELFC

Item	Loading	Threshold 1	Threshold 2
SS2G24B	0.736	-0.795	0.420
SS2G24C	0.840	-1.149	0.172
SS2G24F	0.916	-1.540	-0.313
SS2G24G	0.893	-1.382	-0.056
SS2G24I	0.810	-1.587	-0.427
SS2G24J	0.713	-0.834	0.315

Source: OECD, TALIS Starting Strong 2024 database.

Facilitating play (S2PRINTR)

The scale *Facilitating play* (S2PRINTR) was constructed using three items (SS2G32A, SS2G32B and SS2G32C). In this set of items, ECEC staff were asked how frequently they performed different activities with the children at the ECEC setting during the most recent week. The available response options were:

Unclassified - Non classifié

“Not at all”, “Once a week”, “A few times a week”, “Once a day” and “More than once a day”. Higher values on this scale reflect more frequent activities to facilitate play among children. Table 11.268 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for both populations, as well as for the pooled model per level, are presented in Table 11.269. The fit indices for the S2PRINTR scale are not presented here as the scale was measured by just three items, resulting in a model that is just identified and therefore shows a perfect fit. The scale S2PRINTR has a high reliability that is above 0.75 in all participating countries/territories in both populations.

Table 11.270 presents the results from the measurement invariance testing for S2PRINTR for both levels. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. The equal loadings model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the equal loadings and equal loadings and thresholds models exceeds the thresholds. However, the model fit of the equal loadings and thresholds model is within the acceptable range for the TLI and close to an acceptable range for the CFI, RMSEA and SRMR. No special caution is required when comparing scale score results across countries/territories.

For U3, the degree of change between the equal loadings and equal loadings and thresholds is within the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.269 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PRINTR. The loadings for all of the items are high for the pooled model as well as in single countries/territories.

Table 11.268. Items and response categories used in the construction of S2PRINTR

Scale or item	Question or item wording
S2PRINTR	How often did you do the following at this <ECEC setting>, during your most recent complete calendar week?
	Recoded response categories for scaling: 1=Not at all; 2=Once a week; 3=A few times a week; 4=Once a day; 5=More than once a day
	Scale mid-point: 3
SS2G32A	Allowed children to take the lead when I played with them
SS2G32B	Responded positively to non-verbal invitations to play (e.g. a child passing me a toy)
SS2G32C	Let a child play alone if they were deeply engaged in play

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.269. Reliability coefficient alpha for single countries/territories and pooled model for scale S2PRINTR

Participating country/territory	Reliability Cronbach’s alpha
ISCED level 02	
Chile	0.822
Colombia	0.830
Denmark	0.751
Finland	0.823
Flemish Community (Belgium)	0.813
Germany	0.782
Ireland	0.857

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Israel	0.850
Japan	0.767
Morocco	0.764
Norway	0.785
New Zealand	0.956
Spain	0.849
Sweden	0.843
Türkiye	0.783
International pooled data	0.820
U3	
Canada	0.912
Flemish Community (Belgium)	0.858
Germany	0.798
Ireland	0.882
Israel	0.868
Norway	0.831
New Zealand	0.879
International pooled data	0.861

Note: New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.270. Measurement invariance results from MGCFA for scale S2PRINTR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.993	0.989	0.066	0.016	-0.007	-0.011	0.066	0.016
Equal loadings and thresholds	0.895	0.966	0.117	0.119	-0.098	-0.023	0.051	0.103
U3								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.992	0.986	0.093	0.024	-0.008	-0.014	0.093	0.024
Equal loadings and thresholds	0.969	0.989	0.082	0.095	-0.023	0.003	-0.011	0.071

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.271. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRINTR

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G32A	0.790	-1.681	-1.207	-0.355	0.075
SS2G32B	0.851	-1.622	-1.283	-0.537	-0.185
SS2G32C	0.660	-1.475	-1.108	-0.355	0.082

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Facilitating prosocial behaviour (S2PRSOC)

The scale *Facilitating prosocial behaviour* (S2PRSOC) was constructed using ECEC staff responses to four items (SS2G31A, SS2G31B, SS2G31C and SS2G31D). These items focused on the frequency to which ECEC staff performed different activities with the children at the ECEC setting during the most recent week. The available response options were: “Not at all”, “Once a week”, “A few times a week”, “Once a day” and “More than once a day”. Higher values on this scale indicate a higher frequency of activities that facilitate prosocial behaviour among children. Table 11.272 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.273. The scale S2PRSOC has a high reliability that is above 0.89 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show a good fit across all countries/territories while the RMSEA is at least acceptable in only four countries/territories.

Table 11.274 presents the results from the measurement invariance testing for S2PRSOC for both levels. The baseline model fit indices are at least acceptable for both levels with the exception of the RMSEA that exceeds the cut-off. For ISCED level 02, the degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The change between the equal loadings and equal loadings and thresholds models is within the acceptable range for all but the SRMR. No special caution is required when comparing scale score results across countries/territories.

For U3, the change between equal loadings and baseline models is within the acceptable range. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for all fit indices with the exception of the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.275 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PRSOC. The loadings for all of the items are high for the pooled model as well as in single countries/territories.

Table 11.272. Items and response categories used in the construction of scale S2PRSOC

Scale or item	Question or item wording
S2PRSOC	How often did you do the following at this <ECEC setting>, during your most recent complete calendar week?
	Recoded response categories for scaling: 1=Not at all; 2=Once a week; 3=A few times a week; 4=Once a day; 5=More than once a day
	Scale mid-point: 3
SS2G31A	Encouraged sharing amongst children
SS2G31B	Encouraged children if they helped each other
SS2G31C	Encouraged children playing in small groups to include other children
SS2G31D	Encouraged children if they comforted each other

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.273. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PRSOC

Participating country/territory	Reliability	CFA model fit			
	Cronbach’s alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.934	1.000	0.999	0.035	0.008

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Colombia	0.976	0.997	0.992	**0.127**	0.012
Denmark	0.922	0.991	0.973	**0.143**	0.024
Finland	0.927	0.993	0.978	**0.152**	0.019
Flemish Community (Belgium)	0.931	0.990	0.970	**0.164**	0.025
Germany	0.919	0.993	0.980	**0.155**	0.017
Ireland	0.947	0.998	0.994	0.071	0.026
Israel	0.980	1.000	0.999	0.098	0.003
Japan	0.913	0.983	0.949	**0.234**	0.036
Morocco	0.922	0.992	0.976	**0.154**	0.015
Norway	0.941	0.993	0.978	**0.173**	0.028
New Zealand	0.958	1.000	1.000	0.000	0.000
Spain	0.967	0.998	0.994	**0.133**	0.018
Sweden	0.942	0.994	0.983	**0.132**	0.025
Türkiye	0.945	0.995	0.985	**0.199**	0.023
International pooled data	0.944	0.989	0.966	**0.125**	0.018
U3					
Canada	0.967	0.998	0.993	0.098	0.012
Flemish Community (Belgium)	0.937	1.000	0.999	0.036	0.011
Germany	0.897	0.989	0.968	**0.181**	0.027
Ireland	0.960	0.999	0.997	0.068	0.013
Israel	0.949	0.999	0.997	0.062	0.008
Norway	0.915	0.997	0.992	0.072	0.019
New Zealand	0.933	1.000	1.000	0.000	0.000
International pooled data	0.940	0.997	0.992	0.088	0.011

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.274. Measurement invariance results from MGCFA for scale S2PRSOC with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.997	0.992	0.138	0.019	-	-	-	-
Equal loadings	0.997	0.996	0.100	0.026	-0.001	0.004	-0.037	0.007
Equal loadings and thresholds	0.994	0.998	0.076	0.100	-0.003	0.002	-0.024	0.074
U3								
Baseline	0.997	0.991	0.111	0.015	-	-	-	-
Equal loadings	0.993	0.991	0.111	0.030	-0.003	0.000	-0.000	0.015
Equal loadings and thresholds	0.989	0.995	0.084	0.089	-0.004	0.004	-0.027	0.059

Note: New Zealand and Norway are excluded from measurement invariance testing in the ISCED level 02 population; Canada, New Zealand and Norway are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.275. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRSOC

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G31A	0.904	-2.179	-1.760	-0.988	-0.690
SS2G31B	0.958	-2.397	-1.965	-1.128	-0.801
SS2G31C	0.877	-1.865	-1.543	-0.796	-0.420
SS2G31D	0.888	-1.886	-1.479	-0.724	-0.375

Source: OECD, TALIS Starting Strong 2024 database.

Facilitating emotional development (S2PREMR)

The scale *Facilitating emotional development* (S2PREMR) was developed based on three items (SS2G33A, SS2G33B and SS2G33D), which assessed the frequency to which ECEC staff performed different activities with the children at the ECEC setting during the most recent week. The available response options were: “Not at all”, “Once a week”, “A few times a week”, “Once a day” and “More than once a day”. Higher values on this scale reflect more frequent activities to facilitate the emotional development of children. Table 11.276 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for both populations, as well as for the pooled model per level, are presented in Table 11.277. The fit indices for the S2PREMR scale are not presented here as the scale was measured by just three items, resulting in a model that is just identified and therefore shows a perfect fit. The scale S2PREMR has a high reliability that is above 0.88 in all participating countries/territories in both populations.

Table 11.278 presents the results from the measurement invariance testing for S2PREMR for both levels. As this is a three-item scale, the baseline model has a perfect fit for both levels because it is just identified. For ISCED level 02, the equal loadings model has an acceptable model fit and the degree of change between the equal loadings model and equal loadings and thresholds model is within the cut-off criteria for the CFI, TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

For U3, the change between equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and close to the cut-off criteria for the CFI. No special caution is required when comparing scale score results across countries/territories.

Table 11.279 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PREMR. The loadings for all of the items are high for the pooled model as well as in single countries/territories.

Table 11.276. Items and response categories used in the construction of scale S2PREMR

Scale or item	Question or item wording
S2PREMR	How often did you do the following at this <ECEC setting>, during your most recent complete calendar week?
	Recoded response categories for scaling: 1=Not at all; 2=Once a week; 3=A few times a week; 4=Once a day; 5=More than once a day
	Scale mid-point: 3
SS2G33A	Talked with children about feelings
SS2G33B	Helped children understand their feelings (e.g. when they are excited)
SS2G33D	Helped children express their feelings

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.277. Reliability coefficient alpha for single countries/territories and pooled model for scale S2PREMR

Participating country/territory	Reliability Cronbach's alpha
ISCED level 02	
Chile	0.952
Colombia	0.959
Denmark	0.940
Finland	0.940
Flemish Community (Belgium)	0.939
Germany	0.918
Ireland	0.942
Israel	0.951
Japan	0.907
Morocco	0.883
Norway	0.921
New Zealand	0.982
Spain	0.961
Sweden	0.939
Türkiye	0.910
International pooled data	0.939
U3	
Canada	0.945
Flemish Community (Belgium)	0.922
Germany	0.920
Ireland	0.924
Israel	0.933
Norway	0.928
New Zealand	0.970
International pooled data	0.938

Note: New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.278. Measurement invariance results from MGCFA for scale S2PREMR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.999	0.999	0.053	0.008	-0.001	-0.001	0.053	0.008
Equal loadings and thresholds	0.996	0.999	0.057	0.081	-0.003	-0.000	0.004	0.073
U3								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	1.000	0.999	0.042	0.010	-0.000	-0.001	0.042	0.010

Unclassified - Non classifié

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
Equal loadings and thresholds	0.995	0.998	0.062	0.077	-0.005	-0.001	0.020	0.068

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.279. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PREMR

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G33A	0.896	-2.015	-1.444	-0.566	-0.183
SS2G33B	0.969	-2.052	-1.485	-0.615	-0.227
SS2G33D	0.869	-2.237	-1.731	-0.873	-0.518

Source: OECD, TALIS Starting Strong 2024 database.

Child-centred planning (S2CCAFL)

ECEC staff answered four items measuring their *Child-centred planning* (S2CCAFL). These items (SS2G32D, SS2G32E, SS2G32F and SS2G32G) focused on how frequently staff engaged in various planning activities during the most recent week. Response options included: “Not at all”, “Once a week”, “A few times a week”, “Once a day” and “More than once a day”. Higher scores on this scale indicate a greater use of child-centred approaches to planning. Table 11.280 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.281.The scale S2CCAFL has a high reliability that is above 0.76 in all participating countries/territories in both populations. The single country/territory model fit are showing good fit based on the CFI and SRMR. The TLI is below 0.95 in the ISCED level 02 population in the Flemish Community of Belgium, Germany and Türkiye. The RMSEA exceeds the cut-off in four countries/territories of ISCED level 02 and U3, each.

Table 11.282 presents the results from the measurement invariance testing for S2CCAFL for both levels. The baseline model fit indices are at least acceptable for both levels based on the CFI, TLI and SRMR. For ISCED level 02, the degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The change between the equal loadings and equal loadings and thresholds models exceeds the thresholds for all fit indices. However, the equal loadings and thresholds model shows a good TLI and close-to-acceptable CFI and RMSEA. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

For U3, the change between equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-offs for all fit indices. However, the equal loadings and thresholds model shows good or acceptable CFI, TLI and RMSEA, with the SRMR being close to acceptable. No special caution is required when comparing scale score results across countries/territories.

Table 11.283 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2CCAFL. The loadings for all of the items are high for the pooled model as well as in single countries/territories.

Unclassified - Non classifié

Table 11.280. Items and response categories used in the construction of scale S2CCAFL

Scale or item	Question or item wording
S2CCAFL	How often did you do the following at this <ECEC setting>, during your most recent complete calendar week?
	Recoded response categories for scaling: 1=Not at all; 2=Once a week; 3=A few times a week; 4=Once a day; 5=More than once a day
	Scale mid-point: 3
SS2G32D	Intentionally organised the <classroom/playgroup/group> to facilitate children's exploration and play
SS2G32E	Planned activities designed to allow children to take the initiative
SS2G32F	Involved children in making plans for the day
SS2G32G	Adapted daily activities in response to children's natural rhythms (e.g. hunger, fatigue)

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.281. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2CCAFL

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.865	1.000	0.999	0.018	0.007
Colombia	0.868	0.990	0.970	0.082	0.018
Denmark	0.779	0.990	0.970	0.093	0.021
Finland	0.766	0.998	0.993	0.040	0.010
Flemish Community (Belgium)	0.832	0.964	**0.893**	**0.225**	0.045
Germany	0.810	0.969	0.906	**0.184**	0.030
Ireland	0.871	0.994	0.983	0.080	0.017
Israel	0.918	0.988	0.963	**0.193**	0.017
Japan	0.841	0.999	0.997	0.030	0.008
Morocco	0.813	0.997	0.992	0.058	0.009
Norway	0.861	0.995	0.986	0.097	0.018
New Zealand	0.907	1.000	1.000	0.000	0.000
Spain	0.879	0.996	0.988	0.067	0.016
Sweden	0.815	0.986	0.959	0.097	0.023
Türkiye	0.869	0.975	0.924	**0.183**	0.033
International pooled data	0.854	0.989	0.966	0.096	0.019
U3					
Canada	0.841	0.988	0.963	0.094	0.016
Flemish Community (Belgium)	0.779	0.986	0.958	0.088	0.035
Germany	0.796	0.983	0.950	**0.128**	0.027
Ireland	0.869	0.986	0.958	**0.118**	0.020
Israel	0.872	0.991	0.972	**0.112**	0.019
Norway	0.822	0.989	0.967	**0.107**	0.027
New Zealand	0.882	1.000	1.000	0.000	0.000
International pooled data	0.833	0.988	0.965	0.095	0.022

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.282. Measurement invariance results from MGCFA for scale S2CCAFL with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.987	0.962	0.122	0.020	-	-	-	-
Equal loadings	0.984	0.980	0.090	0.029	-0.004	0.017	-0.032	0.009
Equal loadings and thresholds	0.895	0.958	0.129	0.130	-0.089	-0.022	0.039	0.102
U3								
Baseline	0.989	0.967	0.107	0.024	-	-	-	-
Equal loadings	0.987	0.983	0.076	0.035	-0.002	0.016	-0.031	0.010
Equal loadings and thresholds	0.931	0.970	0.101	0.113	-0.056	-0.013	0.025	0.079

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.283. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2CCAFL

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G32D	0.801	-1.346	-0.957	-0.246	0.236
SS2G32E	0.880	-1.403	-0.927	-0.125	0.367
SS2G32F	0.742	-0.977	-0.529	0.131	0.618
SS2G32G	0.651	-1.269	-0.981	-0.344	0.038

Source: OECD, TALIS Starting Strong 2024 database.

Daily adaptive pedagogical practices (S2PRACTR)

To assess their *Daily adaptive pedagogical practices* (S2PRACTR), ECEC staff responded to five items (SS2G40A, SS2G40B, SS2G40C, SS2G40E and SS2G40F) that asked how often they engaged in specific activities with the target group on a given day. The available response options were: “Never”, “Rarely”, “Occasionally”, “Often” and “Always”. Higher values on this scale reflect more frequent use of daily adaptive pedagogical practices. Table 11.284 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.285. The scale S2PRACTR has a high reliability that is above 0.76 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show a good fit across all countries/territories, while the RMSEA exceeds the cut-off for six ISCED level 02 countries/territories (the Flemish Community of Belgium, Germany, Morocco, New Zealand, Norway and Türkiye) and five U3 countries/territories (Canada, the Flemish Community of Belgium, Germany, Ireland and New Zealand). The RMSEA of the pooled model for the U3 population is also slightly above the acceptable cut-off.

Table 11.286 presents the results from the measurement invariance testing for S2PRACTR for both levels. The baseline model fit indices are at least acceptable for both levels with the RMSEA close to the acceptable criterion in U3. For ISCED level 02, the degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The change between the equal loadings and equal loadings and thresholds models exceeds the acceptable cut-offs. The CFI and TLI values of the equal loadings and thresholds model show an acceptable model fit, while the RMSEA and SRMR values are considerably above the cut-off. Comparisons of results across countries and territories on this scale

Unclassified - Non classifié

are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

For U3, the change between equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.287 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PRACTR. The loadings for all of the items are high with the exception of item SS2G40F, which shows a moderate loading. Results by participating country/territory show a low loading for item SS2G40F in Chile (ISCED level 02), Japan (ISCED level 02) and Türkiye (ISCED level 02), as well as for item SS2G40A in Germany (ISCED level 02) and New Zealand (U3).

Table 11.284. Items and response categories used in the construction of scale S2PRACTR

Scale or item	Question or item wording
S2PRACTR	Thinking about your work with the <target group> on that day, how often did you do the following?
	Recoded response categories for scaling: 1=Never; 2=Rarely; 3=Occasionally; 4=Often; 5=Always
	Scale mid-point: 3
SS2G40A	I explained how a new activity relates to children's lives.
SS2G40B	I gave different activities to suit different children's interests.
SS2G40C	I gave different activities to suit different children's levels of development.
SS2G40E	I recognised children's individual interests regardless of gender.
SS2G40F	I adapted my activities to meet the needs of <dual/second language learners>.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.285. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PRACTR

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.865	0.998	0.995	0.070	0.019
Colombia	0.898	1.000	1.000	0.005	0.015
Denmark	0.795	0.993	0.987	0.058	0.020
Finland	0.803	0.985	0.971	0.079	0.027
Flemish Community (Belgium)	0.821	0.973	0.947	**0.131**	0.032
Germany	0.767	0.977	0.954	**0.117**	0.034
Ireland	0.870	0.995	0.990	0.049	0.018
Israel	0.904	0.999	0.997	0.061	0.015
Japan	0.837	0.998	0.997	0.055	0.021
Morocco	0.879	0.987	0.974	**0.136**	0.032
Norway	0.825	0.986	0.971	**0.103**	0.025
New Zealand	0.898	0.981	0.963	**0.125**	0.027
Spain	0.847	0.986	0.973	0.075	0.026
Sweden	0.831	0.985	0.970	0.080	0.025
Türkiye	0.828	0.980	0.960	**0.106**	0.027

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
International pooled data	0.845	0.996	0.992	0.046	0.015
U3					
Canada	0.827	0.994	0.988	**0.158**	0.044
Flemish Community (Belgium)	0.855	0.985	0.971	**0.147**	0.043
Germany	0.790	0.981	0.962	**0.115**	0.038
Ireland	0.871	0.989	0.978	**0.108**	0.032
Israel	0.887	0.998	0.995	0.050	0.022
Norway	0.841	0.992	0.984	0.097	0.029
New Zealand	0.811	0.981	0.963	**0.125**	0.027
International pooled data	0.857	0.989	0.978	**0.104**	0.031

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.286. Measurement invariance results from MGCFA for scale S2PRACTR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.992	0.984	0.086	0.024	-	-	-	-
Equal loadings	0.988	0.986	0.080	0.042	-0.004	0.002	-0.006	0.017
Equal loadings and thresholds	0.902	0.955	0.143	0.187	-0.086	-0.031	0.063	0.145
U3								
Baseline	0.992	0.984	0.109	0.035	-	-	-	-
Equal loadings	0.989	0.987	0.099	0.051	-0.003	0.003	-0.011	0.015
Equal loadings and thresholds	0.969	0.984	0.107	0.130	-0.020	-0.002	0.008	0.079

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.287. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRACTR

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G40A	0.643	-1.312	-0.805	-0.045	0.867
SS2G40B	0.907	-1.834	-1.467	-0.612	0.578
SS2G40C	0.891	-1.887	-1.525	-0.737	0.426
SS2G40E	0.695	-1.810	-1.524	-0.899	0.161
SS2G40F	0.476	-0.573	-0.256	0.200	0.905

Source: OECD, TALIS Starting Strong 2024 database.

Facilitating language development (S2PRLANR)

The scale *Facilitating language development* (S2PRLANR) was constructed using five items (SS2G39A, SS2G39B, SS2G39C, SS2G39D and SS2G39F). In these set of items, ECEC staff were asked how frequently they engaged in various activities with the target group on a given day. Response options included: "Never", "Rarely", "Occasionally", "Often" and "Always". Higher scores on this scale reflect more

Unclassified - Non classifié

frequent daily activities aimed at facilitating language development among children. Table 11.288 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.289. The scale S2PRLANR has a high reliability that is above 0.79 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show a good fit across all countries/territories while the RMSEA is within the acceptable range for four ISCED level 02 countries/territories and one U3 country/territory.

Table 11.290 presents the results from the measurement invariance testing for S2PRLANR for both levels. The baseline model fit indices are at least acceptable for both levels except for the RMSEA which is close to the acceptable range. For ISCED level 02, the degree of change between the baseline and equal loadings models is within the cut-off criteria for all fit indices. The change between the equal loadings and equal loadings and thresholds models is close to the acceptable range for the TLI and RMSEA and exceeds the cut-offs for the CFI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

For U3, the change between equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and close to the cut-off for the CFI. No special caution is required when comparing scale score results across countries/territories.

Table 11.291 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PRLANR. The loadings for all of the items are high for the pooled model as well as in single countries/territories.

Table 11.288. Items and response categories used in the construction of scale S2PRLANR

Scale or item	Question or item wording
S2PRLANR	Thinking about your work with the <target group> on that day, how often did you do the following?
	Recoded response categories for scaling: 1=Never; 2=Rarely; 3=Occasionally; 4=Often; 5=Always
	Scale mid-point: 3
SS2G39A	I encouraged children to lead conversations.
SS2G39B	I asked supportive questions to encourage children to give longer explanations.
SS2G39C	I supported children to express their ideas by asking them questions.
SS2G39D	I rephrased or repeated statements to make sure I understood the children.
SS2G39F	I used words or phrasing that was new to children.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.289. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PRLANR

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.913	0.983	0.967	**0.112**	0.024
Colombia	0.929	0.987	0.974	**0.104**	0.020
Denmark	0.896	0.996	0.991	0.074	0.016
Finland	0.824	0.981	0.961	**0.115**	0.032
Flemish Community (Belgium)	0.866	0.982	0.965	**0.124**	0.027
Germany	0.791	0.965	0.931	**0.124**	0.039

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Ireland	0.902	0.984	0.968	0.098	0.029
Israel	0.931	0.988	0.975	**0.181**	0.025
Japan	0.902	0.984	0.967	**0.138**	0.025
Morocco	0.883	0.987	0.974	**0.112**	0.024
Norway	0.856	0.970	0.940	**0.175**	0.039
New Zealand	0.921	0.979	0.958	**0.156**	0.051
Spain	0.919	0.996	0.993	0.048	0.013
Sweden	0.875	0.978	0.955	**0.130**	0.028
Türkiye	0.912	0.990	0.980	**0.112**	0.020
International pooled data	0.903	0.986	0.972	0.086	0.018
U3					
Canada	0.904	0.979	0.958	**0.200**	0.041
Flemish Community (Belgium)	0.879	0.993	0.985	0.098	0.025
Germany	0.823	0.980	0.960	**0.113**	0.026
Ireland	0.898	0.990	0.980	**0.111**	0.022
Israel	0.938	0.994	0.987	**0.127**	0.019
Norway	0.844	0.980	0.960	**0.130**	0.029
New Zealand	0.902	0.979	0.958	**0.156**	0.051
International pooled data	0.903	0.989	0.977	**0.116**	0.022

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.290. Measurement invariance results from MGCFA for scale S2PRLANR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.987	0.975	0.110	0.026	-	-	-	-
Equal loadings	0.985	0.983	0.091	0.035	-0.002	0.008	-0.019	0.009
Equal loadings and thresholds	0.940	0.972	0.116	0.148	-0.045	-0.011	0.025	0.113
U3								
Baseline	0.990	0.980	0.129	0.027	-	-	-	-
Equal loadings	0.991	0.990	0.093	0.038	0.001	0.010	-0.036	0.011
Equal loadings and thresholds	0.979	0.989	0.093	0.106	-0.012	-0.000	0.000	0.068

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.291. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRLANR

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G39A	0.783	-1.802	-1.383	-0.550	0.494
SS2G39B	0.863	-1.901	-1.487	-0.744	0.427

Unclassified - Non classifié

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G39C	0.894	-2.175	-1.884	-1.073	0.175
SS2G39D	0.793	-2.156	-1.788	-0.924	0.237
SS2G39F	0.709	-1.800	-1.119	-0.160	0.734

Source: OECD, TALIS Starting Strong 2024 database.

Facilitating literacy development (S2PROLIR)

The scale *Facilitating literacy development* (S2PROLIR) was developed based on seven items (SS2G29A, SS2G29B, SS2G29D, SS2G29E, SS2G29F, SS2G29G and SS2G29H). These items focused on how frequently ECEC staff engaged in various activities with children during the most recent week. Response options included: “Not at all”, “Once a week”, “A few times a week”, “Once a day” and “More than once a day”. Higher scores on this scale reflect more frequent activities aimed at facilitating literacy development among children. Table 11.292 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.293. The scale S2PROLIR has a high reliability that is above 0.78 in all participating countries/territories in both populations. Based on the single CFA model fit results, the scale S2PROLIR works well across all populations except in Germany (ISCED level 02 and U3) and Finland (U3), where the CFI, TLI and RMSEA do not meet the acceptable cut-off criteria.

Table 11.294 presents the results from the measurement invariance testing for S2PROLIR for both levels. The baseline model fit indices are at least acceptable for both levels, however the RMSEA is close to being acceptable in the U3 population. For ISCED level 02, the degree of change between the baseline and equal loadings models is within the cut-off criteria for the CFI, RMSEA, SRMR and slightly exceeds the cut-off for the TLI. The change between the equal loadings and equal loadings and thresholds models exceeds the cut-off criteria. The equal loadings and thresholds model shows a poor model fit. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

For U3, the change between equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within, or close to, the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.295 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PROLIR. The loadings for all of the items are high with the exception of item SS2G29B, which shows a moderate loading. Results by participating country/territory show a low loading for item SS2G29H in New Zealand (U3).

Table 11.292. Items and response categories used in the construction of scale S2PROLIR

Scale or item	Question or item wording
S2PROLIR	How often did you do the following at this <ECEC setting>, during your most recent complete calendar week?
	Recoded response categories for scaling: 1=Not at all; 2=Once a week; 3=A few times a week; 4=Once a day; 5=More than once a day
	Scale mid-point: 3
SS2G29A	Played word games with the children
SS2G29B	Read books to children
SS2G29D	Encouraged pre-verbal children to point to pictures when looking at a book
SS2G29E	Sang songs with or to the children

Unclassified - Non classifié

Scale or item	Question or item wording
SS2G29F	Engaged children in activities that helped them pick out sounds in words (e.g. phonics games)
SS2G29G	Used synonyms for words to help explain their meaning when talking with children
SS2G29H	Used activities for children to make marks (e.g. finger painting, pressing into <dough/playdough>)

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.293. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PROLIR

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.886	0.954	0.931	**0.118**	0.045
Colombia	0.941	0.983	0.974	0.075	0.024
Denmark	0.824	0.970	0.955	0.079	0.033
Finland	0.780	**0.855**	**0.782**	**0.127**	0.060
Flemish Community (Belgium)	0.859	0.968	0.952	0.089	0.033
Germany	0.806	**0.840**	**0.760**	**0.186**	0.079
Ireland	0.850	0.925	**0.887**	**0.108**	0.060
Israel	0.912	0.987	0.981	0.085	0.022
Japan	0.817	0.959	0.938	0.074	0.038
Morocco	0.873	0.977	0.965	0.083	0.028
Norway	0.825	0.969	0.954	0.078	0.037
New Zealand	0.897	0.992	0.984	**0.105**	0.023
Spain	0.892	0.981	0.972	0.057	0.023
Sweden	0.834	0.935	0.902	**0.111**	0.046
Türkiye	0.874	0.979	0.969	0.075	0.027
International pooled data	0.868	0.955	0.933	0.082	0.034
U3					
Canada	0.863	0.919	**0.878**	**0.119**	0.055
Flemish Community (Belgium)	0.849	0.946	0.918	**0.111**	0.055
Germany	0.821	**0.873**	**0.810**	**0.190**	0.083
Ireland	0.867	0.916	**0.874**	**0.143**	0.079
Israel	0.916	0.982	0.974	0.084	0.031
Norway	0.821	0.917	**0.875**	**0.129**	0.065
New Zealand	0.863	0.992	0.984	**0.105**	0.023
International pooled data	0.859	0.934	0.900	**0.120**	0.057

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.294. Measurement invariance results from MGCFA for scale S2PROLIR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.959	0.939	0.097	0.040	-	-	-	-
Equal loadings	0.956	0.953	0.086	0.048	-0.004	0.013	-0.011	0.009
Equal loadings and thresholds	0.751	0.863	0.146	0.193	-0.205	-0.090	0.060	0.145
U3								
Baseline	0.939	0.909	0.133	0.062	-	-	-	-
Equal loadings	0.940	0.934	0.113	0.068	0.001	0.025	-0.020	0.006
Equal loadings and thresholds	0.876	0.927	0.119	0.158	-0.065	-0.007	0.006	0.091

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.295. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PROLIR

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G29A	0.671	-1.122	-0.568	0.228	0.743
SS2G29B	0.598	-1.659	-1.075	-0.204	0.685
SS2G29D	0.696	-0.754	-0.522	0.059	0.533
SS2G29E	0.709	-1.741	-1.313	-0.590	-0.069
SS2G29F	0.828	-0.846	-0.433	0.209	0.684
SS2G29G	0.697	-1.239	-0.797	-0.031	0.373
SS2G29H	0.698	-1.032	-0.546	0.171	0.603

Source: OECD, TALIS Starting Strong 2024 database.

Facilitating numeracy development (S2PRONUR)

The scale *Facilitating numeracy development* (S2PRONUR) was constructed using five items (SS2G30A, SS2G30B, SS2G30C, SS2G30D and SS2G30F) that assessed how frequently ECEC staff engaged various activities with children at the ECEC setting during the most recent week. Response options included: “Not at all”, “Once a week”, “A few times a week”, “Once a day” and “More than once a day”. Higher values on this scale indicate more frequent engagement in activities that support children’s numeracy development. Table 11.296 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.297. The scale S2PRONUR has a high reliability that is above 0.76 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories for the CFI and SRMR. The TLI falls below the acceptable threshold in Norway (U3). The RMSEA is within the acceptable range in nine ISCED level 02 and five U3 countries/territories.

Table 11.298 presents the results from the measurement invariance testing for S2PRONUR. The baseline model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The change between the equal loadings and the equal loadings and thresholds models exceeds the thresholds. The model fit of the equal loadings and thresholds model shows acceptable CFI and TLI. Comparisons of results across

Unclassified - Non classifié

countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

For U3, the change between the equal loadings and the baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria. The model fit of the equal loadings and thresholds model shows acceptable CFI and TLI, while the RMSEA and SRMR values considerably exceed the cut-off. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Table 11.299 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PRONUR. The loadings for all of the items are high for the pooled model as well as in single countries/territories.

Table 11.296. Items and response categories used in the construction of scale S2PRONUR

Scale or item	Question or item wording
S2PRONUR	How often did you do the following at this <ECEC setting>, during your most recent complete calendar week?
	Recoded response categories for scaling: 1=Not at all; 2=Once a week; 3=A few times a week; 4=Once a day; 5=More than once a day
	Scale mid-point: 3
SS2G30A	Used sorting activities by shape or colour
SS2G30B	Played number games
SS2G30C	Sang songs with numbers
SS2G30D	Helped children to use numbers or to count
SS2G30F	Encouraged children to measure items (e.g. while cooking or building with blocks)

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.297. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PRONUR

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.893	0.986	0.972	**0.111**	0.027
Colombia	0.882	0.970	0.940	**0.168**	0.056
Denmark	0.828	1.000	0.999	0.011	0.009
Finland	0.770	0.983	0.966	0.058	0.022
Flemish Community (Belgium)	0.816	0.972	0.945	**0.117**	0.031
Germany	0.761	0.978	0.956	0.077	0.026
Ireland	0.888	0.986	0.973	**0.103**	0.026
Israel	0.917	0.993	0.987	**0.104**	0.019
Japan	0.854	0.983	0.967	0.088	0.024
Morocco	0.872	0.983	0.966	**0.134**	0.021
Norway	0.790	0.991	0.982	0.053	0.020
New Zealand	0.897	0.995	0.986	**0.134**	0.031
Spain	0.911	0.996	0.991	0.064	0.013
Sweden	0.821	0.990	0.981	0.061	0.019
Türkiye	0.904	0.995	0.989	0.081	0.015
International pooled data	0.880	0.994	0.988	0.051	0.020

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha	CFA model fit CFI	TLI	RMSEA	SRMR
		U3			
Canada	0.891	0.990	0.980	0.086	0.020
Flemish Community (Belgium)	0.835	0.991	0.982	0.057	0.025
Germany	0.808	0.994	0.987	0.047	0.015
Ireland	0.851	0.978	0.956	**0.112**	0.027
Israel	0.922	0.995	0.990	0.081	0.012
Norway	0.799	0.943	**0.886**	**0.138**	0.047
New Zealand	0.894	0.995	0.986	**0.134**	0.031
International pooled data	0.881	0.991	0.981	0.071	0.018

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.298. Measurement invariance results from MGCFA for scale S2PRONUR with differences in model fits across models

Invariance model	Model fit CFI	TLI	RMSEA	SRMR	Difference in model fit Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
			ISCED level 02					
Baseline	0.991	0.981	0.086	0.024	-	-	-	-
Equal loadings	0.987	0.985	0.078	0.036	-0.004	0.003	-0.008	0.012
Equal loadings and thresholds	0.915	0.961	0.124	0.158	-0.071	-0.024	0.046	0.122
			U3					
Baseline	0.991	0.982	0.083	0.024	-	-	-	-
Equal loadings	0.987	0.984	0.079	0.035	-0.004	0.002	-0.004	0.011
Equal loadings and thresholds	0.902	0.951	0.138	0.164	-0.085	-0.033	0.060	0.129

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.299. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PRONUR

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G30A	0.780	-0.860	-0.345	0.500	0.998
SS2G30B	0.859	-0.882	-0.401	0.418	0.987
SS2G30C	0.781	-0.506	-0.125	0.505	1.094
SS2G30D	0.742	-1.473	-0.993	-0.120	0.414
SS2G30F	0.695	-0.602	-0.162	0.536	0.968

Source: OECD, TALIS Starting Strong 2024 database.

Behavioural support in the classroom/playroom (S2SOCIALR)

ECEC staff answered five items measuring their *Behavioural support in the classroom/playroom* (S2SOCIALR). These were items SS2G41A, SS2G41B, SS2G41C, SS2G41D and SS2G41F, for which ECEC staff were asked how often they engaged in various activities with the target group on a given day. The available response options were: "Never", "Rarely", "Occasionally", "Often" and "Always". Higher scores on this scale reflect a greater level of behavioural support provided in the classroom/playroom. Table 11.300 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Unclassified - Non classifié

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.301. The scale S2SOCIALR has a high reliability that is above 0.80 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. Only in Morocco ISCED level 02 does the RMSEA exceed the acceptable threshold.

Table 11.302 presents the results from the measurement invariance testing for S2SOCIALR for both levels. The baseline model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the baseline and the equal loadings models is within the cut-off criteria for the TLI, RMSEA, SRMR and slightly exceeds the cut-off for the CFI. The change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

For U3, the change between the equal loadings and baseline models is within the acceptable range for the RMSEA and SRMR and is close to the cut-off for the CFI and TLI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.303 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2SOCIALR. The loadings for all of the items are high for the pooled model as well as in single countries/territories.

Table 11.300. Items and response categories used in the construction of scale S2SOCIALR

Scale or item	Question or item wording
S2SOCIALR	Thinking about your work with the <target group> on that day, how often did you do the following?
	Recoded response categories for scaling: 1=Never; 2=Rarely; 3=Occasionally; 4=Often; 5=Always
	Scale mid-point: 3
SS2G41A	I explained the rules children should follow at the start of a new activity.
SS2G41B	I addressed children's disruptive behaviour by explaining why they should stop.
SS2G41C	I showed appreciation to children that behaved well during an activity.
SS2G41D	I helped children understand the consequences if they did not follow the rules.
SS2G41F	I redirected a child to an appropriate activity if they were disturbing other children.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.301. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2SOCIALR

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.870	0.983	0.966	0.088	0.029
Colombia	0.904	0.991	0.981	0.054	0.023
Denmark	0.833	0.994	0.987	0.060	0.016
Finland	0.865	0.998	0.995	0.040	0.010
Flemish Community (Belgium)	0.851	0.993	0.986	0.063	0.021
Germany	0.853	0.984	0.968	0.095	0.020
Ireland	0.902	1.000	1.002	0.000	0.008
Israel	0.918	0.993	0.985	0.084	0.015
Japan	0.927	0.995	0.989	0.088	0.015

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Morocco	0.865	0.972	0.944	**0.120**	0.031
Norway	0.838	0.993	0.986	0.069	0.018
New Zealand	0.873	0.984	0.968	0.087	0.036
Spain	0.897	0.994	0.988	0.049	0.014
Sweden	0.854	0.996	0.993	0.052	0.015
Türkiye	0.888	0.995	0.990	0.057	0.013
International pooled data	0.879	0.994	0.989	0.039	0.011
U3					
Canada	0.876	0.990	0.979	0.086	0.029
Flemish Community (Belgium)	0.891	1.000	1.002	0.000	0.007
Germany	0.809	1.000	1.000	0.004	0.008
Ireland	0.900	0.992	0.983	0.079	0.022
Israel	0.919	0.991	0.982	0.095	0.022
Norway	0.846	0.994	0.989	0.055	0.018
New Zealand	0.881	0.984	0.968	0.087	0.036
International pooled data	0.885	0.996	0.992	0.048	0.012

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.302. Measurement invariance results from MGCFA for scale S2SOCIALR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.993	0.986	0.068	0.018	-	-	-	-
Equal loadings	0.986	0.984	0.072	0.029	-0.007	-0.002	0.004	0.012
Equal loadings and thresholds	0.961	0.982	0.077	0.108	-0.026	-0.002	0.005	0.078
U3								
Baseline	0.994	0.989	0.065	0.017	-	-	-	-
Equal loadings	0.987	0.984	0.079	0.030	-0.008	-0.005	0.013	0.013
Equal loadings and thresholds	0.966	0.983	0.081	0.104	-0.021	-0.001	0.003	0.074

Note: The Flemish Community (Belgium) and New Zealand are excluded from measurement invariance testing in the ISCED level 02 population; New Zealand is excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.303. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2SOCIALR

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G41A	0.748	-1.955	-1.708	-1.139	-0.257
SS2G41B	0.808	-1.934	-1.618	-0.943	0.083
SS2G41C	0.768	-2.078	-1.845	-1.171	-0.118
SS2G41D	0.869	-1.907	-1.522	-0.844	0.154
SS2G41F	0.678	-1.683	-1.245	-0.470	0.457

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Promoting awareness and acceptance of diversity (S2PAAD)

The scale *Promoting awareness and acceptance of diversity* (S2PAAD) was constructed using five items (SS2G23A, SS2G23C, SS2G23D, SS2G23E and SS2G23G) that assessed the degree to which various statements related to diversity were applicable to the ECEC setting. Response options included: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores on this scale indicate a stronger emphasis on promotion awareness and acceptance of diversity. Table 11.304 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.305. The scale S2PAAD has a high reliability that is above 0.74 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show an acceptable model fit across all countries/territories while the RMSEA is at least acceptable in 8 of the ISCED level 02 and 5 of the U3 countries/territories.

Table 11.306 presents the results from the measurement invariance testing for S2PAAD for both levels. The baseline model fit indices are at least acceptable for both levels with the exception of the RMSEA that is close to the acceptable range. For ISCED level 02, the degree of change between the baseline and the equal loadings model is within the cut-off criteria for the RMSEA and SRMR and close to the cut-off for the CFI and TLI. The change between the equal loadings and equal loadings and thresholds models exceeds the thresholds. However, the CFI and TLI of the equal loadings and threshold model are acceptable and the RMSEA and SRMR are close to being acceptable. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

For U3, the change between the equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.307 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PAAD. The loadings for all of the items are high with the exception of item SS2G23G which shows a moderate loading. Results by participating country/territory show a low loading for items SS2G23G and SS2G23E in Finland (ISCED level 02).

Table 11.304. Items and response categories used in the construction of scale S2PAAD

Scale or item	Question or item wording
S2PAAD	When considering daily interactions with children, to what extent do the following apply to this <ECEC setting>?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
SS2G23A	Books and pictures feature people from a variety of ethnic and cultural groups.
SS2G23C	Books and pictures feature people with different physical needs.
SS2G23D	Books and pictures feature diverse family structures (e.g. single parent families, families with parents from sexual or gender minorities).
SS2G23E	Children play with toys and artefacts from cultures other than the ethnic majority.
SS2G23G	Activities aim to raise awareness about the different languages of the <dual/second language learners> in the <classroom/playgroup/group>.

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.305. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PAAD

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.843	0.984	0.967	0.092	0.026
Colombia	0.876	0.966	0.932	0.100	0.039
Denmark	0.817	0.953	0.905	**0.144**	0.038
Finland	0.741	0.993	0.986	0.041	0.019
Flemish Community (Belgium)	0.837	0.978	0.957	**0.125**	0.035
Germany	0.810	0.979	0.958	0.094	0.028
Ireland	0.924	0.997	0.994	0.065	0.014
Israel	0.891	0.974	0.949	**0.152**	0.039
Japan	0.849	0.975	0.949	0.099	0.035
Morocco	0.819	0.972	0.944	**0.111**	0.033
Norway	0.841	0.975	0.950	**0.118**	0.038
New Zealand	0.863	1.000	1.005	0.000	0.016
Spain	0.863	0.985	0.971	0.090	0.028
Sweden	0.850	0.981	0.961	**0.135**	0.044
Türkiye	0.868	0.976	0.952	**0.129**	0.035
International pooled data	0.854	0.985	0.970	0.075	0.025
U3					
Canada	0.893	0.989	0.979	0.097	0.023
Flemish Community (Belgium)	0.843	0.975	0.950	**0.115**	0.036
Germany	0.800	0.958	0.917	**0.129**	0.040
Ireland	0.923	0.988	0.977	**0.135**	0.026
Israel	0.910	0.992	0.984	0.083	0.019
Norway	0.826	0.989	0.977	0.072	0.030
New Zealand	0.868	1.000	1.005	0.000	0.016
International pooled data	0.884	0.989	0.977	0.090	0.022

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.306. Measurement invariance results from MGCFA for scale S2PAAD with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.980	0.961	0.107	0.032	-	-	-	-
Equal loadings	0.973	0.969	0.095	0.045	-0.007	0.009	-0.012	0.013
Equal loadings and thresholds	0.909	0.947	0.124	0.134	-0.064	-0.022	0.030	0.089
U3								
Baseline	0.988	0.975	0.105	0.029	-	-	-	-
Equal loadings	0.988	0.985	0.081	0.037	0.000	0.010	-0.024	0.008

Unclassified - Non classifié

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
Equal loadings and thresholds	0.966	0.979	0.097	0.096	-0.021	-0.006	0.016	0.060

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.307. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PAAD

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G23A	0.788	-1.295	0.013	1.003
SS2G23C	0.850	-0.795	0.376	1.279
SS2G23D	0.778	-0.678	0.441	1.299
SS2G23E	0.688	-0.442	0.681	1.453
SS2G23G	0.582	-0.702	0.361	1.170

Source: OECD, TALIS Starting Strong 2024 database.

Engagement in collaborative practices (S2COLLR)

Five items were used to assess ECEC staff's *Engagement in collaborative practices* (S2COLLR). In these items (SS2G42A, SS2G42B, SS2G42C, SS2G42D and SS2G42F), ECEC staff had to indicate how often they engaged in various activities at the ECEC setting. The available response options were: "Never", "Less than monthly", "Monthly", "Weekly" and "Daily". Higher values on this scale indicate a greater level of engagement in collaborative practices. Table 11.308 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.309. The scale S2COLLR has a high reliability that is above 0.72 in all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI does not meet the acceptable cut-off in Chile (ISCED level 02), the TLI in Chile and Colombia (ISCED level 02) and the RMSEA in Chile, Colombia, Germany, Israel, Morocco, New Zealand (ISCED level 02), and Israel and New Zealand (U3). Based on the single CFA model fit results, the scale S2COLLR works well across all populations except in Chile (ISCED level 02), where the CFI, TLI and RMSEA do not meet the acceptable cut-off criteria.

Table 11.310 presents the results from the measurement invariance testing for S2COLLR for both levels. The baseline model fit indices are at least acceptable for both levels with the exception of the RMSEA in ISCED level 02 where it is close to the cut-off. For ISCED level 02, the degree of change between the baseline and equal loadings model is within the cut-off criteria for the CFI, RMSEA and SRMR. The change between the equal loadings and the equal loadings and thresholds models exceeds the acceptable cut-offs. The equal loadings and thresholds model shows a poor model fit. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

For U3, the change between the equal loadings and baseline models is within the acceptable range for the TLI, RMSEA and SRMR. The degree of change between the equal loadings and the equal loadings and thresholds models is within, or close to, the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.311 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2COLLR. The loadings for all of the items are high with the exception of item SS2G42A, which shows a moderate loading. Results by participating country/territory show a low loading for item SS2G42B in Finland and Japan (both ISCED level 02).

Unclassified - Non classifié

Table 11.308. Items and response categories used in the construction of scale S2COLLR

Scale or item	Question or item wording
S2COLLR	On average, how often do you engage in the following activities in this <ECEC setting>?
	Recoded response categories for scaling: 1=Never; 2=Less than monthly; 3=Monthly; 4=Weekly; 5=Daily
	Scale mid-point: 3
SS2G42A	Provide feedback to other <ECEC staff> about their practice
SS2G42B	Engage in joint activities across different groups, including age groups
SS2G42C	Exchange learning or pedagogical materials with colleagues
SS2G42D	Co-design activities or content for children's development, well-being and learning with colleagues
SS2G42F	Discuss the evaluation of children's development, well-being and learning with other <ECEC staff>

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.309. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2COLLR

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.803	**0.889**	**0.778**	**0.230**	0.073
Colombia	0.873	0.944	**0.888**	**0.148**	0.061
Denmark	0.755	0.967	0.935	0.091	0.027
Finland	0.724	0.959	0.918	0.089	0.030
Flemish Community (Belgium)	0.763	0.975	0.950	0.087	0.025
Germany	0.745	0.953	0.907	**0.114**	0.034
Ireland	0.817	0.973	0.946	0.091	0.035
Israel	0.859	0.982	0.964	**0.123**	0.034
Japan	0.752	0.991	0.982	0.052	0.018
Morocco	0.845	0.961	0.922	**0.167**	0.035
Norway	0.737	0.978	0.957	0.079	0.027
New Zealand	0.864	0.978	0.956	**0.136**	0.046
Spain	0.808	0.974	0.949	0.088	0.028
Sweden	0.739	0.974	0.949	0.072	0.023
Türkiye	0.880	0.982	0.964	**0.109**	0.023
International pooled data	0.797	0.950	0.900	0.096	0.031
U3					
Canada	0.809	0.978	0.956	0.091	0.025
Flemish Community (Belgium)	0.866	0.999	0.998	0.025	0.012
Germany	0.744	0.974	0.948	0.082	0.026
Ireland	0.825	0.986	0.971	0.068	0.027
Israel	0.858	0.978	0.957	**0.120**	0.035
Norway	0.735	0.967	0.934	0.085	0.031
New Zealand	0.789	0.978	0.956	**0.136**	0.046
International pooled data	0.814	0.980	0.960	0.078	0.021

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.310. Measurement invariance results from MGCFA for scale S2COLLR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.970	0.939	0.108	0.033	-	-	-	-
Equal loadings	0.969	0.965	0.082	0.042	-0.000	0.026	-0.026	0.008
Equal loadings and thresholds	0.769	0.894	0.143	0.180	-0.200	-0.071	0.061	0.139
U3								
Baseline	0.982	0.964	0.090	0.024	-	-	-	-
Equal loadings	0.971	0.965	0.089	0.041	-0.011	0.001	-0.002	0.016
Equal loadings and thresholds	0.922	0.960	0.095	0.117	-0.050	-0.005	0.006	0.077

Note: New Zealand and Norway are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.311. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2COLLR

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SS2G42A	0.594	-0.976	-0.395	0.028	0.899
SS2G42B	0.577	-1.183	-0.532	-0.003	0.793
SS2G42C	0.719	-1.344	-0.639	-0.096	0.762
SS2G42D	0.803	-1.549	-0.987	-0.419	0.632
SS2G42F	0.621	-1.626	-0.984	-0.360	0.594

Source: OECD, TALIS Starting Strong 2024 database.

Facilitating parent/guardian engagement (S2PARENR)

The scale of *Facilitating parent/guarding engagement* (S2PARENR) was measured by a set of five items: SS2G43A, SS2G43C, SS2G43D, SS2G43E and SS2G43F. ECEC staff were asked to indicate their level of agreement with each of these items using the following response categories: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher scores on this scale indicate that ECEC staff agree more strongly that parent/guardian engagement is supported in ECEC setting. Table 11.312 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.313. The scale S2PARENR has a high reliability that is above 0.70 in all participating countries/territories in both populations, except for Denmark ISCED level 02 where it is 0.69. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show a good fit across all countries/territories, except for Germany ISCED level 02 where the TLI is lower than the acceptable cut-off. Further, the RMSEA is at least acceptable in most countries, except for Denmark, Germany, Israel, Morocco, Norway and Türkiye (ISCED level 02), and Canada, the Flemish Community of Belgium, Germany, Ireland and Norway (U3), where it exceeds the cut-off.

Table 11.314 presents the results from the measurement invariance testing for S2PARENR for both levels. The baseline model fit is at least acceptable for both levels based on the CFI, TLI and RMSEA. For ISCED level 02, the degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA, SRMR and slightly exceeds the cut-off for the CFI. The change between the equal loadings and the equal loadings and thresholds models exceeds the cut-offs for all fit indices. The equal loadings and thresholds model shows a poor model fit. Comparisons of results across countries and

Unclassified - Non classifié

territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

For U3, the change between equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-offs for all fit indices. However, the model fit of the equal loadings and thresholds model shows acceptable CFI and TLI. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Table 11.315 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PARENR. The loadings for all the items are high, except for item SS2G43A that exhibits a low loading. Results by participating country/territory also show a low loading for item SS2G43A in eight ISCED level 02 participants (Denmark, Finland, the Flemish Community of Belgium, Germany, Ireland, Japan, Norway and Sweden) and six U3 participants (Canada, the Flemish Community of Belgium, Germany, Ireland, Israel and Norway).

Table 11.312. Items and response categories used in the construction of scale S2PARENR

Scale or item	Question or item wording
S2PARENR	How strongly do you agree or disagree with these statements as applied to this <ECEC setting>?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
SS2G43A	Parents or guardians are informed about daily activities on a regular basis.
SS2G43C	Parents or guardians are encouraged by <ECEC staff> to participate in regular <classroom/playgroup/group> activities.
SS2G43D	Parents or guardians are encouraged by <ECEC staff> to contribute to <classroom/playgroup/group> level decisions.
SS2G43E	Parents or guardians are encouraged by <ECEC staff> to take on <ECEC setting> level tasks.
SS2G43F	Parents or guardians are given opportunities to actively participate in <ECEC setting> decisions.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.313. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2PARENR

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.893	0.993	0.987	0.081	0.018
Colombia	0.877	0.988	0.976	0.094	0.028
Denmark	0.689	0.955	0.910	**0.101**	0.037
Finland	0.790	0.987	0.973	0.077	0.030
Flemish Community (Belgium)	0.750	0.977	0.953	0.089	0.033
Germany	0.718	0.904	**0.807**	**0.149**	0.052
Ireland	0.845	0.993	0.987	0.079	0.032
Israel	0.876	0.970	0.939	**0.226**	0.057
Japan	0.795	0.993	0.986	0.079	0.026
Morocco	0.856	0.967	0.934	**0.190**	0.035
Norway	0.716	0.957	0.914	**0.117**	0.040
New Zealand	0.868	0.998	0.997	0.068	0.028
Spain	0.846	0.983	0.967	0.084	0.031

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Sweden	0.797	0.988	0.975	0.082	0.027
Türkiye	0.891	0.990	0.981	**0.108**	0.024
International pooled data	0.817	0.983	0.966	0.085	0.027
U3					
Canada	0.804	0.977	0.954	**0.126**	0.042
Flemish Community (Belgium)	0.753	0.965	0.930	**0.126**	0.046
Germany	0.747	0.958	0.916	**0.114**	0.035
Ireland	0.871	0.991	0.982	**0.102**	0.029
Israel	0.823	0.984	0.969	0.099	0.061
Norway	0.751	0.937	**0.875**	**0.149**	0.055
New Zealand	0.840	0.998	0.997	0.068	0.028
International pooled data	0.782	0.975	0.949	0.097	0.035

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.314. Measurement invariance results from MGCFA for scale S2PARENR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.982	0.963	0.114	0.033	-	-	-	-
Equal loadings	0.970	0.966	0.110	0.055	-0.012	0.002	-0.003	0.022
Equal loadings and thresholds	0.868	0.922	0.166	0.208	-0.103	-0.043	0.055	0.152
U3								
Baseline	0.982	0.963	0.110	0.042	-	-	-	-
Equal loadings	0.980	0.975	0.090	0.055	-0.002	0.012	-0.020	0.013
Equal loadings and thresholds	0.926	0.952	0.126	0.147	-0.054	-0.024	0.036	0.092

Note: New Zealand and Norway are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.315. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PARENR

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G43A	0.334	-2.196	-1.327	0.081
SS2G43C	0.742	-1.323	-0.224	0.855
SS2G43D	0.865	-1.187	0.008	1.130
SS2G43E	0.795	-1.211	-0.133	1.079
SS2G43F	0.728	-1.437	-0.336	1.024

Source: OECD, TALIS Starting Strong 2024 database.

Satisfaction with setting leadership (S2SSLEAD)

The scale of *Satisfaction with setting leadership* (S2SSLEAD) was measured by a set of seven items (SS2G44A, SS2G44B, SS2G44C, SS2G44D, SS2G44E, SS2G44F and SS2G44G), in which ECEC staff

Unclassified - Non classifié

were asked to indicate their level of agreement with different statements about the ECEC setting leader. For each item, the following response categories were available: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher scores on this scale reflect greater satisfaction with the leadership at the ECEC setting. Item SS2G44G was reverse coded due to its negative statement about satisfaction with leadership and to ensure it had the same direction as the rest of the items. Table 11.316 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.317. The scale S2SSLEAD has a high reliability that is above 0.900 in most participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI and SRMR show a good fit across all countries/territories. The TLI also shows a good fit across countries/territories, except for the two populations in New Zealand. The RMSEA is at least acceptable in approximately half of the countries/territories in each population. For ISCED level 02, the RMSEA exceeds the cut-off in Colombia, Denmark, the Flemish Community of Belgium, Morocco, New Zealand, Sweden and Türkiye. For U3, the RMSEA exceeds the cut-off in the Flemish Community of Belgium, Ireland and New Zealand.

Table 11.318 presents the results from the measurement invariance testing for S2SSLEAD for both levels. The baseline model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the baseline and equal loadings models is within the cut-off criteria for the TLI, RMSEA, SRMR and slightly exceeds the cut-off for the CFI. The change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

For U3, the change between the equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.319 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2SSLEAD. The loadings for all of the items are high, except for item SS2G44G that shows a low loading. Results by participating country/territory also show a low loading for item SS2G44G in six ISCED level 02 participants (Chile, Colombia, Israel, Morocco, Sweden and Türkiye) and three U3 participants (Canada, the Flemish Community of Belgium and Israel).

Table 11.316. Items and response categories used in the construction of scale S2SSLEAD

Scale or item	Question or item wording
S2SSLEAD	Thinking about the <ECEC setting leader> in this <ECEC setting>, how strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
SS2G44A	The <ECEC setting leader> has a clear <vision> for this <ECEC setting>.
SS2G44B	The <ECEC setting leader> encourages co-operation among <ECEC staff> to develop new ideas in their practices.
SS2G44C	The <ECEC setting leader> encourages <ECEC staff> to take responsibility for improving their practices.
SS2G44D	The <ECEC setting leader> encourages all staff to have a say on important decisions.
SS2G44E	The <ECEC setting leader> promotes a culture of shared professional learning.
SS2G44F	The <ECEC setting leader> communicates effectively with <ECEC staff>.
SS2G44G*	I need more support from my <ECEC setting leader>.

Note: * Item was reverse coded.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.317. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2SSLEAD

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.937	0.995	0.993	0.071	0.015
Colombia	0.922	0.991	0.987	**0.103**	0.027
Denmark	0.932	0.988	0.982	**0.106**	0.031
Finland	0.934	0.991	0.986	0.090	0.025
Flemish Community (Belgium)	0.931	0.979	0.969	**0.136**	0.034
Germany	0.930	0.996	0.993	0.059	0.020
Ireland	0.940	0.994	0.990	0.070	0.030
Israel	0.928	0.999	0.998	0.060	0.017
Japan	0.923	0.994	0.991	0.072	0.021
Morocco	0.882	0.985	0.978	**0.128**	0.025
Norway	0.914	0.991	0.986	0.084	0.032
New Zealand	0.949	0.966	**0.897**	**0.224**	0.050
Spain	0.958	0.995	0.993	0.076	0.021
Sweden	0.923	0.986	0.979	**0.116**	0.032
Türkiye	0.946	0.996	0.994	**0.130**	0.018
International pooled data	0.932	0.995	0.992	0.065	0.017
U3					
Canada	0.936	0.996	0.994	0.076	0.023
Flemish Community (Belgium)	0.911	0.975	0.963	**0.121**	0.043
Germany	0.924	0.992	0.989	0.073	0.022
Ireland	0.943	0.994	0.990	**0.102**	0.022
Israel	0.923	0.996	0.993	0.076	0.027
Norway	0.930	0.999	0.999	0.030	0.019
New Zealand	0.947	0.966	**0.897**	**0.224**	0.050
International pooled data	0.929	0.995	0.993	0.059	0.018

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.318. Measurement invariance results from MGCFA for scale S2SSLEAD with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.994	0.990	0.096	0.025	-	-	-	-
Equal loadings	0.988	0.987	0.110	0.066	-0.006	-0.003	0.015	0.041
Equal loadings and thresholds	0.987	0.991	0.091	0.113	-0.001	0.004	-0.019	0.047
U3								
Baseline	0.994	0.991	0.084	0.026	-	-	-	-
Equal loadings	0.991	0.990	0.089	0.051	-0.003	-0.001	0.005	0.025

Unclassified - Non classifié

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
Equal loadings and thresholds	0.990	0.993	0.075	0.106	-0.001	0.003	-0.014	0.055

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.319. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2SSLEAD

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G44A	0.863	-2.058	-1.229	0.104
SS2G44B	0.931	-2.070	-1.256	0.155
SS2G44C	0.891	-2.144	-1.312	0.191
SS2G44D	0.857	-1.923	-0.977	0.278
SS2G44E	0.894	-2.003	-1.089	0.329
SS2G44F	0.874	-1.855	-1.003	0.220
SS2G44G	0.395	-1.090	-0.230	0.928

Source: OECD, TALIS Starting Strong 2024 database.

Satisfaction with profession (S2PROSAR)

The scale *Satisfaction with profession* (S2PROSAR) was measured using a set of three items (SS2G45H, SS2G45I and SS2G45J). These items assessed ECEC staff's level of agreement with different statements related to their job. For each item, ECEC staff selected one of the following response options: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher scores reflect greater satisfaction with profession. Table 11.320 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for both populations, as well as for the pooled model per level, are presented in Table 11.321. The fit indices for the S2PROSAR scale are not presented here as the scale was measured by just three items, resulting in a model that is just identified and therefore shows a perfect fit. The scale S2PROSAR has a high reliability, generally above 0.700, across all participating countries/territories in both populations.

Table 11.322 presents the results from the measurement invariance testing for S2PROSAR for both levels. As this is a three-item scale, the baseline models in both populations have a perfect fit because the models are just identified. For ISCED level 02, the equal loadings model is within the cut-off criteria for all fit indices. The change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

For U3, the equal loadings model is also within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI, RMSEA and SRMR and close to the cut-off for the CFI. No special caution is required when comparing scale score results across countries/territories.

Table 11.323 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2PROSAR. The loadings for items SS2G45I and SS2G45J are high, while the loading for item SS2G45H is close to the acceptable threshold. Results by participating country/territory show a low loading for item SS2G45H in nine ISCED level 02 participants (Chile, Denmark, Finland, the Flemish Community of Belgium, Germany, Ireland, Japan, Norway and Sweden) and six U3 participants (Canada, the Flemish Community of Belgium, Germany, Ireland, New Zealand and Norway).

Unclassified - Non classifié

Table 11.320. Items and response categories used in the construction of scale S2PROSAR

Scale or item	Question or item wording
S2PROSAR	We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
SS2G45H	If I could decide again, I would still choose to work as an <ECEC staff>.
SS2G45I	The children value me.
SS2G45J	Parents or guardians value me as an <ECEC staff>.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.321. Reliability coefficient alpha for single countries/territories and pooled model for scale S2PROSAR

Participating country/territory	Reliability Cronbach's alpha
ISCED level 02	
Chile	0.747
Colombia	0.856
Denmark	0.714
Finland	0.730
Flemish Community (Belgium)	0.650
Germany	0.685
Ireland	0.696
Israel	0.810
Japan	0.752
Morocco	0.805
Norway	0.709
New Zealand	0.734
Spain	0.765
Sweden	0.706
Türkiye	0.803
International pooled data	0.774
U3	
Canada	0.771
Flemish Community (Belgium)	0.720
Germany	0.697
Ireland	0.661
Israel	0.794
Norway	0.707
New Zealand	0.771
International pooled data	0.739

Note: New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.322. Measurement invariance results from MGCFA for scale S2PROSAR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.993	0.989	0.082	0.035	-0.007	-0.011	0.082	0.035
Equal loadings and thresholds	0.971	0.986	0.091	0.151	-0.022	-0.003	0.009	0.115
U3								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.999	0.997	0.036	0.020	-0.001	-0.003	0.036	0.020
Equal loadings and thresholds	0.991	0.995	0.047	0.061	-0.007	-0.002	0.011	0.041

Note: The Flemish Community (Belgium), Germany and New Zealand excluded from measurement invariance testing in the ISCED level 02 population; Canada, New Zealand and Norway are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.323. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2PROSAR

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G45H	0.447	-1.631	-0.869	0.269
SS2G45I	0.925	-2.661	-1.827	-0.265
SS2G45J	0.873	-2.356	-1.457	0.128

Source: OECD, TALIS Starting Strong 2024 database.

Satisfaction with work at this ECEC setting (S2JOBSAR)

The scale *Satisfaction with work at this ECEC setting* (S2JOBSAR) was measured using a set of four items (SS2G45C, SS2G45E, SS2G45F, SS2G45G). These items assessed ECEC staff's level of agreement with different statements related to their job. For each item, ECEC staff selected one of the following response options: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Higher scores indicate greater satisfaction with work at the ECEC setting. Item SS2G44G was reverse coded due to its negative wording, aligning its direction with the other items in the scale. Table 11.324 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.325. The scale S2JOBSAR has a high reliability, generally above 0.800, across all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show a good fit across all countries/territories, except for the TLI of the ISCED level 02 population in Colombia. RMSEA values are at least acceptable across most participating countries/territories, except for the ISCED level 02 population in Colombia, Germany, Ireland, Sweden and Türkiye, as well as the U3 population in Israel.

Table 11.326 presents the results from the measurement invariance testing for S2JOBSAR for both levels. The baseline model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the baseline and the equal loadings model is within the cut-off criteria for the TLI, RMSEA, SRMR and slightly exceeds the cut-off for the CFI. The change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA and is close to the cut-off for the CFI. No special caution is required when comparing scale score results across countries/territories.

Unclassified - Non classifié

For U3, the change between the equal loadings and baseline models is within the acceptable range for the RMSEA and SRMR and is close to the cut-off for the CFI and TLI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the CFI, TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.327 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2JOBSAR. The loadings for all the items are high, except for item SS2G45E for which the loading is within the acceptable range. Results by participating country/territory show a low loading for item SS2G45E in nine ISCED level 02 participants (Chile, Denmark, Finland, the Flemish Community of Belgium, Germany, Japan, Norway, Spain and Sweden) and three U3 participants (Canada, Germany and Ireland). Additionally, item SS2G45G has a low loading in Colombia and Morocco (both ISCED level 02).

Table 11.324. Items and response categories used in the construction of scale S2JOBSAR

Scale or item	Question or item wording
S2JOBSAR	We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
SS2G45C	I enjoy working at this <ECEC setting>.
SS2G45E	I am satisfied with the support that I receive from parents or guardians in this <ECEC setting>.
SS2G45F	I would recommend this <ECEC setting> as a good place to work.
SS2G45G*	I would like to change to another <ECEC setting> if that were possible.

Source: OECD, TALIS Starting Strong 2024 database.
Note: * Item was reverse coded.

Table 11.325. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2JOBSAR

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.765	0.990	0.969	0.089	0.032
Colombia	0.764	0.924	**0.772**	**0.233**	0.076
Denmark	0.792	0.995	0.985	0.073	0.022
Finland	0.813	0.998	0.995	0.051	0.014
Flemish Community (Belgium)	0.821	0.997	0.990	0.077	0.019
Germany	0.819	0.990	0.970	**0.134**	0.039
Ireland	0.771	0.971	0.914	**0.131**	0.045
Israel	0.850	0.996	0.988	0.076	0.018
Japan	0.803	0.996	0.987	0.073	0.018
Morocco	0.730	1.000	1.001	0.000	0.007
Norway	0.831	0.999	0.998	0.038	0.014
New Zealand	0.871	1.000	1.000	0.000	0.000
Spain	0.829	0.994	0.983	0.074	0.021
Sweden	0.807	0.992	0.976	**0.104**	0.023
Türkiye	0.760	0.981	0.942	**0.127**	0.030

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
International pooled data	0.811	0.991	0.974	0.087	0.025
U3					
Canada	0.789	1.000	1.001	0.000	0.010
Flemish Community (Belgium)	0.855	0.991	0.972	0.100	0.023
Germany	0.832	0.997	0.992	0.077	0.019
Ireland	0.765	0.996	0.989	0.050	0.019
Israel	0.816	0.990	0.970	**0.116**	0.032
Norway	0.852	0.997	0.992	0.077	0.028
New Zealand	0.821	1.000	1.000	0.000	0.000
International pooled data	0.824	0.996	0.988	0.072	0.021

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.326. Measurement invariance results from MGCFA for scale S2JOBSAR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.992	0.977	0.095	0.027	-	-	-	-
Equal loadings	0.982	0.977	0.095	0.051	-0.011	-0.000	0.000	0.024
Equal loadings and thresholds	0.971	0.985	0.078	0.111	-0.011	0.007	-0.017	0.060
U3								
Baseline	0.995	0.986	0.081	0.021	-	-	-	-
Equal loadings	0.978	0.969	0.118	0.044	-0.018	-0.016	0.037	0.024
Equal loadings and thresholds	0.983	0.990	0.069	0.093	0.005	0.020	-0.049	0.049

Note: New Zealand and Norway are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.327. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2JOBSAR

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G45C	0.873	-2.249	-1.528	0.023
SS2G45E	0.482	-1.955	-1.052	0.610
SS2G45F	0.906	-1.991	-1.190	0.171
SS2G45G	0.646	-1.613	-0.900	0.139

Source: OECD, TALIS Starting Strong 2024 database.

Sources of work stress: aspects specific to children's development, well-being and learning (S2STRESC)

The scale *Sources of work stress: aspects specific to children's development, well-being and learning* (S2STRESC) was measured using a set of five items (SS2G47E, SS2G47F, SS2G47H, SS2G47I and SS2G47K). These items assessed the extent to which various factors were sources of stress in ECEC staff's work. For each item, ECEC staff selected one of the following response options: "Not at all", "To

Unclassified - Non classifié

some extent", "Quite a bit" and "A lot". Higher scores indicate greater perceived stress in relation to children's development, well-being and learning. Table 11.328 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.329. The scale S2STRESC has a high reliability, generally above 0.75, across all participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI shows a good model fit in most countries/territories, except for Germany (ISCED level 02). The TLI also shows a good model fit across most participating countries/territories, except for Germany (ISCED level 02), Türkiye (ISCED level 02) and Canada (U3). The SRMR is good in all countries/territories in both populations. The RMSEA is at least acceptable in most ISCED level 02 countries/territories, except for Colombia, the Flemish Community of Belgium, Germany, Morocco and Türkiye. For U3, the RMSEA exceeds the acceptable cut-off in Canada, the Flemish Community of Belgium, Germany and Israel. Based on the single CFA model fit results, the scale S2STRESC works well across all countries/territories except Germany (ISCED level 02), where the CFI, TLI and RMSEA do not meet the acceptable cut-off criteria.

Table 11.330 presents the results from the measurement invariance testing for S2STRESC for both levels. The baseline model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the baseline and equal loadings models is within the cut-off criteria for all fit indices. The change between the equal loadings and the equal loadings and thresholds models exceeds the cut-offs for all indices. The equal loadings and thresholds model shows a poor model fit. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

For U3, the change between the equal loadings and baseline models is within the acceptable range for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-offs for all indices. The equal loadings and thresholds model shows a poor model fit. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.331 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2STRESC. The loadings for most items are high, except for items SS2G47I and SS2G47K for which the loadings fall within the acceptable range. Results by participating country/territory show a low loading for item SS2G47K in six ISCED level 02 participants (Denmark, Finland, the Flemish Community of Belgium, Norway, Spain and Sweden) and three U3 participants (the Flemish Community of Belgium, Germany and Norway).

Table 11.328. Items and response categories used in the construction of scale S2STRESC

Scale or item	Question or item wording
S2STRESC	Thinking about your job at this <ECEC setting>, to what extent are the following sources of stress in your work?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
SS2G47E	Being held responsible for children's development, well-being and learning
SS2G47F	Managing <classroom/playgroup/group> behaviour
SS2G47H	Accommodating children with special education needs
SS2G47I	Having too many children in my <classroom/playgroup/group>
SS2G47K	Having to adapt my practices with children due to unexpected disruptions (e.g. natural disasters, public health emergencies/pandemics, humanitarian crises)

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.329. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2STRESC

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.855	0.987	0.973	0.088	0.026
Colombia	0.869	0.950	0.901	**0.115**	0.053
Denmark	0.813	0.982	0.964	0.098	0.031
Finland	0.779	0.984	0.967	0.066	0.029
Flemish Community (Belgium)	0.755	0.958	0.915	**0.121**	0.044
Germany	0.741	**0.896**	**0.791**	**0.148**	0.048
Ireland	0.825	0.987	0.973	0.074	0.034
Israel	0.845	0.998	0.996	0.035	0.014
Japan	0.841	0.983	0.966	0.099	0.032
Morocco	0.823	0.984	0.968	**0.116**	0.035
Norway	0.775	0.976	0.951	0.096	0.040
New Zealand	0.876	0.988	0.981	0.078	0.039
Spain	0.777	0.966	0.932	0.100	0.047
Sweden	0.813	0.984	0.968	0.084	0.037
Türkiye	0.805	0.948	**0.896**	**0.168**	0.061
International pooled data	0.803	0.967	0.934	0.089	0.038
U3					
Canada	0.768	0.935	**0.869**	**0.126**	0.052
Flemish Community (Belgium)	0.771	0.972	0.945	**0.117**	0.047
Germany	0.725	0.956	0.913	**0.103**	0.038
Ireland	0.809	0.970	0.939	0.099	0.038
Israel	0.793	0.957	0.913	**0.103**	0.047
Norway	0.784	0.983	0.966	0.078	0.031
New Zealand	0.814	0.988	0.981	0.078	0.039
International pooled data	0.780	0.961	0.922	0.100	0.039

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.330. Measurement invariance results from MGCFA for scale S2STRESC with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.973	0.946	0.107	0.038	-	-	-	-
Equal loadings	0.970	0.966	0.085	0.051	-0.003	0.020	-0.022	0.013
Equal loadings and thresholds	0.808	0.887	0.155	0.171	-0.162	-0.078	0.069	0.119
U3								
Baseline	0.961	0.921	0.108	0.042	-	-	-	-
Equal loadings	0.961	0.953	0.083	0.057	0.000	0.032	-0.025	0.014

Unclassified - Non classifié

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
Equal loadings and thresholds	0.821	0.887	0.129	0.153	-0.140	-0.066	0.046	0.096

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.331. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2STRESC

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G47E	0.796	-0.702	0.270	1.058
SS2G47F	0.864	-0.791	0.126	0.918
SS2G47H	0.647	-0.759	0.130	0.886
SS2G47I	0.568	-0.569	0.161	0.760
SS2G47K	0.489	-0.165	0.776	1.427

Source: OECD, TALIS Starting Strong 2024 database.

Sources of work stress: aspects related to capacity, resources and time (S2STRESO)

The scale *Sources of work stress: aspects related to capacity, resources and time* (S2STRESO) was measured using a set of five items. These items (SS2G47C, SS2G47D, SS2G47G, SS2G47J and SS2G47L) assessed the extent to which various factors were sources of stress in ECEC staff's work. For each item, ECEC staff selected one of the following response options: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores in this scale indicate greater perceived stress in terms of capacity, resources and time. Table 11.332 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.333. The scale S2STRESO has a high reliability that is above 0.75 in most participating countries/territories in both populations. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI, RMSEA and SRMR all show a good fit across most countries/territories. The only instance where a cut-off is exceeded occurs in Chile (ISCED level 02), where the RMSEA slightly exceeds the acceptable threshold.

Table 11.334 presents the results from the measurement invariance testing for S2STRESO for both levels. The baseline model fit indices are good for both levels. For ISCED level 02, the degree of change between the baseline and the equal loadings models is within the cut-off criteria for the RMSEA and SRMR and slightly exceeds the cut-offs for the CFI and TLI. The change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all fit indices. Furthermore, the equal loadings and thresholds model shows a poor model fit. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

For U3, the change between the equal loadings and baseline models is within the acceptable range for the TLI, RMSEA and SRMR and slightly exceeds the cut-off for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all indices. However, the equal loadings and thresholds model shows an acceptable TLI, and close to acceptable CFI and RMSEA values. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Table 11.335 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2STRESO. The loadings for all the items are at least acceptable.

Unclassified - Non classifié

Results by participating country/territory show a low loading for item SS2G47G in Morocco (ISCED level 02), New Zealand (U3) and Norway (ISCED level 02); for item SS2G47D in Türkiye (ISCED level 02); and for item SS2G47L in the Flemish Community of Belgium (ISCED level 02).

Table 11.332. Items and response categories used in the construction of scale S2STRESO

Scale or item	Question or item wording
S2STRESO	Thinking about your job at this <ECEC setting>, to what extent are the following sources of stress in your work?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
SS2G47C	Having too much administrative work to do (e.g. filling out forms)
SS2G47D	Having extra duties due to absent <ECEC staff>
SS2G47G	Addressing parent or guardian concerns
SS2G47J	Having too many tasks to do at the same time
SS2G47L	Lacking resources (e.g. financial support, material resources)

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.333. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2STRESO

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.800	0.961	0.923	**0.110**	0.037
Colombia	0.833	0.950	0.901	0.099	0.049
Denmark	0.796	0.989	0.977	0.064	0.022
Finland	0.798	0.993	0.986	0.041	0.016
Flemish Community (Belgium)	0.707	0.985	0.969	0.052	0.022
Germany	0.783	0.997	0.993	0.031	0.015
Ireland	0.850	0.999	0.997	0.021	0.015
Israel	0.829	0.991	0.982	0.059	0.020
Japan	0.844	0.993	0.987	0.060	0.019
Morocco	0.770	0.993	0.986	0.047	0.020
Norway	0.753	1.000	1.007	0.000	0.013
New Zealand	0.867	1.000	1.020	0.000	0.019
Spain	0.750	0.982	0.965	0.048	0.025
Sweden	0.817	1.000	1.000	0.008	0.009
Türkiye	0.776	0.998	0.996	0.025	0.015
International pooled data	0.787	0.998	0.996	0.018	0.008
U3					
Canada	0.806	0.986	0.972	0.064	0.027
Flemish Community (Belgium)	0.715	0.980	0.959	0.053	0.033
Germany	0.779	0.999	0.997	0.021	0.013
Ireland	0.843	0.991	0.982	0.059	0.023
Israel	0.831	0.996	0.993	0.032	0.015
Norway	0.795	1.000	1.003	0.000	0.016

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
New Zealand	0.784	1.000	1.020	0.000	0.019
International pooled data	0.804	0.998	0.997	0.021	0.010

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.334. Measurement invariance results from MGCFA for scale S2STRESO with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.990	0.980	0.053	0.021	-	-	-	-
Equal loadings	0.975	0.971	0.063	0.041	-0.015	-0.009	0.011	0.020
Equal loadings and thresholds	0.653	0.797	0.169	0.198	-0.322	-0.175	0.105	0.156
U3								
Baseline	0.994	0.988	0.042	0.021	-	-	-	-
Equal loadings	0.987	0.985	0.047	0.032	-0.007	-0.003	0.005	0.011
Equal loadings and thresholds	0.888	0.929	0.103	0.119	-0.099	-0.056	0.055	0.087

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.335. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2STRESO

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G47C	0.663	-0.664	0.151	0.837
SS2G47D	0.568	-0.562	0.245	0.930
SS2G47G	0.553	-0.747	0.387	1.215
SS2G47J	0.865	-0.940	-0.026	0.723
SS2G47L	0.574	-0.681	0.287	0.922

Source: OECD, TALIS Starting Strong 2024 database.

Level of stress and its impact on staff well-being (S2STRESS)

The scale *Level of stress and its impact on staff well-being* (S2STRESS) was measured using four items (SS2G46A, SS2G46B, SS2G46C and SS2G46D). These items assessed the extent to which different situations related to well-being and stress occur. Response options included: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores reflect greater perceived stress (and less perceived well-being). Item SS2G46B was reverse coded, as it was the only positive statement about well-being, to ensure it had the same direction as the rest of the items. Table 11.336 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fits for both populations, as well as for the pooled model per level, are presented in Table 11.337. The scale S2STRESS has a high reliability, generally above 0.75, across most participating countries/territories in both populations, except in Norway, where the reliability in both populations is below 0.38. The single country/territory model fit is at least acceptable in most countries/territories. The CFI, TLI and SRMR show a good fit across all countries/territories, while the

Unclassified - Non classifié

RMSEA is at least acceptable in all countries/territories except in the Flemish Community of Belgium in ISCED level 02.

Table 11.338 presents the results from the measurement invariance testing for S2STRESS for both levels. The baseline model fit indices are at least acceptable for both levels. For ISCED level 02, the degree of change between the baseline and the equal loadings models is within the cut-off criteria for the RMSEA and SRMR and slightly exceeds the cut-off for the CFI and TLI. The change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all indices. However, it is close to the cut-off for the TLI and RMSEA, and the equal loadings and thresholds model also shows acceptable CFI and TLI values. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

For U3, the change between the equal loadings and baseline models exceeds the cut-off criteria for all indices, although only marginally so for the SRMR. The degree of change between the equal loadings and the equal loadings and thresholds models is within the acceptable range for the TLI and RMSEA but exceeds the cut-offs for the CFI and SRMR. The equal loadings and thresholds model shows an acceptable TLI. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.339 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2STRESS. The loadings for all of the items are high except for item SS2G46B that shows a low loading. Results by participating country/territory also show a low loading for item SS2G46B in ten ISCED level 02 participants (Chile, Colombia, Denmark, Germany, Israel, Morocco, Norway, Spain, Sweden and Türkiye) and five U3 participants (Canada, the Flemish Community of Belgium, Ireland, Israel and Norway).

Table 11.336. Items and response categories used in the construction of scale S2STRESS

Scale or item	Question or item wording
S2STRESS	In your experience as an <ECEC staff> at this <ECEC setting>, to what extent do the following occur?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
SS2G46A	I experience stress in my work.
SS2G46B*	My job leaves me time for my personal life.
SS2G46C	My job negatively impacts my mental health.
SS2G46D	My job negatively impacts my physical health.

Source: OECD, TALIS Starting Strong 2024 database.
Note: * Item was reverse coded.

Table 11.337. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2STRESS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.811	0.998	0.993	0.067	0.017
Colombia	0.728	0.996	0.987	0.071	0.039
Denmark	0.791	0.998	0.993	0.059	0.014
Finland	0.809	0.993	0.979	0.080	0.020
Flemish Community (Belgium)	0.814	0.988	0.965	**0.126**	0.024

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Germany	0.792	0.999	0.997	0.033	0.010
Ireland	0.849	0.997	0.990	0.057	0.015
Israel	0.715	0.998	0.994	0.044	0.014
Japan	0.851	0.998	0.993	0.074	0.014
Morocco	0.767	1.000	1.001	0.000	0.006
Norway	**0.370**	0.999	0.996	0.034	0.015
New Zealand	0.882	1.000	1.029	0.000	0.018
Spain	0.816	0.999	0.997	0.033	0.009
Sweden	0.824	0.998	0.993	0.062	0.012
Türkiye	0.769	0.998	0.994	0.050	0.013
International pooled data	0.782	0.999	0.997	0.030	0.008
U3					
Canada	0.777	1.000	1.001	0.000	0.011
Flemish Community (Belgium)	0.796	1.000	1.002	0.000	0.010
Germany	0.816	0.995	0.985	0.088	0.017
Ireland	0.810	1.000	1.003	0.000	0.003
Israel	0.726	0.994	0.981	0.063	0.025
Norway	**0.357**	0.992	0.976	0.096	0.021
New Zealand	0.772	1.000	1.029	0.000	0.018
International pooled data	0.738	1.000	0.999	0.014	0.006

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.338. Measurement invariance results from MGCFA for scale S2STRESS with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.997	0.991	0.061	0.016	-	-	-	-
Equal loadings	0.981	0.977	0.101	0.050	-0.016	-0.015	0.040	0.034
Equal loadings and thresholds	0.920	0.958	0.136	0.165	-0.061	-0.019	0.035	0.115
U3								
Baseline	0.997	0.992	0.054	0.014	-	-	-	-
Equal loadings	0.947	0.930	0.158	0.067	-0.050	-0.062	0.103	0.053
Equal loadings and thresholds	0.882	0.931	0.156	0.171	-0.066	0.002	-0.002	0.103

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.339. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2STRESS

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SS2G46A	0.756	-1.124	0.154	1.000
SS2G46B	0.265	-1.063	0.020	1.411
SS2G46C	0.970	-0.216	0.871	1.538
SS2G46D	0.791	-0.313	0.805	1.519

Source: OECD, TALIS Starting Strong 2024 database.

Complex scales from the leader questionnaire

Professional development needs, overall (S2LPDEV)

ECEC setting leaders were asked to indicate the extent to which they currently need professional learning activities in 14 different areas. For each area, they selected one of the following response options: “No need at present”, “Low level of need, “Moderate level of need” and “High level of need”. Responses to 14 of the items in this question (listed in Table 11.340) were used to derive a scale reflecting teachers’ *Professional development needs, overall* (S2LPDEV). Higher values on this scale indicate a greater need for professional development. Table 11.340 provides the item names as used in the dataset, question stem and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.341. The reliabilities for S2LPDEV are above 0.700 in all populations. In terms of model fit, the CFI and TLI values for S2LPDEV are generally acceptable across all participating countries/territories, except for both the ISCED level 02 and U3 populations in the Flemish Community of Belgium and Germany, and the U3 population in New Zealand. The SRMR falls within the acceptable cut-off criterion for most populations, except for the U3 population in the Flemish Community of Belgium and New Zealand. The RMSEA exceeds the cut-off in several populations, particularly in the ISCED level 02 population in Germany and Türkiye, where it is above 0.130, and the U3 population in New Zealand and Norway, where it is above 0.200. Based on the single CFA model fit results, the scale S2LPDEV works well across all populations except in the Flemish Community of Belgium (ISCED level 02 and U3), Germany (ISCED level 02 and U3) and New Zealand (U3), where the CFI, TLI and RMSEA – and in some cases also the SRMR – do not meet the acceptable cut-off criteria.

Table 11.342 presents the results from the measurement invariance testing for S2LPDEV for the ISCED level 02 and U3 populations. The results are very similar for both populations. The baseline models show an acceptable model fit based on the CFI, TLI, SRMR; RMSEA is very close to the acceptable cut-off. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all model fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the TLI, RMSEA and close to the cut-off criteria for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories for the ISCED level 02 and U3 populations.

Table 11.343 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LPDEV. All item loadings are high, except for item SL2G11N, for which the loading falls within the acceptable range. Results by participating country/territory show a low loading for item SL2G11N in the Flemish Community of Belgium (U3), Germany (ISCED level 02 and U3) and Ireland (U3); for item SL2G11F in both the ISCED level 02 and U3 populations in the Flemish Community of Belgium; and for item SL2G11B in Spain (ISCED level 02).

Unclassified - Non classifié

Table 11.340. Items and response categories used in the construction of scale S2LPDEV

Scale or item	Question or item wording
S2LPDEV	For each of the areas listed below, please indicate the extent to which you currently need professional development
	Recoded response categories for scaling: 1=No need at present; 2=Low level of need; 3=Moderate level of need; 4=High level of need
	Scale mid-point: 2.5
SL2G11A	Knowledge and understanding of new developments in leadership research and theory
SL2G11B	Knowledge and understanding of current national/local policies on <ECEC>
SL2G11C	Using data for improving the quality of the <ECEC setting> (e.g. feedback from <ECEC staff> and parents or guardians)
SL2G11D	Designing the <ECEC setting's> goals for children's development, well-being and learning
SL2G11E	Knowledge and understanding of research and theories on pedagogy of young children
SL2G11F	Using <digital resources and tools> to facilitate <ECEC setting> management (e.g. to facilitate <ECEC staff> work, to communicate with parents or guardians)
SL2G11G	Collaborating with parents or guardians
SL2G11H	Collaborating with other <ECEC settings> or <ISCED 2011 level 1> schools
SL2G11I	Collaborating with community services (e.g. health services, social services)
SL2G11J	Observing <ECEC staff's> practices and <ECEC staff>-child interactions
SL2G11K	Providing effective feedback to <ECEC staff>
SL2G11L	Promoting <ECEC staff> well-being
SL2G11N	Financial management
SL2G11O	Promoting equity and diversity

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.341. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LPDEV

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.940	0.946	0.936	**0.106**	0.070
Colombia	0.930	0.937	0.926	0.095	0.100
Denmark	0.949	0.942	0.931	**0.111**	0.058
Finland	0.924	0.958	0.951	0.087	0.074
Flemish Community (Belgium)	0.891	**0.857**	**0.831**	**0.114**	0.079
Germany	0.900	**0.870**	**0.847**	**0.136**	0.090
Ireland	0.934	0.931	0.918	**0.103**	0.082
Israel	0.948	0.970	0.949	0.100	0.058
Japan	0.932	0.964	0.957	0.068	0.073
Morocco	0.945	0.948	0.938	**0.105**	0.051
Norway	0.897	0.964	0.940	**0.140**	0.083
New Zealand	0.936	1.000	1.129	0.000	0.058
Spain	0.932	0.950	0.941	0.078	0.060
Sweden	0.925	0.944	0.934	0.092	0.071
Türkiye	0.959	0.940	0.929	**0.137**	0.070
International pooled data	0.948	0.948	0.939	0.098	0.043
U3					
Canada	0.944	0.924	0.911	**0.129**	0.086

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Flemish Community (Belgium)	0.876	**0.811**	**0.776**	**0.117**	**0.117**
Germany	0.890	**0.859**	**0.833**	**0.129**	0.087
Ireland	0.941	0.924	0.910	**0.119**	0.086
Israel	0.956	0.967	0.945	0.088	0.094
Norway	0.836	0.941	0.902	**0.211**	0.096
New Zealand	0.927	**0.587**	**0.312**	**0.281**	**0.191**
International pooled data	0.920	0.920	0.905	0.095	0.066

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.342. Measurement invariance results from MGCFA for scale S2LPDEV with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.945	0.935	0.104	0.072	-	-	-	-
Equal loadings	0.950	0.949	0.092	0.086	0.005	0.014	-0.012	0.014
Equal loadings and thresholds	0.937	0.950	0.092	0.126	-0.013	0.001	-0.001	0.040
U3								
Baseline	0.924	0.910	0.114	0.091	-	-	-	-
Equal loadings	0.940	0.937	0.095	0.100	0.016	0.027	-0.019	0.009
Equal loadings and thresholds	0.926	0.938	0.094	0.131	-0.014	0.001	-0.001	0.031

Note: Japan and New Zealand are excluded from measurement invariance testing in the ISCED level 02 population; New Zealand is excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.343. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LPDEV

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G11A	0.706	-1.107	-0.192	0.981
SL2G11B	0.727	-1.127	-0.123	0.941
SL2G11C	0.756	-1.167	-0.188	0.967
SL2G11D	0.817	-1.021	-0.078	0.873
SL2G11E	0.762	-1.099	-0.100	0.889
SL2G11F	0.678	-0.930	-0.081	0.873
SL2G11G	0.839	-0.707	0.247	1.041
SL2G11H	0.791	-0.784	0.198	1.157
SL2G11I	0.739	-0.909	0.061	1.053
SL2G11J	0.828	-0.982	-0.057	0.939
SL2G11K	0.838	-1.060	-0.179	0.800
SL2G11L	0.815	-1.187	-0.266	0.701
SL2G11N	0.565	-0.916	-0.116	0.747
SL2G11O	0.773	-0.874	0.067	1.083

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Professional development needs: leadership and setting management (ISCED 02 only) (S2LPDLS)

The scale of *Professional development needs: leadership and setting management* (S2LPDLS) was composed by a subset of four items (SL2G11A, SL2G11L, SL2G11M and SL2G11N). In these items, ECEC setting leaders had to indicate the extent to which they currently need professional learning activities, using the following response options: “No need at present”, “Low level of need, “Moderate level of need” and “High level of need”. Higher values on this scale indicate a greater need for professional development. Table 11.344 provides the item names as used in the dataset, question stem and response options for the items belonging to this scale, as well as the scale mid-point. The scale S2LPDLS is only available for the ISCED level 02 population.

Scale reliabilities and model fit for all countries/territories, as well as for the pooled model for ISCED level 02 are presented in Table 11.345. The reliabilities for S2LPDLS are above 0.700 across all ISCED level 02 countries/territories. As shown in Table 11.345, the CFI for S2LPDLS is within the cut-off criterion in all participating countries/territories. This is also the case for the TLI values, except for Colombia and New Zealand. The RMSEA exceeds the cut-off criterion in Colombia, Denmark, the Flemish Community of Belgium and New Zealand. The SRMR is mostly acceptable, only exceeding the cut-off in New Zealand. Based on the single CFA model fit results, the scale S2LPDLS works well across all countries/territories except in New Zealand, where the TLI, RMSEA and SRMR do not meet the acceptable cut-off criteria.

Table 11.346 presents the results from the measurement invariance testing for S2LPDLS for the ISCED level 02 population. The baseline model shows an acceptable model fit across all indices. The degree of change between the baseline and the equal loadings models is within the acceptable limit for the SRMR and RMSEA and is close to the cut-off criteria for the CFI and TLI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the TLI and RMSEA, is close to the cut-off for the CFI, but exceeds it for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.347 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LPDLS. All item loadings are high. Results by participating country/territory show a low loading for item SL2G11A in Chile (ISCED level 02), Germany (ISCED levels 02 and U3), Japan (ISCED level 02) and Spain (ISCED level 02); for item SL2G11L in Colombia (ISCED level 02) and the Flemish Community of Belgium (U3); and for item SL2G11N in Germany (ISCED level 02).

Table 11.344. Items and response categories used in the construction of scale S2LPDLS

Scale or item	Question or item wording
S2LPDLS	For each of the areas listed below, please indicate the extent to which you currently need professional development
	Recoded response categories for scaling: 1=No need at present; 2=Low level of need; 3=Moderate level of need; 4=High level of need
	Scale mid-point: 2.5
SL2G11A	Knowledge and understanding of new developments in leadership research and theory
SL2G11L	Promoting <ECEC staff> well-being
SL2G11M	Human resource management
SL2G11N	Financial management

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.345. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LPDLS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.802	0.995	0.986	0.097	0.031
Colombia	0.718	0.940	**0.821**	**0.164**	0.045
Denmark	0.880	0.995	0.984	**0.127**	0.023
Finland	0.834	1.000	1.001	0.000	0.012
Flemish Community (Belgium)	0.781	0.988	0.965	**0.150**	0.039
Germany	0.715	1.000	1.001	0.000	0.021
Ireland	0.816	0.999	0.997	0.030	0.020
Israel	0.839	1.000	1.002	0.000	0.005
Japan	0.800	0.994	0.981	0.075	0.033
Morocco	0.830	0.996	0.989	0.072	0.016
Norway	0.820	0.998	0.995	0.032	0.031
New Zealand	0.831	0.963	**0.888**	**0.275**	**0.117**
Spain	0.762	0.988	0.963	0.087	0.025
Sweden	0.806	0.999	0.998	0.026	0.016
Türkiye	0.889	0.999	0.997	0.044	0.010
International pooled data	0.836	0.992	0.975	0.098	0.021

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 model.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.346. Measurement invariance results from MGCFA for scale S2LPDLS with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.994	0.983	0.093	0.024	-	-	-	-
Equal loadings	0.976	0.970	0.125	0.052	-0.018	-0.013	0.031	0.028
Equal loadings and thresholds	0.949	0.972	0.120	0.142	-0.028	0.002	-0.005	0.090

Note: Japan and New Zealand are excluded from measurement invariance testing.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.347. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LPDLS

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G11M	0.952	-1.031	-0.153	0.771
SL2G11A	0.627	-1.107	-0.191	0.980
SL2G11L	0.722	-1.187	-0.266	0.701
SL2G11N	0.710	-0.916	-0.116	0.747

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Professional development needs: pedagogy and pedagogical leadership (S2LPDPL)

The scale of *Professional development needs: pedagogy and pedagogical leadership* (S2LPDPL) was composed by a subset of 11 items, listed in Table 11.348. In these items, ECEC setting leaders had to indicate the extent to which they currently need professional learning activities, using the following response options: “No need at present”, “Low level of need, “Moderate level of need” and “High level of need”. Higher values on this scale indicate a greater need for professional development. Table 11.348 provides the item names as used in the dataset, question stem and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.349. The reliabilities for S2LPDPL are above 0.700 in all populations. In terms of model fit, the CFI and TLI values for S2LPDPL are generally acceptable across all participating countries/territories, except for both the ISCED level 02 and U3 populations in the Flemish Community of Belgium and New Zealand, the ISCED level 02 population in Germany, and – specifically for TLI – the ISCED level 02 population in Norway. The SRMR falls within the acceptable cut-off criterion for most populations, except for the ISCED level 02 population in Norway and the U3 population in the Flemish Community of Belgium, Israel and New Zealand. The RMSEA exceeds the cut-off in most populations, particularly in the ISCED level 02 population in Germany, Israel, New Zealand, Norway and Türkiye; and the U3 population in Canada, Israel and New Zealand, where it is above 0.130. Based on the single CFA model fit results, the scale S2LPDPL works well across all populations except in the Flemish Community of Belgium (ISCED level 02 and U3), Germany (ISCED level 02) and New Zealand (ISCED level 02 and U3), where the CFI, TLI and RMSEA – and in some cases also the SRMR – do not meet the acceptable cut-off criteria.

Table 11.350 presents the results from the measurement invariance testing for S2LPDPL for the ISCED level 02 and U3 populations. The results are very similar for both populations. The baseline models show an acceptable model fit based on the CFI, TLI and SRMR, with the RMSEA being very close to the acceptable range. The degree of change between the baseline and the equal loadings models is within the cut-off criteria for all model fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the TLI, RMSEA and close to the cut-off criteria for the CFI and SRMR. No special caution is required when comparing scale score results across countries/territories for the ISCED level 02 and U3 populations.

Table 11.351 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LPDPL. All item loadings are high, except for items SL2G11B and SL2G11F, for which the loadings are within the acceptable range. Results by participating country/territory show a low loading for these two items; for item SL2G11B in Germany (U3), Japan and Spain (both ISCED level 02); and for item SL2G11F in both the ISCED level 02 and U3 populations in the Flemish Community of Belgium.

Table 11.348. Items and response categories used in the construction of scale S2LPDPL

Scale or item	Question or item wording
S2LPDPL	For each of the areas listed below, please indicate the extent to which you currently need professional development
	Recoded response categories for scaling: 1=No need at present; 2=Low level of need; 3=Moderate level of need; 4=High level of need
	Scale mid-point: 2.5
SL2G11B	Knowledge and understanding of current national/local policies on <ECEC>
SL2G11C	Using data for improving the quality of the <ECEC setting> (e.g. feedback from <ECEC staff> and parents or guardians)
SL2G11D	Designing the <ECEC setting’s> goals for children’s development, well-being and learning
SL2G11E	Knowledge and understanding of research and theories on pedagogy of young children
SL2G11F	Using <digital resources and tools> to facilitate <ECEC setting> management (e.g. to facilitate <ECEC staff> work, to

Unclassified - Non classifié

Scale or item	Question or item wording
	communicate with parents or guardians)
SL2G11G	Collaborating with parents or guardians
SL2G11H	Collaborating with other <ECEC settings> or <ISCED 2011 level 1> schools
SL2G11I	Collaborating with community services (e.g. health services, social services)
SL2G11J	Observing <ECEC staff's> practices and <ECEC staff>-child interactions
SL2G11K	Providing effective feedback to <ECEC staff>
SL2G11O	Promoting equity and diversity

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.349. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LPDPL

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.933	0.948	0.935	**0.121**	0.067
Colombia	0.927	0.950	0.938	**0.107**	0.095
Denmark	0.938	0.945	0.931	**0.129**	0.055
Finland	0.909	0.986	0.982	0.055	0.054
Flemish Community (Belgium)	0.865	**0.863**	**0.828**	**0.123**	0.074
Germany	0.884	**0.891**	**0.864**	**0.139**	0.081
Ireland	0.923	0.927	0.909	**0.120**	0.079
Israel	0.938	0.968	0.952	**0.168**	0.054
Japan	0.920	0.961	0.952	0.083	0.071
Morocco	0.935	0.962	0.952	**0.106**	0.044
Norway	0.884	0.931	**0.896**	**0.132**	0.069
New Zealand	0.923	**0.748**	**0.622**	**0.278**	**0.159**
Spain	0.925	0.974	0.967	0.066	0.043
Sweden	0.912	0.959	0.949	0.095	0.062
Türkiye	0.951	0.950	0.938	**0.146**	0.066
International pooled data	0.942	0.966	0.958	0.094	0.035
U3					
Canada	0.939	0.926	0.908	**0.165**	0.089
Flemish Community (Belgium)	0.851	**0.827**	**0.784**	**0.124**	**0.115**
Germany	0.878	0.949	0.936	0.093	0.063
Ireland	0.939	0.950	0.938	**0.114**	0.068
Israel	0.949	0.949	0.924	**0.179**	**0.103**
Norway	0.825	0.961	0.941	**0.129**	0.064
New Zealand	0.899	**0.752**	**0.628**	**0.449**	**0.294**
International pooled data	0.909	0.929	0.912	**0.106**	0.060

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.350. Measurement invariance results from MGCFA for scale S2LPDPL with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.957	0.946	0.107	0.064	-	-	-	-
Equal loadings	0.956	0.954	0.098	0.078	-0.001	0.009	-0.009	0.014
Equal loadings and thresholds	0.947	0.960	0.092	0.121	-0.009	0.005	-0.006	0.043
U3								
Baseline	0.945	0.931	0.117	0.080	-	-	-	-
Equal loadings	0.948	0.945	0.105	0.093	0.003	0.014	-0.012	0.012
Equal loadings and thresholds	0.944	0.955	0.094	0.124	-0.004	0.010	-0.010	0.032

Note: Japan and New Zealand are excluded from measurement invariance testing in the ISCED level 02 population; New Zealand is excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.351. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LPDPL

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G11B	0.591	-1.120	-0.065	1.129
SL2G11C	0.705	-0.999	-0.064	1.214
SL2G11D	0.772	-0.992	0.022	1.177
SL2G11E	0.698	-1.064	-0.056	1.148
SL2G11F	0.539	-0.808	-0.002	0.984
SL2G11G	0.721	-0.761	0.324	1.290
SL2G11H	0.753	-0.676	0.409	1.374
SL2G11I	0.733	-0.735	0.242	1.387
SL2G11J	0.755	-0.861	0.106	1.284
SL2G11K	0.722	-1.005	-0.068	0.983
SL2G11O	0.696	-0.799	0.161	1.367

Source: OECD, TALIS Starting Strong 2024 database.

Neighbourhood environment (S2LNIGHBR)

ECEC setting leaders answered five items measuring their views on the *Neighbourhood environment* (S2LNIGHBR). These items were SL2G14A, SL2G14B, SL2G14C, SL2G14D and SL2G14F. ECEC setting leaders were asked to indicate their level of agreement with various statements about the neighbourhood in which the ECEC setting is located. Response categories included: “Strongly disagree”, “Disagree”, “Agree” and “Strongly agree”. Higher values on this scale indicate more critical, or negative, perceptions of the neighbourhood environment. Item SL2G14D was reverse coded to align with the direction of the other items in the scale, as it was the only positively worded statement. Table 11.352 provides the item names as used in the dataset, question stem and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.353. The reliabilities for S2LNIGHBR are above 0.700 in all populations. As shown in Table 11.353, model fit for S2LNIGHBR is acceptable across all participating countries/territories, with the CFI, TLI and SRMR all within the cut-off criteria. RMSEA values are also generally within acceptable limits, with a few exceptions: the ISCED level 02 population in Chile, Colombia and Germany,

Unclassified - Non classifié

as well as the U3 population in Ireland. In the pooled U3 model, the RMSEA exceeds the established cut-off by a small margin.

Table 11.354 presents the results from the measurement invariance testing for S2LNIGHBR for the ISCED level 02 and U3 populations. The ISCED level 02 results show an acceptable model fit for the baseline model across all fit indices. The degree of change between the baseline and the equal loadings models is within the cut-off criteria for the TLI, RMSEA, SRMR and is close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all indices. However, the equal loadings and thresholds model shows good CFI and TLI. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

For the U3 population, the baseline model also shows an acceptable model fit, with all fit indices within the cut-off criteria. The degree of change between the baseline and the equal loadings models is within the cut-off criteria for the RMSEA and SRMR, is close for the TLI, but exceeds the cut-off for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.355 presents the standardised item loadings and thresholds based on pooled data from ISCED level 02 for the scale S2LNIGHBR. Item SL2G14D exhibits a low loading; all other items demonstrate high loadings. Results by participating country/territory also show a low loading for item SL2G14D in eight ISCED level 02 countries/territories (Colombia, Finland, Germany, Ireland, Israel, Japan, Morocco and Sweden) and five U3 countries/territories (Canada, the Flemish Community of Belgium, Germany, Ireland and Israel).

Table 11.352. Items and response categories used in the construction of scale S2LNIGHBR

Scale or item	Question or item wording
S2LNIGHB	Thinking about the neighbourhood where this <ECEC setting> is located, how strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree; 2=Disagree; 3=Agree; 4=Strongly agree
	Scale mid-point: 2.5
SL2G14A	There is <litter> lying around.
SL2G14B	There is vandalism.
SL2G14C	People from diverse backgrounds (e.g. different ethnicity or culture, migrant background, sexual or gender minorities) experience insults or attacks.
SL2G14D*	There are public places where children can play safely.
SL2G14F	There are drug-related problems.

Note: * Item was reverse coded.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.353. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LNIGHBR

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.841	0.971	0.942	**0.144**	0.049
Colombia	0.753	0.954	0.907	**0.112**	0.061
Denmark	0.818	0.988	0.977	0.083	0.039

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Finland	0.837	0.992	0.983	0.076	0.034
Flemish Community (Belgium)	0.893	0.998	0.997	0.058	0.025
Germany	0.790	0.965	0.930	**0.151**	0.048
Ireland	0.741	0.995	0.990	0.085	0.041
Israel	0.826	1.000	1.000	0.000	0.000
Japan	0.831	0.994	0.988	0.072	0.037
Morocco	0.797	0.999	0.997	0.025	0.015
Norway	0.832	1.000	1.000	0.000	0.000
New Zealand	0.891	1.000	1.000	0.000	0.000
Spain	0.845	0.988	0.976	0.067	0.030
Sweden	0.827	1.000	1.003	0.000	0.013
Türkiye	0.835	0.997	0.994	0.041	0.018
International pooled data	0.828	0.989	0.977	0.076	0.023
U3					
Canada	0.823	0.998	0.997	0.029	0.025
Flemish Community (Belgium)	0.797	0.991	0.982	0.093	0.032
Germany	0.825	0.998	0.996	0.044	0.021
Ireland	0.876	0.982	0.965	**0.173**	0.048
Israel	0.846	1.000	1.000	0.000	0.000
Norway	0.709	1.000	1.000	0.000	0.000
New Zealand	0.831	1.000	1.000	0.000	0.000
International pooled data	0.824	0.980	0.961	**0.114**	0.032

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.354. Measurement invariance results from MGCFA for scale S2LNIGHBR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.988	0.977	0.092	0.035	-	-	-	-
Equal loadings	0.980	0.976	0.092	0.059	-0.009	-0.000	0.000	0.024
Equal loadings and thresholds	0.909	0.946	0.140	0.171	-0.071	-0.030	0.047	0.112
U3								
Baseline	0.994	0.987	0.084	0.029	-	-	-	-
Equal loadings	0.983	0.979	0.107	0.056	-0.011	-0.008	0.023	0.027
Equal loadings and thresholds	0.969	0.980	0.105	0.147	-0.014	0.001	-0.002	0.090

Note: Japan and New Zealand are excluded from measurement invariance testing in the ISCED level 02 population; Norway and New Zealand are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.355. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LNIGHBR

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G14A	0.802	-0.432	0.670	1.565
SL2G14B	0.912	-0.501	0.643	1.534
SL2G14C	0.736	-0.294	0.907	1.626
SL2G14D	0.365	-0.392	0.892	1.479
SL2G14F	0.719	-0.641	0.429	1.393

Source: OECD, TALIS Starting Strong 2024 database.

Structural quality: adequacy of setting (S2LSQSET)

The scale of *Structural quality: adequacy of setting* (S2LSQSET) was constructed using seven items (SL2G28A, SL2G28B, SL2G28C, SL2G28D, SL2G28E, SL2G28F and SL2G28G). These items measured ECEC setting leaders' agreement with different statements about the physical space at their ECEC setting. The response options available were: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Due to limited variability in responses, the categories "Strongly disagree" and "Disagree" were collapsed into a single category for scaling purposes. Higher scores on this scale indicate more positive perceptions of the physical adequacy of the ECEC setting. Table 11.356 provides the item names as used in the dataset, question stem and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.357. The reliabilities for S2LSQSET are high, above 0.800, in all populations. The S2LSQSET scale has a generally acceptable model fit across all participating countries/territories, with the CFI, TLI and SRMR within the cut-off criteria. The only exception for the TLI is the U3 population in New Zealand. RMSEA values exceed the cut-off in one-third of the ISCED level 02 population (in Colombia, Israel, Morocco, New Zealand and Norway), as well as in the U3 population in Israel and New Zealand.

Table 11.358 presents the results from the measurement invariance testing for S2LSQSET for the ISCED level 02 and U3 populations The baseline models show an acceptable model fit based on all indices for both populations. The degree of change between the baseline and the equal loadings models is within the cut-off criteria for all model fit indices for both populations. For ISCED level 02, the degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all fit indices. The equal loadings and thresholds model shows good CFI and TLI, but the RMSEA and SRMR considerably exceed the cut-off. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

For U3, the degree of change between the equal loadings and the equal loadings and thresholds models also exceeds the cut-off criteria for all fit indices, although to a lesser extent. Furthermore, the equal loadings and thresholds models show good CFI, TLI and a close-to-acceptable RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.359 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LSQSET. All item loadings are high for the pooled model, as well as in single countries/territories.

Table 11.356. Items and response categories used in the construction of scale S2LSQSET

Scale or item	Question or item wording
S2LSQSET	To what extent do you agree with the following statements about the physical space at this <ECEC setting>?
	Recoded response categories for scaling: 1=Strongly disagree or disagree; 2=Agree; 3=Strongly agree

Unclassified - Non classifié

Scale or item	Question or item wording
	Scale mid-point: 2
SL2G28A	There is adequate ventilation for healthy airflow.
SL2G28B	There is an adequate amount of furniture for each child (e.g. chairs, tables).
SL2G28C	Indoor space is arranged so that children can easily move around.
SL2G28D	The background noise level in the <classroom/playgroup/group> does not interfere with interactions.
SL2G28E	The roof, ceiling, walls and floor are in good shape (e.g. have no leaks, mould).
SL2G28F	Children can access a bathroom easily.
SL2G28G	Outdoor space is arranged so that children can easily move around.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.357. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSQSET

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.935	0.990	0.985	0.082	0.042
Colombia	0.911	0.972	0.958	**0.135**	0.059
Denmark	0.887	0.998	0.997	0.024	0.042
Finland	0.880	0.976	0.964	0.075	0.071
Flemish Community (Belgium)	0.902	0.992	0.987	0.053	0.044
Germany	0.820	0.965	0.948	0.061	0.068
Ireland	0.965	1.000	1.002	0.000	0.026
Israel	0.903	0.986	0.957	**0.134**	0.027
Japan	0.940	0.992	0.988	0.057	0.035
Morocco	0.938	0.984	0.975	**0.128**	0.035
Norway	0.888	0.997	0.991	**0.143**	0.024
New Zealand	0.895	0.981	0.942	**0.199**	0.055
Spain	0.913	0.982	0.973	0.067	0.041
Sweden	0.904	0.976	0.965	0.093	0.081
Türkiye	0.961	0.992	0.988	0.098	0.021
International pooled data	0.910	0.980	0.970	0.073	0.037
U3					
Canada	0.942	0.989	0.983	0.091	0.040
Flemish Community (Belgium)	0.908	0.987	0.981	0.066	0.062
Germany	0.845	0.999	0.998	0.014	0.052
Ireland	0.955	0.993	0.989	0.066	0.035
Israel	0.910	0.987	0.961	**0.140**	0.040
Norway	0.876	1.000	1.014	0.000	0.016
New Zealand	0.973	0.918	**0.754**	**0.400**	0.084
International pooled data	0.913	0.977	0.966	0.068	0.052

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.358. Measurement invariance results from MGCFA for scale S2LSQSET with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.990	0.985	0.081	0.044	-	-	-	-
Equal loadings	0.987	0.986	0.078	0.065	-0.003	0.001	-0.003	0.022
Equal loadings and thresholds	0.952	0.960	0.130	0.163	-0.034	-0.026	0.052	0.097
U3								
Baseline	0.986	0.978	0.084	0.052	-	-	-	-
Equal loadings	0.985	0.983	0.075	0.071	-0.001	0.004	-0.009	0.020
Equal loadings and thresholds	0.964	0.968	0.103	0.139	-0.021	-0.015	0.028	0.068

Note: New Zealand and Sweden are excluded from measurement invariance testing in the ISCED level 02 population; New Zealand is excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.359. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSQSET

Item	Loading	Threshold 1	Threshold 2
SL2G28A	0.694	-1.068	0.028
SL2G28B	0.849	-1.550	-0.383
SL2G28C	0.843	-1.380	-0.097
SL2G28D	0.626	-0.592	0.519
SL2G28E	0.757	-0.815	0.066
SL2G28F	0.834	-1.498	-0.304
SL2G28G	0.802	-1.441	-0.293

Source: OECD, TALIS Starting Strong 2024 database.

Barriers to structural quality: adequacy of physical resources (S2LSQPRS)

As part of the assessment of structural quality, ECEC setting leaders were also asked to indicate the extent to which different factors hinder ECEC setting's ability to provide a quality environment for children. Four of these items (SL2G42A, SL2G42B, SL2G42C and SL2G42D) were used to construct the scale *Barriers to structural quality: adequacy of physical resources* (S2LSQPRS). The response categories available included: "Not at all", "To some extent", "Quite a bit" and "A lot". Due to limited variability in responses, the categories "Quite a bit" and "A lot" were collapsed into a single category for scaling purposes. Higher scores on this scale indicate greater perceived barriers to structural quality related to the adequacy of physical resources. Table 11.360 provides the item names as used in the dataset, question stem and response options for the items belonging to this scale, as well as the scale mid-point.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.361. The reliabilities for S2LSQPRS are within the cut-off criterion in all populations. As shown in Table 11.361, the S2LSQPRS scale shows a generally acceptable model fit across all participating countries/territories. For the ISCED level 02 population, the CFI and TLI do not meet the cut-off criteria only in the Flemish Community of Belgium, while RMSEA values exceed the cut-off also in the Flemish Community of Belgium, as well as in Chile, Colombia, Denmark, Morocco and Spain. The SRMR is within the cut-off criterion across all ISCED level 02 participating countries/territories. For the U3 population, the CFI, TLI, RMSEA and SRMR are all within the cut-off criteria. Based on the single CFA model fit results, the scale S2LSQPRS works well across all populations except in the Flemish

Unclassified - Non classifié

Community of Belgium (ISCED level 02), where the CFI, TLI and RMSEA do not meet the acceptable cut-off criteria.

Table 11.362 presents the results from the measurement invariance testing for S2LSQPRS for the ISCED level 02 and U3 populations. For the ISCED level 02 population, the baseline model shows an acceptable model fit based on the CFI, TLI, SRMR and is very close to the acceptable cut-off for the RMSEA. The degree of change between the baseline and the equal loadings models is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is close to the cut-off criteria for the TLI and RMSEA and exceeds the cut-offs for the CFI and SRMR. However, the equal loadings and thresholds model shows good CFI and TLI, with close-to-acceptable RMSEA and SRMR. No special caution is required when comparing scale score results across countries/territories.

For the U3 population, the baseline model also shows an acceptable model fit based on all fit indices. The degree of change between the baseline and the equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-offs for the CFI and TLI, very close for the RMSEA, but exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.363 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LSQPRS. All items show high loadings. Results by participating country/territory show a low loading for item SL2G42D in Finland, Germany and Ireland (all ISCED level 02), as well as for item SL2G42C in the Flemish Community of Belgium (ISCED level 02).

Table 11.360. Items and response categories used in the construction of scale S2LSQPRS

Scale or item	Question or item wording
S2LSQPRS	To what extent do the following issues hinder this <ECEC setting's> capacity to provide a quality environment for development, well-being and learning of children?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit or a lot
	Scale mid-point: 2
SL2G42A	Shortage or inadequacy of play or learning materials (e.g. picture books, building blocks, paint)
SL2G42B	Shortage or inadequacy of indoor space
SL2G42C	Shortage or inadequacy of outdoor play space
SL2G42D	Shortage or inadequacy of <digital resources and tools>

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.361. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSQPRS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.898	0.981	0.943	**0.202**	0.054
Colombia	0.847	0.969	0.907	**0.162**	0.078
Denmark	0.782	0.969	0.907	**0.143**	0.051
Finland	0.661	1.000	1.100	0.000	0.012
Flemish Community (Belgium)	0.667	**0.872**	**0.616**	**0.164**	0.064
Germany	0.756	1.000	1.033	0.000	0.011
Ireland	0.773	0.990	0.970	0.070	0.037

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Israel	0.907	1.000	1.000	0.000	0.000
Japan	0.762	0.997	0.992	0.033	0.027
Morocco	0.885	0.987	0.962	**0.153**	0.038
Norway	0.789	1.000	1.000	0.000	0.000
New Zealand	0.698	1.000	1.000	0.000	0.000
Spain	0.860	0.984	0.953	**0.115**	0.039
Sweden	0.814	1.000	1.011	0.000	0.025
Türkiye	0.942	1.000	0.999	0.039	0.010
International pooled data	0.873	0.989	0.967	0.096	0.029
U3					
Canada	0.854	1.000	1.003	0.000	0.030
Flemish Community (Belgium)	0.832	0.998	0.994	0.038	0.045
Germany	0.795	0.995	0.986	0.061	0.024
Ireland	0.812	1.000	1.020	0.000	0.015
Israel	0.925	1.000	1.000	0.000	0.000
Norway	0.651	1.000	1.000	0.000	0.000
New Zealand	0.609	1.000	1.000	0.000	0.000
International pooled data	0.840	1.000	0.999	0.017	0.013

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.362. Measurement invariance results from MGCFA for scale S2LSQPRS with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.993	0.979	0.111	0.035	-	-	-	-
Equal loadings	0.989	0.987	0.089	0.059	-0.004	0.007	-0.022	0.024
Equal loadings and thresholds	0.971	0.977	0.118	0.115	-0.019	-0.010	0.029	0.056
U3								
Baseline	1.000	1.000	0.007	0.025	-	-	-	-
Equal loadings	0.999	0.999	0.039	0.051	-0.001	-0.001	0.032	0.027
Equal loadings and thresholds	0.998	0.998	0.059	0.092	-0.001	-0.001	0.020	0.040

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.363. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSQPRS

Item	Loading	Threshold 1	Threshold 2
SL2G42A	0.829	0.011	0.871
SL2G42B	0.838	-0.215	0.725
SL2G42C	0.820	0.007	0.748
SL2G42D	0.679	-0.382	0.591

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Barriers to structural quality: adequacy of staffing (ISCED 02 only) (S2LSQSTA)

The scale of *Barriers to structural quality: adequacy of staffing* (S2LSQSTA) was constructed using seven items (SL2G42I, SL2G42J, SL2G42K, SL2G42L, SL2G42M, SL2G42N and SL2G42O). ECEC setting leaders were asked to indicate the extent to which each item hinders the setting's ability to provide a quality environment for children. Response options available were: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores on this scale reflect greater perceived barriers to structural quality in relation to staffing adequacy. Table 11.364 provides the item names as used in the dataset, question stem and response options for the items belonging to this scale, as well as the scale mid-point. The scale S2LSQSTA is only available for the ISCED level 02 population.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 are presented in Table 11.365. The reliabilities for S2LSQSTA are high, generally above 0.800, across all populations. In terms of model fit, the CFI values for S2LSQSTA are generally acceptable across all participating countries/territories, except in New Zealand and Norway. The TLI also falls below the acceptable cut-off in these two populations. The RMSEA exceeds the cut-off in several populations, particularly in the Flemish Community of Belgium, Germany, Ireland and New Zealand, where it is above 0.140. SRMR values are within the cut-off criterion for all populations except for New Zealand. Based on the single CFA model fit results, the scale S2LSQSTA works well across all countries/territories except in New Zealand, where the CFI, TLI, RMSEA and SRMR do not meet the acceptable cut-off criteria.

Table 11.366 presents the results from the measurement invariance testing for S2LSQSTA for the ISCED level 02 population. The results show an acceptable model fit for the baseline model across all fit indices. The degree of change between the baseline and the equal loadings models is within the cut-off criteria for the TLI, RMSEA, SRMR and is very close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-offs for all fit indices. However, the equal loadings and thresholds model shows acceptable CFI and TLI, although the RMSEA and SRMR considerably exceed the cut-off. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Table 11.367 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LSQSTA. All item loadings are high. Results by participating country/territory show a low loading for item SL2G42M in Colombia.

Table 11.364. Items and response categories used in the construction of scale S2LSQSTA

Scale or item	Question or item wording
S2LSQSTA	To what extent do the following issues hinder this <ECEC setting's> capacity to provide a quality environment for development, well-being and learning of children?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
SL2G42I	<ECEC staff> absences
SL2G42J	Lack of opportunities or support for <ECEC staff's> professional development
SL2G42K	Shortage of <ECEC staff> with competence in working with children from <socio-economically disadvantaged homes>
SL2G42L	Shortage of <ECEC staff> with competence in working with children with special education needs
SL2G42M	Shortage of <ECEC staff> with competence in working with children speaking another language than the language(s) used in the <ECEC setting>
SL2G42N	Shortage of qualified staff
SL2G42O	Shortage of staff for the number of enrolled children

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.365. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSQSTA

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.910	0.977	0.965	**0.109**	0.057
Colombia	0.905	1.000	1.005	0.000	0.034
Denmark	0.875	0.978	0.967	**0.102**	0.049
Finland	0.904	0.982	0.973	0.082	0.055
Flemish Community (Belgium)	0.884	0.935	0.903	**0.173**	0.066
Germany	0.868	0.940	0.911	**0.148**	0.062
Ireland	0.897	0.945	0.918	**0.140**	0.084
Israel	0.923	0.968	0.952	**0.168**	0.054
Japan	0.828	0.946	0.919	0.097	0.061
Morocco	0.918	0.976	0.963	**0.123**	0.047
Norway	0.840	**0.885**	**0.769**	0.070	0.048
New Zealand	0.773	**0.663**	**0.327**	**0.257**	**0.225**
Spain	0.927	0.998	0.997	0.027	0.020
Sweden	0.844	0.973	0.960	0.082	0.055
Türkiye	0.954	0.993	0.989	**0.104**	0.025
International pooled data	0.891	0.978	0.967	0.077	0.030

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 model.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.366. Measurement invariance results from MGCFA for scale S2LSQSTA with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.979	0.969	0.109	0.051	-	-	-	-
Equal loadings	0.973	0.971	0.105	0.074	-0.006	0.003	-0.005	0.022
Equal loadings and thresholds	0.914	0.942	0.148	0.192	-0.060	-0.029	0.044	0.119

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.367. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSQSTA

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G42I	0.663	-0.594	0.323	1.015
SL2G42J	0.712	-0.441	0.659	1.415
SL2G42K	0.869	-0.181	0.757	1.396
SL2G42L	0.816	-0.587	0.405	1.155
SL2G42M	0.669	-0.230	0.663	1.371

Unclassified - Non classifié

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G42N	0.799	-0.283	0.587	1.135
SL2G42O	0.679	-0.115	0.606	1.126

Source: OECD, TALIS Starting Strong 2024 database.

Leader support for staff in pedagogical learning (S2LEADSPL1)

The scale of *Leader support for staff in pedagogical learning* (S2LEADSPL1) was measured using four items (SL2G32A, SL2G32B, SL2G32C and SL2G32D), in which ECEC setting leaders reported how often they engaged in various leadership activities over the past year. Response options included: “Never”, “Less than monthly”, “Monthly”, “Weekly” and “Daily”. Due to limited variability in responses, the categories “Never” and “Less than monthly” were collapsed into a single category for scaling purposes. Higher scores on this scale indicate more frequent leadership practices aimed at supporting the pedagogical learning of ECEC staff. Table 11.368 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.369. The reliabilities for S2LEADSPL1 are acceptable in all populations. As shown in Table 11.369, the CFI values for S2LEADSPL1 are within the cut-off criterion across all participating countries/territories, except for the ISCED level 02 population in Norway. The TLI is also within the acceptable cut-off criterion for most populations, except in the ISCED level 02 population in the Flemish Community of Belgium and Germany, as well as in the U3 population in Germany and Norway. The SRMR exceeds the cut-off only in the U3 population in Norway. The RMSEA exceeds the cut-off in most participating countries/territories, particularly in the ISCED level 02 population in Germany, Ireland, Israel and Norway, where it is above 0.160; and in the U3 population in Germany, Ireland, New Zealand and Norway, where it is also above 0.160. The RMSEA values for the two pooled models also exceed the cut-off criterion, but only marginally so for the U3 population. Based on the single CFA model fit results, the scale S2LEADSPL1 works well across all populations except in Norway (U3), where the CFI, TLI, RMSEA and SRMR do not meet the acceptable cut-off criteria.

Table 11.370 presents the results from the measurement invariance testing for S2LEADSPL1 for the ISCED level 02 and U3 populations. The ISCED level 02 results show an acceptable model fit for the baseline model based on the CFI, TLI and SRMR. The degree of change between the baseline and the equal loadings models is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is very close to the cut-off criteria for the TLI and RMSEA and exceeds the cut-offs for the CFI and SRMR. However, the equal loadings and thresholds model shows at least acceptable CFI and TLI. No special caution is required when comparing scale score results across countries/territories.

For the U3 population, the baseline model shows an acceptable fit based on the CFI, TLI and SRMR, but exceeds the cut-off for the RMSEA. The degree of change between the baseline and the equal loadings models is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the CFI, TLI and RMSEA but exceeds the cut-off for the SRMR. No special caution is required when comparing scale score results across countries/territories.

Table 11.371 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LEADSPL1. All item loadings are high. Results by participating country/territory show a low loading for items SL2G32A and SL2G32D in the Flemish Community of Belgium (ISCED level 02).

Unclassified - Non classifié

Table 11.368. Items and response categories used in the construction of scale S2LEADSPL1

Scale or item	Question or item wording
S2LEADSPL1	Please indicate how frequently you engaged in the following activities in this <ECEC setting> during the last 12 months.
	Recoded response categories for scaling: 1=Never or less than monthly; 2=Monthly; 3=Weekly; 4=Daily
	Scale mid-point: 2.5
SL2G32A	I collaborated with <ECEC staff> to improve how children play together.
SL2G32B	I observed <ECEC staff> practices and staff-child interactions.
SL2G32C	I provided feedback to <ECEC staff> based on my observations.
SL2G32D	I took actions to support co-operation among <ECEC staff> to develop new approaches to ECEC practices.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.369. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LEADSPL1

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.845	0.988	0.964	**0.116**	0.025
Colombia	0.948	1.000	0.999	0.036	0.013
Denmark	0.792	0.985	0.954	**0.129**	0.042
Finland	0.787	0.995	0.985	0.058	0.023
Flemish Community (Belgium)	0.622	0.955	**0.866**	**0.133**	0.050
Germany	0.782	0.907	**0.720**	**0.287**	0.065
Ireland	0.871	0.981	0.943	**0.197**	0.043
Israel	0.796	0.960	0.921	**0.171**	0.046
Japan	0.815	0.997	0.991	0.046	0.023
Morocco	0.876	0.993	0.979	**0.114**	0.021
Norway	0.789	0.981	0.963	**0.160**	0.048
New Zealand	0.781	1.000	1.007	0.000	0.035
Spain	0.817	0.979	0.936	**0.119**	0.034
Sweden	0.815	0.989	0.967	**0.122**	0.033
Türkiye	0.941	0.999	0.996	0.098	0.011
International pooled data	0.862	0.985	0.956	**0.127**	0.026
U3					
Canada	0.839	1.000	1.007	0.000	0.012
Flemish Community (Belgium)	0.955	0.998	0.995	**0.142**	0.016
Germany	0.787	0.960	**0.881**	**0.200**	0.049
Ireland	0.858	0.975	0.924	**0.182**	0.049
Israel	0.862	0.999	0.998	0.032	0.022
Norway	0.770	**0.836**	**0.672**	**0.317**	**0.114**
New Zealand	0.882	0.995	0.990	**0.190**	0.074
International pooled data	0.888	0.993	0.978	**0.103**	0.021

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.370. Measurement invariance results from MGCFA for scale S2LEADSPL1 with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.992	0.975	0.126	0.032	-	-	-	-
Equal loadings	0.981	0.977	0.123	0.053	-0.010	0.001	-0.003	0.022
Equal loadings and thresholds	0.945	0.970	0.139	0.152	-0.037	-0.006	0.015	0.099
U3								
Baseline	0.992	0.976	0.156	0.034	-	-	-	-
Equal loadings	0.992	0.988	0.110	0.045	-0.001	0.012	-0.047	0.011
Equal loadings and thresholds	0.988	0.993	0.085	0.094	-0.003	0.005	-0.025	0.049

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 and U3 populations.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.371. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LEADSPL1

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G32A	0.791	-0.519	0.152	0.816
SL2G32B	0.851	-0.855	-0.236	0.466
SL2G32C	0.846	-0.641	0.194	1.064
SL2G32D	0.670	-0.513	0.506	1.355

Source: OECD, TALIS Starting Strong 2024 database.

Leader innovations in the ECEC setting (S2LEADSPL2)

The scale of *Leader innovations in the ECEC setting* (S2LEADSPL2) was measured using three items (SL2G32F, SL2G32G and SL2G32H), in which ECEC setting leaders reported how often they engaged in various leadership activities over the past year. Response options included: “Never”, “Less than monthly”, “Monthly”, “Weekly” and “Daily”. Higher scores on this scale reflect a greater frequency of innovative leadership practices within the ECEC setting.

Table 11.372 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.373. The model fit indices for the S2LEADSPL2 scale are not presented here as the scale was measured by just three items, resulting in a model that is just identified and therefore shows a perfect fit. The reliabilities for S2LEADSPL2 are generally acceptable across all participating countries/territories, except for the ISCED level 02 and U3 populations in Germany.

Table 11.374 presents the results from the measurement invariance testing for S2LEADSPL2 for the ISCED level 02 and U3 populations. As this is a three-item scale, the baseline model has a perfect fit because it is just identified. In the equal loadings model, all fit indices are within the cut-off criteria for both populations. For ISCED level 02, the degree of change between the equal loadings and the equal thresholds and loadings models is within the cut-off criterion for the RMSEA but exceeds the cut-offs for the CFI, TLI and SRMR. No special caution is required when comparing scale score results across countries/territories.

Unclassified - Non classifié

For U3, the degree of change between the equal loadings and the equal thresholds and loadings models is within the cut-off criteria for the TLI and RMSEA. No special caution is required when comparing scale score results across countries/territories.

Table 11.375 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LEADSPL2. All item loadings are high. Results by participating country/territory show a low loading for items SL2G32F and SL2G32H in Germany (ISCED level 02).

Table 11.372. Items and response categories used in the construction of scale S2LEADSPL2

Scale or item	Question or item wording
S2LEADSPL2	Please indicate how frequently you engaged in the following activities in this <ECEC setting> during the last 12 months.
	Recoded response categories for scaling: 1=Never; 2=Less than monthly; 3=Monthly; 4=Weekly; 5=Daily
	Scale mid-point: 3
SL2G32F	I worked on developing, revising or communicating a <vision> for this <ECEC setting>.
SL2G32G	I made changes in <ECEC setting> policies or practices based on monitoring results and external evaluation.
SL2G32H	I facilitated improvements in the indoor or outdoor space used for children's development, well-being and learning.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.373. Reliability coefficient alpha for single countries/territories and pooled model for scale S2LEADSPL2

Participating country/territory	Reliability Cronbach's alpha
ISCED level 02	
Chile	0.775
Colombia	0.887
Denmark	0.652
Finland	0.821
Flemish Community (Belgium)	0.745
Germany	**0.552**
Ireland	0.877
Israel	0.676
Japan	0.734
Morocco	0.770
Norway	0.613
New Zealand	0.634
Spain	0.742
Sweden	0.685
Türkiye	0.856
International pooled data	0.770
U3	
Canada	0.763
Flemish Community (Belgium)	0.743
Germany	**0.578**
Ireland	0.791

Unclassified - Non classifié

Participating country/territory	Reliability Cronbach's alpha
Israel	0.830
Norway	0.740
New Zealand	0.829
International pooled data	0.808

Note: Coefficients in **bold** exceed the cut-off criterion. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.374. Measurement invariance results from MGCFA for scale S2LEADSPL2 with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.995	0.992	0.065	0.020	-0.005	-0.008	0.065	0.020
Equal loadings and thresholds	0.928	0.976	0.108	0.135	-0.067	-0.015	0.043	0.115
U3								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.995	0.990	0.063	0.020	-0.005	-0.010	0.063	0.020
Equal loadings and thresholds	0.964	0.987	0.073	0.110	-0.031	-0.004	0.011	0.089

Note: Denmark, New Zealand and Norway are excluded from measurement invariance testing in the ISCED level 02 population; New Zealand and Norway are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.375. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LEADSPL2

Item	Loading	Threshold 1	Threshold 2	Threshold 3	Threshold 4
SL2G32F	0.723	-1.581	-0.222	0.699	1.349
SL2G32G	0.817	-0.967	0.395	1.240	1.759
SL2G32H	0.664	-1.493	-0.113	0.769	1.308

Source: OECD, TALIS Starting Strong 2024 database.

Distributed leadership (S2LDLEAD)

The scale *Distributed leadership* (S2LDLEAD) was measured using six items (SL2G41A, SL2G41B, SL2G41C, SL2G41D, SL2G41F and SL2G41G) that assessed the extent to which various statements about shared leadership applied to the ECEC setting. For each item, ECEC leaders could select one of the following response options: "Not at all", "To some extent", "Quite a bit" and "A lot". Due to limited variability in responses, the categories "Not at all" and "To some extent" were collapsed into a single category for scaling purposes. Higher scores in this scale indicate greater perceived distributed leadership within the ECEC setting. Table 11.376 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.377. The reliabilities for S2LDLEAD are high, generally above 0.800, in all populations. In terms of model fit, the CFI is within the cut-off criterion for most participating

Unclassified - Non classifié

countries/territories, except for the ISCED level 02 population in Colombia, Finland and Ireland. The TLI falls below the cut-off in the ISCED level 02 population in Colombia, Denmark, Finland, the Flemish Community of Belgium, Germany and Ireland. The SRMR falls within the acceptable cut-off criterion for most populations, except for the ISCED level 02 population in Colombia and Ireland. The RMSEA exceeds the cut-off in several populations, particularly in the ISCED level 02 population in Chile, Colombia, Germany, Ireland, Morocco and Norway, as well as in the U3 population in Israel and Norway. In all of these instances, the RMSEA is above 0.130. Based on the single CFA model fit results, the scale S2LDLEAD works well across all populations except in Finland (ISCED level 02), where the CFI, TLI and RMSEA do not meet the acceptable cut-off criteria, as well as in the ISCED level 02 population in Colombia and Ireland, where none of the model fit indices meet the acceptable cut-off criteria.

Table 11.378 presents the results from the measurement invariance testing for S2LDLEAD for the ISCED level 02 and U3 populations. For ISCED level 02, the baseline model shows an acceptable model fit based on the CFI, TLI, SRMR, but exceeds the cut-off for the RMSEA. The degree of change between the baseline and the equal loadings models is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all indices. Furthermore, the equal loadings and thresholds model shows a poor model fit. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

For the U3 population, the baseline model shows an acceptable model fit based on all fit indices. The degree of change between the baseline and the equal loadings model is within the cut-off criteria also for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all indices. The equal loadings and thresholds model shows a poor model fit. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.379 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LDLEAD. All item loadings are high. Results by participating country/territory show a low loading for item SL2G41B in Denmark and Germany (both ISCED level 02).

Table 11.376. Items and response categories used in the construction of scale S2LDLEAD

Scale or item	Question or item wording
S2LDLEAD2	To what extent do the following statements apply to this <ECEC setting>?
	Recoded response categories for scaling: 1=Not at all or to some extent; 2=Quite a bit; 3=A lot
	Scale mid-point: 2
SL2G41A	<ECEC staff> have opportunities to actively participate in <ECEC setting> decisions.
SL2G41B	Parents or guardians have opportunities to actively participate in <ECEC setting> decisions.
SL2G41C	Children have opportunities to actively participate in decisions.
SL2G41D	There is a culture of shared responsibility for <ECEC setting> issues.
SL2G41F	There is a collaborative <ECEC setting> culture which is characterised by mutual support.
SL2G41G	This <ECEC setting> encourages staff to lead new initiatives.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.377. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LDLEAD

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.918	0.965	0.941	**0.168**	0.078

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Colombia	0.848	**0.887**	**0.811**	**0.169**	**0.145**
Denmark	0.778	0.937	**0.895**	**0.101**	0.083
Finland	0.776	**0.885**	**0.809**	**0.113**	0.094
Flemish Community (Belgium)	0.788	0.932	**0.886**	0.099	0.066
Germany	0.763	0.902	**0.836**	**0.136**	0.080
Ireland	0.845	**0.892**	**0.820**	**0.206**	**0.166**
Israel	0.844	0.989	0.966	**0.158**	0.034
Japan	0.831	0.952	0.919	0.088	0.070
Morocco	0.880	0.940	0.901	**0.169**	0.092
Norway	0.850	0.982	0.947	**0.155**	0.032
New Zealand	0.835	1.000	1.006	0.000	0.023
Spain	0.880	0.958	0.929	0.097	0.060
Sweden	0.812	0.950	0.916	**0.108**	0.081
Türkiye	0.915	0.983	0.972	0.099	0.041
International pooled data	0.844	0.939	**0.899**	**0.110**	0.078
U3					
Canada	0.883	0.977	0.962	0.081	0.067
Flemish Community (Belgium)	0.776	0.987	0.979	0.032	0.072
Germany	0.829	0.955	0.926	**0.107**	0.061
Ireland	0.883	0.974	0.957	0.097	0.061
Israel	0.876	0.990	0.970	**0.135**	0.034
Norway	0.902	0.977	0.930	**0.195**	0.063
New Zealand	0.729	1.000	0.999	0.047	0.036
International pooled data	0.849	0.956	0.927	0.088	0.057

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.378. Measurement invariance results from MGCFA for scale S2LDLEAD with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.950	0.916	0.129	0.086	-	-	-	-
Equal loadings	0.948	0.942	0.107	0.101	-0.002	0.026	-0.022	0.016
Equal loadings and thresholds	0.875	0.897	0.143	0.173	-0.073	-0.046	0.036	0.072
U3								
Baseline	0.971	0.952	0.086	0.071	-	-	-	-
Equal loadings	0.975	0.971	0.067	0.080	0.003	0.019	-0.019	0.009
Equal loadings and thresholds	0.830	0.850	0.152	0.203	-0.145	-0.121	0.085	0.124

Note: New Zealand is excluded from measurement invariance testing in the ISCED level 02 population; New Zealand and Norway are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.379. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LDLEAD

Item	Loading	Threshold 1	Threshold 2
SL2G41A	0.740	-1.179	0.100
SL2G41B	0.643	0.123	1.273
SL2G41C	0.652	-0.323	0.884
SL2G41D	0.760	-0.833	0.438
SL2G41F	0.752	-1.123	0.200
SL2G41G	0.715	-1.234	0.076

Source: OECD, TALIS Starting Strong 2024 database.

Satisfaction with work at this ECEC setting (S2LJOBSAR)

The ECEC leader scale *Satisfaction with work at this ECEC setting* (S2LJOBSAR) was measured using three items (SL2G43D, SL2G43E and SL2G43F). These items assessed ECEC leaders' level of agreement with different statements related to their job. For each item, leaders could select one of the following response options: "Strongly disagree", "Disagree", "Agree" and "Strongly agree". Due to limited variability in responses, the categories "Strongly disagree" and "Disagree" were collapsed into a single category for scaling purposes. Higher scores indicate greater satisfaction with work at the ECEC setting. Table 11.380 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.381. The model fit indices for the S2LJOBSAR scale are not presented here as the scale was measured by just three items, resulting in a model that is just identified and therefore shows a perfect fit. The reliabilities for S2LJOBSAR are acceptable in all participating countries/territories.

Table 11.382 presents the results from the measurement invariance testing for S2LJOBSAR for the ISCED level 02 and U3 populations. As this is a three-item scale, the two baseline models have a perfect fit because the models are just identified. For ISCED level 02, the equal loadings model shows a good fit, with the CFI, TLI and SRMR within the cut-off criteria and the RMSEA very close to it. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off for the CFI, TLI and SRMR. However, the equal loadings and thresholds model shows acceptable CFI, TLI and close-to-acceptable SRMR. No special caution is required when comparing scale score results across countries/territories.

For the U3 population, the equal loadings model also shows a good fit, with the CFI, TLI, SRMR and RMSEA all within the cut-off criteria. The degree of change between the equal loadings and the equal thresholds and loadings model is within the cut-offs for all fit indices. No special caution is required when comparing scale score results across countries/territories.

Table 11.383 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LJOBSAR. All item loadings are high. Results by participating country/territory show a low loading for item SL2G43E in Germany (U3).

Table 11.380. Items and response categories used in the construction of scale S2LJOBSAR

Scale or item	Question or item wording
S2LJOBSAR	How strongly do you agree or disagree with the following statements?
	Recoded response categories for scaling: 1=Strongly disagree or disagree; 2=Agree; 3=Strongly agree
	Scale mid-point: 2
SL2G43D	I enjoy working at this <ECEC setting>.
SL2G43E	I am satisfied with the support that I receive from parents or guardians in this <ECEC setting>.

Unclassified - Non classifié

Scale or item	Question or item wording
SL2G43F	I am satisfied with the support that I receive from the staff in this <ECEC setting>.

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.381. Reliability coefficient alpha for single countries/territories and pooled model for scale S2LJOBSAR

Participating country/territory	Reliability Cronbach's alpha
ISCED level 02	
Chile	0.825
Colombia	0.801
Denmark	0.700
Finland	0.827
Flemish Community (Belgium)	0.770
Germany	0.747
Ireland	0.836
Israel	0.789
Japan	0.781
Morocco	0.780
Norway	0.646
New Zealand	0.743
Spain	0.725
Sweden	0.767
Türkiye	0.811
International pooled data	0.789
U3	
Canada	0.816
Flemish Community (Belgium)	0.831
Germany	0.643
Ireland	0.634
Israel	0.832
Norway	0.796
New Zealand	0.890
International pooled data	0.783

Note: New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.382. Measurement invariance results from MGCFA for scale S2LJOBSAR with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.979	0.965	0.106	0.039	-0.021	-0.035	0.106	0.039

Unclassified - Non classifié

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
Equal loadings and thresholds	0.938	0.949	0.127	0.114	-0.040	-0.016	0.021	0.075
U3								
Baseline	1.000	1.000	0.000	0.000	-	-	-	-
Equal loadings	0.986	0.974	0.084	0.037	-0.014	-0.026	0.084	0.037
Equal loadings and thresholds	0.996	0.996	0.034	0.069	0.009	0.021	-0.050	0.032

Note: New Zealand and Spain are excluded from measurement invariance testing in the ISCED level 02 population; New Zealand and Norway are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.383. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LJOBSAR

Item	Loading	Threshold 1	Threshold 2
SL2G43D	0.785	-1.569	-0.155
SL2G43E	0.695	-1.008	0.736
SL2G43F	0.770	-1.415	0.272

Source: OECD, TALIS Starting Strong 2024 database.

Level of stress and impact on leaders' well-being (S2LSTRESL)

The scale *Level of stress and its impact on leaders' well-being* (S2STRESL) was measured using four items (SL2G44A, SL2G44B, SL2G44C and SL2G44D). These items assessed the extent to which different situations related to well-being and stress occur. Response options included: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores reflect greater perceived stress (and less perceived well-being). Item SL2G44B was reverse coded to ensure it had the same direction as the rest of the items, as this item was the only positively worded statement about well-being. Table 11.384 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.385. The reliabilities for S2STRESL are acceptable across all participating countries/territories, except for both the ISCED level 02 and U3 populations in Norway. As shown in Table 11.385, the CFI and TLI values for S2STRESL are generally acceptable. For the CFI, the only exception is the U3 population in Norway, while for the TLI the exceptions are both the ISCED level 02 and U3 populations in Norway, as well as the U3 population in New Zealand. The RMSEA exceeds the cut-off in several populations, particularly in the ISCED level 02 population in Denmark, Ireland, Israel and Sweden, where it is above 0.150. In the U3 population, the RMSEA exceeds the cut-off in Canada, New Zealand and Norway. SRMR values are mostly within the cut-off criterion, except for both ISCED level 02 and U3 populations in New Zealand, and in the U3 population in Norway. Based on the single CFA model fit results, the scale S2STRESL works well across all populations except in Norway (U3), where none of the model fit indices meet the acceptable cut-off criteria, and New Zealand (U3), where the TLI, RMSEA and SRMR do not meet the acceptable cut-off criteria.

Table 11.386 presents the results from the measurement invariance testing for S2STRESL for the ISCED level 02 and U3 populations. The baseline model shows an acceptable model fit based on the CFI, TLI, SRMR but exceeds the cut-off for the RMSEA in both populations. For ISCED level 02, the degree of change between the baseline and equal loadings models is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-offs for all fit indices. However, the equal loadings and thresholds model shows an acceptable CFI and a good TLI. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Unclassified - Non classifié

For the U3 population, the degree of change between the baseline and equal loadings models is also within the cut-off criteria for all fit indices. The change between the equal loadings and the equal loadings and thresholds models exceeds all cut-offs, although it is close to the cut-off for the TLI. The equal loadings and thresholds model shows good CFI and TLI. Comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Table 11.387 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LSTRESL. All item loadings are high, except for item SL2G44B which has a low loading. Results by participating country/territory also show a low loading for item SL2G44B in six ISCED level 02 countries/territories (Colombia, Denmark, Ireland, Israel, Japan and Türkiye) and four U3 countries/territories (Canada, Germany, Ireland, Israel).

Table 11.384. Items and response categories used in the construction of scale S2LSTRESL

Scale or item	Question or item wording
S2LSTRESL	In your experience as an <ECEC setting leader> at this <ECEC setting>, to what extent do the following occur?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
SL2G44A	I experience stress in my work.
SL2G44B*	My job leaves me time for my personal life.
SL2G44C	My job negatively impacts my mental health.
SL2G44D	My job negatively impacts my physical health.

Source: OECD, TALIS Starting Strong 2024 database.
Note: * Item was reverse coded.

Table 11.385. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSTRESL

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.877	0.998	0.993	**0.123**	0.023
Colombia	0.772	0.989	0.968	0.093	0.025
Denmark	0.781	0.965	**0.896**	**0.194**	0.040
Finland	0.822	0.997	0.992	0.053	0.024
Flemish Community (Belgium)	0.863	0.989	0.968	**0.137**	0.027
Germany	0.882	0.996	0.987	**0.139**	0.032
Ireland	0.817	0.984	0.951	**0.272**	0.047
Israel	0.771	0.933	0.921	**0.150**	0.066
Japan	0.807	0.995	0.986	0.078	0.029
Morocco	0.820	0.999	0.998	0.032	0.010
Norway	**0.523**	0.915	**0.899**	**0.103**	0.086
New Zealand	0.810	0.945	0.936	**0.110**	**0.114**
Spain	0.831	0.989	0.966	**0.115**	0.031
Sweden	0.869	0.978	0.933	**0.225**	0.039
Türkiye	0.814	0.999	0.997	0.048	0.015
International pooled data	0.801	0.994	0.982	0.092	0.019

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
U3					
Canada	0.771	0.969	0.907	**0.199**	0.071
Flemish Community (Belgium)	0.850	1.000	0.999	0.022	0.017
Germany	0.802	0.998	0.993	0.079	0.027
Ireland	0.775	1.000	1.004	0.000	0.011
Israel	0.808	0.963	0.956	0.086	0.063
Norway	**0.546**	**0.793**	**0.756**	**0.118**	**0.118**
New Zealand	0.781	0.902	**0.884**	**0.139**	**0.149**
International pooled data	0.757	1.000	0.999	0.028	0.011

Note: Coefficients in **bold** exceed the cut-off criteria. New Zealand is excluded from the pooled ISCED level 02 and pooled U3 models.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.386. Measurement invariance results from MGCFA for scale S2LSTRESL with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.992	0.977	0.121	0.028	-	-	-	-
Equal loadings	0.991	0.988	0.086	0.051	-0.002	0.011	-0.035	0.023
Equal loadings and thresholds	0.937	0.966	0.148	0.184	-0.054	-0.022	0.062	0.133
U3								
Baseline	0.991	0.974	0.128	0.033	-	-	-	-
Equal loadings	0.991	0.987	0.090	0.053	-0.001	0.013	-0.038	0.020
Equal loadings and thresholds	0.957	0.974	0.129	0.195	-0.034	-0.013	0.039	0.141

Note: Germany and New Zealand are excluded from measurement invariance testing in the ISCED level 02 population; New Zealand and Norway are excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.387. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSTRESL

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G44A	0.739	-1.309	0.008	0.858
SL2G44B	0.352	-1.377	-0.224	1.250
SL2G44C	0.952	-0.407	0.823	1.532
SL2G44D	0.841	-0.311	0.907	1.562

Source: OECD, TALIS Starting Strong 2024 database.

Sources of work stress associated with pedagogical leadership (S2LSTRESP)

The scale *Sources of work stress associated with pedagogical leadership* (S2LSTRESP) was measured using a set of five items (SL2G45B, SL2G45C, SL2G45D, SL2G45E and SL2G45F). These items assessed the extent to which various factors were sources of stress in teachers' work. For each item, teachers selected one of the following response options: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores indicate greater perceived stress related to pedagogical leadership.

Unclassified - Non classifié

Table 11.388 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.389, except for Israel (ISCED level 02 and U3) where not all items in the scale were administered. Therefore, no scale results or scores are provided for Israel. The reliabilities for S2LSTRESP are above 0.700 across most populations. The only exception is the ISCED level 02 population in New Zealand, where the reliability coefficient does not meet the cut-off criterion by a small margin. In terms of model fit, the CFI, TLI and SRMR values for S2LSTRESP are acceptable across all ISCED level 02 participating countries/territories, except for the TLI in Germany. The CFI and TLI values fall below the cut-off for the following U3 populations: Ireland, New Zealand and Norway. The SRMR also exceeds the cut-off for the U3 population in New Zealand. RMSEA values exceed the cut-off in several populations but are generally close to the cut-off criterion. The only exceptions are the ISCED level 02 population in Colombia and Israel, as well as the U3 population in Ireland and New Zealand. In all of these cases RMSEA values are above 0.120. Based on the single CFA model fit results, the scale S2LSTRESP works well across all populations except in Ireland (U3) and Norway (U3), where the CFI, TLI and RMSEA do not meet the acceptable cut-off criteria, as well as in New Zealand (U3), where none of the model fit indices meet the acceptable cut-off criteria.

Table 11.390 presents the results from the measurement invariance testing for S2LSTRESP for the ISCED level 02 and U3 populations. For the ISCED level 02 population, the baseline model shows an acceptable fit based on all indices. The degree of change between the baseline and equal loadings models is within the cut-off criteria for the TLI, RMSEA, SRMR and very close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all fit indices. The overall model fit of the equal loadings and thresholds model shows an acceptable TLI. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

For the U3 population, the baseline model also shows an acceptable fit based on all indices. The degree of change between the baseline and equal loadings models is within the cut-off criteria for the TLI, RMSEA and SRMR, but exceeds the cut-off for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for the CFI, TLI and SRMR, and is close to the cut-off for the RMSEA. The overall model fit of the equal loadings and thresholds model shows an acceptable TLI and a close-to-acceptable RMSEA. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Table 11.391 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LSTRESP. All item loadings are high. Results by participating country/territory show a low loading for item SL2G45C in Canada (U3), Germany and Spain (both ISCED level 02), and as well as for item SL2G45F in Germany (ISCED level 02 and U3).

Table 11.388. Items and response categories used in the construction of scale S2LSTRESP

Scale or item	Question or item wording
S2LSTRESP	Thinking about your job at this <ECEC setting>, to what extent are the following sources of stress in your work?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
SL2G45B	Being held responsible for children's development, well-being and learning
SL2G45C	Keeping up with changing requirements from <local, municipality/regional, state, or national/federal> authorities
SL2G45D	Managing <ECEC staff>
SL2G45E	Addressing parent or guardian concerns
SL2G45F	Accommodating children with special education needs

Source: OECD, TALIS Starting Strong 2024 database.

Unclassified - Non classifié

Table 11.389. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSTRESP

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.832	0.975	0.950	**0.107**	0.041
Colombia	0.868	0.974	0.949	**0.121**	0.041
Denmark	0.825	0.979	0.958	**0.106**	0.058
Finland	0.798	0.989	0.977	0.045	0.032
Flemish Community (Belgium)	0.777	0.965	0.929	**0.106**	0.040
Germany	0.660	0.918	**0.837**	**0.112**	0.065
Ireland	0.830	1.000	1.003	0.000	0.032
Israel	-	-	-	-	-
Japan	0.821	0.995	0.990	0.045	0.027
Morocco	0.871	0.990	0.981	0.084	0.022
Norway	0.755	0.934	0.918	**0.106**	0.075
New Zealand	**0.598**	0.979	0.974	0.068	0.082
Spain	0.763	0.991	0.982	0.038	0.027
Sweden	0.816	0.979	0.958	0.083	0.030
Türkiye	0.842	1.000	1.005	0.000	0.013
International pooled data	0.816	0.993	0.987	0.045	0.016
U3					
Canada	0.782	1.000	1.023	0.000	0.021
Flemish Community (Belgium)	0.815	0.971	0.943	0.098	0.060
Germany	0.766	0.996	0.992	0.035	0.029
Ireland	0.817	**0.891**	**0.782**	**0.188**	0.074
Israel	-	-	-	-	-
Norway	0.772	**0.870**	**0.838**	**0.117**	0.098
New Zealand	0.771	**0.892**	**0.865**	**0.170**	**0.156**
International pooled data	0.784	0.970	0.940	0.087	0.037

Note: Coefficients in **bold** exceed the cut-off criteria. Israel and New Zealand are excluded from the pooled ISCED level 02 and pooled U3 models. Israel (ISCED level 02, U3) was excluded from this scale because not all items that comprise the scale were administered.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.390. Measurement invariance results from MGCFA for scale S2LSTRESP with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.987	0.974	0.073	0.036	-	-	-	-
Equal loadings	0.981	0.978	0.068	0.052	-0.006	0.004	-0.005	0.016
Equal loadings and thresholds	0.858	0.916	0.132	0.164	-0.123	-0.062	0.065	0.112
U3								
Baseline	0.964	0.927	0.104	0.046	-	-	-	-

Unclassified - Non classifié

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
Equal loadings	0.942	0.928	0.104	0.069	-0.022	0.000	-0.000	0.023
Equal loadings and thresholds	0.860	0.905	0.119	0.173	-0.082	-0.022	0.015	0.104

Note: Israel and New Zealand are excluded from measurement invariance testing in the ISCED level 02 population; New Zealand is excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.391. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSTRESP

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G45B	0.720	-0.716	0.324	1.146
SL2G45C	0.612	-1.126	-0.059	0.825
SL2G45D	0.756	-0.832	0.207	1.087
SL2G45E	0.771	-0.966	0.270	1.197
SL2G45F	0.612	-0.739	0.285	1.099

Source: OECD, TALIS Starting Strong 2024 database.

Sources of work stress associated with general leadership concerns (S2LSTRESG)

The scale *Sources of work stress associated with general leadership concerns* (S2LSTRESG) was measured using a set of five items. These items (SL2G45A, SL2G45G, SL2G45H, SL2G45I and SL2G45J) assessed the extent to which various factors were sources of stress in ECEC leaders' work. Response options included: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores in this scale indicate greater perceived stress in terms of general leadership concerns. Table 11.392 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all populations, as well as for the pooled models for ISCED level 02 and U3, are presented in Table 11.393, except for Israel (ISCED level 02 and U3) where not all items in the scale were administered. Therefore, no scale results or scores are provided for Israel. The reliabilities for S2LSTRESG are generally acceptable, except for the ISCED level 02 population in Japan and Norway, and both the ISCED level 02 and U3 populations in New Zealand. In terms of model fit, the CFI and SRMR are acceptable in almost all participating countries/territories, the only exception is the ISCED level 02 population in New Zealand. The TLI is also acceptable in most populations, except for the ISCED level 02 population in Japan, Morocco, New Zealand and Spain, as well as in the U3 population in Canada. RMSEA values exceed the cut-off only in the following ISCED level 02 population: Israel, Morocco, New Zealand and Türkiye. Based on the single CFA model fit results, the scale S2LSTRESG works well across all populations except in New Zealand (ISCED level 02), where the CFI, TLI, RMSEA and SRMR do not meet the acceptable cut-off criteria.

Table 11.394 presents the results from the measurement invariance testing for S2LSTRESG for the ISCED level 02 and U3 populations. The results are similar for both populations, with an acceptable fit for the baseline model based on all indices. The degree of change between the baseline and equal loadings model is within the cut-off criteria for the TLI, RMSEA and SRMR, and close for the CFI. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-offs for all fit indices. Furthermore, the equal loadings and thresholds models of both populations show a poor model fit. Comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution for both the ISCED level 02 and the U3 populations.

Unclassified - Non classifié

Table 11.395 presents the standardised item loadings and thresholds based on pooled data from the ISCED level 02 population for the scale S2LSTRESG. Item SL2G45H shows a high loading, while the loadings for the remaining items are within the acceptable range. Results by participating country/territory show a low loading for item SL2G45A in four ISCED level 02 countries/territories (Japan, Morocco, Spain and Sweden) and in the U3 population in the Flemish Community of Belgium; for item SL2G45G in the ISCED level 02 population in the Flemish Community of Belgium and Germany; for item SL2G45H in Germany (ISCED level 02); for item SL2G45I in Canada (U3), Germany (ISCED level 02 and U3), Japan and Sweden (both ISCED level 02); and for item SL2G45J in four ISCED level 02 populations (Colombia, Japan, Spain and Sweden) as well as in the U3 population in the Flemish Community of Belgium and Germany.

Table 11.392. Items and response categories used in the construction of scale S2LSTRESG

Scale or item	Question or item wording
S2LSTRESG	Thinking about your job at this <ECEC setting>, to what extent are the following sources of stress in your work?
	Recoded response categories for scaling: 1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale mid-point: 2.5
SL2G45A	Having too much administrative work to do (e.g. filling out forms)
SL2G45G	Lacking human resources (e.g. insufficient roles, unfilled positions, absent staff)
SL2G45H	Lacking other resources (e.g. financial support and material resources)
SL2G45I	Lacking technical skills for the use of <digital resources and tools>
SL2G45J	Having to adapt my practice due to unexpected disruptions (e.g. natural disasters, public health emergencies/pandemics, humanitarian crises)

Source: OECD, TALIS Starting Strong 2024 database.

Table 11.393. Reliability coefficient alpha and CFA model fits for single countries/territories and pooled model for scale S2LSTRESG

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
ISCED level 02					
Chile	0.765	0.964	0.929	0.088	0.044
Colombia	0.696	0.960	0.920	0.065	0.057
Denmark	0.740	0.995	0.991	0.024	0.055
Finland	0.756	0.971	0.941	0.078	0.052
Flemish Community (Belgium)	0.688	1.000	1.041	0.000	0.025
Germany	0.617	1.000	1.102	0.000	0.040
Ireland	0.819	0.997	0.993	0.023	0.047
Israel	-	-	-	-	-
Japan	**0.599**	0.937	**0.875**	0.064	0.041
Morocco	0.728	0.919	**0.838**	**0.123**	0.050
Norway	**0.443**	0.979	0.958	0.077	0.050
New Zealand	**0.237**	**0.840**	**0.679**	**0.159**	**0.112**
Spain	0.719	0.939	**0.879**	0.080	0.049
Sweden	0.641	0.991	0.982	0.030	0.042
Türkiye	0.823	0.956	0.912	**0.160**	0.049
International pooled data	0.703	0.951	0.902	0.070	0.035
U3					
Canada	0.604	0.900	**0.800**	0.066	0.059
Flemish Community (Belgium)	0.709	0.964	0.927	0.090	0.062
Germany	0.637	1.000	1.008	0.000	0.043

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
Ireland	0.739	1.000	1.057	0.000	0.037
Israel	-	-	-	-	-
Norway	0.656	1.000	1.058	0.000	0.022
New Zealand	**0.442**	0.998	0.996	0.044	0.088
International pooled data	0.707	0.979	0.959	0.044	0.032

Note: Coefficients in **bold** exceed the cut-off criteria. Israel and New Zealand are excluded from the pooled ISCED level 02 and pooled U3 models. Israel (ISCED level 02, U3) was excluded from this scale because not all items that comprise the scale were administered.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.394. Measurement invariance results from MGCFA for scale S2LSTRESG with differences in model fits across models

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
ISCED level 02								
Baseline	0.963	0.925	0.086	0.045	-	-	-	-
Equal loadings	0.949	0.941	0.077	0.070	-0.013	0.016	-0.010	0.024
Equal loadings and thresholds	0.627	0.776	0.149	0.243	-0.322	-0.164	0.072	0.173
U3								
Baseline	0.983	0.966	0.042	0.050	-	-	-	-
Equal loadings	0.974	0.967	0.041	0.070	-0.009	0.001	-0.001	0.019
Equal loadings and thresholds	0.829	0.884	0.078	0.145	-0.144	-0.083	0.036	0.076

Note: Denmark, Israel, New Zealand and Sweden are excluded from measurement invariance testing in the ISCED level 02 population; New Zealand is excluded from measurement invariance testing in the U3 population.
Source: OECD, TALIS Starting Strong 2024 database.

Table 11.395. Item loadings and thresholds based on pooled ISCED level 02 data for scale S2LSTRESG

Item	Loading	Threshold 1	Threshold 2	Threshold 3
SL2G45A	0.498	-1.322	-0.298	0.631
SL2G45G	0.583	-1.032	-0.189	0.541
SL2G45H	0.687	-0.956	0.088	0.821
SL2G45I	0.576	-0.284	0.829	1.527
SL2G45J	0.525	-0.395	0.657	1.324

Source: OECD, TALIS Starting Strong 2024 database.

11.4.3. TALIS Teacher Knowledge Survey (TKS)

Complex scales from the teacher questionnaire

Most of the TKS scales were included in the core survey. For these scales, only country/territory-specific results are presented as the item parameters used for scale construction were already presented in the descriptions of the respective scales for the core survey. The TKS questionnaires also included a set of questions – not administered in the core survey questionnaire – to elicit teachers' opportunities to learn about different topics related to pedagogy during their studies (whether during formal teacher education or through following professional learning courses or activities). The answers to these questions were used

Unclassified - Non classifié

to create four scales, which provide a summary measure of such opportunities. These scales are presented with a full description at the end of this section.

Exchange of information and ideas among teachers (T4EXINF)

The degree of *Exchange of information and ideas among teachers* (T4EXINF) was measured by three items (TT4G26D, TT4G26E, TT4G26F), presented in Table 11.28. In this question, teachers were asked to indicate at which frequency they exchange teaching materials with colleagues, engage in discussions about the learning development of specific students, and work with other teachers in the school to ensure common standards in evaluations for assessing student progress. Higher values on this scale indicate more frequent exchange of information and ideas.

Table **11.396** presents scale reliabilities for all TKS participating countries/territories as well as for the pooled model including data from all participating education systems. The fit indices for the T4EXINF scale are not presented here as the scale was measured by just three items and the fit indices indicate a perfect model fit. The reliabilities for T4EXINF are generally high (above 0.700) across countries/territories.

Measurement invariance testing for this scale was based on the ISCED level 2 population of the core survey, presented in Table 11.30. Standardised item loadings and thresholds based on the pooled ISCED level 2 core survey data for scale T4EXINF are presented in Table 11.31 Item loadings from single TKS countries/territories are high.

Table 11.396. Reliability coefficient alpha for single countries and pooled model for scale T4EXINF

Participating country/territory	Reliability coefficient Cronbach's alpha
TKS	
Chile	0.782
Croatia	0.743
Morocco	0.777
Poland	0.760
Portugal	0.800
Saudi Arabia	0.828
South Africa	0.773
United States	0.813
International pooled data	0.804

Source: OECD, TALIS 2024 database.

Professional collaboration in lessons among teachers (T4COLES)

The degree of *Professional collaboration in lessons among teachers* (T4COLES) was measured by four items (TT4G26A, TT4G26B, TT4G26C, TT4G26G). Teachers were asked to indicate the frequency with which they teach jointly as a team in the same class, observe other teachers' classes and provide feedback, engage in joint activities across different classes and age groups, and take part in collaborative professional learning. Higher values on this scale indicate more frequent professional collaboration among teachers. Table 11.32 provides the item names, question stem, item statements and response options for the items belonging to this scale as well as the scale mid-point.

Unclassified - Non classifié

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.397. The reliabilities for T4COLES are generally acceptable (above 0.650), except for Poland. In terms of model fit, the CFI and SRMR are within the cut-off criteria in all countries/territories. The TLI does not meet the cut-off criteria in Portugal and Saudia Arabia, while the RMSEA does not meet the cut-off in Saudi Arabia.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.34. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4COLES are presented in Table 11.35. Results by participating TKS country/territory show an item loading below the threshold for item TT4G26G in Croatia and in the United States.

Table 11.397. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4COLES

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
TKS					
Chile	0.708	1.000	1.004	0.000	0.006
Croatia	0.664	0.979	0.937	0.072	0.018
Morocco	0.805	0.985	0.955	0.058	0.019
Poland	0.638	0.967	0.902	0.075	0.019
Portugal	0.657	0.962	**0.886**	0.097	0.022
Saudi Arabia	0.814	0.949	**0.846**	**0.234**	0.034
South Africa	0.692	0.995	0.984	0.028	0.012
United States	0.781	0.997	0.990	0.042	0.009
International sample	0.723	1.000	1.000	0.000	0.002

Note. Coefficients in **bold** exceed the cut-off criteria.
Source: OECD, TALIS 2024 database.

Self-efficacy in classroom management (T4SECLS)

The scale of *Self-efficacy in classroom management* (T4SECLS) was measured by a set of four items (TT4G27D, TT4G27F, TT4G27H, TT4G27I). Teachers had to indicate to what extent they could control disruptive behaviour in the classroom, make expectations about student behaviour clear, get students to follow classroom rules, and calm a student who is disruptive or noisy. Items belonging to this scale, including variable names and response categories, are described in Table 11.36. Higher values on this scale indicate higher self-efficacy in classroom management.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.398. The scale T4SECLS has high reliability (above 0.800) in all populations. The scale also shows a good model fit, with all indices meeting the established cut-off criteria. The CFI, TLI and SRMR satisfy the good fit criteria across all participating countries/territories, while the RMSEA indicates good fit for most countries/territories and acceptable fit for the remaining ones.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.38. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4SECLS are presented in Table 11.39.

Unclassified - Non classifié

Table 11.398. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SECLS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.883	0.998	0.995	0.051	0.012
Croatia	0.919	0.998	0.995	0.073	0.011
Morocco	0.823	0.999	0.998	0.017	0.008
Poland	0.917	0.997	0.992	0.064	0.013
Portugal	0.911	1.000	0.999	0.040	0.007
Saudi Arabia	0.948	0.999	0.996	0.071	0.010
South Africa	0.893	0.999	0.996	0.042	0.015
United States	0.905	1.000	0.999	0.022	0.005
International pooled data	0.900	0.999	0.998	0.037	0.007

Note. Coefficients in **bold** exceed the cut-off criteria.
Source: OECD, TALIS 2024 database.

Self-efficacy in instruction (T4SEINS)

The scale of *Self-efficacy in instruction* (T4SEINS) was based on four items (TT4G27C, TT4G27J, TT4G27K, TT4G27L). In these items, teachers had to indicate to what extent they could craft good questions for students, use a variety of assessment strategies, provide an alternative explanation for students, and vary instructional strategies in their classroom (see Table 11.40). Higher values on this scale indicate higher self-efficacy.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.399. The reliabilities for T4SEINS are high, above 0.800 in all participating countries/territories. As can be seen in Table 11.399, the scale T4SEINS has a good model fit across all participating countries/territories, with the CFI, TLI, SRMR and RMSEA all within the cut-off criteria.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.42. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4SEINS are presented in Table 11.43. Loadings for all items are high for the single TKS countries/territories.

Table 11.399. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEINS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.852	0.992	0.975	0.079	0.021
Croatia	0.875	0.998	0.993	0.054	0.011
Morocco	0.805	0.998	0.993	0.027	0.011
Poland	0.887	1.000	1.000	0.007	0.004
Portugal	0.871	1.000	1.001	0.000	0.002
Saudi Arabia	0.953	1.000	0.999	0.032	0.004
South Africa	0.845	0.992	0.977	0.066	0.020
United States	0.888	1.000	0.999	0.021	0.005
International pooled data	0.883	0.998	0.995	0.038	0.008

Note. Coefficients in **bold** exceed the cut-off criteria.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Self-efficacy in student engagement (T4SEENG)

The scale of *Self-efficacy in student engagement* (T4SEENG) was measured by four items (TT4G27A, TT4G27B, TT4G27E, TT4G27G), described in Table 11.44. Teachers had to indicate to what extent they could get students to believe they can do well in schoolwork, help students value learning, motivate students who show low interest in schoolwork, and help students think critically. Higher values on this scale indicate higher self-efficacy.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.400. The reliabilities for T4SEENG are high, generally above 0.850, in all participating countries/territories. The scale T4SEENG also shows a good model fit, with the CFI, TLI and SRMR within the good model fit cut-off criteria for all participating countries/territories and RMSEA values within the acceptable cut-off criteria.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.46. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4SEENG are presented in Table 11.47. All items show high loadings for the single TKS countries/territories.

Table 11.400. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4SEENG

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.852	0.992	0.976	0.088	0.021
Croatia	0.872	0.999	0.997	0.040	0.009
Morocco	0.848	0.996	0.987	0.053	0.015
Poland	0.878	0.992	0.977	0.090	0.019
Portugal	0.882	0.997	0.991	0.087	0.019
Saudi Arabia	0.939	0.997	0.990	0.098	0.014
South Africa	0.875	0.999	0.998	0.035	0.012
United States	0.906	0.997	0.991	0.067	0.010
International pooled data	0.902	0.999	0.996	0.055	0.010

Note. Coefficients in **bold** exceed the cut-off criteria.
Source: OECD, TALIS 2024 database.

Clarity of instruction (T4CLAIN)

The scale of *Clarity of instruction* (T4CLAIN) was measured by a set of four items (TT4G51A, TT4G51B, TT4G51C and TT4G51D). Teachers had to indicate the frequency with which they did the different activities described in Table 11.84, including presenting a summary of recently learned content, setting goals at the beginning of a lesson or a unit, explaining what they expect the students to learn, and explain how new and old topics are related. Higher values on this scale indicate a higher frequency of clarity of instruction activities.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.401. Reliability for T4CLAIN is high, above 0.750, in most participants, with none of them below the established cut-off criteria. In terms of CFA model fit, the CFI and SRMR for T4CLAIN are all within the acceptable cut-off criteria in all populations. The TLI is acceptable in most countries/territories, except for Chile and Portugal. The RMSEA is also acceptable in most countries/territories, except for Portugal.

Unclassified - Non classifié

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.86. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for the scale T4CLAIN are presented in Table 11.87. Results for single TKS countries/territories show a low loading for item TT4G27A in Croatia and Morocco.

Table 11.401. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLAIN

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.773	0.954	**0.863**	0.098	0.038
Croatia	0.756	0.991	0.972	0.062	0.020
Morocco	0.719	0.979	0.936	0.066	0.024
Poland	0.805	0.986	0.958	0.075	0.027
Portugal	0.741	0.949	**0.847**	**0.136**	0.037
Saudi Arabia	0.906	0.995	0.984	0.083	0.013
South Africa	0.812	0.991	0.974	0.065	0.021
United States	0.812	0.983	0.950	0.091	0.027
International pooled data	0.781	0.967	0.902	**0.103**	0.031

Note. Coefficients in **bold** exceed the cut-off criteria.
Source: OECD, TALIS 2024 database.

Cognitive activation (T4COGAC)

The scale of *Cognitive activation* (T4COGAC) was measured by a set of four items (TT4G51E, TT4G51F, TT4G51G and TT4G51H). Teachers had to indicate the frequency with which they did the different activities presented in Table 11.88, including presenting tasks for which there is no obvious solution, giving tasks that require students to think critically, having students work in small groups to come up with a joint solution to a problem or task, and asking students to decide on their own procedures for solving complex tasks. Higher values on this scale indicate a higher frequency of cognitive activation practices.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.402. The reliabilities for T4COGAC are generally high, with values mostly above 0.700 in across populations, except for Croatia. As can be observed from Table 11.402, the CFI and SRMR are within the cut-off criteria for all participants. The TLI and RMSEA do not meet the cut-off criteria in most participating countries/territories, specifically in Chile, Croatia, Morocco, Poland, Portugal, as well as in the pooled TKS model. The RMSEA also exceeds the cut-off in Saudi Arabia.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.90. Based on the results of measurement invariance testing, comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4COGAC are presented in Table 11.91. Results from single TKS participating countries/territories show high loadings for all items.

Unclassified - Non classifié

Table 11.402. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4COGAC

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.776	0.933	**0.798**	**0.167**	0.048
Croatia	0.654	0.946	**0.839**	**0.111**	0.030
Morocco	0.737	0.956	**0.868**	**0.117**	0.039
Poland	0.721	0.946	**0.839**	**0.119**	0.039
Portugal	0.765	0.921	**0.764**	**0.233**	0.053
Saudi Arabia	0.859	0.991	0.973	**0.131**	0.026
South Africa	0.746	0.978	0.933	0.087	0.026
United States	0.786	0.994	0.983	0.056	0.016
International pooled data	0.763	0.966	**0.897**	**0.121**	0.033

Note. Coefficients in **bold** exceed the cut-off criteria.
Source: OECD, TALIS 2024 database.

Classroom management (T4CLASM)

The scale of *Classroom management* (T4CLASM) was measured by a set of four items (TT4G51I, TT4G51J, TT4G51K and TT4G51L). Teachers had to indicate the frequency with which they did different classroom management practices as described in Table 11.92, including telling students to follow classroom rules, telling students to listen to what the teacher says, calming students who are disruptive, and telling students to quieten down quickly at the beginning of a lesson. Higher values on this scale indicate a higher frequency of classroom management practices.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.403. The reliabilities for T4CLASM are high in all populations, with values mostly above 0.900. As can be observed from Table 11.403, the CFI, TLI and SRMR for T4CLASM are all within the good cut-off criteria for all participants. The RMSEA of most participants is high, considerably exceeding the cut-off criteria in Croatia, Poland and Saudi Arabia.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.94. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4CLASM are presented in Table 11.95. Results by participating TKS country/territory indicate a low loading for item TT4G51L in Portugal.

Table 11.403. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4CLASM

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.911	0.992	0.975	**0.102**	0.022
Croatia	0.913	0.993	0.980	**0.158**	0.024
Morocco	0.860	0.987	0.960	**0.101**	0.028
Poland	0.922	0.992	0.975	**0.152**	0.025
Portugal	0.774	0.995	0.984	0.081	0.025
Saudi Arabia	0.926	0.991	0.973	**0.129**	0.021

Unclassified - Non classifié

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
South Africa	0.887	0.994	0.983	**0.117**	0.022
United States	0.878	0.985	0.955	**0.117**	0.025
International pooled data	0.913	0.995	0.984	0.097	0.018

Note. Coefficients in **bold** exceed the cut-off criteria
Source: OECD, TALIS 2024 database.

Adaptive learning (T4ADLE)

The scale of *Adaptive learning* (T4ADLE) was measured using five items (TT4G55A, TT4G55B, TT4G55C, TT4G55D, TT4G55E), in which teachers had to indicate how frequently they performed different actions related to adapting their teaching to the needs of their students. These actions include considering students' prior knowledge and needs when planning a lesson, pointing students to different materials for learning depending on their needs, changing their way of explaining when a student has difficulties understanding a topic or task, adapting their teaching methods to students' needs, and asking questions at various difficulty levels. Higher values on these scales indicate a higher frequency of such practices. Table 11.108 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.404. The scale T4ADLE has high reliability (above 0.800) in all countries/territories. The scale also shows a good model fit, with the CFI, TLI and SRMR all within the good cut-off criteria for all participants, and the RMSEA within the acceptable range.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.110. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4ADLE are presented in Table 11.111. All items show high loadings for the single TKS countries/territories.

Table 11.404. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4ADLE

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.877	0.987	0.973	0.075	0.025
Croatia	0.874	0.990	0.980	0.089	0.025
Morocco	0.814	0.988	0.976	0.044	0.023
Poland	0.875	0.997	0.994	0.035	0.017
Portugal	0.844	0.991	0.981	0.061	0.027
Saudi Arabia	0.913	0.992	0.985	0.082	0.019
South Africa	0.885	0.992	0.983	0.062	0.022
United States	0.865	0.990	0.981	0.065	0.025
International pooled data	0.872	0.992	0.983	0.055	0.020

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Progression-based learning (T4PBLE)

The scale of *Progression-based learning* (T4PBLE) was measured by a set of four items (TT4G56A, TT4G56B, TT4G56C, TT4G56D), described in Table 11.112. Teachers had to indicate the frequency with which they let students review multiple examples to practice the steps involved in a procedure or skill, select tasks for student practice that gradually increase in difficulty, prepare students for difficulties that can occur while practicing a procedure or skill, and let students practise similar tasks until the teacher knows that every student has understood the subject matter. Higher scores on this scale reflect a higher frequency of progression-based learning practices.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.405. The reliabilities for T4PBLE are generally high and greater than 0.800 in all countries/territories. As can be seen in Table 11.405, the scale T4PBLE shows a good model fit in all participants, based on all model fit indices presented.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.114. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4PBLE are presented in Table 11.115. All items show high loadings for the single TKS countries/territories.

Table 11.405. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4PBLE

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.884	0.999	0.996	0.036	0.008
Croatia	0.830	0.997	0.991	0.054	0.011
Morocco	0.839	0.994	0.983	0.057	0.016
Poland	0.840	0.992	0.975	0.067	0.016
Portugal	0.839	1.000	0.999	0.021	0.006
Saudi Arabia	0.923	0.997	0.992	0.096	0.012
South Africa	0.877	0.992	0.976	0.088	0.018
United States	0.829	0.987	0.960	**0.104**	0.023
International pooled data	0.858	0.994	0.983	0.065	0.014

Note. Coefficients in **bold** exceed the cut-off criteria.
Source: OECD, TALIS 2024 database.

Fulfilment of lesson aims (complexity of teaching) (T4FULFIL)

The scale of *Fulfilment of lesson aims (complexity of teaching)* (T4FULFIL) was measured by a set of five items (TT4G58A, TT4G58B, TT4G58C, TT4G58D and TT4G58E). These items assessed the extent to which teachers believed they had achieved various instructional goals, reflecting the complexity of the teaching activity, in their recently taught lessons (Table 11.120). Specifically, these goals were: presenting the content in a comprehensible way, engaging students in work that challenges them, providing students with feedback to support their learning, offering students opportunities to practise what they learned, and adapting teaching to meet the different needs of students. Higher scores indicate a greater perceived fulfilment of lesson aims by teachers.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.406. The scale T4FULFIL has a high reliability (above 0.800) in all

Unclassified - Non classifié

countries/territories. The scale also shows a good model fit, with the CFI, TLI and SRMR all within the good cut-off criteria for all participants and the RMSEA within the acceptable cut-off.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.122. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4FULFIL are presented in Table 11.123. All items show high loadings for the single TKS countries/territories.

Table 11.406. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4FULFIL

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.832	0.989	0.978	0.051	0.023
Croatia	0.862	0.991	0.982	0.069	0.022
Morocco	0.830	0.988	0.976	0.050	0.022
Poland	0.863	0.995	0.989	0.040	0.018
Portugal	0.832	0.995	0.989	0.046	0.017
Saudi Arabia	0.934	0.998	0.996	0.052	0.010
South Africa	0.866	0.988	0.975	0.065	0.026
United States	0.860	0.984	0.968	0.080	0.029
International pooled data	0.864	0.994	0.989	0.043	0.015

Note. Portugal excluded from the pooled TKS model.
Source: OECD, TALIS 2024 database.

Workload stress (T4WLOADT)

The scale of *Workload stress* (T4WLOADT) was measured by a set of four items (TT4G77A, TT4G77B, TT4G77C and TT4G77D). Teachers had to indicate to what extent they experienced stress in their work due to having too much lesson preparation, having too many lessons to teach, having too much marking, having too much administrative work to do. Higher scores indicate greater perceived stress related to workload. Table 11.176 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.407. The scale T4WLOADT has high reliability (above 0.800) across all participants. The scale also exhibits a good model fit, with the CFI, TLI and SRMR within the good cut-off criteria and the RMSEA within the acceptable cut-off for all participants.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.178. Based on the measurement invariance testing results, comparisons of results across countries and territories on this scale are affected by moderate model fit issues in the most restricted multi-group model and should be interpreted with some caution.

Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4WLOADT are presented in Table 11.179. Results by TKS country/territory show high loadings for all items.

Unclassified - Non classifié

Table 11.407. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4WLOADT

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
TKS					
Chile	0.831	0.995	0.985	0.055	0.016
Croatia	0.835	0.995	0.986	0.069	0.014
Morocco	0.839	0.990	0.970	0.071	0.020
Poland	0.811	1.000	1.002	0.000	0.002
Portugal	0.839	0.998	0.995	0.069	0.015
Saudi Arabia	0.906	0.997	0.992	0.084	0.012
South Africa	0.831	0.993	0.979	0.080	0.022
United States	0.847	0.992	0.977	0.089	0.021
International pooled data	0.843	0.994	0.982	0.076	0.018

Source: OECD, TALIS 2024 database.

Student behaviour stress (T4STBEH)

The scale *Student behaviour stress* (T4STBEH) was measured using a set of three items (TT4G77F, TT4G77G and TT4G77H). These items assessed the extent to which factors such as being held responsible for students' achievement, maintaining classroom discipline, and being intimidated or verbally abused by students were sources of stress in teachers' work. Higher scores indicate greater perceived stress related to student behaviour. Table 11.180 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.408. The fit indices for the T4STBEH scale are not presented here as the scale was measured by just three items. The reliabilities for T4STBEH are generally good in all populations, with values above 0.600.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.182. Based on the measurement invariance testing results, comparisons of results across countries and territories on this scale are affected by substantial model fit issues in the most restricted multi-group model and must be interpreted with considerable caution.

Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4STBEH are presented in Table 11.183. Results by participating TKS country/territory show a low loading for item TT4G77F in Portugal and item TT4G77H in Morocco.

Table 11.408. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4STBEH

Participating country/territory	Reliability
	Cronbach's alpha
TKS	
Chile	0.715
Croatia	0.711
Morocco	0.614
Poland	0.692

Unclassified - Non classifié

Participating country/territory	Reliability
	Cronbach's alpha
Portugal	0.698
Saudi Arabia	0.781
South Africa	0.745
United States	0.684
International pooled data	0.716

Source: OECD, TALIS 2024 database.

Joy of teaching (T4JOYTCH)

The scale *Joy of teaching* (T4JOYTCH) was measured using a set of four items (TT4G80A, TT4G80B, TT4G80C and TT4G80D). These items assessed the level of agreement to different statements about teachers' experiences, including whether they like the subject(s) they teach, whether they often feel happy while teaching, whether they generally teach with enthusiasm, and whether they find satisfaction in the interesting challenges of teaching. Higher scores reflect greater joy of teaching.

Table 11.196 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities and model fit for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.409. The scale T4JOYTCH has high reliability (above 0.850) in all countries/territories. As can be seen in Table 11.409, the scale exhibits a good model fit based on all indices. The CFI, TLI and SRMR of T4JOYTCH are within the good cut-off criteria for all participants, while the RMSEA is within the acceptable cut-off for all participants.

Measurement invariance testing was based on the ISCED level 2 population of the core survey, presented in Table 11.198. Standardised item loadings and thresholds based on the pooled ISCED level 2 data for scale T4SEENG are presented in Table 11.199. All items show high loadings for the single TKS countries/territories.

Table 11.409. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4JOYTCH

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.872	1.000	1.000	0.000	0.008
Croatia	0.913	0.997	0.991	0.083	0.017
Morocco	0.867	0.997	0.991	0.054	0.021
Poland	0.919	1.000	1.000	0.014	0.006
Portugal	0.868	0.999	0.998	0.029	0.011
Saudi Arabia	0.938	0.999	0.997	0.066	0.009
South Africa	0.891	1.000	0.999	0.025	0.009
United States	0.855	0.997	0.992	0.044	0.013
International pooled data	0.882	0.999	0.998	0.030	0.008

Note. Coefficients in **bold** exceed the cut-off criteria.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Opportunities to learn – Classroom instruction

The scale of *Opportunities to learn – Classroom instruction* (T4OTLCI) was constructed on the basis of teachers' responses to ten items (KTB4G111A, KTB4G111B, KTB4G111C, KTB4G111D, KTB4G111E, KTB4G111F, KTB4G111G, KTB4G111H, KTB4G111I and KTB4G111J). In these items, teachers had to indicate the extent to which their training or subsequent professional learning prepared them in various topics about classroom instruction. The available response options were "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores on this scale reflect greater opportunities available to teachers. Table 11.410 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.411. The scale T4OTLCI displayed high reliability (above 0.900) in all participating countries/territories. In terms of model fit, the CFI, TLI and SRMR are within the cut-off criteria for all participants, while the RMSEA exceeds the cut-off criteria in Croatia, Poland and Portugal.

Table 11.412 presents the results from the measurement invariance testing for KRBINS for TKS participating countries/territories. All indices, except the RMSEA, are within the cut-off criteria in the baseline invariance model. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off criteria for the TLI and RMSEA. No specific caution has to be made when comparing scale score results across countries/territories.

Table 11.413 presents the standardised item loadings and thresholds based on pooled TKS data for the scale T4OTLCI. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.410. Items and response categories used in the construction of scale T4OTLCI

Scale or item	Question or item wording
KRBINS	To what extent has your formal teacher <education and training> or subsequent professional learning prepared you in the following topics related to classroom instruction?
	1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale midpoint: 2.5
KTB4G111A	Lesson design (e.g. planning and structuring activities, lesson objectives and goals, phases and structure of the lesson)
KTB4G111B	Long-term planning (e.g. weekly, thematic unit planning, syllabuses)
KTB4G111C	Time management in the classroom (e.g. optimising and prioritising instructional time, setting appropriate lesson pace, adapting the plan during the lesson)
KTB4G111D	Student behaviour and classroom management (e.g. setting classroom rules and consequences, addressing classroom disruptions, identifying and addressing behavioural problems such as aggression, hyperactivity)
KTB4G111E	Collaborative learning (e.g. students working in small groups, sharing responsibility and working interdependently to complete a task)
KTB4G111F	Adaptive teaching (e.g. individual assistance, internal differentiation, personalised instruction)
KTB4G111G	Classroom discussion and dialogue (e.g. initiating, managing and promoting discussion/dialogue)
KTB4G111H	Setting clear learning expectations (e.g. communicating expectations and goals for learning, clarifying success criteria for students)
KTB4G111I	Student-centred approaches to learning (e.g. inquiry-based learning, problem/project-based learning, guided discovery)
KTB4G111J	Teaching clarity (e.g. explicit instruction, teacher modelling, teacher-guided practice)

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.411. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4OTLCI

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
TKS					
Chile	0.933	0.946	0.930	0.100	0.055
Croatia	0.954	0.959	0.947	**0.139**	0.049
Morocco	0.924	0.955	0.942	0.078	0.052
Poland	0.946	0.951	0.937	**0.119**	0.060
Portugal	0.945	0.963	0.953	**0.153**	0.079
Saudi Arabia	0.969	0.986	0.981	0.090	0.024
South Africa	0.941	0.962	0.952	0.094	0.046
United States	0.943	0.983	0.979	0.064	0.030
International pooled data	0.951	0.965	0.956	0.098	0.042

Note. Coefficients in **bold** exceed the cut-off criteria
Source: OECD, TALIS 2024 database.

Table 11.412. Measurement invariance results from MGCFA for scale T4OTLCI with differences in model fits across models for TKS countries/territories

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
TKS								
Baseline	0.965	0.955	0.109	0.049	-	-	-	-
Equal loadings	0.965	0.964	0.098	0.060	0.000	0.009	-0.011	0.010
Equal loadings and thresholds	0.949	0.962	0.101	0.108	-0.016	-0.002	0.002	0.049

Source: OECD, TALIS 2024 database.

Table 11.413. Item loadings and thresholds based on pooled TKS data for scale T4OTLCI

Item	Loading	Threshold 1	Threshold 2	Threshold 3
KTB4G111A	0.837	-2.081	-0.984	-0.015
KTB4G111B	0.832	-1.745	-0.720	0.225
KTB4G111C	0.840	-1.719	-0.668	0.241
KTB4G111D	0.821	-1.232	-0.261	0.499
KTB4G111E	0.837	-1.585	-0.435	0.559
KTB4G111F	0.812	-1.087	-0.114	0.729
KTB4G111G	0.822	-1.446	-0.370	0.537
KTB4G111H	0.842	-1.687	-0.654	0.379
KTB4G111I	0.817	-1.454	-0.400	0.532
KTB4G111J	0.772	-1.616	-0.632	0.410

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Opportunities to learn – Student learning

The scale of *Opportunities to learn – Student learning* (T4OTLSL) was measured using a set of eight items (KTB4G121A, KTB4G121B, KTB4G121C, KTB4G121D, KTB4G121E, KTB4G121F, KTB4G121G and KTB4G121H). These items assessed the extent to which formal teacher training or subsequent professional learning prepared teachers in various topics related to student learning. For each item, teachers selected one of the following response options: “Not at all”, “To some extent”, “Quite a bit” and “A lot”. Higher scores on this scale reflect greater opportunities available to teachers. Table 11.414 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.415. The scale T4OTLSL has high reliability (above 0.900) in all participating countries/territories. In terms of model fit, the CFI, TLI and SRMR are within the cut-off criteria for all participants, while the RMSEA exceeds the cut-off criteria in Chile, Croatia, Portugal, Saudi Arabia and South Africa.

Table 11.416 presents the results from the measurement invariance testing for T4OTLSL for TKS participating countries/territories. All indices, except the RMSEA, are within the cut-off criteria in the baseline invariance model. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for all fit indices. However, it is close to the acceptable range for the TLI and RMSEA. No specific caution has to be made when comparing scale score results across countries/territories.

Table 11.417 presents the standardised item loadings and thresholds based on pooled TKS data for the scale T4OTLSL. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.414. Items and response categories used in the construction of scale T4OTLSL

Scale or item	Question or item wording
KRBLEA	To what extent has your formal teacher <education and training> or subsequent professional learning prepared you in the following topics related to student learning?
	1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale midpoint: 2.5
KTB4G121A	Educational theories of learning (e.g. constructivism, behaviourism, cognitivism, social-constructivism)
KTB4G121B	Student individual differences (e.g. in prior knowledge, motivation, proficiency, interests)
KTB4G121C	Identification of learning difficulties of students and interpretation of specialists’ diagnoses (e.g. dyslexia, dysgraphia, attentional problems, etc.)
KTB4G121D	Psychological theories of child development (e.g. Piaget, Maslow, Bronfenbrenner, Montessori, Vygotsky, Erikson, Kohlberg, etc.)
KTB4G121E	Science of learning (e.g. cognitive processes underlying learning, such as memory, executive functions, attention controls, acquisition, storage and retrieval of knowledge, etc.)
KTB4G121F	Taxonomies of learning (e.g. Bloom’s Taxonomy, Krathwohl’s Affective Domain Taxonomy, Dreyfus Model of Skill Acquisition, SOLO Taxonomy)
KTB4G121G	Self-regulated learning (e.g. metacognitive learning strategies, comprehension-monitoring, goal-setting)
KTB4G121H	Affective-motivational impacts on learning (e.g. intrinsic/extrinsic motivation, self-efficacy, self-concept)

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.415. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4OTLSL

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.899	0.933	0.906	**0.119**	0.064
Croatia	0.924	0.967	0.954	**0.120**	0.040
Morocco	0.910	0.956	0.938	0.092	0.047
Poland	0.913	0.968	0.955	0.093	0.043
Portugal	0.914	0.947	0.925	**0.143**	0.054
Saudi Arabia	0.959	0.984	0.977	**0.121**	0.033
South Africa	0.923	0.957	0.940	**0.105**	0.043
United States	0.920	0.982	0.975	0.074	0.029
International pooled data	0.930	0.971	0.960	0.097	0.038

Note. Coefficients in **bold** exceed the cut-off criteria
Source: OECD, TALIS 2024 database.

Table 11.416. Measurement invariance results from MGCFA for scale T4OTLSL with differences in model fits across models for TKS countries/territories

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
				TKS				
Baseline	0.968	0.955	0.108	0.044	-	-	-	-
Equal loadings	0.975	0.973	0.084	0.049	0.007	0.018	-0.024	0.005
Equal loadings and thresholds	0.932	0.952	0.112	0.131	-0.043	-0.021	0.028	0.082

Source: OECD, TALIS 2024 database.

Table 11.417. Item loadings and thresholds based on pooled TKS data for scale T4OTLSL

Item	Loading	Threshold 1	Threshold 2	Threshold 3
KTB4G121A	0.772	-1.524	-0.376	0.604
KTB4G121B	0.827	-1.700	-0.529	0.465
KTB4G121C	0.756	-1.085	-0.088	0.715
KTB4G121D	0.751	-1.234	-0.158	0.755
KTB4G121E	0.839	-1.415	-0.218	0.785
KTB4G121F	0.725	-1.056	-0.140	0.756
KTB4G121G	0.864	-1.311	-0.143	0.822
KTB4G121H	0.842	-1.421	-0.288	0.647

Source: OECD, TALIS 2024 database.

Opportunities to learn – Assessment

The scale of *Opportunities to learn – Assessment* (T4OTLAS) was measured using a set of nine items (KTB4G131A, KTB4G131B, KTB4G131C, KTB4G131D, KTB4G131E, KTB4G131F, KTB4G131G,

Unclassified - Non classifié

KTB4G131H and KTB4G131I). These items assessed the extent to which formal teacher training or subsequent professional learning prepared teachers in various topics related to assessment. For each item, teachers selected one of the following response options: “Not at all”, “To some extent”, “Quite a bit” and “A lot”. Higher scores on this scale reflect greater opportunities available to teachers. Table 11.418 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.419. The scale T4OTLAS has high reliability (above 0.900) in all participating countries/territories. In terms of model fit, the CFI, TLI and SRMR are within the cut-off criteria for good model fit for all participants, while the RMSEA exceeds the acceptable cut-off criteria in Croatia, Poland and Saudi Arabia.

Table 11.420 presents the results from the measurement invariance testing for T4OTLAS for TKS participating countries/territories. All indices are within the cut-off criteria in the baseline invariance model. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models exceeds the cut-off criteria for the CFI and SRMR and is close to the cut-off for the TLI and RMSEA. No specific caution has to be made when comparing scale score results across countries/territories.

Table 11.421 presents the standardised item loadings and thresholds based on pooled TKS data for the scale T4OTLAS. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.418. Items and response categories used in the construction of scale T4OTLAS

Scale or item	Question or item wording
KRBASS	To what extent has your formal teacher <education and training> or subsequent professional learning prepared you in the following topics related to assessment?
	1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale midpoint: 2.5
KTB4G131A	Different purposes for assessment (e.g. diagnostic, formative, summative)
KTB4G131B	Standards used to assess students (e.g. individual, social, norm-referenced, criterion-referenced)
KTB4G131C	Creating and using rubrics for assessment of students’ work
KTB4G131D	Peer and/or self-assessment (e.g. students assessing other students or assessing themselves on their work, their performance or their input into tasks)
KTB4G131E	Standardised tests (e.g. national and international tests)
KTB4G131F	Grades and grading (e.g. how to assign grades, reporting grades to parents, uses and functions, advantages, limitations)
KTB4G131G	Providing effective feedback to students (e.g. appropriate form, focus and detail of feedback)
KTB4G131H	Data literacy (e.g. analysing and interpreting assessment data such as test results, data about students’ attitudes and perceptions, etc.)
KTB4G131I	Monitoring learning progress (e.g. using assessments and analysing assessment data to check if students are making learning progress)

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.419. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4OTLAS

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
TKS					
Chile	0.929	0.962	0.949	0.093	0.041
Croatia	0.955	0.974	0.966	**0.136**	0.039
Morocco	0.904	0.961	0.947	0.078	0.046
Poland	0.954	0.977	0.970	**0.113**	0.034
Portugal	0.933	0.981	0.974	0.098	0.031
Saudi Arabia	0.965	0.985	0.980	**0.109**	0.024
South Africa	0.940	0.964	0.953	0.100	0.051
United States	0.946	0.976	0.968	0.091	0.036
International pooled data	0.948	0.977	0.970	0.092	0.030

Note. Coefficients in **bold** exceed the cut-off criteria
Source: OECD, TALIS 2024 database.

Table 11.420. Measurement invariance results from MGCFA for scale T4OTLAS with differences in model fits across models for TKS countries/territories

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
TKS								
Baseline	0.978	0.971	0.100	0.038	-	-	-	-
Equal loadings	0.980	0.979	0.085	0.044	0.002	0.008	-0.015	0.007
Equal loadings and thresholds	0.963	0.973	0.097	0.099	-0.017	-0.006	0.012	0.054

Source: OECD, TALIS 2024 database.

Table 11.421. Item loadings and thresholds based on pooled TKS data for scale T4OTLAS

Item	Loading	Threshold 1	Threshold 2	Threshold 3
KTB4G131A	0.800	-1.844	-0.789	0.242
KTB4G131B	0.836	-1.504	-0.402	0.577
KTB4G131C	0.829	-1.385	-0.446	0.489
KTB4G131D	0.800	-1.401	-0.300	0.678
KTB4G131E	0.720	-1.014	-0.096	0.739
KTB4G131F	0.815	-1.362	-0.424	0.523
KTB4G131G	0.839	-1.503	-0.525	0.405
KTB4G131H	0.877	-1.342	-0.321	0.607
KTB4G131I	0.901	-1.517	-0.483	0.523
KTB4G131A	0.800	-1.844	-0.789	0.242

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Opportunities to learn – Additional pedagogical topics

The scale of *Opportunities to learn – Additional pedagogical topics* (T4OTLAP) was measured using a set of 11 items (KTB4G141A, KTB4G141B, KTB4G141C, KTB4G141D, KTB4G141E, KTB4G141F, KTB4G141G, KTB4G141H, KTB4G141I, KTB4G141J and KTB4G141K). These items assessed the extent to which formal teacher training or subsequent professional learning prepared teachers in various topics related to pedagogy. For each item, teachers selected one of the following response options: "Not at all", "To some extent", "Quite a bit" and "A lot". Higher scores on this scale reflect greater opportunities available to teachers. Table 11.422 provides the item names, question stem, item statements and response options for the items belonging to this scale.

Scale reliabilities for all TKS participating countries/territories as well as for the pooled TKS model are presented in Table 11.423. The scale T4OTLAP has high reliability (above 0.900) in all participating countries/territories. In terms of model fit, the CFI, TLI and SRMR are within the acceptable cut-off criteria. The RMSEA exceeds the cut-off criteria in the pooled model, as well as in the models for Croatia, Poland, Portugal, Saudi Arabia and the United States.

Table 11.424 presents the results from the measurement invariance testing for T4OTLAP for TKS participating countries/territories. The CFI, TLI and SRMR are within the cut-off criteria in the baseline invariance model, while the RMSEA exceeds the cut-off. The degree of change between the baseline and equal loadings model is within the cut-off criteria for all fit indices. The degree of change between the equal loadings and the equal loadings and thresholds models is within the cut-off for the RMSEA, close to the cut-off for the TLI and exceeds the cut-off criteria for the CFI and SRMR. No specific caution has to be made when comparing scale score results across countries/territories.

Table 11.425 presents the standardised item loadings and thresholds based on pooled TKS data for the scale T4OTLAP. All items show high loadings for the pooled model as well as in single countries/territories.

Table 11.422. Items and response categories used in the construction of scale T4OTLAP

Scale or item	Question or item wording
KRBEPR	To what extent has your formal teacher <education and training> or subsequent professional learning prepared you in the following additional topics related to pedagogy?
	1=Not at all; 2=To some extent; 3=Quite a bit; 4=A lot
	Scale midpoint: 2.5
KTB4G141A	Teaching in a multicultural setting
KTB4G141B	Teaching in a multilingual setting
KTB4G141C	Teaching students from socio-economically disadvantaged homes
KTB4G141D	Methods and interventions for inclusion and inclusive pedagogies (e.g. methods for making students from minority backgrounds feel more included in the learning and preventing and dealing with discrimination and bullying based on these factors)
KTB4G141E	Accommodating students with special education needs (e.g. dyslexia, dysgraphia, attentional problems, autism, hearing impairment, etc.)
KTB4G141F	Identifying and/or meeting the learning needs of gifted students
KTB4G141G	Teaching cross-disciplinary skills (e.g. creativity, critical thinking, complex problem solving, collaboration)
KTB4G141H	Using <digital resources and tools> in instruction (e.g. approaches to using Internet, software tools and computers/digital devices for teaching and learning)
KTB4G141I	Classroom climate (e.g. the physical and social environment of the classroom)
KTB4G141J	Students' social and emotional development (e.g. emotion regulation, self-esteem, self-efficacy, respect for others, communicating and interacting with others)
KTB4G141K	Identifying and intervening when students display emotional problems (e.g. stress, anxiety, traumatic event, family dysfunction, victimisation)

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table 11.423. Reliability coefficient alpha and CFA model fits for single countries and pooled model for scale T4OTLAP

Participating country/territory	Reliability	CFA model fit			
	Cronbach's alpha	CFI	TLI	RMSEA	SRMR
		TKS			
Chile	0.933	0.955	0.944	0.099	0.054
Croatia	0.956	0.962	0.953	**0.140**	0.058
Morocco	0.927	0.949	0.937	0.089	0.053
Poland	0.946	0.948	0.936	**0.129**	0.084
Portugal	0.950	0.960	0.950	**0.141**	0.047
Saudi Arabia	0.958	0.953	0.941	**0.144**	0.059
South Africa	0.945	0.961	0.952	0.095	0.069
United States	0.939	0.937	0.921	**0.129**	0.064
International pooled data	0.951	0.958	0.947	**0.114**	0.051

Note. Coefficients in **bold** exceed the cut-off criteria
Source: OECD, TALIS 2024 database.

Table 11.424. Measurement invariance results from MGCFA for scale T4OTLAP with differences in model fits across models for TKS countries/territories

Invariance model	Model fit				Difference in model fit			
	CFI	TLI	RMSEA	SRMR	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR
				TKS				
Baseline	0.958	0.947	0.118	0.061	-	-	-	-
Equal loadings	0.962	0.960	0.102	0.073	0.004	0.013	-0.016	0.012
Equal loadings and thresholds	0.939	0.953	0.111	0.124	-0.023	-0.007	0.009	0.051

Source: OECD, TALIS 2024 database.

Table 11.425. Item loadings and thresholds based on pooled TKS data for scale T4OTLAP

Item	Loading	Threshold 1	Threshold 2	Threshold 3
KTB4G141A	0.822	-0.791	0.086	0.820
KTB4G141B	0.773	-0.376	0.465	1.084
KTB4G141C	0.819	-0.948	-0.027	0.732
KTB4G141D	0.859	-0.955	-0.024	0.706
KTB4G141E	0.780	-0.951	0.011	0.793
KTB4G141F	0.819	-0.907	-0.011	0.762
KTB4G141G	0.810	-1.410	-0.296	0.671
KTB4G141H	0.644	-1.252	-0.297	0.567
KTB4G141I	0.829	-1.409	-0.372	0.642
KTB4G141J	0.905	-1.448	-0.395	0.532
KTB4G141K	0.893	-1.142	-0.167	0.629

Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

References

Bailey, P. and A. Emad (2021), *Wcorr: Weighted Correlations*. [10]

Browne, M. et al. (1993), "Alternative ways of assessing model fit", in Bollen, K. and J. Long (eds.), *Testing Structural Equation Models*, Sage, Newbury Park, CA. [14]

Brown, T. (2015), *Confirmatory Factor Analysis for Applied Research*, Guilford Press, New York, NY. [8]

Cheung, G. (1999), "Testing factorial invariance across groups: A reconceptualization and proposed new method", *Journal of Management*, Vol. 25/1, pp. 1-27, https://doi.org/10.1016/S0149-2063(99)80001-4. [18]

Cheung, G. and R. Rensvold (2002), "Evaluating goodness-of-fit indexes for testing measurement invariance", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 9/2, pp. 233-255, https://doi.org/10.1207/S15328007SEM0902_5. [3]

Cronbach, L. (1951), "Coefficient alpha and the internal structure of tests", *Psychometrika*, Vol. 16, pp. 297-334, https://doi.org/10.1007/BF02310555. [12]

Davidov, E. (2008), "A cross-country and cross-time comparison of the Human Values Measurements with the second round of the European Social Survey", *Survey Research Methods*, Vol. 2/1, pp. 33-46, https://doi.org/10.5167/uzh-95236. [19]

Davidov, E. et al. (2014), "Measurement equivalence in cross-national research", *Annual Review of Sociology*, Vol. 40, pp. 55-75, https://doi.org/10.1146/annurev-soc-071913-043137. [23]

Edwards, J. and R. Bagozzi (2000), "On the nature and direction of relationships between constructs and measures", *Psychological Methods*, Vol. 5/2, pp. 155-174, https://doi.org/10.1037/1082-989X.5.2.155. [30]

Hu, L. and P. Bentler (1999), "Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6/1, pp. 1-55, https://doi.org/10.1080/10705519909540118. [13]

Kline, R. (2015), *Principles and Practice of Structural Equation Modeling, Fourth Edition*, Guilford Press, New York, NY. [15]

Little, T. (2013), *Longitudinal Structural Equation Modeling*, Guilford Press, New York, NY. [16]

Lyubomirsky, S. and H. Lepper (1999), "A measure of subjective happiness: Preliminary reliability and construct validation", *Social Indicators Research*, Vol. 46/2, pp. 137-155, https://doi.org/10.1023/A:1006824100041. [2]

Messick, S. (1995), "Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning", *American Psychologist*, Vol. 50/9, pp. 741-749, https://doi.org/10.1037/0003-066X.50.9.741. [1]

Unclassified - Non classifié

Millsap, R. and J. Yun-Tein (2004), "Assessing factorial invariance in ordered-categorical measures", *Multivariate Behavioral Research*, Vol. 39/3, pp. 479-515, https://doi.org/10.1207/S15327906MBR3903_4. [6]

Mîndrila, D. (2010), "Maximum likelihood (ML) and diagonally weighted least squares (DWLS) estimation procedures: A comparison of estimation bias with ordinal and multivariate non-normal data", *International Journal of Digital Society*, Vol. 1/1, https://doi.org/10.20533/ijds.2040.2570.2010.0010. [7]

OECD (2019), *TALIS 2018 Technical Report*, OECD, Paris, https://www.oecd.org/content/dam/oecd/en/about/programmes/edu/talis/talis2018supportmaterials/TALIS_2018_Technical_Report.pdf. [26]

OECD (2019), *TALIS Starting Strong 2018 Technical Report*, TALIS, OECD Publishing, Paris, https://doi.org/10.1787/0921466e-en. [27]

OECD (2014), *TALIS 2013 Technical Report*, OECD Publishing, Paris, https://www.oecd.org/content/dam/oecd/en/about/programmes/edu/talis/talis2013supportmaterials/TALIS-2013-technical-report.pdf. [22]

OECD (2010), *TALIS 2008 Technical Report*, TALIS, OECD Publishing, Paris, https://doi.org/10.1787/9789264079861-en. [28]

R Core Team (2022), *R: A Language and Environment for Statistical Computing*, R Foundation for Statistical Computing. [9]

Rosseel, Y. (2012), "lavaan: An R package for structural equation modeling", *Journal of Statistical Software*, Vol. 48/2, pp. 1-36, https://doi.org/10.18637/jss.v048.i02. [11]

Rutkowski, L. and D. Svetina (2017), "Measurement invariance in international surveys: Categorical indicators and fit measure performance", *Applied Measurement in Education*, Vol. 30/1, pp. 39-51, https://doi.org/10.1080/08957347.2016.1243540. [24]

Schermelleh-Engel, K., H. Moosbrugger and H. Müller (2003), "Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures", *Methods of Psychological Research Online*, Vol. 8/2, pp. 23-74, https://doi.org/10.23668/psycharchives.12784. [17]

Skrondal, A. and S. Rabe-Hesketh (2004), *Generalized Latent Variable Modeling*, Interdisciplinary Statistics Series, Chapman and Hall/CRC. [29]

Steenkamp, J. and H. Baumgartner (1998), "Assessing measurement invariance in cross-national consumer research", *Journal of Consumer Research*, Vol. 25, pp. 78-90, https://doi.org/10.1086/209528. [20]

van de Vijver, F. et al. (2019), "Invariance analyses in large-scale studies", *OECD Education Working Papers*, No. 201, OECD Publishing, Paris, https://doi.org/10.1787/254738dd-en. [21]

Vandenberg, R. and C. Lance (2000), "A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research", *Organizational Research Methods*, Vol. 3/1, pp. 4-69, https://doi.org/10.1177/109442810031002. [4]

Wu, H. and R. Estabrook (2016), "Identification of confirmatory factor analysis models of different levels of invariance for ordered categorical outcomes", *Psychometrika*, Vol. 81/4, pp. 1014-1045, https://doi.org/10.1007/s11336-016-9506-0. [5]

Yang-Hansen, K., M. Rosén and J. Gustafsson (2006), "Measures of self-reported reading resources, attitudes and activities based on latent variable modeling", *International Journal of Research and Method in Education*, Vol. 29/2, pp. 221-237, https://doi.org/10.1080/17437270600891721. [25]

Notes

[1] Numbering refers to the ISCED levels 2 and 3 principal questionnaires.

[2] The factor loadings presented in the report are based on the pooled model. However, during the scale evaluation process, values for individual countries/territories were also examined. Only countries/territories and items that fall below the established factor loadings cut-offs are reported on.

[3] Notes on reliability are shown only for three-item scales, as reliability is the only criterion available for these scales. For scales with more than three items, reliability is considered alongside the four model-fit indices in each country/territory.

Unclassified - Non classifié

12 Scaling analysis of items measuring general pedagogical knowledge

This document summarises the psychometric analyses conducted on the general pedagogical knowledge (GPK) assessment developed for the Teaching and Learning International Survey (TALIS) 2024 Teacher Knowledge Survey (TKS). The analyses – carried out by the Australian Council for Educational Research – informed item selection, scaling and the development of a described GPK scale. Advanced psychometric models, such as the two-parameter logistic model and the Generalized Partial Credit Model, were employed for item calibration and scaling. Differential item functioning and cross-national comparability were also examined. Key areas of focus included item-level performance, dimensionality of the scale, reliability and measurement invariance across countries and gender. Missing data patterns and test targeting were reviewed to ensure data quality. The final scale enables robust cross-country comparisons and meaningful interpretation of teachers' GPK proficiency.

Unclassified - Non classifié

12.1. Overview

This chapter describes the analysis and scaling procedures for the main survey data from the Teaching and Learning International Survey (TALIS) 2024 Teacher Knowledge Survey (TKS) assessment of general pedagogical knowledge (GPK). Data from the eight participating countries were received by the Australian Council for Educational Research (ACER) after cleaning and processing by the International Association for the Evaluation of Educational Achievement (IEA). In a first step, ACER conducted an exhaustive analysis of these data prior to their final scaling. At various points in the process, these analyses were discussed with and vetted by the TALIS Technical Advisory Group and the Teacher Knowledge Expert Group whose advice and feedback informed further analysis and final scaling procedures.

The following types of analysis were undertaken:

- review of percentages of missing data
- log data analysis, such as time per item and time per whole test
- investigation of the factorial structure of the GPK scale using multi-dimensional item response theory (IRT) models
- review of test reliability (IRT-based) for the overall GPK scale and potential sub-scales
- analyses based on IRT and classical test theory to examine item and test performance, such as:
  - item facility
  - adjusted (rest) and non-adjusted item-total correlation
  - item fit (weighted infit mean square [MNSQ])
  - mean latent construct estimates for respondents (per each question/item)
  - key and distractor analyses
  - item characteristic curves
- differential item functioning (DIF):
  - by gender
  - by country.

The analyses and scaling procedures were conducted using appropriate sampling weights for all TKS teacher data. For analyses and calibrations based on data from the combined international[1] sample, so called “senate weights” were used to ensure that each of the eight participating education systems contributed to the results with the same weight.

12.2. Scaling model

Following best practice in other international large-scale assessments, IRT was used for the scaling of GPK assessment items. The ACER ConQuest software (Adams et al., 2020[1]) was used for analysis and scaling, applying the two-parameter logistic (2PL) model and Generalized Partial Credit Model (Muraki, 1992[2]).

For dichotomously scored items (e.g. correct vs. incorrect), the 2PL models the probability of obtaining a correct response $xi = 1$ as:

$$P_i(x_i = 1|\theta_{n,}\alpha_i, \delta_i) = \frac{exp\big(\alpha_i(\theta_n - \delta_i)\big)}{1 + exp\big(\alpha_i(\theta_n - \delta_i)\big)}$$

Unclassified - Non classifié

Here, $P_i(x_i = 1|\theta_{n,}\alpha_i, \delta_i)$ is the probability of person n scoring 1 on item i, θ_n is the estimated latent trait of person n, α_i is the estimated location of item i on this dimension and α_i is a discrimination (slope) parameter. For each item, item responses are modelled as a function of the latent trait θ_n.

For items with more than two categories, the model becomes the Generalized Partial Credit Model,

$$P_i(x_i|\theta_{n,}\alpha_i, \delta_i, \tau_{ik}) = \frac{exp\sum_{k=0}^{x}\alpha_i(\theta_n - \delta_i + \tau_{ik})}{\sum_{h=0}^{m_i} exp\sum_{k=0}^{h}\alpha_i(\theta_n - \delta_i + \tau_{ik})}, x_i = 1, 2, \cdots, m_i$$

Here, $P_i(x_i|\theta_{n,}\alpha_i, \delta_i, \tau_{ik})$ denotes the probability of individual n score x_i on item i, θ_n is the estimated latent trait for respondent n, α_i is a discrimination (slope) parameter for item i, δ_i is an item parameter which indicates the location of the item i on the latent continuum and τ_{ik} is a parameter indicating step k for item i.

12.3. Targeting and test reliability

The targeting of the assessment was reviewed by comparing the range of item difficulties and the range of GPK amongst assessed teachers in the main survey. Further, the reliability of the assessment was computed based on IRT measures (plausible value reliability estimate), which was satisfactory across national samples and for the international sample (Table 12.1).

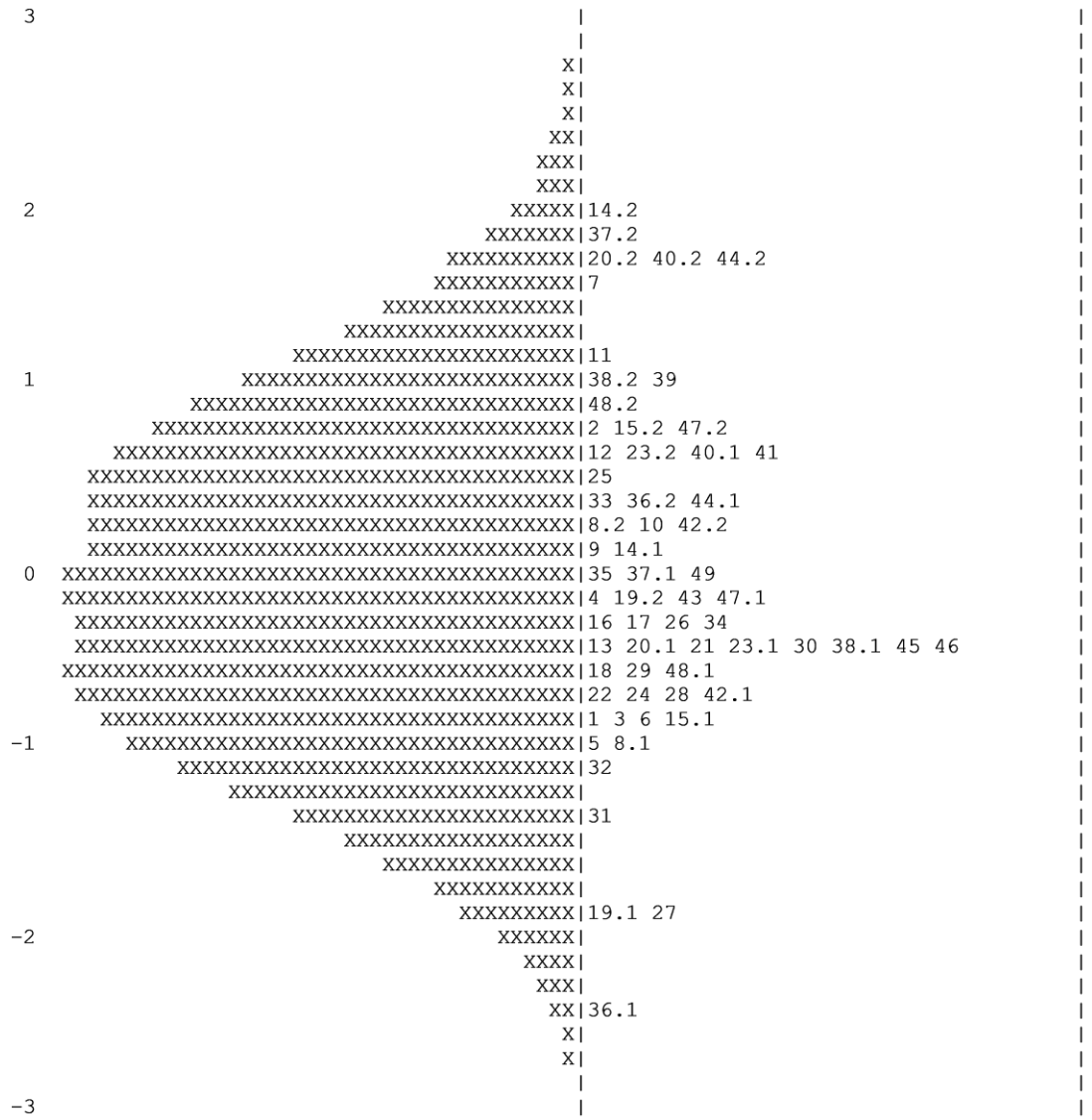
Table 12.1. Reliabilities of assessment items

Sample	Weighted reliability estimate
Chile	0.80
Croatia	0.83
Morocco	0.75
Poland	0.81
Portugal	0.75
Saudi Arabia	0.77
South Africa	0.82
United States	0.75
International sample	0.86

When measuring knowledge domains with an assessment, it is important to use assessment items that cover the range of knowledge found in the target population. To review this coverage, the distribution of GPK and the location of item parameters (with a response probability of 0.5) were estimated based on the 49 items that were selected for scaling (Figure 12.1). Item thresholds were equal to item difficulties for dichotomous items. For partial credit items, a difficulty threshold was estimated for each score, indicated by the 0.1 and 0.2 appended to the item number. This mapping comparing teacher knowledge and item thresholds is known as a Wright Map.[2] The map illustrates that, generally, the assessment items covered the range of teachers' GPK measured in participating countries. However, there were fewer items describing lower as well as higher levels of GPK.

Unclassified - Non classifié

Figure 12.1. Wright map of GPK assessment items



12.4. Review of missing data

Three possible types of non-response could appear in the GPK assessment data:

4. **Omitted items** (coded as 9): items to which a respondent was exposed, but for which no response was entered.
5. **Not-administered items** (coded as 8): items to which a respondent was not exposed. Most commonly, this is due to the rotated cluster design of the assessment, by which respondents were assigned to different clusters of items.
6. **Not-reached items** (coded as 7): a derived category of non-response based on evidence from strings of omitted items at the end of a test form completed by a respondent. If the final valid response in a test form completed by a respondent was followed by more than two omitted responses, the first omitted response remained coded as 9 while all remaining trailing omitted responses were deemed to have been not reached and were recoded accordingly.

Unclassified - Non classifié

Not-reached and not-administered items (categories 7 and 8) were not included in the analyses and scaling of GPK items. On average, between 5% and 6% of GPK item responses were coded as not-reached in the international sample; however, the percentages ranged from 1.3% in Poland to 13.9% in the United States (Table 12.2). As items were included in three different positions across the four booklets, drop-out effects due to fatigue or other reasons tended to be equally spread across assessment items. The GPK assessment was not timed (i.e. respondents could take up to 24 hours to complete both the context questionnaire and the GPK assessment) and responses in the not-reached category were treated as missing information for the analyses and scaling of GPK data.

Table 12.2. Percentages of not-reached responses

Item	Chile	Croatia	Morocco	Poland	Portugal	Saudi Arabia	United States	South Africa
KTN4G69D1	5.9	3.8	2.8	1.0	4.2	4.2	13.6	7.1
KTN4G79C1	5.9	3.8	2.8	1.0	4.3	4.2	13.8	7.2
KTN4G32F1	5.4	3.6	2.3	0.7	3.9	3.7	13.4	6.7
KTN4G31C1	7.8	3.5	2.2	1.3	5.1	4.1	14.5	6.4
KTN4G47E1	5.5	3.8	2.5	0.8	4.0	3.8	13.4	6.7
KTN4G34H1	8.0	4.3	2.4	1.4	4.1	3.7	12.5	6.6
KTN4G54H1	7.9	3.3	2.9	1.2	4.4	4.0	12.9	6.1
KTN4G591	7.7	4.2	2.3	1.4	3.9	3.6	12.4	6.4
KTN4G43E1	8.7	5.0	2.7	1.7	4.8	4.3	14.2	7.3
KTN4G46E1	7.1	3.5	2.2	1.2	4.9	4.1	14.4	6.3
KTN4G751	7.4	4.3	2.9	1.4	5.0	4.9	15.1	8.0
KTN4G401	8.5	3.8	2.3	1.8	5.4	4.2	14.9	6.6
KTN4G50S1	7.3	4.2	2.3	1.3	3.9	3.6	12.1	6.3
KTN4G681	8.1	4.4	2.6	1.4	4.1	3.7	12.7	6.6
KTN4G711	8.6	4.5	3.0	1.5	5.3	5.2	16.5	8.5
KTN4G49E1	6.2	4.0	2.8	1.2	4.5	4.3	14.3	7.3
KTN4G44U1	7.2	4.0	2.3	1.2	3.8	3.6	12.0	6.3
KTN4G70E1	6.5	4.1	2.8	1.2	4.6	4.4	14.4	7.4
KTN4G601	7.8	3.2	2.9	1.2	4.1	4.0	12.7	6.0
KTN4G561	8.8	3.7	3.0	1.5	4.5	4.3	15.1	6.3
KTN4G78Q1	8.3	3.8	2.2	1.5	5.2	4.2	14.9	6.5
KTN4G36A1	6.7	3.1	2.1	1.0	4.4	3.4	13.1	5.8
KTN4G301	7.2	3.2	2.8	1.2	3.9	4.0	12.4	5.8
KTN4G53G1	6.7	3.2	2.1	1.0	4.4	3.6	13.4	5.8
KTN4G52I1	8.0	3.6	2.9	1.2	4.4	4.2	13.2	6.2
KTN4G35D1	8.4	3.6	2.9	1.5	4.5	4.2	13.3	6.3
KTN4G61A1	6.9	3.6	2.2	1.1	3.6	3.5	11.6	5.8
KTN4G73L1	7.0	3.6	2.2	1.1	3.7	3.5	11.7	5.9
KTN4G29T1	6.9	3.4	2.1	1.0	4.5	3.6	14.0	5.8
KTN4G66R1	6.7	4.1	2.9	1.2	4.7	4.6	14.5	7.7
KTN4G55F1	7.2	3.2	2.8	1.1	3.9	4.0	12.4	5.8
KTN4G77O1	7.2	3.2	2.8	1.1	3.9	3.8	12.4	5.8
KTN4G45T1	7.8	3.2	2.8	1.2	4.0	4.0	12.5	6.0

Unclassified - Non classifié

Item	Chile	Croatia	Morocco	Poland	Portugal	Saudi Arabia	United States	South Africa
KTN4G42T1	9.2	3.7	3.2	1.6	4.8	4.3	15.1	6.5
KTN4G28A1	9.2	3.7	3.1	1.5	4.8	4.3	15.1	6.4
KTN4G41T1	8.5	4.8	2.7	1.6	4.5	3.9	13.1	7.0
KTN4G761	7.1	4.3	2.9	1.2	4.9	4.7	14.9	7.7
KTN4G651	9.3	3.7	3.2	1.6	4.8	4.4	15.2	6.5
KTN4G721	7.1	3.4	2.1	1.0	4.5	3.8	14.2	5.9
KTN4G581	8.7	4.9	2.7	1.7	4.7	4.1	14.1	7.1
KTN4G631	8.4	4.7	2.7	1.5	4.2	3.8	13.1	6.9
KTN4G51S1	8.5	4.4	3.0	1.5	5.3	5.1	15.2	8.5
KTN4G371	5.6	3.8	2.6	0.9	4.1	3.9	13.5	6.9
KTN4G39A1	9.5	3.7	3.3	1.6	5.0	4.5	15.6	6.5
KTN4G641	9.3	4.2	2.3	2.0	5.6	4.7	15.6	7.1
KTN4G741	8.0	3.6	2.2	1.5	5.1	4.1	14.9	6.5
KTN4G48P1	8.8	5.1	2.8	1.7	4.9	4.3	14.9	7.3
KTN4G67S1	8.6	3.9	2.3	1.8	5.5	4.4	14.9	6.8
KTN4G381	8.6	4.0	2.3	1.8	5.5	4.4	15.0	6.8
KTN4G621	7.0	3.9	2.2	1.1	3.8	3.6	12.0	5.9
KTN4G57R1	8.0	4.4	3.0	1.4	5.3	5.1	15.2	8.2
KTN4G33D1	9.0	4.0	2.3	1.9	5.6	4.4	15.3	6.9
Average	7.7	3.9	2.6	1.3	4.5	4.1	13.9	6.7

There were relatively low percentages of omitted responses for individual[3] GPK items, when not administered and not-reached responses were treated as missing information (Table 12.3). On average, 1.6% of responses were omitted; complex multiple-choice (CMC) items were more likely to be omitted (1.9%) than simple multiple-choice (SMC) items (1.1%).

Table 12.3. Percentages of omitted responses for individual items

Item	Type	% omitted	Item	Type	% omitted	Item	Type	% omitted
KTO4G61A1	SMC	0.8	KTO4G31C1	SMC	0.9	KTO4G561B	CMC	3.1
KTO4G73L1	SMC	0.7	KTO4G741A	CMC	1.3	KTO4G561C	CMC	3.5
KTO4G621A	CMC	3.6	KTO4G741B	CMC	1.9	KTO4G561D	CMC	2.6
KTO4G621B	CMC	3.9	KTO4G741C	CMC	2.2	KTO4G28A1	SMC	0.7
KTO4G621C	CMC	2.6	KTO4G741D	CMC	2.0	KTO4G42T1	SMC	0.9
KTO4G621D	CMC	2.9	KTO4G741E	CMC	2.0	KTO4G651A	CMC	1.8
KTO4G44U1	SMC	1.7	KTO4G78Q1	SMC	1.1	KTO4G651B	CMC	1.8
KTO4G50S1	SMC	1.5	KTO4G401A	CMC	1.8	KTO4G651C	CMC	1.5
KTO4G591A	CMC	1.3	KTO4G401B	CMC	1.8	KTO4G651D	CMC	1.9
KTO4G591B	CMC	1.7	KTO4G401C	CMC	2.2	KTO4G39A1	SMC	0.9
KTO4G591C	CMC	1.5	KTO4G67S1	SMC	0.9	KTO4G32F1	SMC	0.9
KTO4G591D	CMC	1.4	KTO4G381A	CMC	1.2	KTO4G47E1	SMC	1.0
KTO4G34H1	SMC	0.9	KTO4G381B	CMC	1.5	KTO4G371A	CMC	1.2
KTO4G681A	CMC	1.7	KTO4G381C	CMC	1.7	KTO4G371B	CMC	1.1
KTO4G681B	CMC	1.9	KTO4G381D	CMC	1.7	KTO4G371C	CMC	1.3

Unclassified - Non classifié

Item	Type	% omitted	Item	Type	% omitted	Item	Type	% omitted
KTO4G681C	CMC	1.7	KTO4G381E	CMC	1.5	KTO4G371D	CMC	1.3
KTO4G681D	CMC	1.9	KTO4G33D1	SMC	1.8	KTO4G69D1	SMC	0.7
KTO4G631A	CMC	2.0	KTO4G641A	CMC	1.4	KTO4G79C1	SMC	2.0
KTO4G631B	CMC	2.1	KTO4G641B	CMC	1.4	KTO4G49E1	SMC	1.0
KTO4G631C	CMC	2.2	KTO4G641C	CMC	2.0	KTO4G70E1	SMC	0.8
KTO4G631D	CMC	2.1	KTO4G77O1	SMC	0.8	KTO4G66R1	SMC	0.8
KTO4G41T1	SMC	2.2	KTO4G55F1	SMC	0.5	KTO4G761A	CMC	1.4
KTO4G581A	CMC	1.7	KTO4G301A	CMC	1.5	KTO4G761B	CMC	1.8
KTO4G581B	CMC	1.6	KTO4G301B	CMC	1.5	KTO4G761C	CMC	1.8
KTO4G581C	CMC	2.0	KTO4G301C	CMC	1.6	KTO4G761D	CMC	1.6
KTO4G43E1	SMC	1.5	KTO4G301D	CMC	1.7	KTO4G751A	CMC	2.1
KTO4G48P1	SMC	0.9	KTO4G45T1	SMC	2.0	KTO4G751B	CMC	1.6
KTO4G36A1	SMC	0.9	KTO4G601A	CMC	0.9	KTO4G751C	CMC	2.2
KTO4G53G1	SMC	1.0	KTO4G601B	CMC	1.4	KTO4G57R1	SMC	1.2
KTO4G29T1	SMC	0.7	KTO4G601C	CMC	1.3	KTO4G51S1	SMC	1.2
KTO4G721A	CMC	2.4	KTO4G601D	CMC	1.8	KTO4G711A	CMC	1.7
KTO4G721B	CMC	3.1	KTO4G54H1	SMC	1.5	KTO4G711B	CMC	1.6
KTO4G721C	CMC	2.2	KTO4G52I1	SMC	1.7	KTO4G711C	CMC	1.2
KTO4G721D	CMC	3.1	KTO4G35D1	SMC	1.3	KTO4G711D	CMC	1.7
KTO4G46E1	SMC	1.0	KTO4G561A	CMC	3.3			

12.5. Review of psychometric item properties

Psychometric item properties for all assessment items were analysed using the following criteria (using senate):

- the overall facility of items, measured by the percentage of correct responses (weighted in the case of CMC items)
- the item-rest correlation, which reflects the correlation of a scored item with the total score based on all other items in a booklet
- the weighted mean square (MNSQ) statistic (Wright and Masters, 1982[3]), which indicates the level of item fit for the IRT scaling model and tends to be satisfactory when using a 2PL model
- the (initial) estimate of the scaled 2PL location parameter (computed by dividing the location parameter by the slope parameter)
- the 2PL slope parameter, which indicates the discrimination of each item (with low values denoting low discrimination and high values higher discrimination).

The results for the international sample (Table 12.4) highlighted good psychometric properties for most items, except for three items that were flagged for further review: KTF4G33D1, KTF4G45T1 and KTF4G641. Statistics for these items revealed low discrimination as indicated by very low item-rest correlations (below 0.15) and corresponding low 2PL slope parameters (below 0.35). Item statistics were further reviewed based on separate calibrations for each national sample, which showed similarly low discrimination for these items across all countries. Based on this extensive review, the decision was taken to remove these three items from the final scaling of GPK.

Unclassified - Non classifié

Table 12.4. Item facilities, item-rest correlations, weighted item fit and initial parameter estimations for the full set of GPK items

Item name	Item type	Facility (% correct)	Item-rest correlation	Weighted MNSQ	Scaled 2PL location parameter	2PL slope parameter
KTF4G28A1	SMC	56	0.28	1.00	-0.37	0.65
KTF4G29T1	SMC	60	0.34	1.00	-0.59	0.82
KTF4G301	CMC	50	0.49	0.99	0.04	0.79
KTF4G31C1	SMC	53	0.45	0.99	-0.15	1.19
KTF4G32F1	SMC	72	0.49	1.00	-0.89	1.55
KTF4G33D1	SMC	48	0.12	1.00	0.31	0.27
KTF4G34H1	SMC	67	0.37	1.00	-0.87	0.97
KTF4G35D1	SMC	55	0.35	1.00	-0.28	0.85
KTF4G36A1	SMC	60	0.29	1.00	-0.64	0.70
KTF4G371	CMC	55	0.51	1.00	-0.22	0.85
KTF4G381	CMC	43	0.63	0.99	0.25	1.39
KTF4G39A1	SMC	54	0.35	1.00	-0.23	0.82
KTF4G401	CMC	36	0.46	0.99	0.58	1.33
KTF4G41T1	SMC	51	0.44	0.99	-0.03	1.13
KTF4G42T1	SMC	43	0.42	0.99	0.34	1.11
KTF4G43E1	SMC	48	0.29	1.00	0.13	0.67
KTF4G44U1	SMC	55	0.36	1.00	-0.26	0.89
KTF4G45T1	SMC	28	0.12	1.00	3.21	0.31
KTF4G46E1	SMC	45	0.35	1.00	0.27	0.83
KTF4G47E1	SMC	70	0.40	1.00	-0.94	1.09
KTF4G48P1	SMC	60	0.48	1.00	-0.39	1.34
KTF4G49E1	SMC	56	0.36	1.00	-0.30	0.88
KTF4G50S1	SMC	59	0.41	0.99	-0.44	1.03
KTF4G51S1	SMC	36	0.33	0.99	0.80	0.83
KTF4G52I1	SMC	44	0.28	1.00	0.43	0.65
KTF4G53G1	SMC	64	0.37	1.00	-0.75	0.96
KTF4G54H1	SMC	35	0.19	1.00	1.48	0.45
KTF4G55F1	SMC	78	0.39	0.99	-1.34	1.18
KTF4G561	CMC	42	0.34	1.00	0.56	0.52
KTF4G57R1	SMC	51	0.32	1.00	-0.06	0.77
KTF4G581	CMC	32	0.37	1.01	0.97	0.97
KTF4G591	CMC	60	0.60	0.99	-0.42	1.29
KTF4G601	CMC	69	0.40	1.00	-1.07	0.68
KTF4G61A1	SMC	84	0.32	0.99	-1.90	1.06
KTF4G621	CMC	46	0.55	1.00	0.17	1.08
KTF4G631	CMC	23	0.49	0.99	1.19	1.09
KTF4G641	CMC	29	0.09	1.00	4.24	0.21
KTF4G651	CMC	33	0.48	1.01	0.91	0.99
KTF4G66R1	SMC	59	0.36	1.00	-0.48	0.88
KTF4G67S1	SMC	61	0.51	1.00	-0.45	1.49

Unclassified - Non classifié

Item name	Item type	Facility (% correct)	Item-rest correlation	Weighted MNSQ	Scaled 2PL location parameter	2PL slope parameter
KTF4G681	CMC	36	0.30	1.00	1.03	0.45
KTF4G69D1	SMC	74	0.49	1.00	-0.94	1.59
KTF4G70E1	SMC	58	0.35	1.00	-0.44	0.84
KTF4G711	CMC	51	0.48	1.00	-0.03	0.80
KTF4G721	CMC	40	0.52	1.00	0.44	1.02
KTF4G73L1	SMC	67	0.50	0.99	-0.66	1.54
KTF4G741	CMC	32	0.41	1.00	1.00	0.69
KTF4G751	CMC	30	0.33	1.00	1.13	0.88
KTF4G761	CMC	65	0.34	1.00	-1.06	0.58
KTF4G77O1	SMC	75	0.42	1.00	-1.12	1.28
KTF4G78Q1	SMC	61	0.42	1.00	-0.49	1.11
KTF4G79C1	SMC	38	0.27	1.00	0.80	0.65

12.6. Review of item dimensionality

The TALIS TKS framework (OECD, 2025[4]) stipulates that teachers' GPK broadly encompasses three content-related dimensions:

- **instruction:** teaching methods and lesson planning vs. classroom management
- **learning:** learning and development vs. affective-motivational dispositions
- **assessment:** evaluation and diagnostic procedures vs. data literacy, interpretation and use.

The TKS framework also identifies three cross-cutting categories of types of knowledge:

- **cognitive demand:** recall vs. analyse or apply
- **knowledge base:** theoretical/scientific vs. practice-based
- **thematic orientation:** core knowledge vs. emergent priorities.

GPK items were developed to ensure coverage of these aspects and can be classified according to these framework dimensions.

Multi-dimensional IRT models were used to investigate the possibility of separately reporting assessment results for these different sub-dimensions.

Two two-dimensional models were estimated using data from the pooled international sample only. One model distinguished items according to their **cognitive demand** (recall vs. analyse and apply). The second model distinguished items according to their **knowledge base** (theoretical/scientific vs. practice-based). The correlations between the two latent knowledge-type dimensions turned out to be very high in both models (0.99), which suggested that it would not be meaningful to report sub-scales reflecting these different types of knowledge.

Then, a three-dimensional model was estimated, distinguishing the three (broader) content-related dimensions of instruction, learning and assessment. The model was estimated for the international sample as well as separately for each national sample (Table 12.5). The results showed that the correlations between these three dimensions were very high (0.97-0.98). While they were somewhat lower in some of the national samples, they were mostly above 0.90, suggesting that only minor differences exist in the variation of GPK across these sub-dimensions. As there were only minor differences in the distribution of estimated sub-scale scores and the overall score across countries, it was decided to derive and report only an overall scale reflecting GPK.

Unclassified - Non classifié

Table 12.5. Correlations between latent dimensions of teachers' GPK

Sample	Latent correlations between subdimensions		
	Assessment with instruction	Assessment with learning	Instruction with learning
Chile	0.95	0.93	0.94
Croatia	0.94	0.92	0.96
Morocco	0.94	0.91	0.93
Poland	0.93	0.87	0.92
Portugal	0.94	0.94	0.95
Saudi Arabia	0.93	0.90	0.92
South Africa	0.95	0.95	0.95
United States	0.96	0.95	0.97
International sample	0.98	0.97	0.98

12.7. Review of differential item functioning by country

Comparability of data and results from cross-national large-scale assessments relies on assessment items having comparable properties across participating countries. An assessment item shows *item-by-country interaction* (country DIF) when respondents with the same levels of knowledge, but from different countries, display a different probability of correctly answering the item. It is important to carefully examine items that show considerable lack of measurement invariance across countries. These variations may indicate problems in the translation or national adaptation of the items (for example, by including content that is not appropriate to specific national contexts). Translation or adaptation mistakes are typical examples of factors that make an item more or less difficult for reasons unrelated to the construct the assessment aims to measure.

To assess the occurrence of item-by-country interactions, nationally calibrated item parameters were compared with those from a calibration of item parameters based on the combined dataset from all eight participating countries. Confidence intervals for each national item difficulty parameter were computed based on the respective standard errors and adjustments to account for possible design effects as well as for multiple comparisons.

Figure 12.2 illustrates item-by-country interaction using the example of item KTF4G54H1 (Behaviourism), which was one of the items showing a considerable amount of variation across participating countries. Figure 12.3 shows the example of item KTF4G301 (intrinsic and extrinsic motivation) for which only minor variation in item location across national samples was observed.

Based on these comparisons, correlations were also computed between item location and slope parameters from the calibration of the international sample with those from national samples, to provide information on the general alignment of national and international item parameters. These correlations were calculated in two different ways: (1) unadjusted correlations, defined as those between national item parameters and those from the international sample including all countries; and (2) adjusted correlations, defined as those between national item parameters and those from a combined sample that included only data from the other seven countries.

Unclassified - Non classifié

Figure 12.2. Example of graph for review of item-by-country interaction (KTF4G54H1)

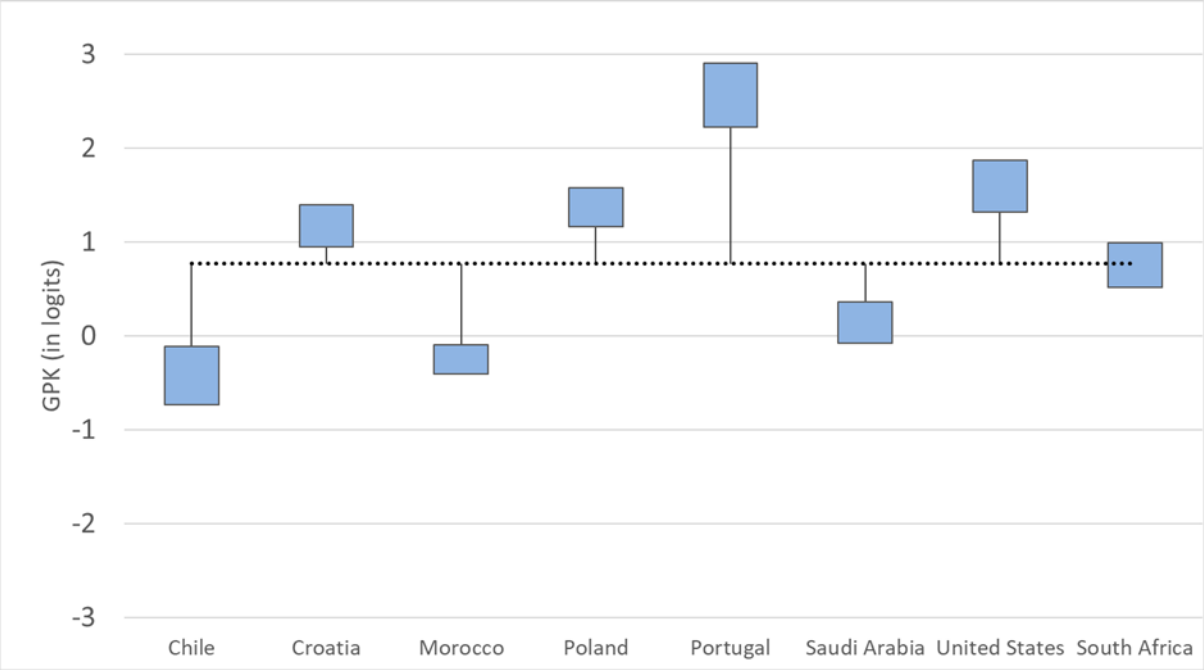


Figure 12.3. Example of graph for review of item-by-country interaction (KTF4G301)

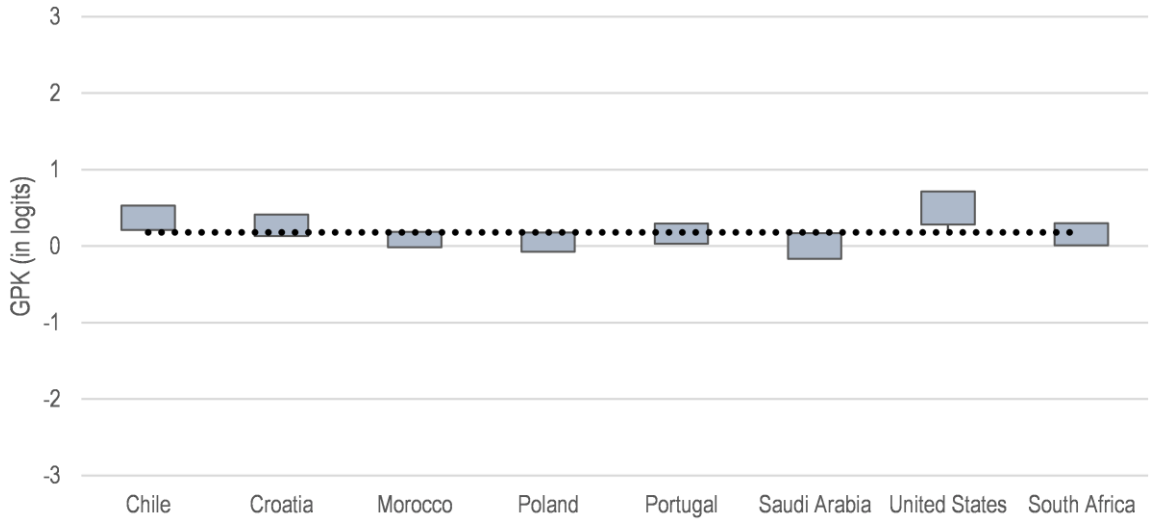


Table 12.6 shows consistently high unadjusted correlations between international and national item location parameters (0.84 on average), with correlations below 0.80 for Morocco and Saudi Arabia only. The unadjusted correlations between national and international slope parameters were generally lower (0.60 on average), with the lowest correlations recorded for Morocco and Saudi Arabia (below 0.50). In both cases, the adjusted correlations were, as expected, somewhat lower than the adjusted one (on average 0.79 for the item location and 0.55 for the slope parameters).

Unclassified - Non classifié

Table 12.6. Correlations between national and international item parameters

Country	Item location parameters		Item slope parameters	
	Unadjusted	Adjusted	Unadjusted	Adjusted
Chile	0.85	0.80	0.55	0.49
Croatia	0.84	0.78	0.72	0.64
Morocco	0.76	0.69	0.47	0.48
Poland	0.86	0.80	0.59	0.51
Portugal	0.90	0.86	0.61	0.56
Saudi Arabia	0.77	0.71	0.45	0.42
South Africa	0.88	0.85	0.74	0.68
United States	0.84	0.80	0.69	0.59
Average	0.84	0.79	0.60	0.55

12.7.1. National item adjudication

National project managers (NPMs) received detailed national reports that included information about the psychometric quality of their GPK assessment items in comparison with results for the international sample. NPMs were also provided with a list of items that were flagged for concerns about their psychometric quality (such as low discrimination, or larger deviations in facility from the international sample results) and asked to review regarding possible context effects or adaptation/translation issues that might explain these anomalies.

In particular, based on results from national and international calibrations of GPK items, NPMs were provided with the following information:

- individual item statistics, that showed for each assessment item the (national) distribution of responses, item-rest correlations, IRT 2PL parameters, weighted item fit and average estimated GPK scores in each response category
- summary national statistic tables that listed for all assessment items the overall number of respondents, facility (percentage of correct responses), item-rest correlation, item-total correlation (i.e. scored item correlation with sum score based on all items in a booklet), weighted item fit and item location coefficient
- a list of national items that were flagged for one of the following reasons:
  - SMC items flagged if a distractor had a positive point-biserial correlation
  - CMC items flagged if they exhibited unexpected category ordering
  - items flagged for item-by-country interaction if an item was found to be relatively easier or harder (i.e. if there was a difference of one logit or more between the national and the overall item location parameters) in a country compared to the overall estimate (based on the international TKS sample).

The comparisons of psychometric properties (such as facility or discrimination) of items at the national level (considering issues with psychometric quality only occurring in individual national samples), in combination with feedback from countries, led to the identification of five items (two in Chile and three in Poland) whose translations deviated from the original English source version. These items were discarded from the scaling for those countries and were set to “Not administered” in the TALIS database. Preliminary calibrations further showed that one item in Saudi Arabia (KTF4G46E1) had a negative 2PL slope parameter (indicating that respondents correctly answering that item had lower GPK scores, on average, than respondents who provided the wrong answer). This item was discarded at the national level from the international calibration and the national scaling but was preserved in the TALIS database.

Unclassified - Non classifié

Table 12.7. Example of flagged items report

Item no.	Item identifier	Item name	Response format	Facility (% correct)	Item-rest correlation	Item-rest correlation (< 0.2)	Distractor with positive biserial correlations (SMC items)	Item category disordering (CMC items)	Item difficulty compared to overall estimate	Flagged for checking
3	KTF4G32F1	Achievement-related feedback	SMC	31	0.14	Yes			Harder	Yes
33	KTF4G45T1	Metacognition and creative thinking	SMC	27	0.05	Yes	Yes			Yes
42	KTF4G51S1	Summative assessment	SMC	33	0.18	Yes				Yes
45	KTF4G641	Standardised tests	CMC	26	0.06	Yes		Yes		Yes
48	KTF4G6751	Think aloud strategy	SMC	86	0.48				Easier	Yes
52	KTF4G33D1	Zone of proximal development	SMC	39	0.06	Yes	Yes			Yes

Subsequently, item fit was further reviewed to identify items with larger country DIF warranting treatment as (separate) national items in the final scaling with their corresponding national item parameters. To this end, the 49 adjudicated items were included in an international calibration. Item fit was then reviewed at the national level based on the following fit statistics, in combination with visual inspections of expected and observed item characteristic curves for each national sample:

- the mean deviation (MD) statistic
- the root mean square deviation (RMSD) statistic
- the standardised chi square (S-X2) statistic
- the weighted mean square (Infit) statistic.

All four fit statistics were calculated based on comparisons between the expected and observed probabilities of correct responses to each assessment item.

In particular, the MD and RMSD statistics are calculated as follows (Robitzsch, 2022[5]; Yamamoto, Khorramdel and von Davier, 2013[6]):

$$MD_g = \int \left[p_g^{obs}(\theta) - p_g^{exp}(\theta) \right] f_g(\theta) d\theta$$

$$RMSD_g = \sqrt{\int \left[p_g^{obs}(\theta) - p_g^{exp}(\theta) \right]^2 f_g(\theta) d\theta}$$

Letting $g = 1, \ldots, G$ denote the education systems participating in the TKS, $p_g^{obs}(\theta)$ and $p_g^{exp}(\theta)$ are the observed and expected probability of a correct response to each item given proficiency θ, while $f_g(\theta)$ is the group-specific density of teachers' GPK scale. For assessing item fit, only the RMSD value was used to flag item misfit at a threshold of 0.2, above which items were flagged for national item misfit. A similar flag for MD values (flagging statistics outside the range of -0.2 and 0.2) was used as an auxiliary index that indicated whether an item was relatively harder or easier than for the combined sample.

The S-X2 statistic is calculated as:

Unclassified - Non classifié

$$S - X_g^2 = \sum_{k=1}^{n-1} \frac{(O_{kg} - E_{kg})^2}{(1 - E_{kg})}$$

Letting $g = 1, \ldots, G$ denote the education systems participating in the TKS and $k = 1, \ldots, n-1$ all possible score groups, O_{ikg} are the observed and E_{ikg} the expected item responses (Orlando and Thissen, 2000[7]). For the assessment of item misfit at the national level, a threshold value of 15 was used, above which items were flagged for national item misfit.

The Infit statistic (Wright and Masters, 1982[3]) was calculated as:

$$Infit_{gn} = \frac{\sum_n z_{ng}^2 Var(X_{ng})}{\sum_n Var(X_{ng})}$$

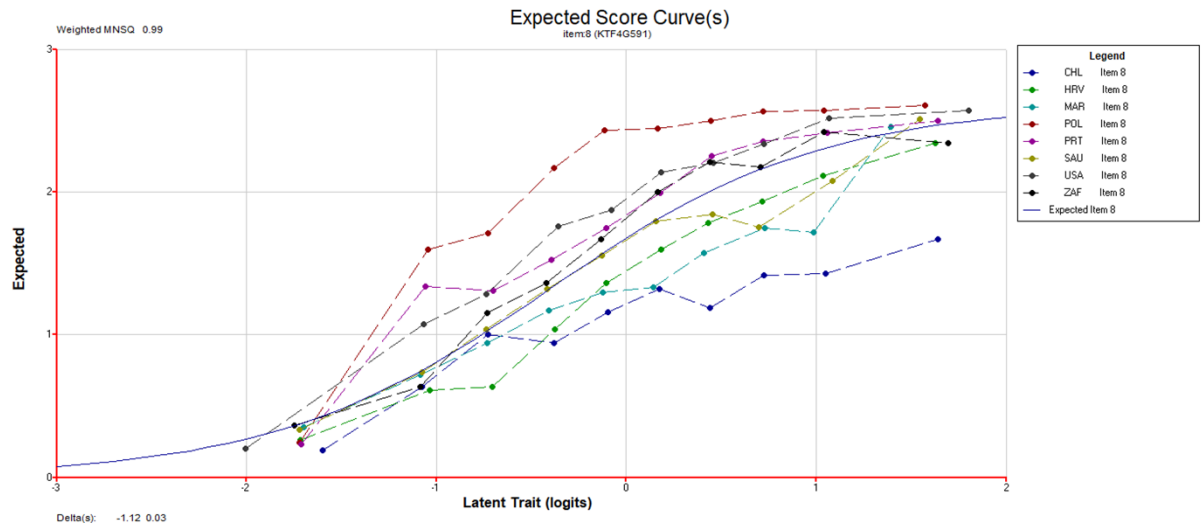
For each item, letting $g = 1, \ldots, G$ denote the education systems participating in the TKS, n is the number respondents in each country, $Var(X_{ng})$ is the variance of the observed responses X_{ng} and z_{ng}^2 are the residuals, which, with $E(X_{ng})$ denoting the expected responses, are calculated as:

$$z_{ng}^2 = \frac{X_{ng} - E(X_{ng})}{\sqrt{Var(X_{ng})}}$$

Infit values close to 1 indicate a good fit to the scaling model, while values below 1 indicate higher-than-expected and those above 1 lower-than-expected discrimination. To assess national item misfit, 0.7 and 1.3 were used as the lower and higher thresholds, flagging items with statistics outside of this range.

Following the initial calibration with all items, two further calibrations were performed to derive the final item parameters for the scaling of GPK items. After discarding three items (KTF4G33D1, KTF4G45T1 and KTF4G641) from the item set and those national items that had translation deviations or negative discrimination, the remaining 49 items were calibrated, and the residual-based fit statistics were calculated within each participating education system. These statistics were reviewed in reference to visual plots of the expected and the observed item curves within each country (see example in Figure 12.4).

Figure 12.4. Example item plot for identifying item misfit at the national level



Item KTF4G591 was flagged in Poland (S-X2 = 22.6, RMSD = 0.216) and the MD (0.196) indicating that the item was easier in this country. The same item was also flagged for Chile (S-X2 = 28.1, RMSD = 0.226) with an MD (-0.206) indicating that the item was much harder. This finding is visible in Figure 12.4 where the brown dotted line (for Poland) is considerably above the expected (straight) line, while the blue dotted

Unclassified - Non classifié

line (for Chile) is clearly below it. In cases like this, the corresponding item was discarded from scaling at the international level but was treated as a national item with its own item parameters in the subsequent calibration.

After the first calibration, 11 national items were identified as presenting lack of item fit and treated as national items with country-specific parameters. The second calibration showed no further instances of item misfit at the national level and was used as the final calibration for the scaling of GPK items.

Table 12.8 shows a list of items that were either: (i) excluded for all countries from scaling; (ii) excluded from national scaling and the national database due to translation deviations; (iii) excluded from national scaling due to negative discrimination parameters; or (iv) treated as national items for scaling due to lack of measurement invariance.

Table 12.8. List of items that were excluded or treated as national items

Item	Level	Treatment	Rationale
KTF4G45T1	International	Discarded from scaling for all countries	Poor psychometric item quality
KTF4G641			
KTF4G33D1			
KTF4G36A1	Poland	Discarded from national database and scaling	Translation error reported by national centre
KTF4G721	Chile		
KTF4G70E1	Poland		
KTF4G51S1			
KTF4G69D1	Chile		
KTF4G46E1	Saudi Arabia	Discarded from national scaling	Negative slope parameter in preliminary calibration
KTF4G54H1	Chile	Treated as national item for scaling	Country DIF (national item fit issues)
KTF4G591			
KTF4G50S1			
KTF4G49E1			
KTF4G78Q1	Croatia		
KTF4G55F1	Morocco		
KTF4G591	Poland		
KTF4G54H1	Portugal		
KTF4G29T1			
KTF4G32F1	Saudi Arabia		
KTF4G42T1	United States		

Table 12.9 shows the final item parameters for the scaling of GPK items. While the first 49 items were based on data from all or most countries, the last 11 items were those that were treated as national items. To clearly indicate this, the names of such items have been modified, with the ISO three-letter codes replacing the first three letters of the item name. The final as well as previous calibrations were conducted with senate weights.

Table 12.9. Final item parameters for the scaling of GPK items

Item no.	Item identifier	Item parameters			
		Slope	Location	Step 1	Step 2
1	KTF4G69D1	1.56	-1.36		

Unclassified - Non classifié

Item no.	Item identifier	Item parameters			
		Slope	Location	Step 1	Step 2
2	KTF4G79C1	0.65	0.52		
3	KTF4G32F1	1.46	-1.55		
4	KTF4G31C1	1.18	-0.18		
5	KTF4G47E1	1.09	-1.02		
6	KTF4G34H1	0.98	-0.84		
7	KTF4G54H1	0.45	0.71		
8	KTF4G591	1.38	-0.56	-0.50	0.50
9	KTF4G43E1	0.67	0.08		
10	KTF4G46E1	0.85	0.20		
11	KTF4G751	0.88	0.99		
12	KTF4G401	1.33	0.78		
13	KTF4G50S1	0.98	-0.29		
14	KTF4G681	0.45	0.46	0.17	-0.17
15	KTF4G711	0.79	-0.02	-0.27	0.27
16	KTF4G49E1	0.85	-0.12		
17	KTF4G44U1	0.89	-0.23		
18	KTF4G70E1	1.03	-0.61		
19	KTF4G601	0.68	-0.74	-0.25	0.25
20	KTF4G561	0.53	0.29	-0.17	0.17
21	KTF4G78Q1	1.30	-0.76		
22	KTF4G36A1	0.74	-0.50		
23	KTF4G301	0.78	0.03	0.17	-0.17
24	KTF4G53G1	0.97	-0.72		
25	KTF4G52I1	0.65	0.28		
26	KTF4G35D1	0.85	-0.24		
27	KTF4G61A1	1.06	-2.01		
28	KTF4G73L1	1.54	-1.01		
29	KTF4G29T1	0.99	-0.66		
30	KTF4G66R1	0.89	-0.42		
31	KTF4G55F1	1.05	-1.79		
32	KTF4G77O1	1.28	-1.43		
33	KTF4G42T1	0.92	0.51		
34	KTF4G28A1	0.65	-0.24		
35	KTF4G41T1	1.13	-0.03		
36	KTF4G761	0.58	-0.61	-0.58	0.58
37	KTF4G651	0.98	0.90	-0.79	0.79
38	KTF4G721	1.09	0.34	-0.52	0.52
39	KTF4G581	0.98	0.94		
40	KTF4G631	1.09	1.30	-0.15	0.15
41	KTF4G51S1	0.90	0.56		
42	KTF4G371	0.85	-0.19	0.14	-0.14
43	KTF4G39A1	0.82	-0.18		

Unclassified - Non classifié

Item no.	Item identifier	Item parameters			
		Slope	Location	Step 1	Step 2
44	KTF4G741	0.69	0.69	0.01	-0.01
45	KTF4G48P1	1.32	-0.52		
46	KTF4G67S1	1.49	-0.67		
47	KTF4G381	1.41	0.35	-0.38	0.38
48	KTF4G621	1.07	0.19	-0.52	0.52
49	KTF4G57R1	0.77	-0.04		
50	SAU4G32F1	0.57	0.32		
51	CHL4G54H1	1.29	-0.43		
52	PRT4G54H1	1.43	2.64		
53	CHLTF4G59	1.55	0.83	-2.40	2.40
54	POLTF4G59	1.42	-1.77	0.47	-0.47
55	CHL4G50S1	1.78	-1.95		
56	CHL4G49E1	0.76	-1.33		
57	HRV4G78Q1	0.93	0.40		
58	PRT4G29T1	0.55	0.24		
59	MAR4G55F1	0.50	0.00		
60	USA4G42T1	1.80	-0.85		

12.7.2. Differential item functioning by gender

The analyses of GPK assessment data included an exploration of potential DIF by gender. DIF occurs when groups of respondents with the same degree of knowledge have different probabilities of responding correctly to an item. The IRT model assumes the probability only to be a function of the measured latent variable and not of any group membership. Groups are most typically defined in terms of nationality in DIF analyses but can also be defined according to any other characteristic. So, if men have a higher probability of correctly answering an item than women (at the same level of overall GPK), the item shows gender DIF. Gender DIF was assessed for the international sample using senate weights.

Estimates of gender DIF were derived by including interaction terms in the item response model. The following facet model was used to investigate the occurrence of gender DIF for dichotomously scored test items:

$$P_i(\theta_n) = \frac{exp\big(\theta_n - (\alpha_i(\delta_i - \eta_g + \lambda_{ig}))\big)}{1 + exp\big(\theta_n - (\alpha_i(\delta_i - \eta_g + \lambda_{ig}))\big)}$$

Where θ_n denotes the ability of person n, δ_i the location of item i, and α_i is the discrimination (slope) parameter. To measure parameter equivalence across the two gender groups, two extra terms were included in the scaling model. The additional parameter for gender effects is denoted by λ_{ig}. To obtain proper estimates, we also needed to include the overall gender effect η_g in the model. Both item-by-gender interaction estimates λ_{ig} and overall gender effects η_g were constrained to sum to 0.

For CMC items with more than two categories, this was modelled as:

$$P_{x_i}(\theta_n) = \frac{exp\sum_{k=0}^{x_i}\big(\theta_n - (\alpha_i(\delta_i - \eta_g + \lambda_{ig} + \tau_{ik}))\big)}{\sum_{h=0}^{m_i} exp\sum_{k=0}^{h}\big(\theta_n - (\alpha_i(\delta_i - \eta_g + \lambda_{ig} + \tau_{ik}))\big)} \quad x_i = 1, 2, \cdots, m_i$$

The difference in item difficulty between gender groups was estimated by multiplying the item-by-gender interaction estimates by two to obtain the estimated difference between the two comparison groups and was reviewed for each item (Table 12.10). While some six items had notable DIF in favour of females and

Unclassified - Non classifié

one in favour of males, most items in this assessment showed no notable item DIF. Based on international data that were included in the final calibration, the estimated differences in ability between gender groups was larger than 0.3 logits (which was used as a threshold, and which is equivalent to somewhat less than a third of a standard deviation) for 7 items (out of 49).

Table 12.10. Gender DIF estimates for GPK assessment items

Item no.	Item name	DIF (female)	Easier for	Difference larger than 0.3 logits
1	KTF4G69D1	-0.70	Females	Yes
2	KTF4G79C1	0.20	Males	No
3	KTF4G32F1	-0.48	Females	Yes
4	KTF4G31C1	-0.19	Females	No
5	KTF4G47E1	-0.04	Females	No
6	KTF4G34H1	-0.25	Females	No
7	KTF4G54H1	0.49	Males	Yes
8	KTF4G591	-0.35	Females	Yes
9	KTF4G43E1	0.26	Males	No
10	KTF4G46E1	0.17	Males	No
11	KTF4G751	0.07	Males	No
12	KTF4G401	-0.05	Females	No
13	KTF4G50S1	0.11	Males	No
14	KTF4G681	0.26	Males	No
15	KTF4G711	-0.09	Females	No
16	KTF4G49E1	0.15	Males	No
17	KTF4G44U1	0.00	Males	No
18	KTF4G70E1	-0.07	Females	No
19	KTF4G601	0.19	Males	No
20	KTF4G561	0.10	Males	No
21	KTF4G78Q1	-0.01	Females	No
22	KTF4G36A1	0.03	Males	No
23	KTF4G301	0.07	Males	No
24	KTF4G53G1	0.06	Males	No
25	KTF4G52I1	0.01	Males	No
26	KTF4G35D1	0.19	Males	No
27	KTF4G61A1	-0.22	Females	No
28	KTF4G73L1	-0.63	Females	Yes
29	KTF4G29T1	0.10	Males	No
30	KTF4G66R1	0.20	Males	No
31	KTF4G55F1	-0.35	Females	Yes
32	KTF4G77O1	-0.01	Females	No
33	KTF4G42T1	0.02	Males	No
34	KTF4G28A1	0.10	Males	No
35	KTF4G41T1	-0.05	Females	No

Unclassified - Non classifié

Item no.	Item name	DIF (female)	Easier for	Difference larger than 0.3 logits
36	KTF4G761	0.02	Males	No
37	KTF4G651	0.16	Males	No
38	KTF4G721	0.13	Males	No
39	KTF4G581	-0.23	Females	No
40	KTF4G631	0.01	Males	No
41	KTF4G51S1	0.13	Males	No
42	KTF4G371	0.05	Males	No
43	KTF4G39A1	-0.03	Females	No
44	KTF4G741	0.07	Males	No
45	KTF4G48P1	-0.17	Females	No
46	KTF4G67S1	-0.42	Females	Yes
47	KTF4G381	-0.25	Females	No
48	KTF4G621	-0.10	Females	No
49	KTF4G57R1	0.18	Males	No

12.8. Scaling of GPK items

For the final scaling of GPK, the Generalized Partial Credit Model was used, and plausible values were computed as final GPK scale scores (Mislevy, 1991[8]; Mislevy and Sheehan, 1987[9]; von Davier, Gonzalez and Mislevy, 2009[10]; von Davier, Gonzalez and Schulz, 2020[11]). Plausible values were derived using the ACER ConQuest software, which allows conditioning on all available background information (from the teacher questionnaire) as well as on between-school differences.

Using item parameters anchored at their estimated values from the calibration based on the international TKS data, plausible values were generated as random draws $\hat{\theta}_{ng}$ from the following (posterior) distribution:

$$\hat{\theta}_{ng} \sim N\left(E_g(\theta|x_n; z_n), \sqrt{V_g(\theta|x_n; z_n)}\right)$$

that depend on response data x_n (the conditional item response model), other available context data z_n (conditioning variables) and group membership g, which in the case of TALIS TKS 2024 was determined by the education system in which an individual was assessed. Here, $E_g(\theta|x_n; z_n)$ represents the posterior distribution, while $E_g(\theta|x_n; z_n)$ denotes the posterior variance, which provides a measure of uncertainty – see more detailed descriptions in Adams, Wu and Macaskill (1997[12]), Adams (2002[13]) and von Davier, Gonzalez and Schulz (2020[11]). Group membership g is accounted for by drawing plausible values separately for each national sample.

In a first step, GPK items were calibrated with a sample consisting of data from all eight countries participating in the TALIS TKS, using senate weights (see information on item calibration procedures above). In a second step, the item parameters obtained from this calibration were anchored for the subsequent generation of plausible values, that was conducted separately for each national datafile. For each teacher, five plausible values were drawn, that provide a robust basis for computing the measurement error as part of the final reported standard error for all statistics based on TKS GPK data.

The conditioning part of the model included some direct regressors (number of not-reached responses, average GPK of all other teachers at the school, explicit stratum, teachers' gender) as well as factor scores derived from a principal component analysis (PCA) of all other information available in the TKS

Unclassified - Non classifié

questionnaire. Including all available information is important to strengthen the process of generating plausible values as well as to allow an unbiased analysis between questionnaire data and GPK, regardless of the size of correlations between conditioning variables and GPK. All variables (both direct regressors and factor scores from the PCA) that are included in the conditioning model were scored so that they have no missing information (by giving cases with missing data the national mean or mode of the respective variable) and (dummy) missing indicators will be added to the model. School differences were accounted for by adding a variable reflecting the average GPK score (adjusted for the contribution of each respondent) as well as explicit stratification variables. Information about the coding of questionnaire items for conditioning is presented in Annex H.

The plausible values were transformed to an international metric, where the average score was set to 250 and the standard deviation to 50 for the international dataset using senate weights. This transformation was achieved using the following formula:

$$\hat{\theta}_n' = 250 + 50\left(\frac{\theta_n - \overline{\theta}}{\sigma_\theta}\right)$$

where $\hat{\theta}_n^{'}$ are the GPK estimates (plausible values) in the international reporting metric, θ_n the original estimates (in logits), while $\overline{\theta}$ and σ_θ are the corresponding GPK mean (-0.24) and standard deviation (1.39), computed as the average of all five plausible values with weights assigning equal weight to each national sample. This transformation was applied to each of the five plausible values.

12.9. Using plausible values to estimate standard errors for GPK scores

When estimating standard errors for statistics based on teachers' GPK scores, it is important to consider the imputation variance that provides an estimate of the measurement error. While each plausible value constitutes an unbiased estimate of the population value, all five plausible values must be used to get an accurate estimate of the associated uncertainty, which is not only due to sampling variance, but also to imputation variance.

Concretely, if q is the population average of GPK (at the level of the combined sample, individual countries or any sub-groups within national samples) any statistic of interest μ_θ^P related to GPK should be computed using each of the P plausible values:

$$\mu_\theta = \frac{1}{P}\sum_{p=1}^{P} \mu_\theta^P$$

Similarly, estimates of the sampling variance SV_μ is calculated as the average of the sampling variance for each plausible value SV_μ^p:

$$SV_\mu = \frac{1}{P}\sum_{p=1}^{P} SV_\mu^p$$

Use of the P plausible values for data analysis also allows one to estimate the amount of error associated with the measurement of GPK. The measurement variance or imputation variance IV_p is computed as:

$$IV_p = \frac{1}{P-1}\sum_{p=1}^{P}\left(\mu_\theta^p - \mu_\theta\right)^2$$

Here, μ_θ^p is the statistic of interest computed on each plausible value p and μ_θ is the mean statistic based on all P plausible values.

The estimate of the total variance TV_μ, consisting of sampling variance and imputation variance, can be computed as:

$$TV_\mu = SV_\mu + \left(1 + \frac{1}{P}\right) IV_\mu$$

The estimate of the final standard error SE_μ is equal to:

Unclassified - Non classifié

$$SE_{\mu} = \sqrt{TV_{\mu}}$$

12.10. The development of a described scale

One of the objectives of TALIS TKS was to establish a described scale of GPK as a reference point for further cross-national assessments. Following 2PL IRT analysis and calibration, an RP67 value (the required proficiency associated with a 67% probability of success) was derived for each item.

The standardised item difficulty δ'_i for each item can be obtained by applying the following transformation to the item difficulty in its original metric δ_i:

$$\delta'_i = 250 + 50 \times \frac{\left(\delta_i + \ln\left(\frac{0.67}{0.33}\right) - (-0.34)\right)}{1.39}$$

For the final description, so-called Thurstonian thresholds were used, which were generated by ACER ConQuest based on the same scaling model assuming an item response probability of RP67. While in the case of SMC items the Thurstonian threshold is equivalent to the scaled item location, for CMC items there is one threshold for each step. Thurstonian thresholds were then ordered by their RP67 values – that is, by increasing levels of required proficiency – and draft item descriptors were developed to summarise the knowledge being assessed in each item.

Using these descriptors, a content-focused analysis was conducted to identify potential cut points along the proficiency continuum – specifically, locations where there were noticeable shifts in the cognitive demand or conceptual complexity of the items, suggesting a qualitative increase in the underlying proficiency. To support the development of a described scale, two cut points were identified to divide the scale into three levels. This approach was chosen to balance interpretability with empirical grounding, given the relatively modest number of items in the assessment of GPK. While the middle level is bounded, the lower and upper levels are only defined by the cut points and otherwise unbounded. This structure reflects the current distribution of item difficulties and allows for meaningful distinctions in knowledge without using a more fine-grained approach in view of a limited number of items that were used in this first assessment of GPK. The chosen approach preserves the capacity to refine or expand the scale in future assessment cycles, if additional items are introduced at the lower or upper ends. The broader span of the upper level, in particular, accommodates the clustering of more conceptually demanding items at the higher end of the scale.

The scatterplot below (Figure 12.5) shows the distribution of items by RP67 across the logit scale (x axis) and by rank order (y axis). The red vertical lines and associated brackets represent the proposed cut points and levels for the described scale.

The first level is considered foundational knowledge, consisting largely of basic practical knowledge of how to engage, motivate and manage students to maintain a productive learning environment. This level is indicative of knowledge perhaps held by teachers with practical experience of the classroom but limited formal training in codified or theoretical knowledge. Seven item thresholds in the assessment correspond to this level, which encompasses GPK below -0.5 logits (241 score points in the final reporting metric) and has no lower bound.

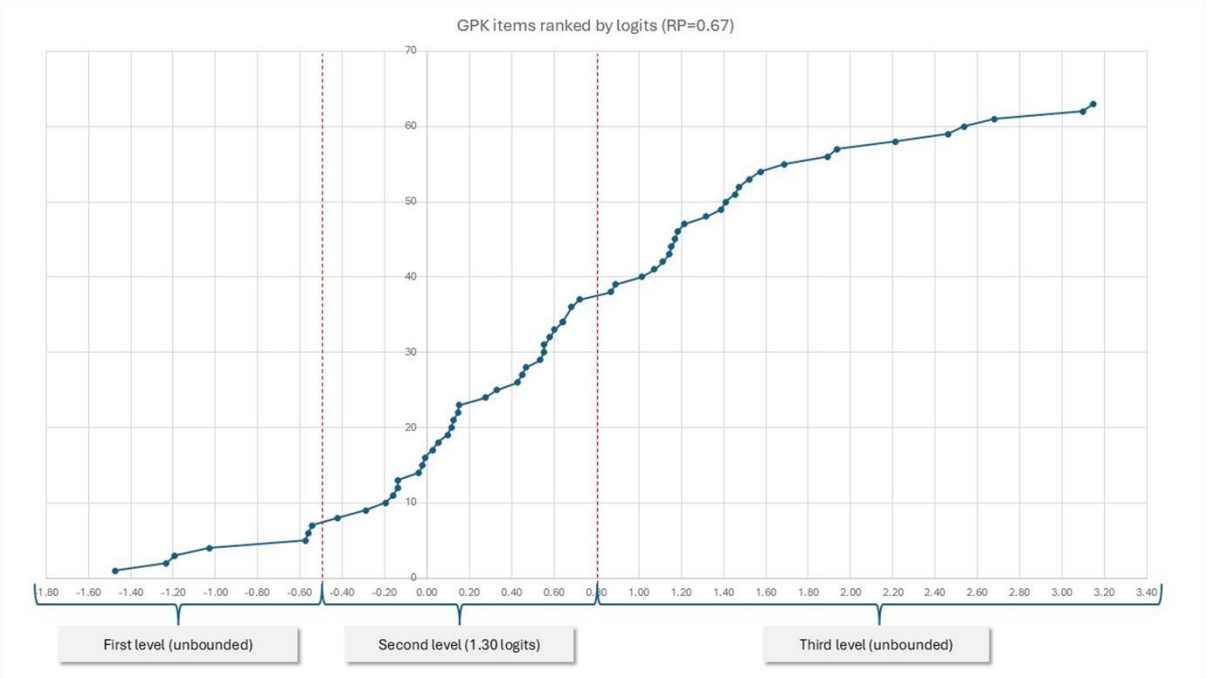
The second level describes knowledge encompassing a broad range of established theoretical and/or more specialised, codified pedagogical knowledge. This level is indicative of knowledge that teachers would be expected to gain from formal teacher training. Thirty item thresholds correspond to this level, which ranges from -0.5 logits (241 points) to 0.8 logits (287 points).

The third and highest level describes more nuanced and complete knowledge of concepts included in the previous level. This level is indicative of more updated or academic knowledge, particularly towards the

Unclassified - Non classifié

higher end. Twenty-six item thresholds correspond to this level, which is defined by GPK at or above 0.8 logits (287 points).

Figure 12.5. Scatterplot showing GPK scale cut points of item-step thresholds and rank order



References

Adams, R. (2002), "Scaling PISA cognitive data", in Adams, R. and M. Wu (eds.), *PISA 2000 Technical Report*, OECD Publications, Paris, https://www.oecd.org/content/dam/oecd/en/publications/reports/2002/12/programme-for-international-student-assessment-pisa_g1gh2e07/9789264199521-en.pdf. [13]

Adams, R. et al. (2020), *ACER ConQuest: Generalised Item Response Modelling Software (Version 5.29) (computer software)*, Australian Council for Educational Research, https://www.acer.org/au/conquest. [1]

Adams, R., M. Wu and G. Macaskill (1997), "Scaling methodology and procedures for the mathematical and science scales", in Martin, M. and D. Kelly (eds.), *TIMSS Technical Report Volume II: Implementation and Analysis (Primary and Middle School Years)*, Boston College. [12]

Mislevy, R. (1991), "Randomization-based inference about latent variables from complex samples", *Psychometrika*, Vol. 56/2, pp. 177-196. [8]

Mislevy, R. and K. Sheehan (1987), "Marginal estimation procedures", in Beaton, A. (ed.), *NAEP 1983-1984 Technical Report (Report No. 15-TR-20)*, Educational Testing Service. [9]

Muraki, E. (1992), "A generalized partial credit model: Application of an EM algorithm", *Applied Psychological Measurement*, Vol. 16/2, pp. 159-177, https://doi.org/10.1177/014662169201600206. [2]

Unclassified - Non classifié

OECD (2025), *TALIS Teacher Knowledge Survey 2024 Conceptual and Assessment Framework*, OECD Publishing, Paris, https://doi.org/10.1787/65903902-en. [4]

Orlando, M. and D. Thissen (2000), "Likelihood-based item-fit indices for dichotomous item response theory models", *Applied Psychological Measurement*, Vol. 24/1, pp. 50-64, https://doi.org/10.1177/01466216000241003. [7]

Robitzsch, A. (2022), "Statistical properties of estimators of the RMSD item fit statistic", *Foundations*, Vol. 2/2, pp. 488–503, https://doi.org/10.3390/foundations2020032. [5]

von Davier, M., E. Gonzalez and W. Schulz (2020), "Validity and reliability: Quality control strategies in IEA's large scale assessments", Springer. [11]

von Davier, M. and D. Hastedt (eds.) (2009), *What are plausible values and why are they useful?*, IEA-ETS Research Institute, Hamburg and Princeton, NJ, https://ierinstitute.org/fileadmin/Documents/IERI_Monograph/Volume_2/IERI_Monograph_Volume_02_Chapter_01.pdf. [10]

Wilson, M. and K. Draney (2002), "A technique for setting standards and maintaining them over time", in Nishisato, S. et al. (eds.), *Measurement and Multivariate Analysis*, Springer, https://doi.org/10.1007/978-4-431-65955-6_35. [14]

Wright, B. and G. Masters (1982), *Rating Scale Analysis*, MESA Press, Chicago, IL. [3]

Yamamoto, K., L. Khorramdel and M. von Davier (2013), "Scaling PIAAC cognitive data", in *Technical Report of the Survey of Adult Skills (PIAAC)*, OECD, Paris, https://www.oecd.org/content/dam/oecd/en/about/programmes/edu/piaac/technical-reports/cycle-1/PIAAC_Technical_Report_2013.pdf. [6]

Notes

[1] While acknowledging that only eight countries participated in TALIS TKS, the term "international sample" is used to refer to the combined dataset including data from all eight participants.

[2] The name for such a map was introduced by Wilson and Draney (2002[14]) in honour of the psychometrics expert Ben Wright (University of Chicago).

[3] For this review, the individual parts of complex multiple-choice (CMC) items were included as separate items.

Unclassified - Non classifié

Annex A. Consortium and experts

International Association for the Evaluation of Educational Achievement (IEA) Hamburg (Hamburg, Germany) – International study centre

Management and direction

- Steffen Knoll (Study Director)
- Anja Waschk (Study Director)
- Ralph Carstens (Senior Strategic Advisor, Lead Conceptual Development)
- Eleonora Kolomiets (Study Coordinator, 2022 onwards)
- Mira Bocti (Study Coordinator, 2023 to 2024)
- Megan Sim (Study Coordinator, 2021 to 2023)
- Huyen Thi Thu Nguyen (Study Coordinator, 2021 to 2023)
- Xiao Xiao (Study Coordinator, 2021)

Data management, adaptation and layout verification

- Adriana Viteri (Lead Data Manager, 2022 to 2025)
- Darrell Gwaltney (Data Manager, 2021 to 2022, 2025)
- Mark Cockle (Data Manager, 2023)
- Kamil Kowolik (Data Manager, 2024 onwards)
- Abdullah Al-Azzawi (Research Analyst, 2021 to 2023)
- Alena Becker (Senior Research Analyst, 2020 to 2022)
- Clara Beyer (Research Analyst)
- Viktoria Boehm (Research Analyst)
- Renato Coppi (Research Analyst)
- Tim Daniel (Research Analyst)
- Osman Deger (Student Assistant, 2022 to 2024)
- Ikram El Jabiry (Student Assistant)
- Isbat Hasnat (Research Analyst)
- Wolfram Jarchow (Research Analyst)
- Svenja Kalmbach (Research Analyst, 2021 to 2024)
- Inderawes Khalil (Research Analyst, 2021 to 2023)
- Juliane Kobelt (Research Analyst)
- Adam Kotb (Student Assistant, 2023 to 2024)
- Hannah Kowolik (Research Analyst)
- Chen-Ho Lee (Research Analyst)

Unclassified - Non classifié

- Jurij Lenar (Research Analyst)
- Widianto Persadha (Research Analyst)
- Valentina Rivera Toloza (Research Analyst, 2021 to 2023)
- Heiko Sibberns (Senior Research Advisor)
- Xiao Sui (Research Analyst)
- Daniel Ugurel (Research Analyst)
- Duygu Uyar (Research Analyst)
- Vanisa Vongphanakhone (Research Analyst)
- Hajar Zare (Student Assistant, 2022 to 2024)

Sampling

- Karsten Penon (Sampling Manager)
- Diego Cortes (Senior Research Analyst)
- Isbat Ibn Hasnat (Research Analyst, 2024)
- Ahmad Khalil (Research Analyst, 2023 onwards)
- Rodrigo Leyton (Research Analyst, 2022 onwards)
- Sabine Meinck (Co-head Research and Analysis Unit)
- Maximiliano Romero (Research Analyst, 2021 to 2024)
- Duygu Savaşcı-Smith (Research Analyst)
- Refilwe Setimela (Research Analyst, 2024 onwards)
- Hannah Smith (Research Analyst, 2020 to 2021)
- Felix Süttmann (Research Analyst, 2021 to 2022)
- Sabine Tieck (Senior Research Analyst, Sampling Team Lead)
- Pablo Torres Irribarra (Research Analyst, 2021 to 2024)

Scaling and analysis

- Mojca Rožman (Senior Research Analyst, Team Lead, 2022 onwards)
- Agnes Stancel-Piątak (Senior Research Analyst, Team Lead, 2020 to 2022)
- Purya Baghaei Moghadam (Senior Research Analyst)
- Falk Brese (Senior Research Analyst)
- Minge Chen (Research Analyst)
- Andres Christiansen (Senior Research Analyst)
- Alec Kennedy (Senior Research Analyst)
- Yuan-Ling Liaw (Senior Research Analyst)
- Ana Maria Mejia-Rodríguez (Senior Research Analyst)
- Maximiliano Romero (Research Analyst, 2024 onwards)
- Andres Ignacio Strello Toledo (Senior Research Analyst)
- Rolf Strietholt (Co-head Research and Analysis Unit)
- Pablo Torres Irribarra (Research Analyst, 2024 onwards)

Unclassified - Non classifié

Software development (IEA StudyExpert)

- Guido Martin (Lead)
- Sascha da Silva Burger (Quality Assurance)
- Sven Flachsbarth (Quality Assurance, 2022 to 2023)
- Christian Harries (Developer)
- André Schäfer (Quality Assurance)
- Katharina Sedelmayr (Developer)
- Harpreet Singh (Developer)
- Daniela Specks (Quality Assurance)
- Sheung Kong Tai (Developer)
- Sujith Thulaseedharan (Quality Assurance)

Software development (IEA DME, IEA DPE, IEA WinW3S, IEA IDB Analyzer)

- Yasin Afana (Research Analyst)
- Mohamadreza Atrian (Developer)
- Limiao Duan (Developer)
- Marwan Elkholy (Student Assistant, 2022 to 2023)
- Maike Junod (Developer)
- Marius Kaltenbach (Developer)
- Delnaz Mohebigilani (Developer)
- Tam Nguyen (Developer)
- Meng Xue (Senior Advisor, Unit Head)

Contracts, events and administration

- Mira Bocti (Event Coordinator, 2024 onwards)
- Connie Crossman (Unit Coordinator)
- Aisha Elsayed (SharePoint Administrator)
- Eva Feron (Unit Head International Studies)
- Christian Groth (Finance Director)
- Juliane Hencke (Director)
- Laiza Souza (Event Coordinator, 2021 to 2024)
- Bettina Wietzorek (SharePoint Administrator)
- Viola Wittmann (Contracts)

IEA Amsterdam (Amsterdam, the Netherlands)

- Betina Borisova (Data Protection Officer)
- Jan-Peter Broek (Financial Director, 2023 onwards)
- Roel Burgers (Financial Director, 2021 to 2023)
- David Ebbs (Senior Research Officer, Lead Translation Verification)
- Kateřina Hartmanová (Research Officer, 2021 to 2024)

Unclassified - Non classifié

- Florence Mitchell-Green (Junior Research Officer, 2024 onwards)
- Marta Moreno Hidalgo (Research Officer)
- Lauren Musu (Head Translation Verification and International Quality Control)
- Tahira Qadri (Research Officer)
- Anna Wikström (Junior Research Officer, 2023 to 2024)

cApStAn Linguistic Quality Control (Brussels, Belgium)

- Josiane Tyburn (Lead Project Manager)
- Steve Dept (Founding Partner)
- Elica Krajčeva (Senior Project Manager, Cross-cultural Survey Translation and Adaptation)
- Roberta Lizzi (Senior Project Manager, External Human Resources Director)
- Adrien Mathot (Translation Technologist)
- Manuel Souto Pico (Lead Translation Technologist)
- Laura Wayrynen (Operations Director)

Australian Council for Educational Research (ACER, Melbourne, Australia)

- Wolfram Schulz (Framework Lead, Project Lead 2023 onwards)
- Pina Tarricone (Project Lead, 2021 to 2023)
- Jonathan Heard (Test Developer, Deputy Project Lead 2023 onwards)
- John Ainley (Framework Lead)
- Nicola Andrews (Test Developer)
- Trish Dowsett (Test Developer)
- Eunjung Lee (Data Analyst)
- Gregory Macaskill (Data Analyst)
- Juliette Mendelovits (Supervising Test Developer)
- Ray Peck (Lead Test Development, 2021)
- Toby Simmer (Administrative Officer)
- Adam Wardell (Test Developer)

RAND Europe (Cambridge, United Kingdom)

- Merrilyn Groom (Research Analyst, Project Lead, 2022 to 2024, 2025 onwards)
- Miguel Subosa (Research Analyst, Project Lead, 2024 to 2025)
- Miriam Broeks (Research Analyst, Project Lead, 2021 to 2022)
- Elena Rosa Brown (Senior Researcher)
- Fin Oades (Research Assistant)

Unclassified - Non classifié

Experts

TALIS core survey Questionnaire Expert Group (QEG)

- Heather Price (Learning Policy Institute, United States, Chair)
- Charalambos Charalambous (University of Cyprus, Cyprus)
- Tracy Durksen (University of New South Wales, Australia)
- Hilary Hollingsworth (ACER, Australia)
- Stefan Johansson (University of Gothenburg, Sweden)
- Ridwan Maulana (University of Groningen, The Netherlands)
- Lorena Ortega (University of Chile, Chile)
- Oren Pizmony-Levy (Teachers College at Columbia University, United States)
- Ronny Scherer (University of Oslo, Norway)
- Anna Qian Sun (Rowan University, United States)
- Kristen Weatherby (Weatherby Education Studies, United Kingdom)

TALIS Starting Strong Questionnaire Expert Group (ECEC QEG)

- Lynn A. Karoly (RAND Corporation, United States, Chair)
- Julie Belanger (Better Purpose, United Kingdom)
- Alejandra Cortázar (ECEC Researcher and Consultant, Chile)
- Rahel Dreyer (Extended Member, Alice Salomon University of Applied Sciences, Germany)
- Mine Göl-Güven (Boğaziçi University, Türkiye)
- Maelis Karlsson Lohmander (Extended Member, University of Gothenburg, Sweden)
- Thomas Moser (University of Stavanger, Norway)
- Abbie Raikes (Extended Member, University of Nebraska Medical Center, United States)
- Yumi Yodogawa (Extended Member, Chiba University, Japan)

Teacher Knowledge Expert Group (TKEG)

- Jonathan Heard (ACER, Australia, Chair 2023 onwards)
- Pina Tarricone (ACER, Australia, Chair 2020 to 2023)
- Charalambos Charalambous (University of Cyprus, Cyprus)
- Drew Gitomer (Rutgers University, United States)
- Liina Malva (Tallinn University, Estonia)
- Thamar Voss (Extended Member, University of Freiburg, Germany)

Technical Advisory Group (TAG)

- Timothy Kennell (US Census Bureau, United States, Chair)
- Mick Couper (University of Michigan, United States)
- Paul Leseman (Utrecht University, The Netherlands)
- Bart Meuleman (University of Leuven, Belgium)
- Christian Monseur (University of Liège, Belgium)

Unclassified - Non classifié

Sampling Referee

- Jean Dumais (Previously Statistics Canada, Gatineau, Canada)

Translation Referee

- Michèle Ernst Stähli (Swiss Centre of Expertise in the Social Sciences, Switzerland)

Unclassified - Non classifié

Annex B. Sampling forms

This annex presents the sampling forms that were used to collect information from countries/territories before the school sampling process started.

Figure A B.1. Sampling form 1

Sampling Form 1 **General Information**

See Chapter 2 of SOP Unit 1 - Sampling of Schools for more details

TALIS 2024 Participant:

National Project Manager:

National Sampling Manager:

1. Please indicate your participation in the core survey and/or any optional modules.

- ☐ ISCED level 2 (core survey)
- ☐ ISCED level 1
- ☐ ISCED level 3
- ☐ ISCED level 02 (Starting Strong)
- ☐ Under 3 (Starting Strong)
- ☐ Teacher Knowledge Survey

2. Specify the expected survey administration period for the Field Trial (between February and March 2023) and the Main Survey (between February and April 2024 for Northern Hemisphere countries and between June and August 2024 for Southern Hemisphere countries).
(For further information, see Chapter 3 of the NPM General Guidelines).

Expected period for Field Trial: | Expected period for Main Survey:

3. Specify the start and end dates of the school years in which the survey is expected to take place.

Start date of Field Trial school year: *(DD-MM-YYYY)* | Start date of Main Survey school year: *(DD-MM-YYYY)*

End date of Field Trial school year: *(DD-MM-YYYY)* | End date of Main Survey school year: *(DD-MM-YYYY)*

4. Specify the expected date of submission of the sampling frame to the IEA.

5. Specify by when the sample(s) of schools/ECEC settings should be ready.

6. Specify the language(s) in which the survey will be administered.

7. Do you wish to survey another target population (as a national option)? If so, please specify.

Please upload the completed forms to SharePoint

Unclassified - Non classifié

Figure A B.2. Sampling form 2

Sampling Form 2 — **Structure of Early Childhood Education and Care System**

See Chapter 2 of SOP Unit 1 - Sampling of Schools for more details

TALIS 2024 Participant:

This form only needs to be completed by participants in Starting Strong (ISCED level 02 and Under 3).

1. Please describe the structure of the Early Childhood Education and Care System throughout ISCED level 0 in your country.

Name of programme/setting type (national name)	English translation	Type of setting (centre-based/home-based)	Typical age range	Distinctive characteristics	ISCED level 02 (yes/no)	Under 3 (yes/no)

1. Please describe the staff categories in the Early Childhood Education and Care System throughout ISCED level 0 in your country.

Staff category (national name)	English translation	Description (e.g. types of duties, how often these duties are carried out, typical education background, role within the ECEC setting, role within the group/class of children)	What percentage of staff fall into this category within the country?	International staff category (if known)

Please upload the completed forms to SharePoint

Unclassified - Non classifié

Figure A B.3. Sampling form 3

Sampling Form 3 **Co-ordination of Studies**

See Chapter 3 of SOP Unit 1 - Sampling of Schools for more details

TALIS 2024 Participant:

1. If you plan to participate in multiple target populations, please indicate (where relevant) whether any schools/ECEC settings contain multiple target populations. *(Click in the box and on the right-hand arrow to see the drop-down menu.)*

ISCED level 2 and **ISCED level 1**: *Are there any schools/ECEC settings that contain both target populations?*

ISCED level 2 and **ISCED level 3**: *Are there any schools/ECEC settings that contain both target populations?*

ISCED level 1 and **ISCED level 02**: *Are there any schools/ECEC settings that contain both target populations?*

ISCED level 02 and **Under 3**: *Are there any schools/ECEC settings that contain both target populations?*

2. If you plan to participate in any other combinations not listed above (e.g. ISCED level 2 and ISCED level 02) **and** there are schools/ECEC settings that contain both target populations, please specify these combinations.

3. If you would like to co-ordinate the TALIS school/ECEC setting sample with any other assessments/studies, please list the assessments/studies and how you wish the overlap control to be done (i.e. minimum overlap or maximum overlap). *(Please note that the feasibility of overlap control with other studies will be evaluated and discussed during country consultations with the IEA Sampling Team.)*

4. In this field, you can enter any further information or comments on the co-ordination of studies.

Please upload the completed forms to SharePoint

Unclassified - Non classifié

Figure A B.4. Sampling form 4

Sampling Form 4 — **Coverage and Exclusions**

See Chapter 3 of SOP Unit 1 - Sampling of Schools for more details

TALIS 2024 Participant:

Target Population:

			# of schools	# of teachers	# of students
1.	Total enrolment in the target population:	[a]			

2. School-level exclusions (if applicable):

	Description of exclusions		# of schools	# of teachers	# of students
1.					
2.					
3.					
4.					
5.					
TOTAL:	*(Sum of exclusions - Calculated automatically)*	[b]	-	-	-

3.	**Percentage of school-level exclusions:** *(Box [b] ÷ Box [a])*	**[1]**	%	%	%
4.	Total enrolment after school-level exclusions: *(Box [c] = Box [a] - Box [b])*	[c]			

5. Within-school exclusions (if applicable):

	Description of exclusions		# of schools	# of teachers	# of students
1.			n.a.		n.a.
2.					
3.					
TOTAL:	*(Sum of exclusions - Calculated automatically)*	[d]		-	

			schools	teachers	students
6.	**Expected percentage of within-school exclusions:** *(Box [d] ÷ Box [c])*	**[2]**		%	
7.	**Expected percentage of reduced coverage and exclusions in total:** *(Box [1] + (1 - Box [1]) x Box [2])*		%	%	%

8. Please list any changes in school-level or within-school exclusions compared to previous TALIS cycles.

Please upload the completed forms to SharePoint

Unclassified - Non classifié

Figure A B.5. Sampling form 5

Sampling Form 5 **Stratification**

See Chapter 3 of SOP Unit 1 - Sampling of Schools for more details

TALIS 2024 Participant:

Target Population:

Stratification of schools

1. List and describe the variables to be used for stratification in order of importance.
   (Please note that the choice of variables used for explicit or implicit stratification will be discussed during consultations with the IEA Sampling Team.)

Stratification Variables			
	Name	Description	# of categories
1			
2			
3			
4			
5			
6			
Include additional information if needed:			

2. Do you intend to present any comparative results for specific groups of schools in your national reports? Do you wish to increase the school sample size in some strata? If so, please specify these groups of schools below.

Please upload the completed forms to SharePoint

Unclassified - Non classifié

Figure A B.6. Sampling form 6

Sampling Form 6 **Measure of Size (MOS) and Sampling Frame**

See Chapter 4 of SOP Unit 1 - Sampling of Schools for more details

TALIS 2024 Participant:

Target Population:

1. Specify the measure of size (MOS) to be used.

Click in the box and on the right-hand arrow to see the drop-down menu

If "Other", please describe:

2. Specify the year for which enrolment data will be used for the school MOS.

3. Specify the source of the sampling frame.

4. If a frame other than a single-level sampling frame (list of all schools) is to be used, please provide a preliminary description of the information available to construct this frame.

5. In this field, you can enter any further information or comments on the sampling frame, or further requests for the selection of your school sample.

Please upload the completed forms to SharePoint

Unclassified - Non classifié

Figure A B.7. Sampling form 7

Sampling Form 7 — **Non-Response Bias Analysis**

See Chapter 7 of SOP Unit 1 - Sampling of Schools for more details

TALIS 2024 Participant:

Target Population:

1. List and describe the variables available for use in non-response bias analysis.
   (Please only list variables for which the data are currently available. The planning of non-response bias analyses will be discussed during consultations with the IEA Sampling Team.)

Non-Response Bias Analysis Variables			
	Name	Description	# of categories
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Include additional information if needed:			

Please upload the completed forms to SharePoint

Unclassified - Non classifié

Annex C. Target and survey populations

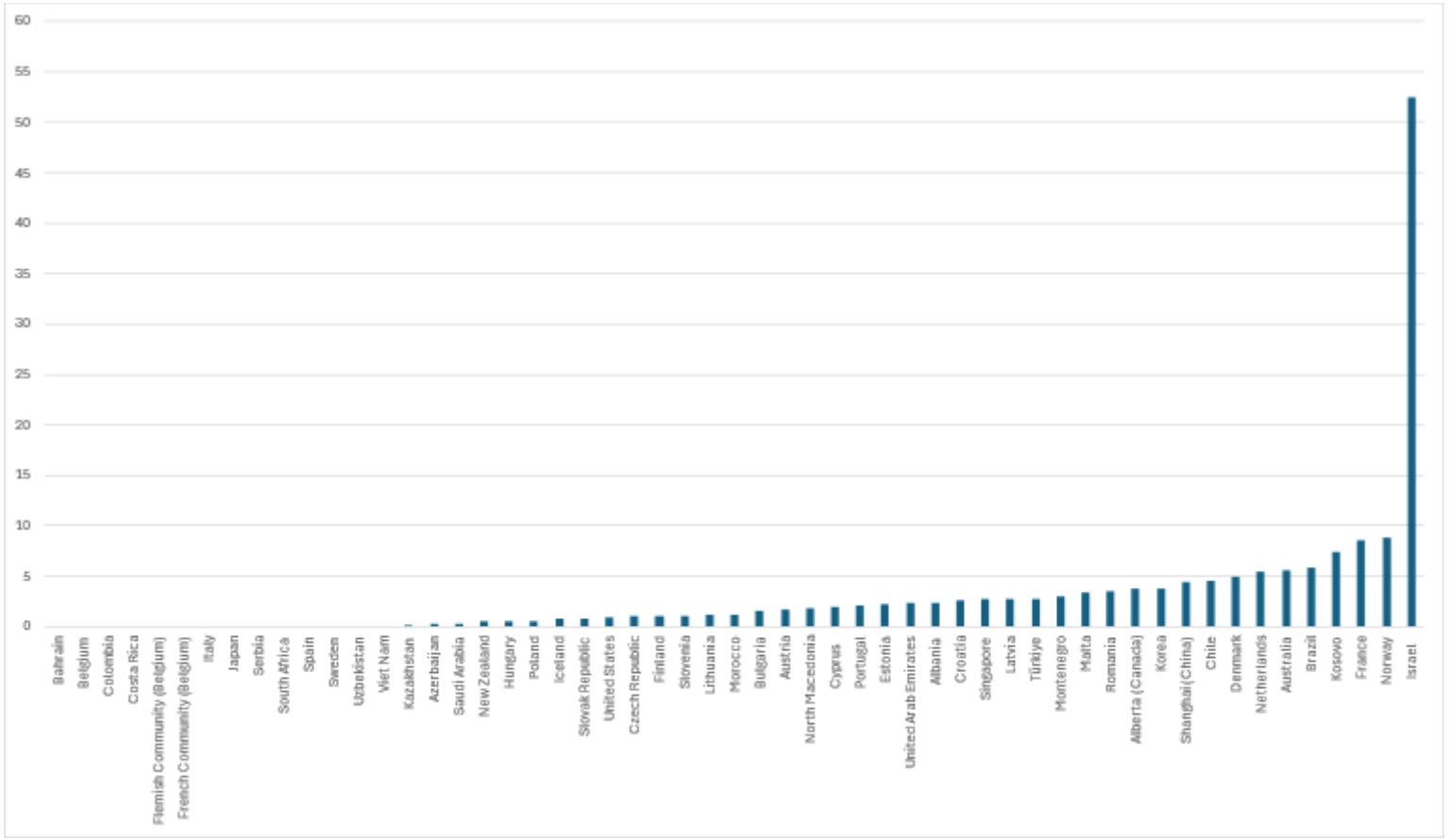
This annex presents statistics for totals of the target and survey populations per module, population and country/territory. All figures are based on information provided by the participating countries/territories in Sampling Form 4 and are in line with the information given in the school frame. Note that in many instances, national statistics on the number of teachers/members of staff were not available, leading to empty cells in the respective tables.

The annex further presents the excluded types of schools/settings and the respective exclusion rates. In most instances, exclusion rates were calculated based on the numbers provided by the participating countries/territories in Sampling form 4. In a few cases, sampled schools were excluded during survey administration because they were labelled incorrectly on the school/setting lists or because the actual situation of the schools/settings had changed over time. These within-sample exclusions are considered in the exclusion rates. However, within-sample exclusions are not reflected in the survey population as indicated in Sampling Form 4.

Unclassified - Non classifié

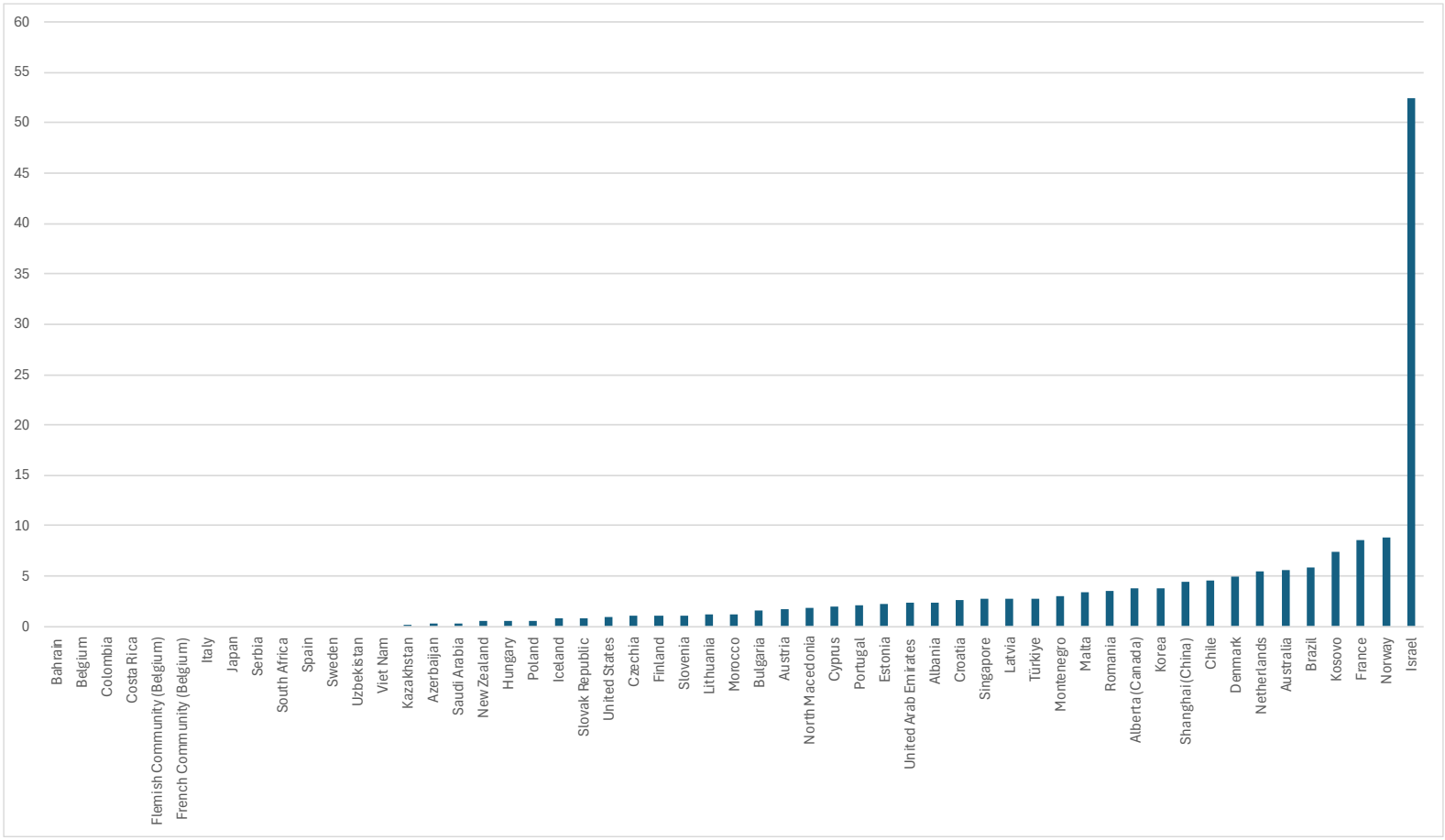
Target and survey populations: International Standard Classification of Education (ISCED) level 2

Figure A C.1. Exclusion rates, ISCED level 2 schools



Unclassified - Non classifié

Figure A C.2. Exclusion rates, ISCED level 2 teachers



Unclassified - Non classifié

Table A C.1. Target and survey populations: ISCED level 2

Country/territory	Schools				Teachers				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Albania	1 141	1 114	Small schools (<4 ISCED level 2 teachers, 2.4%)	2.4	13 524	13 465	Small schools (<4 ISCED level 2 teachers, 0.4%)	0.4	
Alberta (Canada)	1 234	1 187	First Nation Bands operated schools (3.0%), federal schools (0.8%)	3.8	-	-	First Nation Bands operated schools (1.4%), federal schools (0.1%)	1.5	The teacher exclusion rate is based on the number of ISCED level 2 students.
Australia	2 817	2 659	Remote schools (4.8%), small schools (<4 ISCED levels 1 and 2 teachers, 0.9%)	5.6	103 751	102 935	Remote schools (0.7%), small schools (<4 ISCED levels 1 and 2 teachers, 0.0%)	0.8	Teacher numbers were estimated by the country.
Austria	1 493	1 490	Slovene school (0.1%), international schools (partially within-sample, 1.6%)	1.7	41 922	41 826	Slovene school (0.1%), international schools (partially within-sample, 2.3%)	2.4	
Azerbaijan	4 117	4 104	Georgian schools (0.1%), English schools (0.2%)	0.3	108 550	108 149	Georgian schools (0.1%), English schools (0.3%)	0.4	The target population does not include schools or teachers in the Karabakh Economic Region under the Russian peacekeeping control (status of 2022).
Bahrain	122	122		0.0	-	-		0.0	The teacher exclusion rate is based on the number of teachers in ISCED level 2 schools.
Belgium	1 206	1 206		0.0	-	-		0.0	The target population comprises the Flemish and French Communities of Belgium, not including the German community.
Flemish Community (Belgium)	754	754		0.0	30 865	30 865		0.0	

Unclassified - Non classifié

Country/territory	Schools				Teachers				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
French Community (Belgium)	452	452		0.0	-	-		0.0	The teacher exclusion rate is based on the number of ISCED level 2 students.
Brazil	61 779	61 779	Rio Grande do Sul (within-sample, 5.9%)	5.9	888 725	888 725	Rio Grande do Sul (within-sample, 10.5%)	10.5	
Bulgaria	1 733	1 705	Schools in jails (0.1%), small schools (<4 ISCED level 2 teachers, 1.5%)	1.6	25 051	24 957	Schools in jails (0.1%), small schools (<4 ISCED level 2 teachers, 0.3%)	0.4	
Chile	5 982	5 810	Insular Chile and Cabo de Hornos (0.1%), small schools (<3 ISCED level 2 teachers, 2.8%), schools in conflict zones (within-sample, 1.6%)	4.5	61 211	60 797	Insular Chile and Cabo de Hornos (0.1%), small schools (<3 ISCED level 2 teachers, 0.6%), schools in conflict zones (within-sample, 2.3%)	3.0	
Colombia	14 628	14 628		0.0	-	-		0.0	The teacher exclusion rate is based on the number of ISCED level 2 students.
Costa Rica	981	981		0.0	-	-		0.0	The teacher exclusion rate is based on the number of teachers in ISCED level 2 schools.
Croatia	886	863	Czech schools (0.2%), Italian schools (1.1%), Hungarian schools (0.2%), Serbian schools (0.8%), international schools (0.2%)	2.6	-	-	Czech schools (0.1%), Italian schools (0.6%), Hungarian schools (0.0%), Serbian schools (0.2%), international schools (0.1%)	1.1	The teacher exclusion rate is based on the number of ISCED level 2 students.

Unclassified - Non classifié

Country/territory	Schools				Teachers				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Cyprus	102	100	School in a remote location (1.0%), language other than Greek or English (1.0%)	2.0	4 225	4 190	School in a remote location (0.5%), language other than Greek or English (0.4%)	0.8	
Czechia	2 846	2 818	Small schools (<3 ISCED level 2 teachers, 0.5%), Polish schools (0.4%), dance conservatories (0.2%)	1.0	53 596	53 318	Small schools (<3 ISCED level 2 teachers, 0.0%), Polish schools (0.3%), dance conservatories (0.2%)	0.5	
Denmark	1 666	1 590	Small schools (<20 ISCED level 2 students, 4.0%), international schools (partially within-sample, 0.9%)	4.9	-	-	Small schools (<20 ISCED level 2 students, 0.4%), international schools (partially within-sample, 0.9%)	1.3	The target population comprises metropolitan Denmark, not including the autonomous territories of the Faroe Islands and Greenland. The teacher exclusion rate is based on the number of ISCED level 2 students.
Estonia	398	393	International schools (partially within-sample, 1.9%), ballet school (0.3%)	2.2	9 678	9 577	International schools (partially within-sample, 2.0%), ballet school (0.3%)	2.2	
Finland	733	725	Language other than Finnish or Swedish (1.1%)	1.1	-	-	Language other than Finnish or Swedish (0.7%)	0.7	The teacher exclusion rate is based on the number of ISCED level 2 students.
France	7 484	6 850	Private non-contractual educational sector (5.6%), schools in Réunion, Mayotte and overseas collectivities (2.8%)	8.5	276 380	265 452	Private non-contractual educational sector (0.5%), schools in Réunion, Mayotte and overseas collectivities (3.5%)	4.0	

Unclassified - Non classifié

Country/territory	Schools				Teachers				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Hungary	2 836	2 819	Language other than Hungarian (0.6%)	0.6	39 053	38 835	Language other than Hungarian (0.6%)	0.6	
Iceland	146	146	International school (within-sample, 0.8%)	0.8	-	-	International school (within-sample, 0.8%)	0.8	The teacher exclusion rate is based on the number of ISCED level 2 students.
Israel	2 766	1 315	Schools teaching in English or French (0.1%), ultra-Orthodox schools (52.3%)	52.5	-	-	Schools teaching in English or French (0.1%), ultra-Orthodox schools (20.4%)	20.4	The teacher exclusion rate is based on the number of ISCED level 2 students.
Italy	5 879	5 879		0.0	211 657	211 657		0.0	
Japan	10 283	10 283		0.0	268 417	268 417		0.0	
Kazakhstan	6 755	6 744	Uyghur schools (0.1%), English schools (0.1%)	0.2	246 499	246 113	Uyghur schools (0.1%), English schools (0.1%)	0.2	
Korea	3 259	3 136	Schools on islands and in remote places (3.8%)	3.8	100 239	98 889	Schools on islands and in remote places (1.3)	1.3	
Kosovo	678	628	Bosnian and Serbian schools (7.4%)	7.4	12 424	11 993	Bosnian and Serbian schools (3.5%)	3.5	
Latvia	540	525	Distance learning schools (1.5%), special regime school (0.2%), international schools (1.1%)	2.8	-	-	Distance learning schools (2.4%), special regime school (0.0%), international schools (0.7%)	3.1	The teacher exclusion rate is based on the number of ISCED level 2 students.
Lithuania	753	744	International schools (0.5%), youth schools (0.7%)	1.2	-	-	International schools (0.3%), youth schools (0.2%)	0.5	The teacher exclusion rate is based on the number of ISCED level 2 students.

Unclassified - Non classifié

Country/territory	Schools				Teachers				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Malta	58	56	Schools teaching in foreign language (3.4%)	3.4	3 464	3 449	Schools teaching in foreign language (0.4%)	0.4	
Montenegro	167	162	International English schools (3.0%)	3.0	2 617	2 571	International English schools (1.8%)	1.8	
Morocco	3 941	3 893	International schools (1.2%)	1.2	75 409	74 156	International schools (1.7%)	1.7	
Netherlands	1 340	1 268	Private schools (3.7%), small schools (<40 students, 1.6%)	5.4	-	-	Private schools (0.4%), small schools (<40 students, 0.1%)	0.5	The target population comprises the European Netherlands, not including the Dutch Caribbean. The teacher exclusion rate is based on the number of ISCED level 2 students.
New Zealand	1 727	1 718	Online-only/correspondence schools (0.2%), teen parent units (0.3%)	0.5	35 281	35 024	Online-only/correspondence schools (0.7%), teen parent units (0.1%)	0.7	The target population comprises New Zealand, not including the associated states Cook Islands and Niue or the dependent territory Tokelau. Teacher numbers were estimated by the country.
North Macedonia	340	334	Language other than Macedonian or Albanian (1.8%)	1.8	10 045	9 931	Language other than Macedonian or Albanian (1.1%)	1.1	
Norway	1 207	1 101	Sami language schools (0.5%), international schools (2.0%), small schools (<4 ISCED level 2 teachers, 6.3%)	8.8	24 805	24 196	Sami language schools (0.2%), international schools (1.5%), small schools (<4 ISCED level 2 teachers, 0.8%)	2.5	
Poland	12 622	12 543	International schools (0.2%), artistic schools (0.5%)	0.6	240 742	239 146	International schools (0.2%), artistic schools (0.5%)	0.7	

Unclassified - Non classifié

Country/territory	Schools				Teachers				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Portugal	1 217	1 192	Schools with a non-Portuguese curriculum (2.1%)	2.1	45 232	44 621	Schools with a non-Portuguese curriculum (1.4%)	1.4	The target population comprises mainland Portugal, not including the Azores and Madeira.
Romania	4 731	4 566	Small schools (<26 ISCED level 2 students, 3.5%)	3.5	-	-	Small schools (<26 ISCED level 2 students, 0.4%)	0.4	The teacher exclusion rate is based on the number of ISCED level 2 students.
Saudi Arabia	7 996	7 972	International schools with foreign curriculum (0.3%)	0.3	133 277	133 140	International schools with foreign curriculum (0.1%)	0.1	
Serbia	1 128	1 128		0.0	40 373	40 373		0.0	
Shanghai (China)	735	703	Foreigners' schools (3.7%), special schools for students with behaviour problems (0.7%)	4.4	49 315	48 052	Foreigners' schools (2.3%), special schools for students with behaviour problems (0.2%)	2.6	
Singapore	188	183	International schools (2.7%)	2.7	11 630	11 440	International schools (1.6%)	1.6	
Slovak Republic	1 609	1 596	Small schools (<4 teachers in ISCED level 2 schools, 0.6%), international schools (0.2%)	0.8	-	-	Small schools (<4 teachers in ISCED level 2 schools, 0.1%), international schools (0.1%)	0.2	The teacher exclusion rate is based on the number of teachers in ISCED level 2 schools.
Slovenia	456	451	Waldorf schools (0.4%), Italian schools (0.7%)	1.1	-	-	Waldorf schools (0.3%), Italian schools (0.5%)	0.8	The teacher exclusion rate is based on the number of ISCED level 2 students.
South Africa	8 251	8 251		0.0	-	-		0.0	The teacher exclusion rate is based on the number of teachers in ISCED level 2 schools.
Spain	7 319	7 319		0.0	250 630	250 630		0.0	
Sweden	1 754	1 754		0.0	45 958	45 958		0.0	

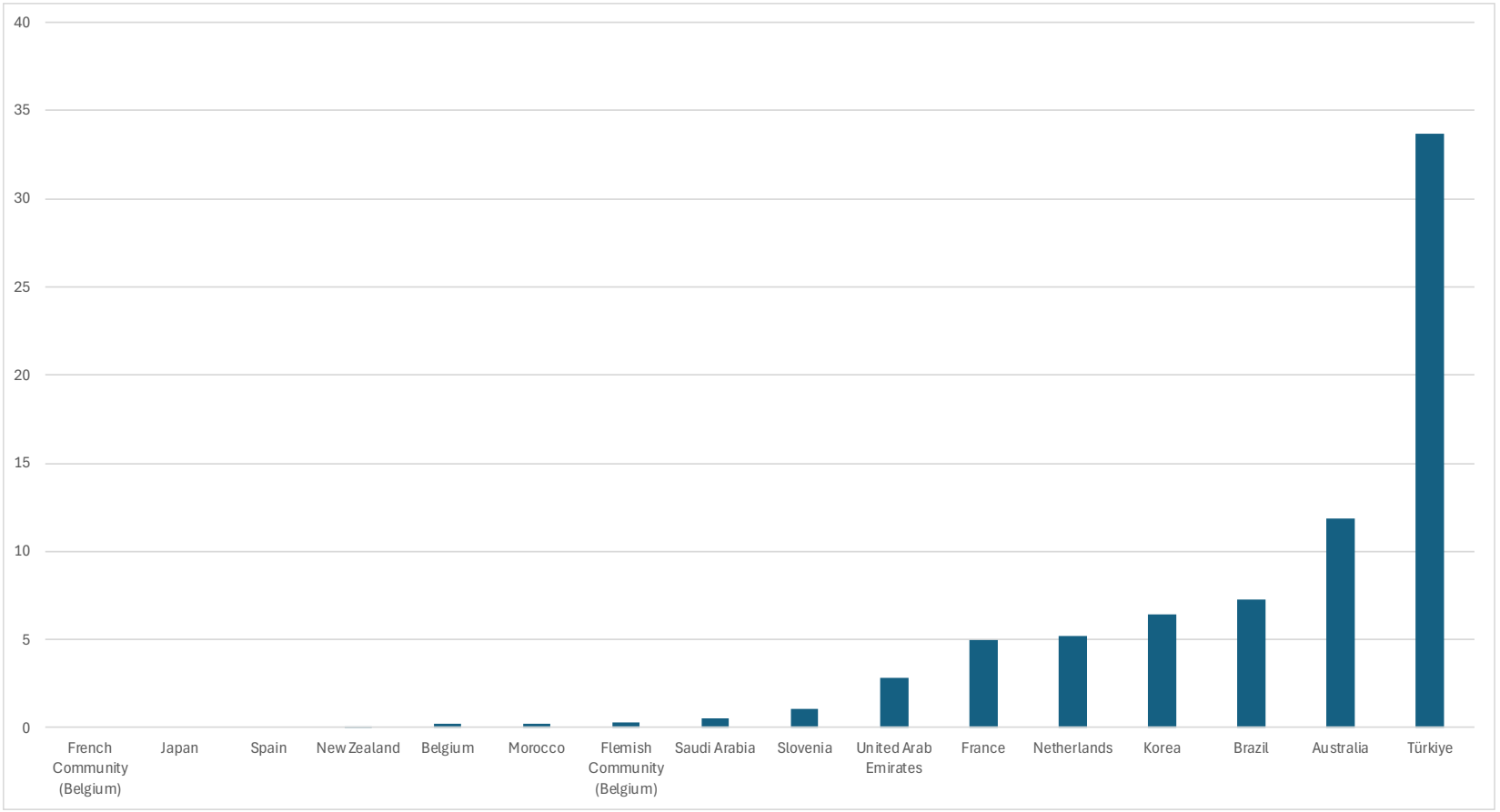
Unclassified - Non classifié

Country/territory	Schools				Teachers				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Türkiye	17 149	16 672	Small schools (<4 ISCED level 2 teachers, 2.8%)	2.8	-	-	Small schools (<4 ISCED level 2 teachers, 0.2%)	0.2	The teacher exclusion rate is based on the number of ISCED level 2 students.
United Arab Emirates	918	897	Language other than Arabic or English (2.3%)	2.3	34 962	34 437	Language other than Arabic or English (1.5%)	1.5	
United States	64 590	63 988	Detention centres, hospitals, treatment centres (0.9%)	0.9	-	-	Detention centres, hospitals, treatment centres (0.0%)	0.0	The target population comprises the 50 states and Washington, DC, not including the territories. The teacher exclusion rate is based on the number of ISCED level 2 students.
Uzbekistan	10 585	10 585		0.0	344 058	344 058		0.0	
Viet Nam	11 338	11 337	International school (0.0%)	0.0	318 538	318 503	International school (0.0%)	0.0	

Unclassified - Non classifié

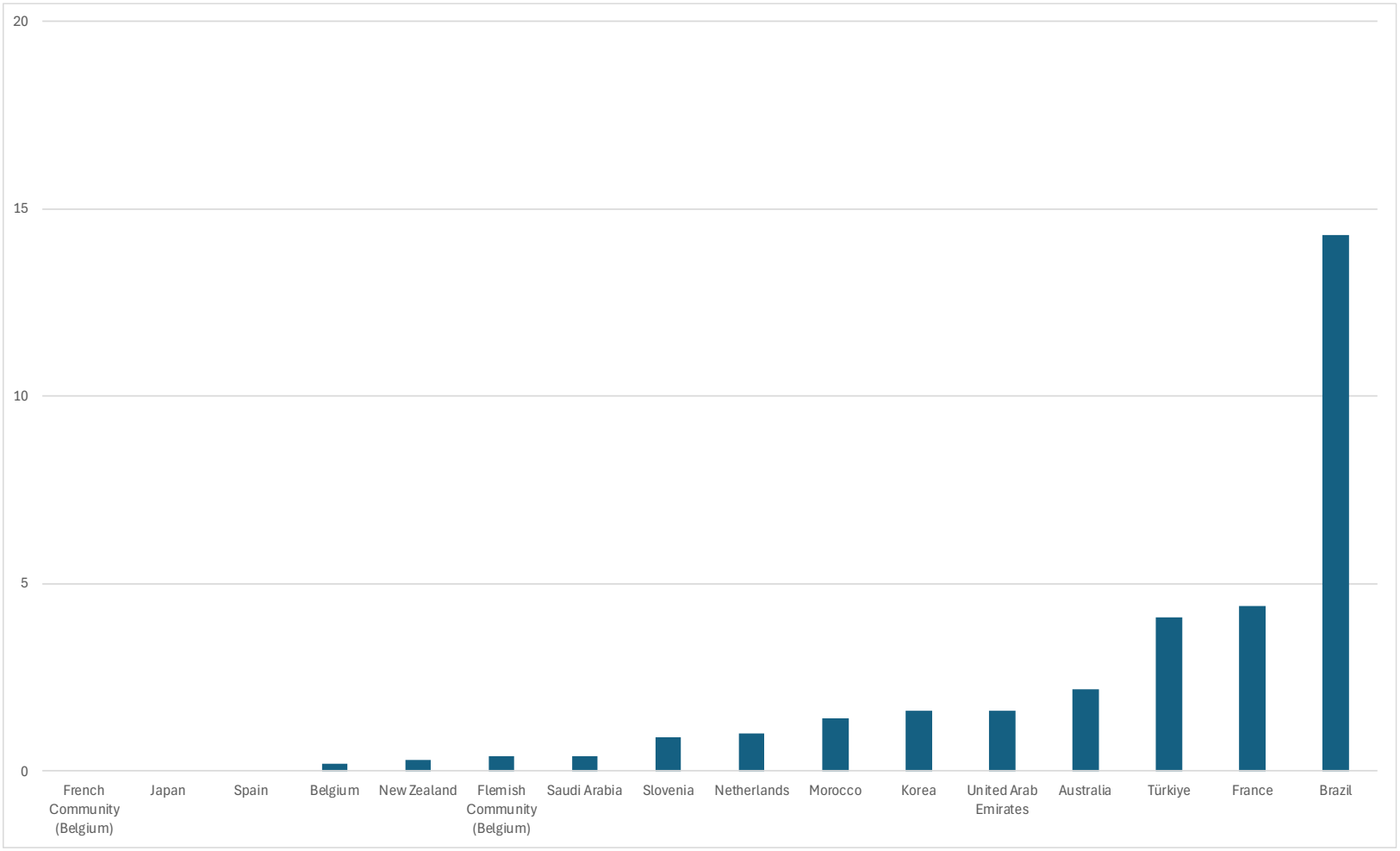
Target and survey populations: ISCED level 1

Figure A C.3. Exclusion rates, ISCED level 1 schools



Unclassified - Non classifié

Figure A C.4. Exclusion rates, ISCED level 1 teachers



Unclassified - Non classifié

Table A C.2. Target and survey populations: ISCED level 1

Country/territory	Schools				Teachers				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Australia	7 766	6 840	Remote schools (3.0%), small schools (<4 ISCED levels 1 and 2 teachers, 8.9%)	11.9	165 866	162 200	Remote schools (1.1%), small schools (<4 ISCED levels 1 and 2 teachers, 1.1%)	2.2	Teacher numbers were estimated by the country.
Belgium	4 189	4 181	French schools in the Flemish Community (0.2%)	0.2	82 019	81 846	French schools in the Flemish Community (0.2%)	0.2	The target population comprises the Flemish and French Communities of Belgium, not including the German community.
Flemish Community (Belgium)	2 356	2 348	French schools (0.3%)	0.3	45 199	45 026	French schools (0.4%)	0.4	
French Community (Belgium)	1 833	1 833		0.0	36 820	36 820		0.0	
Brazil	105 350	105 350	Rio Grande do Sul (within-sample, 7.3%)	7.3	895 730	895 730	Rio Grande do Sul (within-sample, 14.3%)	14.3	
France	36 571	34 742	Private non-contractual educational sector (2.6%), schools in Réunion, Mayotte and overseas collectivities (2.4%)	5.0	-	-	Private non-contractual educational sector (1.1%), schools in Réunion, Mayotte and overseas collectivities (3.2%)	4.4	The teacher exclusion rate is based on the number of teachers in ISCED level 1 schools.
Japan	19 487	19 487		0.0	411 981	411 981		0.0	
Korea	6 309	5 907	Schools on islands and in remote places (6.4%)	6.4	162 085	159 484	Schools on islands and in remote places (1.6%)	1.6	
Morocco	24 690	24 637	International schools (0.2%)	0.2	177 674	175 166	International schools (1.4%)	1.4	

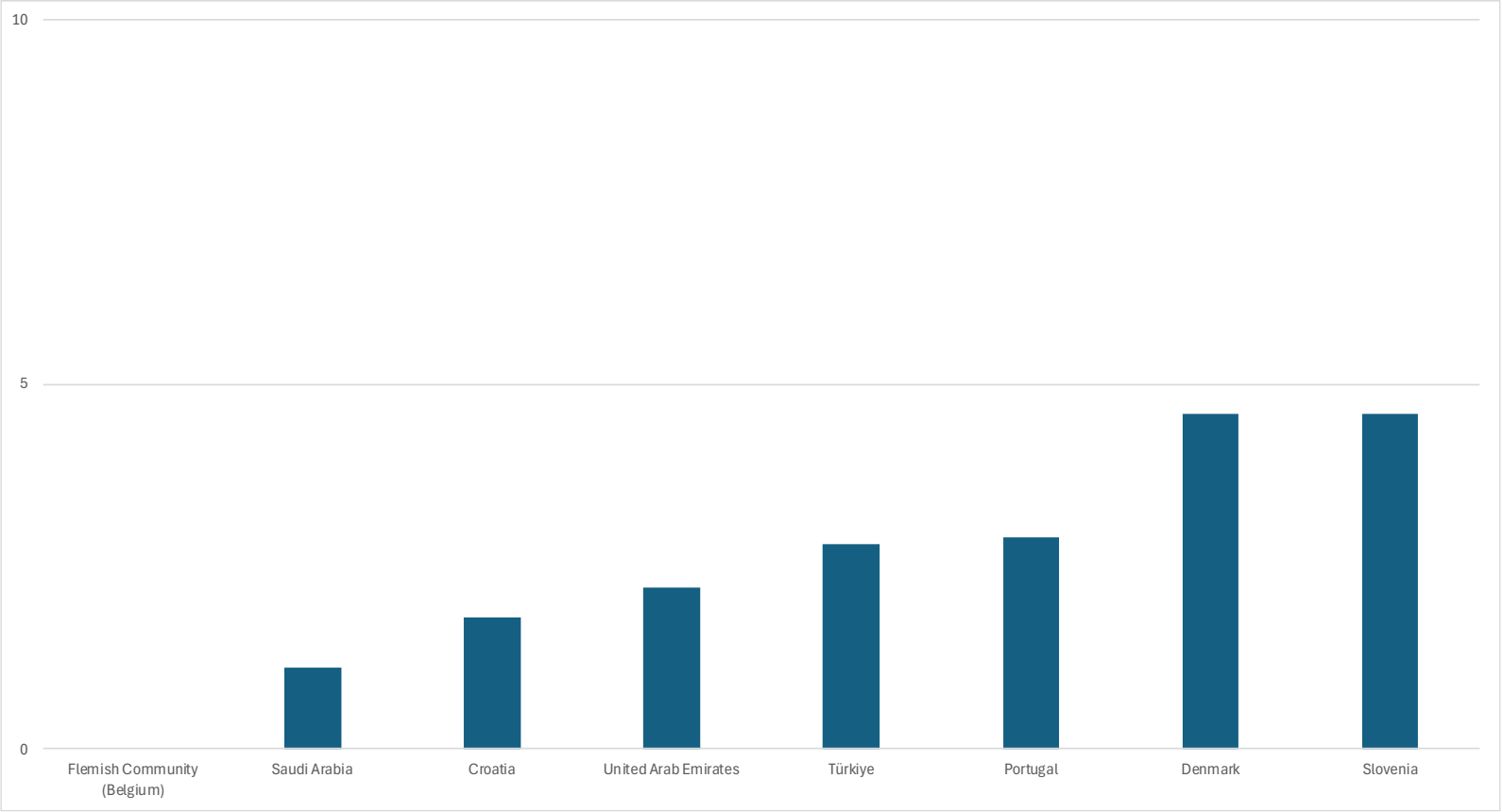
Unclassified - Non classifié

Country/territory	Schools				Teachers				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Netherlands	6 225	5 903	Private schools (0.5%), small schools (<41 ISCED levels 02 and 1 students, 4.7%)	5.2	-	-	Private schools (0.1%), small schools (<41 ISCED levels 02 and 1 students, 0.9%)	1.0	The target population comprises the European Netherlands, not including the Dutch Caribbean. The teacher exclusion rate is based on the number of ISCED level 1 students.
New Zealand	2 024	2 021	Online-only/correspondence schools (0.1%)	0.1	29 868	29 778	Online-only/correspondence schools (0.3%)	0.3	The target population comprises New Zealand, not including the associated states Cook Islands and Niue or the dependent territory Tokelau. Teacher numbers were estimated by the country.
Saudi Arabia	13 099	13 029	International schools with foreign curriculum (0.5%)	0.5	260 491	259 510	International schools with foreign curriculum (0.4%)	0.4	
Slovenia	456	451	Waldorf schools (0.4%), Italian schools (0.7%)	1.1	-	-	Waldorf schools (0.3%), Italian schools (0.6%)	0.9	The teacher exclusion rate is based on the number of ISCED level 1 students.
Spain	13 648	13 648		0.0	233 871	233 871		0.0	
Türkiye	24 648	16 344	Small schools (<4 ISCED level 1 teachers, 33.7%)	33.7	-	-	Small schools (<4 ISCED level 1 teachers, 4.1%)	4.1	The teacher exclusion rate is based on the number of ISCED level 1 students.
United Arab Emirates	828	805	Language other than Arabic or English (2.8%)	2.8	38 069	37 457	Language other than Arabic or English (1.6%)	1.6	

Unclassified - Non classifié

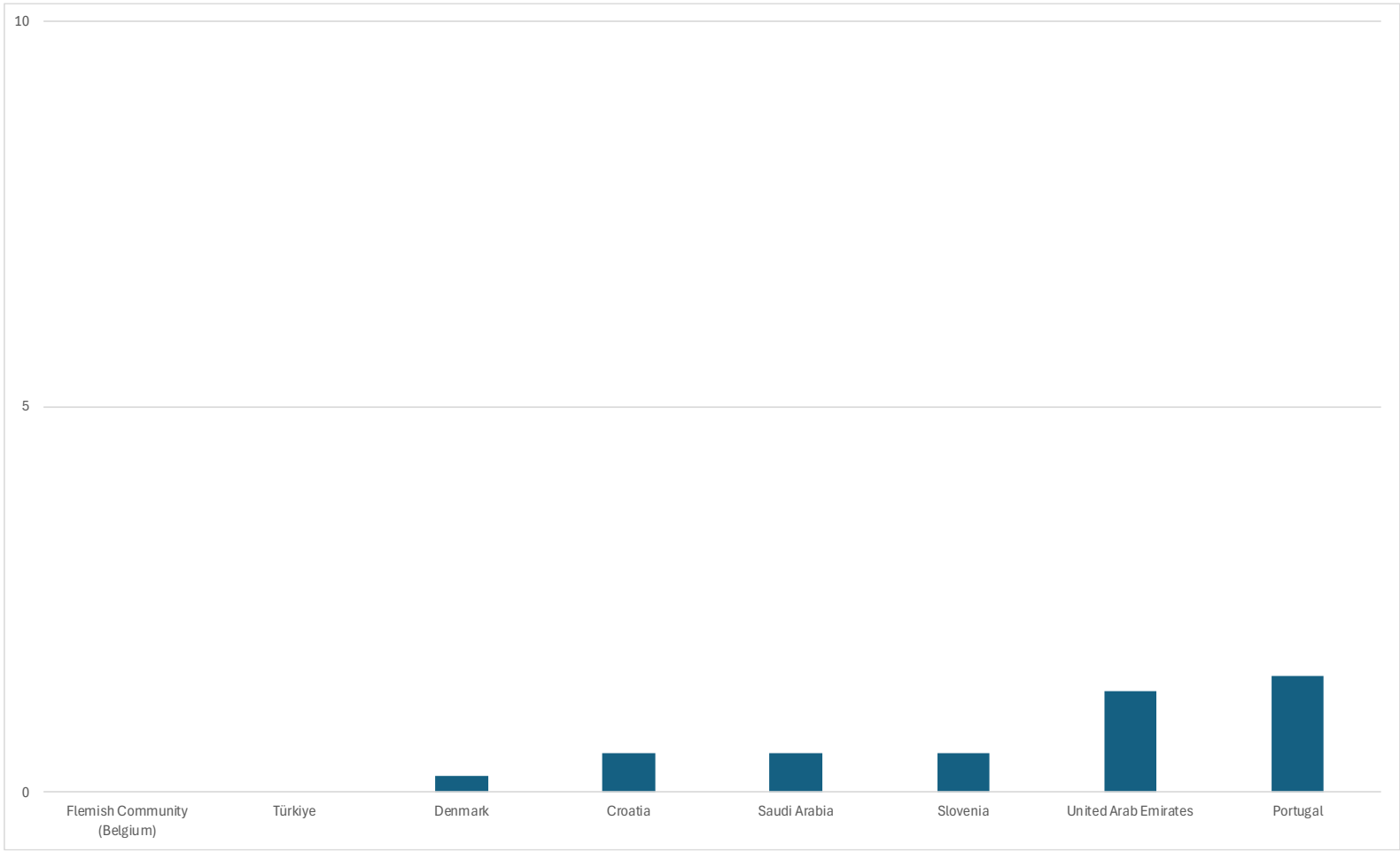
Target and survey populations: ISCED level 3

Figure A C.5. Exclusion rates, ISCED level 3 schools



Unclassified - Non classifié

Figure A C.6. Exclusion rates, ISCED level 3 teachers



Unclassified - Non classifié

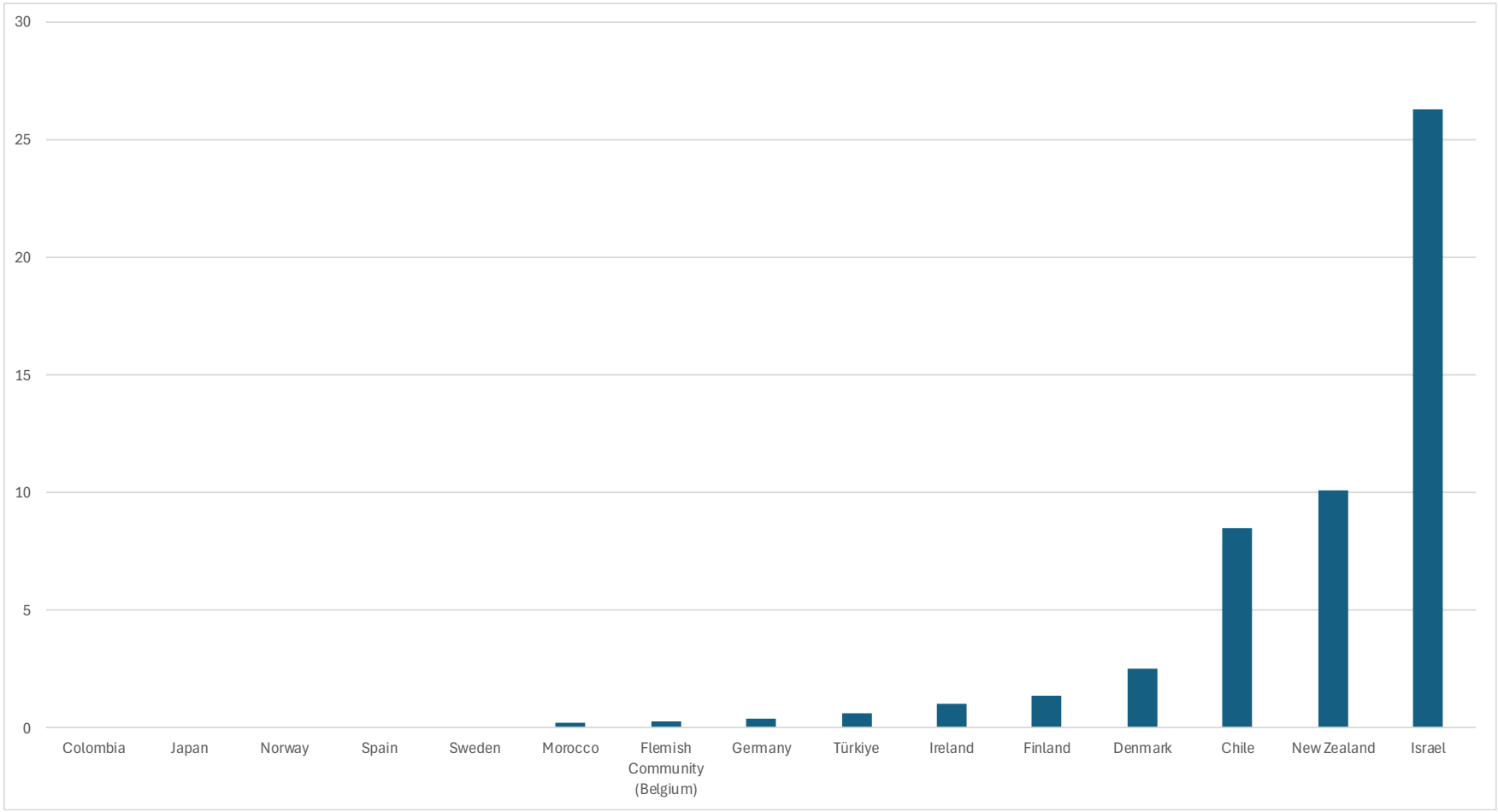
Table A C.3. Target and survey populations: ISCED level 3

Country/territory	Teachers				Schools				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Croatia	385	378	Italian schools (1.0%), Hungarian school (0.3%), Serbian school (0.3%), international school (0.3%)	1.8	-	-	Italian schools (0.4%), Hungarian school (0.0%), Serbian school (0.0%), international school (0.0%)	0.5	The teacher exclusion rate is based on the number of ISCED level 3 students.
Denmark	636	607	Small schools (<15 ISCED level 3 students, 3.8%), international schools (0.8%)	4.6	-	-	Small schools (<15 ISCED level 3 students, 0.1%), international schools (0.2%)	0.2	The target population comprises metropolitan Denmark, not including the autonomous territories of the Faroe Islands and Greenland. The teacher exclusion rate is based on the number of ISCED level 3 students.
Flemish Community (Belgium)	705	705		0.0	61 095	61 095		0.0	
Portugal	789	766	Schools with a non-Portuguese curriculum (2.9%)	2.9	40 245	39 632	Schools with a non-Portuguese curriculum (1.5%)	1.5	The target population comprises mainland Portugal, not including the Azores and Madeira.
Saudi Arabia	5 272	5 216	International schools with a foreign curriculum (1.1%)	1.1	117 760	117 176	International schools with a foreign curriculum (0.5%)	0.5	
Slovenia	151	144	Waldorf school (0.7%), Italian schools (2.0%), institutions for delinquent students (2.0%)	4.6	-	-	Waldorf school (0.2%), Italian schools (0.2%), institutions for delinquent students (0.1%)	0.5	The teacher exclusion rate is based on the number of ISCED level 3 students.
Türkiye	11 257	10 941	Small schools (<4 ISCED level 3 teachers, 2.8%)	2.8	-	-	Small schools (<4 ISCED level 3 teachers, 0.0%)	0.0	The exclusion rate is based on the number of ISCED level 3 students.
United Arab Emirates	668	653	Language other than Arabic or English (2.2%)	2.2	26 974	26 631	Language other than Arabic or English (1.3%)	1.3	

Unclassified - Non classifié

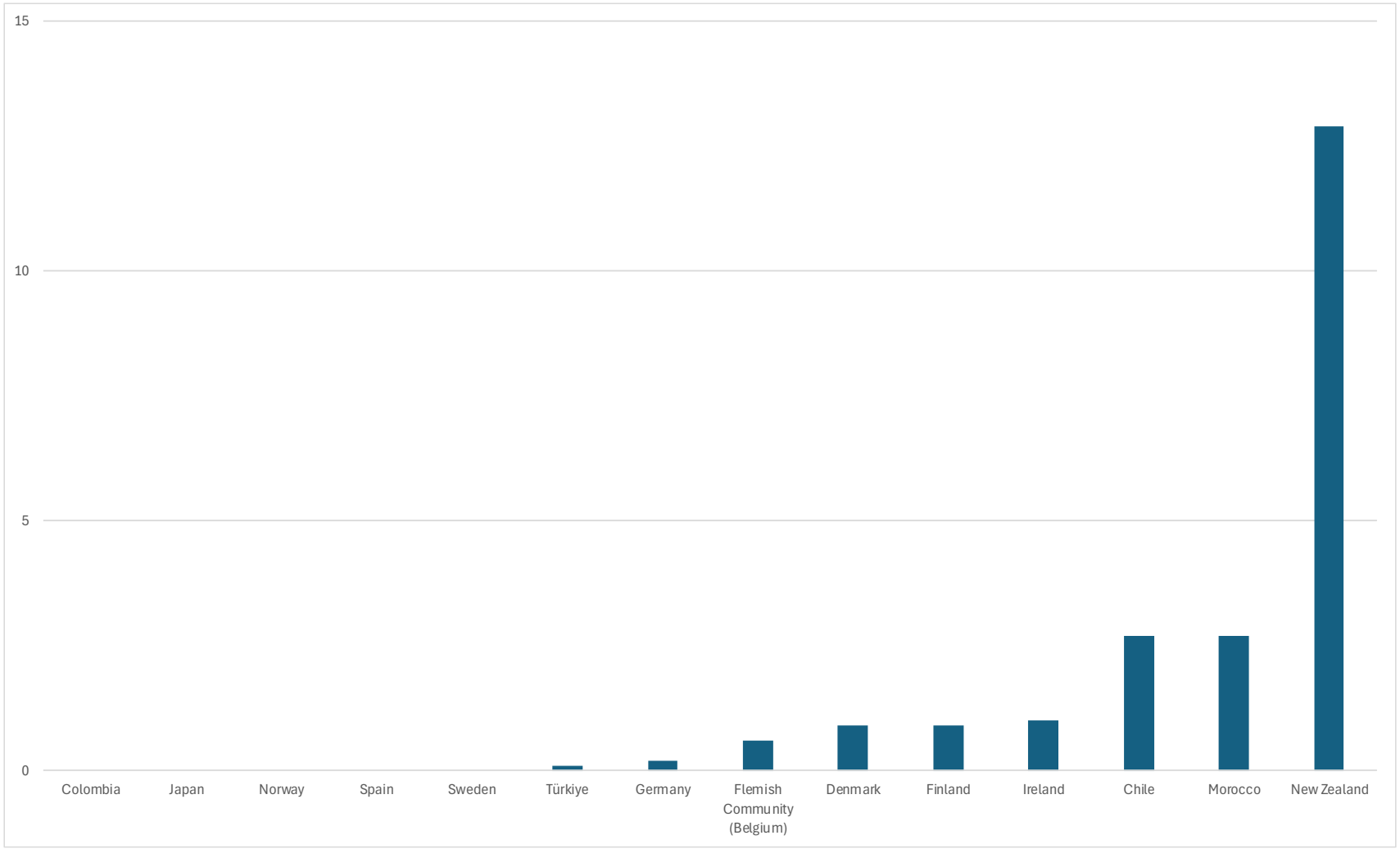
Target and survey populations: ISCED level 02

Figure A C.7. Exclusion rates, ISCED level 02 settings



Unclassified - Non classifié

Figure A C.8. Exclusion rates, ISCED level 02 staff



Unclassified - Non classifié

Table A C.4. Target and survey populations: ISCED level 02

Country/territory	Settings				Staff				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Chile	9 912	9 155	Insular Chile and Cabo de Hornos (0.1%), small settings (<2 members of staff, 1.9%), settings with only assistants (5.7%), settings in conflict zones (within-sample, 0.9%)	8.5	-	-	Insular Chile and Cabo de Hornos (0.1%), small settings (<2 members of staff, 0.2%), settings with only assistants (1.1%), settings in conflict zones (within-sample, 1.3%)	2.7	The staff exclusion rate is based on the number of staff in ISCED level 02 settings.
Colombia	78 751	78 751		0.0	-	-		0.0	The staff exclusion rate is based on the number of ISCED level 02 children.
Denmark	3 536	3 448	Small settings (<15 ISCED level 02 children, 2.5%)	2.5	36 167	35 839	Small settings (<15 ISCED level 02 children, 0.9%)	0.9	The target population comprises metropolitan Denmark, not including the autonomous territories of the Faroe Islands and Greenland. Staff numbers were estimated by the country.
Finland	4 973	4 901	Åland (0.8%), language other than Finnish or Swedish (0.6%)	1.4	-	-	Åland (0.5%), language other than Finnish or Swedish (0.4%)	0.9	The staff exclusion rate is based on the number of ISCED level 02 children.
Flemish Community (Belgium)	2 360	2 352	French settings (0.3%)	0.3	24 741	24 650	French settings (0.4%), leaders with staff duties (within-sample, 0.2%)	0.6	
Germany	54 362	54 133	Pre-classes (Vorklassen, 0.4%)	0.4	-	-	Pre-classes (Vorklassen, 0.2%)	0.2	The staff exclusion rate was estimated by the country.

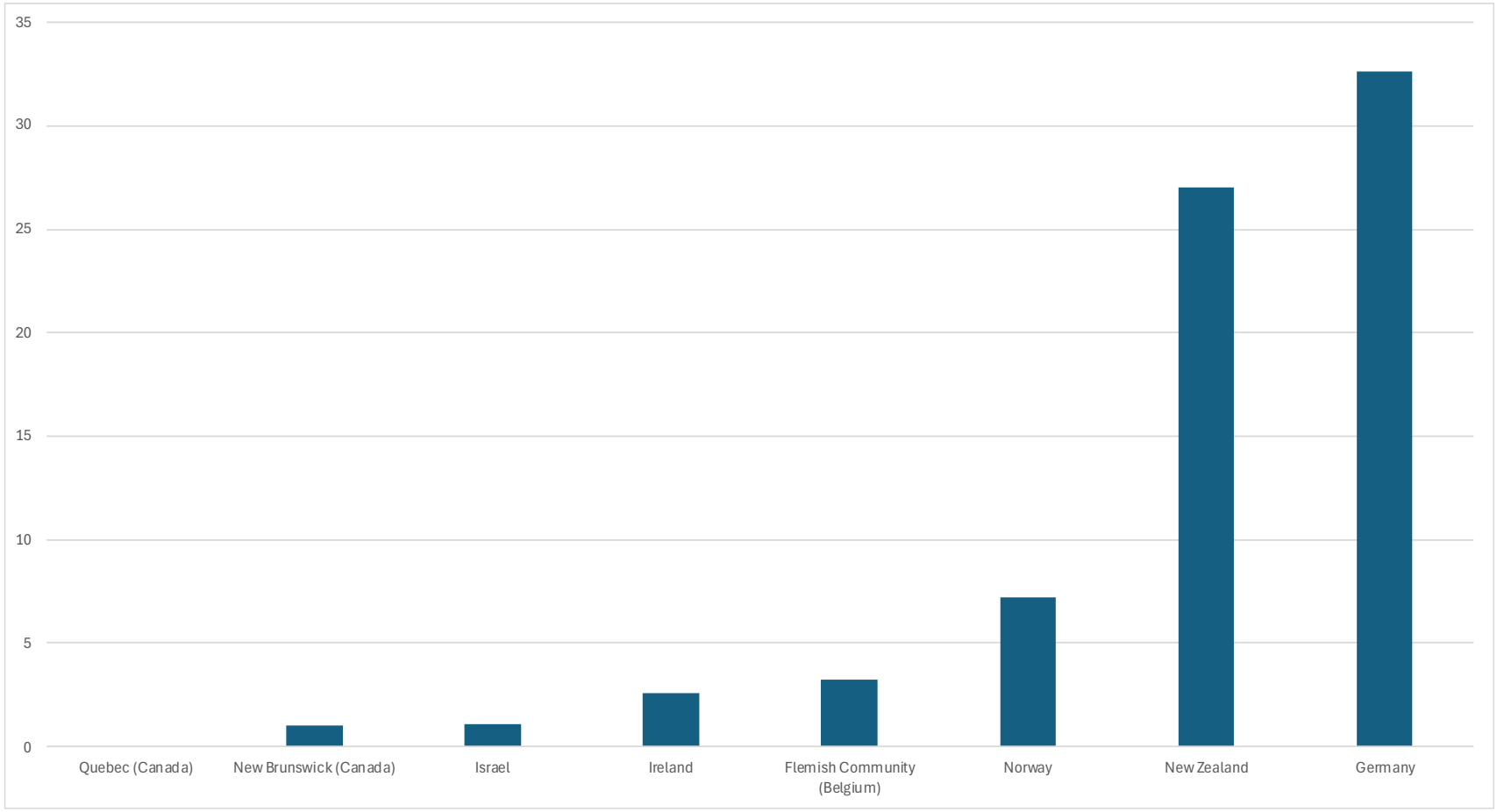
Unclassified - Non classifié

Country/territory	Settings				Staff				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Ireland	3 974	3 934	Early start/early intervention programmes (1.0%)	1.0	-	-	Early start/early intervention programmes (1.0%)	1.0	The staff exclusion rate is based on the number of places in ISCED level 02 settings.
Israel	17 198	12 681	Ultra-Orthodox settings (26.3%)	26.3	-	-	Ultra-Orthodox settings	-	The staff exclusion rate is unknown.
Japan	37 128	37 128		0.0	326 282	326 282		0.0	
Morocco	25 180	25 127	International settings (0.2%)	0.2	30 867	30 028	International settings (2.7%)	2.7	
New Zealand	4 150	3 731	Correspondence school (0.0%), Te Kōhanga Reo (Māori language immersion environment for children and families, 10.1%)	10.1	-	-	Correspondence school (0.0%), Te Kōhanga Reo (Māori language immersion environment for children and families, 12.8%)	12.9	The target population comprises New Zealand, not including the associated states Cook Islands and Niue or the dependent territory Tokelau. The staff exclusion rate is based on the number of staff in ISCED level 02 settings.
Norway	4 976	4 976		0.0	-	-		0.0	The staff exclusion rate is based on the number of staff in ISCED level 02 settings.
Spain	13 830	13 830		0.0	137 396	137 396		0.0	
Sweden	13 011	13 011		0.0	-	-		0.0	The staff exclusion rate is based on the number of staff in ISCED level 02 settings.
Türkiye	24 621	24 471	Small schools (with unknown number of staff, 0.6%)	0.6	-	-	Small schools (with unknown number of staff, 0.1%), leaders with staff duties (within-sample, 0.0%)	0.1	The staff exclusion rate is based on the number of ISCED level 02 children.

Unclassified - Non classifié

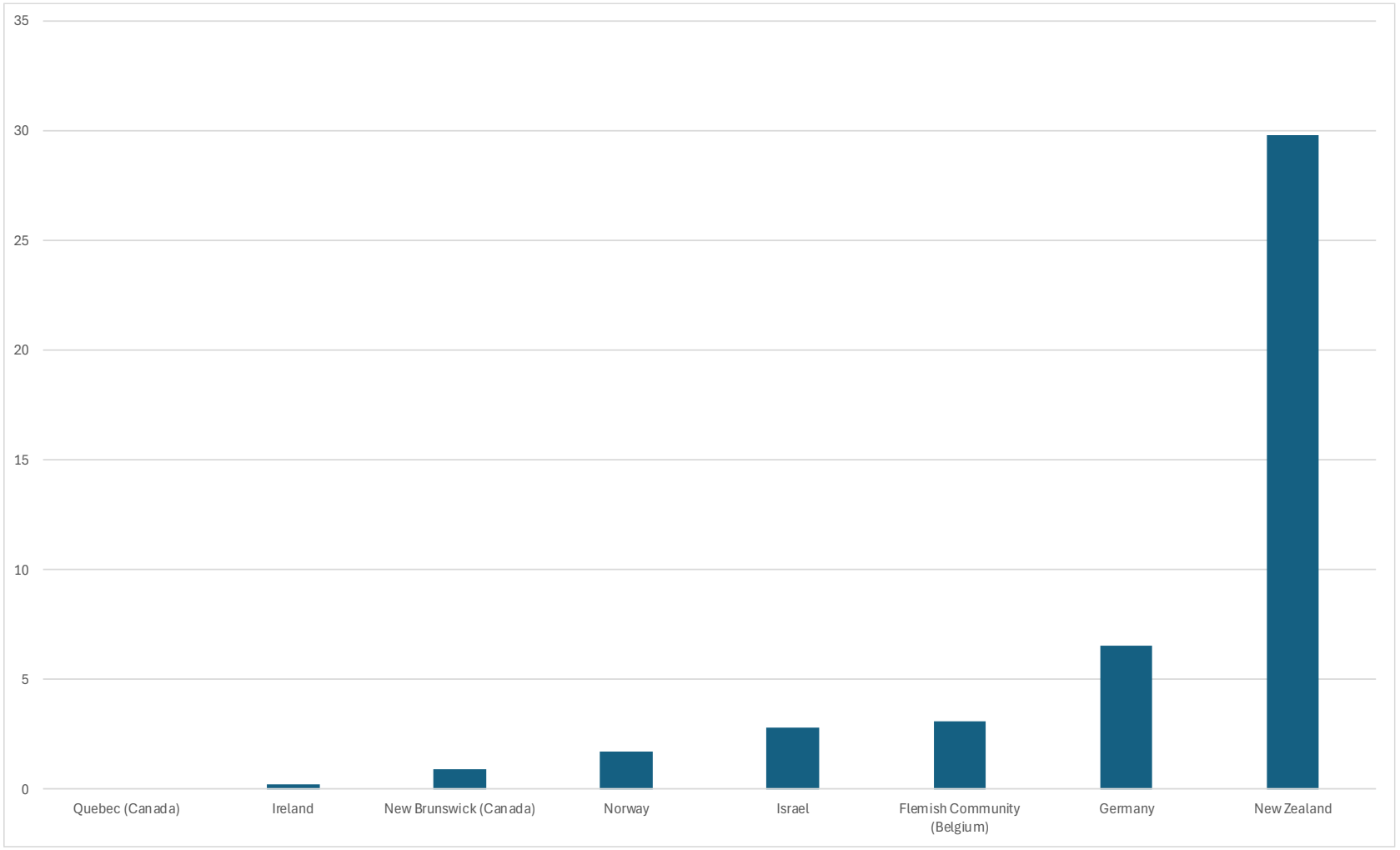
Target and survey populations: children under the age of three (U3)

Figure A C.9. Exclusion rates, U3 settings



Unclassified - Non classifié

Figure A C.10. Exclusion rates, U3 staff



Unclassified - Non classifié

Table A C.5. Target and survey populations: U3

Country/territory	Settings				Staff				Notes
	Target population	Survey population	Exclusions	Exclusion rate	Target population	Survey population	Exclusions	Exclusion rate	
Flemish Community (Belgium)	5 912	5 724	Settings without subsidy (3.2%)	3.2	-	-	Settings without subsidy	3.1	The staff exclusion rate is based on the number of U3 places.
Germany	84 220	56 744	Home-based settings (32.6%)	32.6	-	-	Home-based settings	6.5	The staff exclusion rate was estimated by the country.
Ireland	2 207	2 150	Childminders (2.6%)	2.6	-	-	Childminders	0.2	The staff exclusion rate is based on the number of places in U3 settings.
Israel	6 579	6 579	Language other than Hebrew or Arabic (within-sample, 1.1%)	1.1	-	-	Language other than Hebrew or Arabic (within-sample)	2.8	
New Brunswick (Canada)	573	567	First Nations Reserves (1.0%)	1.0	-	-	First Nations Reserves	0.9	The staff exclusion rate is based on the number of children in U3 settings.
New Zealand	3 701	2 702	Free kindergartens (5.8%), playcentres (9.9%), Te Kōhanga Reo (Māori language immersion environment for children and families, 11.2%)	27.0	-	-	Free kindergartens (3.1%), playcentres (13.8%), Te Kōhanga Reo (Māori language immersion environment for children and families, 12.9%)	29.8	The target population comprises New Zealand, not including the associated states Cook Islands and Niue or the dependent territory Tokelau. The staff exclusion rate is based on the number of staff in U3 settings.
Norway	5 339	4 953	Home-based settings (7.2%)	7.2	-	-	Home-based settings (1.7%)	1.7	The staff exclusion rate is based on the number of staff in U3 settings.
Quebec (Canada)	13 843	13 843		0.0	-	-		0.0	The staff exclusion rate is based on the number of children in U3 settings.

Unclassified - Non classifié

Annex D. Characteristics of national samples

This annex contains the characteristics of national samples, ordered by module and country/territory. The features of the sample design, including the sample allocations, sample sizes, methods of sample selection, measures of size, explicit and implicit stratification schemes, are presented as determined prior to the school/setting sample selections. The source of the school/setting frame is stated, as indicated by the country/territory.

The tables show the achieved sample sizes, detailing the status of sampled schools/settings. Per country/territory, there is one table for the principal/leader population and two tables for the teacher/staff population, indicating the participation on the school/setting level and on the teacher/staff level.

Information on participation in the Teacher Knowledge Survey (TKS) module is added to the respective International Standard Classification of Education (ISCED) level 2 samples. As the same school samples were used, the same sample design applies.

Unclassified - Non classifié

Characteristics of national samples, ISCED level 2 and TKS

Albania: ISCED level 2

ISCED level 2 in Albania consists of "Lower secondary or second stage of basic education" and comprises Grades 1 to 4 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 30 schools were selected for the field trial; 286 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by funding with two categories (public, private), urbanisation with two categories (urban, rural) and region with four categories (Dürres, Fier, Korçë and Lezhë) within public schools.

Implicit stratification: Organised by urbanisation with two categories (urban, rural).

Data sources: Data used for school sampling were obtained from the General Directorate of Pre-University Education (Ministry of Education and Sports) and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Albania, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Rural – Dürres	46	0	0	46	0	0	0
Public – Rural – Fier	28	1	0	27	0	0	0
Public – Rural – Korçë	38	1	0	37	0	0	0
Public – Urban – Lezhë	18	0	0	18	0	0	0
Public – Urban – Dürres	54	0	0	54	0	0	0
Public – Urban – Fier	22	0	0	22	0	0	0
Public – Urban – Korçë	26	0	0	26	0	0	0
Public – Urban – Lezhë	18	0	0	18	0	0	0
Private	30	1	0	28	0	1	0
Total	**286**	**4**	**0**	**281**	**0**	**1**	**0**

Table A D.2. School participation status: survey of teachers – Albania, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Rural – Dürres	46	0	0	46	0	0	0
Public – Rural – Fier	28	1	0	27	0	0	0
Public – Rural – Korçë	38	1	0	37	0	0	0
Public – Rural – Lezhë	24	1	0	23	0	0	0
Public – Urban – Dürres	54	0	0	54	0	0	0
Public – Urban – Fier	22	0	0	22	0	0	0
Public – Urban – Korçë	26	0	0	26	0	0	0
Public – Urban – Lezhë	18	0	0	18	0	0	0
Private	30	1	0	28	0	1	0
Total	**286**	**4**	**0**	**281**	**0**	**1**	**0**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Albania, ISCED level 2

Participation status	Teachers
Participated	4 029
Absent	23
Left school permanently	5
Not part of sample	0
Total	**4 057**

Unclassified - Non classifié

Alberta (Canada): ISCED level 2

ISCED level 2 in Canada consists of "Junior high/middle school" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students for anglophone schools; census for francophone schools.

Sample sizes: 30 schools were selected for the field trial; 285 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by language with two categories (anglophone, francophone) and funding with two categories (public, private) for anglophone schools.

Implicit stratification: Organised by school type with five categories (public, separate, charter, private, francophone).

Data sources: Data used for school sampling were obtained from the Alberta Education Corporate Data Warehouse and referred to school year 2021/22.

Table A D.4. School participation status: survey of principals – Alberta (Canada), ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Anglophone – Public	244	6	0	108	12	3	115
Anglophone – Private	14	0	0	2	1	3	8
Francophone – Public	27	0	0	10	0	0	17
Total	**285**	**6**	**0**	**120**	**13**	**6**	**140**

Table A D.5. School participation status: survey of teachers – Alberta (Canada), ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Anglophone – Public	244	6	0	123	13	3	99
Anglophone – Private	14	0	0	2	2	2	8
Francophone – Public	27	0	0	8	0	0	19
Total	**285**	**6**	**0**	**133**	**15**	**5**	**126**

Table A D.6. Teacher participation status – Alberta (Canada), ISCED level 2

Participation status	Teachers
Participated	1 823
Absent	415
Left school permanently	11
Not part of sample	14
Total	**2 263**

Unclassified - Non classifié

Australia: ISCED level 2

ISCED level 2 in Australia consists of “Secondary school”, “Certificate I” and “Certificate II” and comprises Grades 8 to 11 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 31 schools were selected for the field trial; 204 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 2 only, ISCED levels 1 and 2) and sector with three categories (government, independent, Catholic).

Implicit stratification: Organised by socio-economic status with three categories (low, medium, high).

Data sources: Data used for school sampling were obtained from the Australian Council for Educational Research and referred to 2022.

Table A D.7. School participation status: survey of principals – Australia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Government	104	0	0	58	16	11	19
ISCED 2 only – Independent	8	0	0	7	1	0	0
ISCED 2 only – Catholic	36	0	0	32	3	0	1
ISCED 1 and ISCED 2 – Government	12	0	0	5	4	2	1
ISCED 1 and ISCED 2 – Independent	36	0	0	26	8	0	2
ISCED 1 and ISCED 2 – Catholic	8	0	0	5	2	1	0
Total	**204**	**0**	**0**	**133**	**34**	**14**	**23**

Table A D.8. School participation status: survey of teachers – Australia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Government	104	0	0	58	15	11	20
ISCED 2 only – Independent	8	0	0	7	1	0	0
ISCED 2 only – Catholic	36	0	0	32	3	0	1
ISCED 1 and ISCED 2 – Government	12	0	0	5	3	2	2
ISCED 1 and ISCED 2 – Independent	36	0	0	26	8	0	2
ISCED 1 and ISCED 2 – Catholic	8	0	0	5	2	1	0
Total	**204**	**0**	**0**	**133**	**32**	**14**	**25**

Table A D.9. Teacher participation status – Australia, ISCED level 2

Participation status	Teachers
Participated	3 035
Absent	453
Left school permanently	23
Not part of sample	59
Total	**3 570**

Unclassified - Non classifié

Austria: ISCED level 2

ISCED level 2 in Austria consists of “Primary school, stages 5-8”, “Academic secondary school, junior stage”, “General school of own statutory right (including international schools), stages 5-8” and “New secondary school” and comprises Grades 5 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between academic secondary schools and compulsory education schools.

Sample sizes: 34 schools were selected for the field trial; 280 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by school type with three categories (academic secondary schools, compulsory education schools, schools by statute).

Implicit stratification: Organised by urbanisation with two categories (dense, medium and sparse) for academic secondary schools, urbanisation with three categories (dense, medium, sparse) for compulsory education schools and states with nine categories (Burgenland, Carinthia, Lower Austria, Salzburg, Styria, Tyrol, Upper Austria, Vienna, Vorarlberg).

Data sources: Data used for school sampling were obtained from the Federal Ministry of Education, Science and Research and referred to school years 2019/20 and 2020/21.

Table A D.10. School participation status: survey of principals – Austria, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Academic secondary schools (AHS)	110	0	0	97	9	0	4
Compulsory education schools (APS)	160	2	0	131	18	6	3
Schools by statute (Statutschulen)	10	0	3	2	1	2	2
Total	**280**	**2**	**3**	**230**	**28**	**8**	**9**

Table A D.11. School participation status: survey of teachers – Austria, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Academic secondary schools (AHS)	110	0	0	95	9	0	6
Compulsory education schools (APS)	160	2	0	116	16	6	20
Schools by statute (Statutschulen)	10	0	3	2	1	2	2
Total	**280**	**2**	**3**	**213**	**26**	**8**	**28**

Table A D.12. Teacher participation status – Austria, ISCED level 2

Participation status	Teachers
Participated	4 335
Absent	711
Left school permanently	30
Not part of sample	26
Total	**5 102**

Unclassified - Non classifié

Azerbaijan: ISCED level 2

ISCED level 2 in Azerbaijan consists of "General secondary education" and comprises Grades 5 to 9 (UNESCO Institute of Statistics, 2017[1]).

The target population does not include schools or teachers in the Karabakh Economic Zone under Russian peacekeeping control.

Sample allocation: Disproportional allocation to allow comparisons between public and private schools; adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 30 schools were selected for the field trial; 223 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by funding with two categories (public, private) and language with three categories (Azerbaijani, Azerbaijani and Russian, Russian) within public schools.

Implicit stratification: Organised by urbanisation with two categories (urban, rural).

Data sources: Data used for school sampling were obtained from the Ministry of Science and Education and referred to school year 2021/22.

Table A D.13. School participation status: survey of principals – Azerbaijan, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Azerbaijani	158	0	0	158	0	0	0
Public – Azerbaijani and Russian	38	0	0	37	1	0	0
Public – Russian	8	0	0	8	0	0	0
Private	19	0	0	18	0	0	1
Total	**223**	**0**	**0**	**221**	**1**	**0**	**1**

Table A D.14. School participation status: survey of teachers – Azerbaijan, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Azerbaijani	158	0	0	158	0	0	0
Public – Azerbaijani and Russian	38	0	0	37	1	0	0
Public – Russian	8	0	0	8	0	0	0
Private	19	0	0	18	0	0	1
Total	**223**	**0**	**0**	**221**	**1**	**0**	**1**

Table A D.15. Teacher participation status – Azerbaijan, ISCED level 2

Participation status	Teachers
Participated	4 307
Absent	67
Left school permanently	13
Not part of sample	4
Total	**4 391**

Unclassified - Non classifié

Bahrain: ISCED level 2

ISCED level 2 in Bahrain consists of "General preparatory education" and "Religious preparatory education" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Census.

Sample sizes: 30 schools were selected for the field trial; all 122 schools were asked to participate in the main survey.

Method of sample selection: Census.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by funding with two categories (public, private).

Implicit stratification: Organised by governorate with four categories (Capital, Muharraq, Northern, Southern).

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2021/22.

Table A D.16. School participation status: survey of principals – Bahrain, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public	62	0	0	62	0	0	0
Private	60	6	0	53	0	0	1
Total	**122**	**6**	**0**	**115**	**0**	**0**	**1**

Table A D.17. School participation status: survey of teachers – Bahrain, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public	62	0	0	62	0	0	0
Private	60	6	0	54	0	0	0
Total	**122**	**6**	**0**	**116**	**0**	**0**	**0**

Table A D.18. Teacher participation status – Bahrain, ISCED level 2

Participation status	Teachers
Participated	3 104
Absent	74
Left school permanently	108
Not part of sample	31
Total	**3 317**

Unclassified - Non classifié

Belgium: ISCED level 2

The target population comprises the Flemish and French Communities of Belgium, not including the German Community.

ISCED level 2 in the Flemish Community of Belgium consists of "Reception class for immigrants", "Regular secondary education – 1st stage" and "European School – 1st stage" and comprises Grades 7 to 8 (UNESCO Institute of Statistics, 2017[1]).

ISCED level 2 in the French Community of Belgium consists of "Regular secondary education – common first stage" and "Regular secondary education – differentiated first stage" and comprises Grades 7 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to accommodate separate adjudication of communities.

Sample sizes: 30 schools were selected for the field trial; 360 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools for the Flemish Community and number of ISCED level 2 students in schools for French Community.

Explicit stratification: Organised by community with two categories (Flemish, French), by funding with three categories (public at the state level, public at the local level, private) within the French Community, by overlap with two categories (ISCED level 2 only, ISCED levels 2 and 3) and funding with two categories (public, private) within the Flemish Community.

Implicit stratification: Organised by educational network with three categories (education organised by the Flemish Community, government-aided public education, government-aided private education) within the Flemish Community and by ISCED level 3 tracks with four categories (ISCED level 2 only, academic only, academic and vocational, vocational) within the French Community.

Data sources: For the Flemish Community, data used for school sampling were obtained from the Ministry of Education and Training and referred to school year 2022/23. For the French Community, data used for school sampling were obtained from the General Administration of Education and referred to school year 2021/22.

Table A D.19. School participation status: survey of principals – Belgium, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Flemish Community – ISCED 2 only – Public	16	0	0	9	1	0	6
Flemish Community – ISCED 2 only – Private	60	0	0	32	9	0	19
Flemish Community – ISCED 2 and ISCED 3 – Public	36	0	0	23	0	0	13
Flemish Community – ISCED 2 and ISCED 3 – Private	98	0	0	56	6	3	33
French Community – Public at the state level	38	0	0	31	2	0	5
French Community – Public at the local level	18	0	0	13	2	0	3
French Community – Private	94	3	0	68	6	1	16
Total	**360**	**3**	**0**	**232**	**26**	**4**	**95**

Unclassified - Non classifié

Table A D.20. School participation status: survey of teachers – Belgium, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Flemish Community – ISCED 2 only – Public	16	0	0	8	1	0	7
Flemish Community – ISCED 2 only – Private	60	0	0	34	10	1	15
Flemish Community – ISCED 2 and ISCED 3 – Public	36	0	0	23	1	0	12
Flemish Community – ISCED 2 and ISCED 3 – Private	98	0	0	57	5	3	33
French Community – Public at the state level	38	0	0	33	2	0	3
French Community – Public at the local level	18	0	0	12	2	0	4
French Community – Private	94	3	0	74	6	1	10
Total	**360**	**3**	**0**	**241**	**27**	**5**	**84**

Table A D.21. Teacher participation status – Belgium, ISCED level 2

Participation status	Teachers
Participated	5 175
Absent	949
Left school permanently	42
Not part of sample	48
Total	**6 214**

Unclassified - Non classifié

Flemish Community (Belgium): ISCED level 2

ISCED level 2 in the Flemish Community of Belgium consists of “Reception class for immigrants”, “Regular secondary education – 1st stage” and “European School – 1st stage” and comprises Grades 7 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 210 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 2 only, ISCED levels 2 and 3) and funding with two categories (public, private).

Implicit stratification: Organised by educational network with three categories (education organised by the Flemish Community, government-aided public education, government-aided private education).

Data sources: Data used for school sampling were obtained from the Ministry of Education and Training and referred to school year 2022/23.

Table A D.22. School participation status: survey of principals – Flemish Community (Belgium), ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public	16	0	0	9	1	0	6
ISCED 2 only – Private	60	0	0	32	9	0	19
ISCED 2 and ISCED 3 – Public	36	0	0	23	0	0	13
ISCED 2 and ISCED 3 – Private	98	0	0	56	6	3	33
Total	**210**	**0**	**0**	**120**	**16**	**3**	**71**

Table A D.23. School participation status: survey of teachers – Flemish Community (Belgium), ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public	16	0	0	8	1	0	7
ISCED 2 only – Private	60	0	0	34	10	1	15
ISCED 2 and ISCED 3 – Public	36	0	0	23	1	0	12
ISCED 2 and ISCED 3 – Private	98	0	0	57	5	3	33
Total	**210**	**0**	**0**	**122**	**17**	**4**	**67**

Table A D.24. Teacher participation status – Flemish Community (Belgium), ISCED level 2

Participation status	Teachers
Participated	2 444
Absent	457
Left school permanently	17
Not part of sample	29
Total	**2 947**

Unclassified - Non classifié

French Community (Belgium): ISCED level 2

ISCED level 2 in the French Community of Belgium consists of "Regular secondary education – common first stage" and "Regular secondary education – differentiated first stage" and comprises Grades 7 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students.

Sample sizes: 30 schools were selected for the field trial; 150 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by funding with three categories (public at the state level, public at the local level, private).

Implicit stratification: Organised by ISCED level 3 tracks with four categories (ISCED level 2 only, academic only, academic and vocational, vocational).

Data sources: Data used for school sampling were obtained from the General Administration of Education and referred to school year 2021/22.

Table A D.25. School participation status: survey of principals – French Community (Belgium), ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public at the state level	38	0	0	31	2	0	5
Public at the local level	18	0	0	13	2	0	3
Private	94	3	0	68	6	1	16
Total	**150**	**3**	**0**	**112**	**10**	**1**	**24**

Table A D.26. School participation status: survey of teachers – French Community (Belgium), ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public at the state level	38	0	0	33	2	0	3
Public at the local level	18	0	0	12	2	0	4
Private	94	3	0	74	6	1	10
Total	**150**	**3**	**0**	**119**	**10**	**1**	**17**

Table A D.27. Teacher participation status – French Community (Belgium), ISCED level 2

Participation status	Teachers
Participated	2 731
Absent	492
Left school permanently	25
Not part of sample	19
Total	**3 267**

Unclassified - Non classifié

Brazil: ISCED level 2

ISCED level 2 in Brazil consists of "Fundamental education (Years 6-9)" and comprises Grades 6 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers; adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 33 schools were selected for the field trial; 250 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 2 only, ISCED levels 1 and 2) and type with four categories (federal, regional, local, private).

Implicit stratification: Organised by region with five categories (Central-West, North, Northeast, Southeast, South).

Data sources: Data used for school sampling were obtained from the national School Census and referred to 2022.

Table A D.28. School participation status: survey of principals – Brazil, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Federal	8	0	1	2	2	0	3
ISCED 2 only – Regional	66	4	0	60	1	0	1
ISCED 2 only – Local	24	0	1	22	1	0	0
ISCED 2 only – Private	8	1	0	7	0	0	0
ISCED 1 and ISCED 2 – Federal	8	0	0	3	0	0	5
ISCED 1 and ISCED 2 – Regional	26	0	3	22	0	0	1
ISCED 1 and ISCED 2 – Local	66	3	4	55	1	2	1
ISCED 1 and ISCED 2 – Private	44	1	1	30	3	1	8
Total	**250**	**9**	**10**	**201**	**8**	**3**	**19**

Table A D.29. School participation status: survey of teachers – Brazil, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Federal	8	0	1	2	2	0	3
ISCED 2 only – Regional	66	4	0	59	1	0	2
ISCED 2 only – Local	24	0	1	22	0	0	1
ISCED 2 only – Private	8	1	0	7	0	0	0
ISCED 1 and ISCED 2 – Federal	8	0	0	3	0	0	5
ISCED 1 and ISCED 2 – Regional	26	0	3	22	0	0	1
ISCED 1 and ISCED 2 – Local	66	3	4	53	1	2	3
ISCED 1 and ISCED 2 – Private	44	1	1	30	2	1	9
Total	**250**	**9**	**10**	**198**	**6**	**3**	**24**

Unclassified - Non classifié

Table A D.30. Teacher participation status – Brazil, ISCED level 2

Participation status	Teachers
Participated	3 009
Absent	143
Left school permanently	104
Not part of sample	57
Total	**3 313**

Unclassified - Non classifié

Bulgaria: ISCED level 2

ISCED level 2 in Bulgaria consists of "Lower secondary stage of basic education" and comprises Grades 5 to 7 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to increase the number of big schools.

Sample sizes: 31 schools were selected for the field trial; 212 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by school structure with two categories (up to ISCED level 2, up to ISCED level 3) and school size with two categories (big, small).

Implicit stratification: Organised by urbanisation with four categories (capital, regional centre, city, village).

Data sources: Data used for school sampling were obtained from the National Center for Informatics Coverage of Education and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – Bulgaria, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Up to ISCED 2 – Big schools	30	0	0	29	0	0	1
Up to ISCED 2 – Small schools	66	1	0	64	0	0	1
Up to ISCED 3 – Big schools	84	0	0	81	1	1	1
Up to ISCED 3 – Small schools	32	0	0	31	0	1	0
Total	**212**	**1**	**0**	**205**	**1**	**2**	**3**

Table A D.2. School participation status: survey of teachers – Bulgaria, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Up to ISCED 2 – Big schools	30	0	0	29	0	0	1
Up to ISCED 2 – Small schools	66	1	0	65	0	0	0
Up to ISCED 3 – Big schools	84	0	0	82	1	1	0
Up to ISCED 3 – Small schools	32	0	0	31	0	1	0
Total	**212**	**1**	**0**	**207**	**1**	**2**	**1**

Table A D.3. Teacher participation status – Bulgaria, ISCED level 2

Participation status	Teachers
Participated	3 629
Absent	31
Left school permanently	51
Not part of sample	2
Total	**3 713**

Unclassified - Non classifié

Chile: ISCED level 2

ISCED level 2 in Chile consists of "Lower secondary education" and comprises Grades 7 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to increase the number of big schools.

Sample sizes: 34 schools were selected for the field trial; 467 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 2 only, ISCED levels 02 and 2), funding with three categories (public school, private school with public funds, private school) and size with two categories (small schools, big schools).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the schools and the National School Directory and referred to 2021.

Table A D.1. School participation status: survey of principals – Chile, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public school – Small schools	8	1	1	4	1	0	1
ISCED 2 only – Public school – Big schools	30	1	0	15	2	0	12
ISCED 2 only – Private school with public funds – Small schools	8	0	0	4	2	0	2
ISCED 2 only – Private school with public funds – Big schools	20	0	0	10	5	2	3
ISCED 2 only – Private school – Small schools	8	0	0	4	1	1	2
ISCED 2 only – Private school – Big schools	8	0	0	5	1	0	2
ISCED 02 and ISCED 2 – Public school – Small schools	52	0	0	44	5	0	3
ISCED 02 and ISCED 2 – Public school – Big schools	80	0	0	59	11	4	6
ISCED 02 and ISCED 2 – Private school with public funds – Small schools	34	0	1	24	3	1	5
ISCED 02 and ISCED 2 – Private school with public funds – Big schools	149	0	0	82	26	3	38
ISCED 02 and ISCED 2 – Private school – Small schools	8	0	0	4	1	0	3
ISCED 02 and ISCED 2 – Private school – Big schools	62	0	0	28	5	5	24
Total	**467**	**2**	**2**	**283**	**63**	**16**	**101**

Unclassified - Non classifié

Table A D.2. School participation status: survey of teachers – Chile, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public school – Small schools	8	1	1	4	1	0	1
ISCED 2 only – Public school – Big schools	30	1	0	15	1	0	13
ISCED 2 only – Private school with public funds – Small schools	8	0	0	4	2	0	2
ISCED 2 only – Private school with public funds – Big schools	20	0	0	11	5	2	2
ISCED 2 only – Private school – Small schools	8	0	0	4	1	1	2
ISCED 2 only – Private school – Big schools	8	0	0	5	1	0	2
ISCED 02 and ISCED 2 – Public school – Small schools	52	0	0	44	4	0	4
ISCED 02 and ISCED 2 – Public school – Big schools	80	0	0	55	12	4	9
ISCED 02 and ISCED 2 – Private school with public funds – Small schools	34	0	1	24	2	1	6
ISCED 02 and ISCED 2 – Private school with public funds – Big schools	149	0	0	80	26	2	41
ISCED 02 and ISCED 2 – Private school – Small schools	8	0	0	4	1	0	3
ISCED 02 and ISCED 2 – Private school – Big schools	62	0	0	27	5	5	25
Total	**467**	**2**	**2**	**277**	**61**	**15**	**110**

Table A D.3. Teacher participation status – Chile, ISCED level 2

Participation status	Teachers
Participated	2 319
Absent	520
Left school permanently	0
Not part of sample	2
Total	**2 841**

Table A D.4. School participation status: survey of teachers – Chile, TKS

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public school – Small schools	8	1	1	4	1	0	1
ISCED 2 only – Public school – Big schools	30	1	0	15	1	0	13
ISCED 2 only – Private school with public funds – Small schools	8	0	0	4	2	0	2
ISCED 2 only – Private school with public funds – Big schools	20	0	0	9	5	2	4
ISCED 2 only – Private school – Small schools	8	0	0	4	0	1	3

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Private school – Big schools	8	0	0	5	1	0	2
ISCED 02 and ISCED 2 – Public school – Small schools	51	0	0	42	5	0	4
ISCED 02 and ISCED 2 – Public school – Big schools	80	0	0	54	11	4	11
ISCED 02 and ISCED 2 – Private school with public funds – Small schools	34	0	1	24	2	1	6
ISCED 02 and ISCED 2 – Private school with public funds – Big schools	149	0	0	76	25	3	45
ISCED 02 and ISCED 2 – Private school – Small schools	8	0	0	4	1	0	3
ISCED 02 and ISCED 2 – Private school – Big schools	62	0	0	25	5	5	27
Total	**466**	**2**	**2**	**266**	59	**16**	**121**

Table A D.5. Teacher participation status – Chile, TKS

Participation status	Teachers
Participated	1 645
Absent	414
Left school permanently	0
Not part of sample	1
Total	**2 060**

Unclassified - Non classifié

Colombia: ISCED level 2

ISCED level 2 in Colombia consists of “Basic secondary”, “Basic post-primary”, “Active secondary” and “Basic post-primary – New school methodology” and comprises Grades 6 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students; adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 32 schools were selected for the field trial; 276 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by overlap with two categories (ISCED 2 only, ISCED 02 and ISCED 2), funding with two categories (public, private) and urbanisation for public schools with two categories (urban, rural).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of National Education (SIMAT MEN) and referred to 2023.

Table A D.1. School participation status: survey of principals – Colombia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public – Urban – SIMAT MEN	78	0	0	52	4	0	22
ISCED 2 only – Public – Rural – SIMAT MEN	16	0	0	12	0	0	4
ISCED 2 only – Private – SIMAT MEN	8	0	0	4	0	0	4
ISCED 02 and ISCED 2 – Public – Urban – SIMAT MEN	88	0	0	57	3	0	28
ISCED 02 and ISCED 2 – Public – Rural – SIMAT MEN	42	0	0	28	2	0	12
ISCED 02 and ISCED 2 – Private – SIMAT MEN	44	0	0	23	4	0	17
Total	**276**	**0**	**0**	**176**	**13**	**0**	**87**

Table A D.2. School participation status: survey of teachers – Colombia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public – Urban – SIMAT MEN	78	0	0	60	6	0	12
ISCED 2 only – Public – Rural – SIMAT MEN	16	0	0	11	0	0	5
ISCED 2 only – Private – SIMAT MEN	8	0	0	5	1	0	2
ISCED 02 and ISCED 2 – Public – Urban – SIMAT MEN	88	0	0	64	3	0	21
ISCED 02 and ISCED 2 – Public – Rural – SIMAT MEN	42	0	0	31	2	0	9

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 02 and ISCED 2 – Private – SIMAT MEN	44	0	0	27	3	0	14
Total	**276**	**0**	**0**	**198**	**15**	**0**	**63**

Table A D.3. Teacher participation status – Colombia, ISCED level 2

Participation status	Teachers
Participated	3 010
Absent	265
Left school permanently	15
Not part of sample	0
Total	**3 290**

Unclassified - Non classifié

Costa Rica: ISCED level 2

ISCED level 2 in Costa Rica consists of "General basic education – Cycle III – Academic daytime", "General basic education – Cycle III – Technical daytime" and "Vocational – Cycle III (National Plan)" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between regions and between public and private schools.

Sample sizes: 30 schools were selected for the field trial; 216 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by region with four categories (Atlantic, Greater Metropolitan Area, North Zone and Guanacaste, Pacific) and funding with two categories (public, private and subsidised).

Implicit stratification: Organised by education stream with three categories (daytime academic, daytime technique, education for young people and adults).

Data sources: Data used for school sampling were obtained from the Ministry of Public Education and referred to 2021.

Table A D.1. School participation status: survey of principals – Costa Rica, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Atlantic – Public	30	0	0	27	0	0	3
Atlantic – Private and subsidised	8	0	0	6	0	0	2
Greater Metropolitan Area – Public	86	6	0	72	0	0	8
Greater Metropolitan Area – Private and subsidised	20	0	0	15	0	0	5
North Zone and Guanacaste – Public	34	0	0	30	0	0	4
North Zone and Guanacaste – Private and subsidised	8	0	0	5	1	0	2
Pacific – Public	22	0	0	22	0	0	0
Pacific – Private and subsidised	8	0	0	3	2	0	3
Total	**216**	**6**	**0**	**180**	**3**	**0**	**27**

Table A D.2. School participation status: survey of teachers – Costa Rica, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Atlantic – Public	30	0	0	27	0	0	3
Atlantic – Private and subsidised	8	0	0	7	0	0	1
Greater Metropolitan Area – Public	86	6	0	72	0	0	8
Greater Metropolitan Area – Private and subsidised	20	0	0	18	0	0	2
North Zone and Guanacaste – Public	34	0	0	28	0	0	6
North Zone and Guanacaste – Private and subsidised	8	0	0	6	1	0	1
Pacific – Public	22	0	0	22	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Pacific – Private and subsidised	8	0	0	4	2	0	2
Total	**216**	**6**	**0**	**184**	**3**	**0**	**23**

Table A D.3. Teacher participation status – Costa Rica, ISCED level 2

Participation status	Teachers
Participated	3 026
Absent	188
Left school permanently	25
Not part of sample	3
Total	**3 242**

Unclassified - Non classifié

Croatia: ISCED level 2

ISCED level 2 in Croatia consists of "Formal education in the upper grades of elementary school" and "Art education at the elementary level" and comprises Grades 5 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students.

Sample sizes: 30 schools were selected for the field trial; 296 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by region with six categories (Central Croatia, City of Zagreb, Eastern Croatia, Northern Croatia, Southern Croatia, Western Croatia).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Science, Education and Youth and referred to school year 2020/21.

Table A D.1. School participation status: survey of principals – Croatia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Central Croatia	62	0	0	58	0	0	4
Eastern Croatia	46	0	0	38	0	0	8
Northern Croatia	30	0	0	25	0	0	5
Western Croatia	34	0	0	32	0	0	2
Southern Croatia	64	0	0	57	0	0	7
City of Zagreb	60	0	0	49	0	0	11
Total	**296**	**0**	**0**	**259**	**0**	**0**	**37**

Table A D.2. School participation status: survey of teachers – Croatia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Central Croatia	62	0	0	57	0	0	5
Eastern Croatia	46	0	0	42	0	0	4
Northern Croatia	30	0	0	27	0	0	3
Western Croatia	34	0	0	33	0	0	1
Southern Croatia	64	0	0	56	0	0	8
City of Zagreb	60	0	0	53	0	0	7
Total	**296**	**0**	**0**	**268**	**0**	**0**	**28**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Croatia, ISCED level 2

Participation status	Teachers
Participated	3 163
Absent	665
Left school permanently	52
Not part of sample	39
Total	**3 919**

Table A D.4. School participation status: survey of teachers – Croatia, TKS

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Central Croatia	62	0	0	57	0	0	5
Eastern Croatia	46	0	0	42	0	0	4
Northern Croatia	30	0	0	26	0	0	4
Western Croatia	34	0	0	32	0	0	2
Southern Croatia	64	0	0	57	0	0	7
City of Zagreb	60	0	0	48	0	0	12
Total	**296**	**0**	**0**	**262**	**0**	**0**	**34**

Table A D.5. Teacher participation status – Croatia, TKS

Participation status	Teachers
Participated	2 282
Absent	514
Left school permanently	37
Not part of sample	19
Total	**2 852**

Unclassified - Non classifié

Cyprus: ISCED level 2

ISCED level 2 in Cyprus consists of “Public lower secondary general (Gymnasium)”, “Guests pupils – Gymnasiums” and “Private secondary general (Lower)” and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Census.

Sample sizes: 10 schools were selected for the field trial; all 100 schools were asked to participate in the main survey. For the field trial, a smaller convenience sample was used to reduce the burden for schools already participating in the main survey.

Method of sample selection: Census.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by funding with two categories (public, private).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education, Sport and Youth and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Cyprus, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public	70	0	0	70	0	0	0
Private	30	0	0	29	0	0	1
Total	**100**	**0**	**0**	**99**	**0**	**0**	**1**

Table A D.2. School participation status: survey of teachers – Cyprus, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public	70	0	0	70	0	0	0
Private	30	0	0	29	0	0	1
Total	**100**	**0**	**0**	**99**	**0**	**0**	**1**

Table A D.3. Teacher participation status – Cyprus, ISCED level 2

Participation status	Teachers
Participated	1 793
Absent	172
Left school permanently	9
Not part of sample	43
Total	**2 017**

Unclassified - Non classifié

Czechia: ISCED level 2

ISCED level 2 in Czechia consists of "Basic school – 2nd stage", "Gymnasium – Lower stage of 8-year courses (1st to 4th grade)", "Gymnasium – Lower stage of 6-year courses (1st and 2nd grade)", "Conservatoire – Lower stage of 8-year courses (1st to 4th grade)" and "Basic school - Home schooling (2nd stage)" and comprises Grades 6 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation following the country's request.

Sample sizes: 33 schools were selected for the field trial; 346 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by school type with 2 categories (elementary, gymnasium) and region with 14 categories for elementary schools.

Implicit stratification: Organised by region with 14 categories.

Data sources: Data used for school sampling were obtained from the Annual Statistics of the Ministry of Education, Youth and Sports and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – Czechia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Elementary – Prague	30	0	0	30	0	0	0
Elementary – Central Bohemian Region	36	0	0	36	0	0	0
Elementary – South Bohemian Region	16	0	0	16	0	0	0
Elementary – Plzeň Region	16	0	0	16	0	0	0
Elementary – Karlovy Vary Region	20	0	0	19	1	0	0
Elementary – Ústí nad Labem Region	26	0	0	26	0	0	0
Elementary – Liberec Region	16	0	0	16	0	0	0
Elementary – Hradec Králové Region	16	0	0	16	0	0	0
Elementary – Pardubice Region	16	0	0	16	0	0	0
Elementary – Vysočina Region	16	0	0	16	0	0	0
Elementary – South Moravian Region	26	0	0	26	0	0	0
Elementary – Olomouc Region	16	0	0	16	0	0	0
Elementary – Zlín Region	16	0	0	16	0	0	0
Elementary – Moravian-Silesian Region	30	0	0	30	0	0	0
Gymnasium	50	0	0	50	0	0	0
Total	**346**	**0**	**0**	**345**	**1**	**0**	**0**

Unclassified - Non classifié

Table A D.2. School participation status: survey of teachers – Czechia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Elementary – Prague	30	0	0	30	0	0	0
Elementary – Central Bohemian Region	36	0	0	36	0	0	0
Elementary – South Bohemian Region	16	0	0	16	0	0	0
Elementary – Plzeň Region	16	0	0	16	0	0	0
Elementary – Karlovy Vary Region	20	0	0	19	1	0	0
Elementary – Ústí nad Labem Region	26	0	0	26	0	0	0
Elementary – Liberec Region	16	0	0	16	0	0	0
Elementary – Hradec Králové Region	16	0	0	16	0	0	0
Elementary – Pardubice Region	16	0	0	16	0	0	0
Elementary – Vysočina Region	16	0	0	16	0	0	0
Elementary – South Moravian Region	26	0	0	26	0	0	0
Elementary – Olomouc Region	16	0	0	16	0	0	0
Elementary – Zlín Region	16	0	0	16	0	0	0
Elementary – Moravian-Silesian Region	30	0	0	30	0	0	0
Gymnasium	50	0	0	50	0	0	0
Total	**346**	**0**	**0**	**345**	**1**	**0**	**0**

Table A D.3. Teacher participation status – Czechia, ISCED level 2

Participation status	Teachers
Participated	6 369
Absent	101
Left school permanently	10
Not part of sample	18
Total	**6 498**

Unclassified - Non classifié

Denmark: ISCED level 2

The target population comprises metropolitan Denmark, not including the autonomous territories of the Faroe Islands and Greenland.

ISCED level 2 in Denmark consists of “Primary school 7th-9th grade” and “Primary school 10th grade” and comprises Grades 7 to 9/10 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students.

Sample sizes: 30 schools were selected for the field trial; 240 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by funding with two categories (public, private) and size with three categories (small schools, medium-sized schools, large schools).

Implicit stratification: Organised by school type with two categories (elementary, boarding schools) for private schools.

Data sources: Data used for school sampling were obtained from the National Agency for IT and Learning and referred to school year 2020/21.

Table A D.1. School participation status: survey of principals – Denmark, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Small schools	16	1	0	11	3	0	1
Public – Medium-sized schools	50	0	0	27	10	2	11
Public – Large schools	102	0	0	52	19	5	26
Private – Small schools	24	1	0	11	6	1	5
Private – Medium-sized schools	24	0	0	14	5	3	2
Private – Large schools	24	0	1	15	4	1	3
Total	**240**	**2**	**1**	**130**	**47**	**12**	**48**

Table A D.2. School participation status: survey of teachers – Denmark, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Small schools	16	1	0	11	3	0	1
Public – Medium-sized schools	50	0	0	26	10	2	12
Public – Large schools	102	0	0	54	19	5	24
Private – Small schools	24	1	0	10	6	1	6
Private – Medium-sized schools	24	0	0	14	5	3	2
Private – Large schools	24	0	1	15	4	1	3
Total	**240**	**2**	**1**	**130**	**47**	**12**	**48**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Denmark, ISCED level 2

Participation status	Teachers
Participated	2 488
Absent	440
Left school permanently	72
Not part of sample	98
Total	**3 098**

Unclassified - Non classifié

Estonia: ISCED level 2

ISCED level 2 in Estonia consists of “Basic education (Grades 7-9 of basic school)”, “Second-level vocational training” and “Third-level vocational training” and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 30 schools were selected for the field trial; 214 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by urbanisation with two categories (urban, rural) and school type with two categories (basic school, upper and lower secondary school).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Estonian Education Information System and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Estonia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Urban – Basic school	46	1	1	39	0	0	5
Urban – Upper and lower secondary school	74	6	0	64	0	0	4
Rural – Basic school	62	2	0	58	0	0	2
Rural – Upper and lower secondary school	32	0	0	31	0	0	1
Total	**214**	**9**	**1**	**192**	**0**	**0**	**12**

Table A D.2. School participation status: survey of teachers – Estonia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Urban – Basic school	46	1	1	43	0	0	1
Urban – Upper and lower secondary school	74	6	0	67	0	0	1
Rural – Basic school	62	2	0	57	0	0	3
Rural – Upper and lower secondary school	32	0	0	32	0	0	0
Total	**214**	**9**	**1**	**199**	**0**	**0**	**5**

Table A D.3. Teacher participation status – Estonia, ISCED level 2

Participation status	Teachers
Participated	3 339
Absent	409
Left school permanently	10
Not part of sample	5
Total	**3 763**

Unclassified - Non classifié

Finland: ISCED level 2

ISCED level 2 in Finland consists of "Comprehensive school grades 7-9 (10)" and comprises Grades 7 to 9/10 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between Finnish and Swedish schools and between urban/semi-urban and rural schools.

Sample sizes: 31 schools were selected for the field trial; 226 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by language with two categories (Finnish, Swedish), by region with four categories (Helsinki/Uusimaa, Northern and Eastern, Southern, Western) for Finnish schools and by urbanisation with two categories (urban and semi-urban, rural) for Finnish schools in Northern and Eastern, Southern, and Western and for Swedish schools.

Implicit stratification: Organised by region with four categories (Eastern, Western and Inland, Northern, Lapland) for Finnish schools in Northern and Eastern and by region with two categories (Mainland, Åland) for Swedish schools.

Data sources: Data used for school sampling were obtained from Statistics Finland and the Finnish National Agency for Education and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Finland, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Finnish – Helsinki/Uusimaa	56	0	0	55	1	0	0
Finnish – Southern – Urban and semi-urban	34	0	0	34	0	0	0
Finnish – Southern – Rural	8	0	0	8	0	0	0
Finnish – Western – Urban and semi-urban	40	0	0	40	0	0	0
Finnish – Western – Rural	8	0	0	8	0	0	0
Finnish – Northern and Eastern – Urban and semi-urban	38	0	0	38	0	0	0
Finnish – Northern and Eastern – Rural	12	0	0	12	0	0	0
Swedish – Urban and semi-urban	22	0	0	22	0	0	0
Swedish – Rural	8	0	0	8	0	0	0
Total	**226**	**0**	**0**	**225**	**1**	**0**	**0**

Table A D.2. School participation status: survey of teachers – Finland, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Finnish – Helsinki/Uusimaa	56	0	0	55	1	0	0
Finnish – Southern – Urban and semi-urban	34	0	0	34	0	0	0
Finnish – Southern – Rural	8	0	0	8	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Finnish – Western – Urban and semi-urban	40	0	0	40	0	0	0
Finnish – Western – Rural	8	0	0	8	0	0	0
Finnish – Northern and Eastern – Urban and semi-urban	38	0	0	38	0	0	0
Finnish – Northern and Eastern – Rural	12	0	0	12	0	0	0
Swedish – Urban and semi-urban	22	0	0	22	0	0	0
Swedish – Rural	8	0	0	8	0	0	0
Total	**226**	**0**	**0**	**225**	**1**	**0**	**0**

Table A D.3. Teacher participation status – Finland, ISCED level 2

Participation status	Teachers
Participated	4 300
Absent	236
Left school permanently	41
Not part of sample	118
Total	**4 695**

Unclassified - Non classifié

France: ISCED level 2

ISCED level 2 in France consists of "Secondary education (1st cycle)" and comprises Grades 6 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 30 schools were selected for the field trial; 200 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by school sector with three categories (public school non-priority education, public school priority education, private school under contract with the state).

Implicit stratification: Organised by urbanisation with three categories (fewer than 10 000 inhabitants, 10 000 to 199 999 inhabitants, more than 199 999 inhabitants).

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – France, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public school non-priority education	118	1	0	104	0	1	12
Public school priority education	32	0	0	29	0	0	3
Private school under contract with the state	50	2	0	35	2	0	11
Total	**200**	**3**	**0**	**168**	**2**	**1**	**26**

Table A D.2. School participation status: survey of teachers – France, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public school non-priority education	118	1	0	95	0	1	21
Public school priority education	32	0	0	27	0	0	5
Private school under contract with the state	50	2	0	36	2	0	10
Total	**200**	**3**	**0**	**158**	**2**	**1**	**36**

Table A D.3. Teacher participation status – France, ISCED level 2

Participation status	Teachers
Participated	2 877
Absent	889
Left school permanently	0
Not part of sample	73
Total	**3 839**

Unclassified - Non classifié

Hungary: ISCED level 2

ISCED level 2 in Hungary consists of "Primary school lower secondary level (Grades 5-8), and Grades 5-8 of the upper secondary general school (full-time education)" and comprises Grades 5 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers, then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 42 schools were selected for the field trial; 254 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by region with seven categories (Central Hungary, Central Transdanubia, Northern Great Plain, Northern Hungary, Southern Great Plain, Southern Transdanubia, Western Transdanubia) and by urbanisation with four categories (capital, county town, town, rural area).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Hungary, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Central Hungary – Capital	40	0	0	33	1	0	6
Central Hungary – Town	22	2	0	20	0	0	0
Central Hungary – Rural area	10	0	0	8	0	0	2
Central Transdanubia – County town	8	0	0	8	0	0	0
Central Transdanubia – Town	12	0	0	11	0	0	1
Central Transdanubia – Rural area	10	0	0	10	0	0	0
Northern Great Plain – County town	10	0	0	10	0	0	0
Northern Great Plain – Town	16	2	0	14	0	0	0
Northern Great Plain – Rural area	12	1	0	11	0	0	0
Northern Hungary – County town	8	0	0	8	0	0	0
Northern Hungary – Town	10	1	0	9	0	0	0
Northern Hungary – Rural area	14	2	0	11	0	0	1
Southern Great Plain – County town	8	0	0	8	0	0	0
Southern Great Plain – Town	14	0	0	14	0	0	0
Southern Great Plain – Rural area	8	0	0	7	0	0	1
Southern Transdanubia – County town	8	0	0	7	0	0	1
Southern Transdanubia – Town	8	0	0	7	0	0	1
Southern Transdanubia – Rural area	10	0	0	10	0	0	0
Western Transdanubia – County town	8	0	0	8	0	0	0
Western Transdanubia – Town	8	0	0	8	0	0	0
Western Transdanubia – Rural area	10	0	0	8	0	0	2
Total	**254**	**8**	**0**	**230**	**1**	**0**	**15**

Unclassified - Non classifié

Table A D.2. School participation status: survey of teachers – Hungary, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Central Hungary – Capital	40	0	0	36	1	0	3
Central Hungary – Town	22	2	0	19	0	0	1
Central Hungary – Rural area	10	0	0	9	0	0	1
Central Transdanubia – County town	8	0	0	8	0	0	0
Central Transdanubia – Town	12	0	0	11	0	0	1
Central Transdanubia – Rural area	10	0	0	10	0	0	0
Northern Great Plain – County town	10	0	0	10	0	0	0
Northern Great Plain – Town	16	2	0	14	0	0	0
Northern Great Plain – Rural area	12	1	0	11	0	0	0
Northern Hungary – County town	8	0	0	8	0	0	0
Northern Hungary – Town	10	1	0	9	0	0	0
Northern Hungary – Rural area	14	2	0	11	0	0	1
Southern Great Plain – County town	8	0	0	8	0	0	0
Southern Great Plain – Town	14	0	0	14	0	0	0
Southern Great Plain – Rural area	8	0	0	8	0	0	0
Southern Transdanubia – County town	8	0	0	8	0	0	0
Southern Transdanubia – Town	8	0	0	7	0	0	1
Southern Transdanubia – Rural area	10	0	0	9	0	0	1
Western Transdanubia – County town	8	0	0	8	0	0	0
Western Transdanubia – Town	8	0	0	7	0	0	1
Western Transdanubia – Rural area	10	0	0	9	0	0	1
Total	**254**	**8**	**0**	**234**	**1**	**0**	**11**

Table A D.3. Teacher participation status – Hungary, ISCED level 2

Participation status	Teachers
Participated	3 890
Absent	313
Left school permanently	16
Not part of sample	3
Total	**4 222**

Unclassified - Non classifié

Iceland: ISCED level 2

ISCED level 2 in Iceland consists of "Lower secondary school (2nd section compulsory education)" and comprises Grades 8 to 10 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Census.

Sample sizes: 20 schools were selected for the field trial; all 146 schools were asked to participate in the main survey.

Method of sample selection: Census.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by region with three categories (Reykjavík, other Reykjavík area, outside Reykjavík area).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from Statistics Iceland and referred to 2021.

Table A D.1. School participation status: survey of principals – Iceland, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Reykjavík	29	1	1	24	0	0	3
Other Reykjavík area	27	0	0	21	0	0	6
Outside Reykjavík area	90	4	0	64	0	0	22
Total	**146**	**5**	**1**	**109**	**0**	**0**	**31**

Table A D.2. School participation status: survey of teachers – Iceland, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Reykjavík	29	1	1	26	0	0	1
Other Reykjavík area	27	0	0	24	0	0	3
Outside Reykjavík area	90	5	0	81	0	0	4
Total	**146**	**6**	**1**	**131**	**0**	**0**	**8**

Table A D.3. Teacher participation status – Iceland, ISCED level 2

Participation status	Teachers
Participated	1 427
Absent	322
Left school permanently	37
Not part of sample	46
Total	**1 832**

Unclassified - Non classifié

Israel: ISCED level 2

ISCED level 2 in Israel consists of “Lower secondary education, public” and “Lower secondary education, government-dependent private” and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to oversample specific orientations.

Sample sizes: 32 schools were selected for the field trial; 305 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by orientation with six categories (Hebrew secular, Hebrew religious, Arabic Arab, Arabic Druze, Arabic Bedouin, Hebrew ultra-Orthodox), likeliness to participate with two categories (potential educational streams, non-potential education streams) for Hebrew ultra-Orthodox and gender with two categories (male, female) for Hebrew ultra-Orthodox potential educational streams.

Implicit stratification: Organised by socio-economic status with three categories (low, medium, high) for Hebrew secular, Hebrew religious male, Hebrew religious female, Arabic Arab and Arabic Druze, region with two categories (north, south) for Arabic Bedouin, tracks/streams with six categories (Mukarim-Much’shar, Bney Yoseph-Much’shar, Mamach-Rishmi, Much’shar, Patur, Tarbuti Yichudi) for Hebrew ultra-Orthodox and gender with three categories (male, female, mixed) for Hebrew religious and Much’shar.

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2023/24.

Weighting: The strata “Hebrew ultra-Orthodox – Potential educational streams – Male”, “Hebrew ultra-Orthodox – Potential educational streams – Female” and “Hebrew ultra-Orthodox – Non-potential educational streams” were treated as excluded because few schools participated.

Table A D.1. School participation status: survey of principals – Israel, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Hebrew secular	124	8	0	108	0	0	8
Hebrew religious	41	4	0	29	1	0	7
Arabic Arab	36	0	0	36	0	0	0
Arabic Druze	8	0	0	8	0	0	0
Arabic Bedouin	16	0	0	16	0	0	0
Hebrew ultra-Orthodox – Potential educational streams – Male	22	1	21	0	0	0	0
Hebrew ultra-Orthodox – Potential educational streams – Female	34	0	34	0	0	0	0
Hebrew ultra-Orthodox – Non-potential educational streams	24	0	24	0	0	0	0
Total	**305**	**13**	**79**	**197**	**1**	**0**	**15**

Unclassified - Non classifié

Table A D.2. School participation status: survey of teachers – Israel, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Hebrew secular	124	8	0	108	0	0	8
Hebrew religious	41	4	0	28	0	0	9
Arabic Arab	36	0	0	36	0	0	0
Arabic Druze	8	0	0	8	0	0	0
Arabic Bedouin	16	0	0	16	0	0	0
Hebrew ultra-Orthodox – Potential educational streams – Male	22	1	21	0	0	0	0
Hebrew ultra-Orthodox – Potential educational streams – Female	34	0	34	0	0	0	0
Hebrew ultra-Orthodox – Non-potential educational streams	24	0	24	0	0	0	0
Total	**305**	**13**	**79**	**196**	**0**	**0**	**17**

Table A D.3. Teacher participation status – Israel, ISCED level 2

Participation status	Teachers
Participated	3 227
Absent	464
Left school permanently	17
Not part of sample	34
Total	**3 742**

Unclassified - Non classifié

Italy: ISCED level 2

ISCED level 2 in Italy consists of “Lower secondary education” and comprises Grades 6 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 30 schools were selected for the field trial; 202 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by region with three categories (north, centre, south).

Implicit stratification: Organised by funding with two categories (public, private) and student average performance with three categories (low, medium or missing, high) within public schools.

Data sources: Data used for school sampling were obtained from the Ministry of Education and Merit and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Italy, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
North	88	0	0	86	1	0	1
Centre	38	0	0	36	0	0	2
South	76	0	0	75	0	0	1
Total	**202**	**0**	**0**	**197**	**1**	**0**	**4**

Table A D.2. School participation status: survey of teachers – Italy, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
North	88	0	0	87	1	0	0
Centre	38	0	0	37	0	0	1
South	76	0	0	75	0	0	1
Total	**202**	**0**	**0**	**199**	**1**	**0**	**2**

Table A D.3. Teacher participation status – Italy, ISCED level 2

Participation status	Teachers
Participated	3 874
Absent	320
Left school permanently	12
Not part of sample	10
Total	**4 216**

Unclassified - Non classifié

Japan: ISCED level 2

ISCED level 2 in Japan consists of "Lower secondary school", "Compulsory education school" and "Secondary education school (lower division)" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers, then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 31 schools were selected for the field trial; 208 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 2 only, ISCED levels 1 and 2), funding with two categories (public, national or private) for ISCED level 2 only schools and urbanisation with four categories (very large city, large city, small city, non-city area) for ISCED level 2 only public schools.

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education, Culture, Sports, Science and Technology and referred to 2021.

Table A D.1. School participation status: survey of principals – Japan, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public – Very large city	40	0	0	37	3	0	0
ISCED 2 only – Public – Large city	28	0	0	27	1	0	0
ISCED 2 only – Public – Small city	86	0	0	80	5	0	1
ISCED 2 only – Public – Non-city area	22	0	0	19	2	0	1
ISCED 2 only – National or private	24	0	0	16	3	3	2
ISCED 1 and ISCED 2	4	0	0	4	0	0	0
Total	**204**	**0**	**0**	**183**	**14**	**3**	**4**

Table A D.2. School participation status: survey of teachers – Japan, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public – Very large city	40	0	0	37	3	0	0
ISCED 2 only – Public – Large city	28	0	0	27	1	0	0
ISCED 2 only – Public – Small city	86	0	0	80	5	0	1
ISCED 2 only – Public – Non-city area	22	0	0	19	2	0	1
ISCED 2 only – National or private	24	0	0	17	3	3	1
ISCED 1 and ISCED 2	4	0	0	4	0	0	0
Total	**204**	**0**	**0**	**184**	**14**	**3**	**3**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Japan, ISCED level 2

Participation status	Teachers
Participated	3 558
Absent	85
Left school permanently	31
Not part of sample	5
Total	**3 679**

Unclassified - Non classifié

Kazakhstan: ISCED level 2

ISCED level 2 in Kazakhstan consists of "Lower secondary education" and comprises Grades 5 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between regions and between public and private schools.

Sample sizes: 42 schools were selected for the field trial; 399 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by region with 13 categories and funding with 2 categories (public, private).

Implicit stratification: Organised by language with three categories (Kazakh, Kazakh and Russian, Russian).

Data sources: Data used for school sampling were obtained from the National Education Database and referred to 2022.

Table A D.1. School participation status: survey of principals – Kazakhstan, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Astana city – Public	22	0	0	21	0	0	1
Astana city – Private	8	1	0	7	0	0	0
Almaty city – Public	22	0	0	22	0	0	0
Almaty city – Private	8	1	0	7	0	0	0
Shymkent city – Public	22	0	0	22	0	0	0
Shymkent city – Private	8	2	0	6	0	0	0
Northern Kazakhstan (Akmola Region, Kostanay Region, Pavlodar Region) – Public	20	0	0	20	0	0	0
Northern Kazakhstan (Akmola Region, Kostanay Region, Pavlodar Region) – Private	6	1	0	5	0	0	0
Northern Kazakhstan (North Kazakhstan Region) – Public	28	1	0	27	0	0	0
Northern Kazakhstan (North Kazakhstan Region) – Private	2	0	0	2	0	0	0
Central Kazakhstan (Karaganda Region, Ulytau Region) – Public	24	0	0	23	0	0	1
Central Kazakhstan (Karaganda Region, Ulytau Region) – Private	7	1	0	5	0	0	1
Eastern Kazakhstan (East Kazakhstan Region, Abai Region) – Public	24	0	0	24	0	0	0
Eastern Kazakhstan (East Kazakhstan Region, Abai Region) – Private	7	2	0	5	0	0	0
Southern Kazakhstan (Jambyl Region, Kyzylorda Region, Jetisu Region) – Public	30	0	0	30	0	0	0
Southern Kazakhstan (Jambyl Region, Kyzylorda Region, Jetisu Region) – Private	8	2	0	6	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Southern Kazakhstan (Almaty Region) – Public	22	0	0	21	0	0	1
Southern Kazakhstan (Almaty Region) – Private	8	1	0	7	0	0	0
Southern Kazakhstan (Turkistan Region) – Public	30	0	0	30	0	0	0
Southern Kazakhstan (Turkistan Region) – Private	8	1	0	6	0	0	1
Western Kazakhstan (West Kazakhstan Region, Aktobe Region) – Public	16	0	0	16	0	0	0
Western Kazakhstan (West Kazakhstan Region, Aktobe Region) – Private	8	2	0	6	0	0	0
Western Kazakhstan (Atyrau Region) – Public	24	1	0	23	0	0	0
Western Kazakhstan (Atyrau Region) – Private	7	2	0	5	0	0	0
Western Kazakhstan (Mangystau Region) – Public	22	0	0	20	0	0	2
Western Kazakhstan (Mangystau Region) – Private	8	3	0	5	0	0	0
Total	**399**	**21**	**0**	**371**	**0**	**0**	**7**

Table A D.2. School participation status: survey of teachers – Kazakhstan, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Astana city – Public	22	0	0	22	0	0	0
Astana city – Private	8	1	0	7	0	0	0
Almaty city – Public	22	0	0	21	0	0	1
Almaty city – Private	8	1	0	7	0	0	0
Shymkent city – Public	22	0	0	22	0	0	0
Shymkent city – Private	8	2	0	6	0	0	0
Northern Kazakhstan (Akmola Region, Kostanay Region, Pavlodar Region) – Public	20	0	0	20	0	0	0
Northern Kazakhstan (Akmola Region, Kostanay Region, Pavlodar Region) – Private	6	1	0	5	0	0	0
Northern Kazakhstan (North Kazakhstan Region) – Public	28	1	0	27	0	0	0
Northern Kazakhstan (North Kazakhstan Region) – Private	2	0	0	2	0	0	0
Central Kazakhstan (Karaganda Region, Ulytau Region) – Public	24	0	0	24	0	0	0
Central Kazakhstan (Karaganda Region, Ulytau Region) – Private	7	1	0	6	0	0	0
Eastern Kazakhstan (East Kazakhstan Region, Abai Region) – Public	24	0	0	24	0	0	0
Eastern Kazakhstan (East Kazakhstan Region, Abai Region) – Private	7	2	0	5	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Southern Kazakhstan (Jambyl Region, Kyzylorda Region, Jetisu Region) – Public	30	0	0	30	0	0	0
Southern Kazakhstan (Jambyl Region, Kyzylorda Region, Jetisu Region) – Private	8	2	0	6	0	0	0
Southern Kazakhstan (Almaty Region) – Public	22	0	0	22	0	0	0
Southern Kazakhstan (Almaty Region) – Private	8	1	0	7	0	0	0
Southern Kazakhstan (Turkistan Region) – Public	30	0	0	30	0	0	0
Southern Kazakhstan (Turkistan Region) – Private	8	1	0	7	0	0	0
Western Kazakhstan (West Kazakhstan Region, Aktobe Region) – Public	16	0	0	16	0	0	0
Western Kazakhstan (West Kazakhstan Region, Aktobe Region) – Private	8	2	0	6	0	0	0
Western Kazakhstan (Atyrau Region) – Public	24	1	0	23	0	0	0
Western Kazakhstan (Atyrau Region) – Private	7	2	0	5	0	0	0
Western Kazakhstan (Mangystau Region) – Public	22	0	0	22	0	0	0
Western Kazakhstan (Mangystau Region) – Private	8	3	0	5	0	0	0
Total	**399**	**21**	**0**	**377**	**0**	**0**	**1**

Table A D.3. Teacher participation status – Kazakhstan, ISCED level 2

Participation status	Teachers
Participated	7 360
Absent	34
Left school permanently	11
Not part of sample	5
Total	**7 410**

Unclassified - Non classifié

Korea: ISCED level 2

ISCED level 2 in Korea consists of “Middle school” and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 31 schools were selected for the field trial; 202 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by urbanisation with three categories (large city, city, town) and funding with two categories (public, private).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Center for Educational Statistics (KEDI) and referred to 2021.

Table A D.1. School participation status: survey of principals – Korea, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Large city – Public	62	0	0	46	9	0	7
Large city – Private	16	0	0	15	1	0	0
City – Public	72	0	0	47	13	1	11
City – Private	10	0	0	1	5	2	2
Town – Public	34	0	0	22	7	1	4
Town – Private	8	0	0	1	2	0	5
Total	**202**	**0**	**0**	**132**	**37**	**4**	**29**

Table A D.2. School participation status: survey of teachers – Korea, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Large city – Public	62	0	0	47	7	0	8
Large city – Private	16	0	0	13	1	0	2
City – Public	72	0	0	44	13	0	15
City – Private	10	0	0	2	5	2	1
Town – Public	34	0	0	23	4	2	5
Town – Private	8	0	0	3	3	0	2
Total	**202**	**0**	**0**	**132**	**33**	**4**	**33**

Table A D.3. Teacher participation status – Korea, ISCED level 2

Participation status	Teachers
Participated	3 098
Absent	305
Left school permanently	5
Not part of sample	7
Total	**3 415**

Unclassified - Non classifié

Kosovo: ISCED level 2

ISCED level 2 in Kosovo consists of lower secondary education and comprises Grades 6 to 9.

Sample allocation: Disproportional allocation to reduce the number of big schools in the sample for overlap control.

Sample sizes: 30 schools were selected for the field trial; 224 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by districts with seven categories (Ferizaj, Gjakova, Gjilan, Mitrovica, Peja, Pristina, Prizren) and size with two categories (big, small) for Gjakova, Peja and Pristina.

Implicit stratification: Organised by urbanisation with two categories (urban, rural).

Data sources: Data used for school sampling were obtained from the municipalities and referred to 2023.

Table A D.1. School participation status: survey of principals – Kosovo, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Ferizaj	34	0	0	34	0	0	0
Gjakova – Big	8	0	0	8	0	0	0
Gjakova – Small	22	0	0	22	0	0	0
Gjilan	22	0	0	22	0	0	0
Mitrovica	28	0	0	27	0	0	1
Peja – Big	8	0	0	8	0	0	0
Peja – Small	18	0	0	18	0	0	0
Pristina – Big	8	0	0	8	0	0	0
Pristina – Small	48	0	0	47	0	0	1
Prizren	28	0	0	28	0	0	0
Total	**224**	**0**	**0**	**222**	**0**	**0**	**2**

Table A D.2. School participation status: survey of teachers – Kosovo, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Ferizaj	34	0	0	34	0	0	0
Gjakova – Big	8	0	0	8	0	0	0
Gjakova – Small	22	0	0	22	0	0	0
Gjilan	22	0	0	22	0	0	0
Mitrovica	28	0	0	27	0	0	1
Peja – Big	8	0	0	8	0	0	0
Peja – Small	18	0	0	18	0	0	0
Pristina – Big	8	0	0	8	0	0	0
Pristina – Small	48	0	0	47	0	0	1
Prizren	28	0	0	28	0	0	0
Total	**224**	**0**	**0**	**222**	**0**	**0**	**2**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Kosovo, ISCED level 2

Participation status	Teachers
Participated	3 281
Absent	309
Left school permanently	28
Not part of sample	1
Total	**3 619**

Unclassified - Non classifié

Latvia: ISCED level 2

ISCED level 2 in Latvia consists of “General basic education, offered as 9 years long programme (grades 1-9), spanning two ISCED 2011 levels”, “General basic education, second stage (grades 7-9)”, “Vocational basic education, implemented without limitations to previous educational attainment” and “Vocational education (acquisition of 2nd level professional qualification), for children who have not completed full basic education. Duration of programme 3 years” and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students.

Sample sizes: 30 schools were selected for the field trial; 221 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by school type with three categories (basic, secondary, gymnasium) and urbanisation with three categories (Riga, city, town/rural)

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education and Science and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – Latvia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Basic – Riga	14	1	0	13	0	0	0
Basic – City	10	0	0	9	1	0	0
Basic – Town/rural	34	1	0	32	0	0	1
Secondary – Riga	52	1	0	50	0	0	1
Secondary – City	30	0	0	27	1	0	2
Secondary – Town/rural	54	0	0	53	1	0	0
Gymnasium – Riga	6	0	0	5	0	0	1
Gymnasium – City	9	0	0	9	0	0	0
Gymnasium – Town/rural	12	0	0	12	0	0	0
Total	**221**	**3**	**0**	**210**	**3**	**0**	**5**

Table A D.2. School participation status: survey of teachers – Latvia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Basic – Riga	14	1	0	13	0	0	0
Basic – City	10	0	0	9	1	0	0
Basic – Town/rural	34	1	0	33	0	0	0
Secondary – Riga	52	1	0	49	0	0	2
Secondary – City	30	0	0	28	1	0	1
Secondary – Town/rural	54	0	0	53	1	0	0
Gymnasium – Riga	6	0	0	6	0	0	0
Gymnasium – City	9	0	0	9	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Gymnasium – Town/rural	12	0	0	12	0	0	0
Total	**221**	**3**	**0**	**212**	**3**	**0**	**3**

Table A D.3. Teacher participation status – Latvia, ISCED level 2

Participation status	Teachers
Participated	4 088
Absent	403
Left school permanently	23
Not part of sample	14
Total	**4 528**

Unclassified - Non classifié

Lithuania: ISCED level 2

ISCED level 2 in Lithuania consists of "General lower secondary (basic) education programmes", "Vocational education programmes for person without basic education aimed at the acquisition of a professional qualification and basic education" and "Vocational education programmes for person without basic education aimed at the acquisition of a professional qualification" and comprises Grades 5 to 10 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students.

Sample sizes: 30 schools were selected for the field trial; 212 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by urbanisation with four categories (capital, other major cities, towns, small towns and villages).

Implicit stratification: Organised by language with two categories (Lithuanian, other).

Data sources: Data used for school sampling were obtained from the National Agency for Education under the Ministry of Education and Science and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Lithuania, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Capital	48	0	0	47	1	0	0
Other major cities	54	0	0	54	0	0	0
Towns	76	0	0	76	0	0	0
Small towns and villages	34	1	0	33	0	0	0
Total	**212**	**1**	**0**	**210**	**1**	**0**	**0**

Table A D.2. School participation status: survey of teachers – Lithuania, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Capital	48	0	0	46	1	0	1
Other major cities	54	0	0	54	0	0	0
Towns	76	0	0	76	0	0	0
Small towns and villages	34	1	0	33	0	0	0
Total	**212**	**1**	**0**	**209**	**1**	**0**	**1**

Table A D.3. Teacher participation status – Lithuania, ISCED level 2

Participation status	Teachers
Participated	4 223
Absent	126
Left school permanently	11
Not part of sample	2
Total	**4 362**

Unclassified - Non classifié

Malta: ISCED level 2

ISCED level 2 in Malta consists of “Lower secondary general education”, “Lower secondary vocational education”, “Lower secondary vocational education” and “Introductory certificate” and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Census.

Sample sizes: 6 schools were selected for the field trial; all 56 schools were asked to participate in the main survey.

Method of sample selection: Census.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by provider with three categories (state, church, independent).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Human Resources Department and Quality Assurance Department within the Ministry for Education, Sport, Youth, Research and Innovation and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Malta, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
State	24	1	0	21	0	0	2
Church	22	0	0	21	0	0	1
Independent	10	0	0	8	0	0	2
Total	**56**	**1**	**0**	**50**	**0**	**0**	**5**

Table A D.2. School participation status: survey of teachers – Malta, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
State	24	1	0	21	0	0	2
Church	22	0	0	20	0	0	2
Independent	10	0	0	7	0	0	3
Total	**56**	**1**	**0**	**48**	**0**	**0**	**7**

Table A D.3. Teacher participation status – Malta, ISCED level 2

Participation status	Teachers
Participated	2 263
Absent	518
Left school permanently	10
Not part of sample	10
Total	**2 801**

Unclassified - Non classifié

Montenegro: ISCED level 2

ISCED level 2 in Montenegro consists of "Lower secondary school – higher grades (VI-IX)" and comprises Grades 6 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Census.

Sample sizes: All 162 schools were asked to participate in the main survey.

Method of sample selection: Census.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by region with three categories (central, north, south) and urbanisation with three categories (urban, suburban, rural).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education, Science, Culture and Sportsand referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Montenegro, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Central – Urban	21	0	0	11	0	0	10
Central – Suburban	10	0	0	8	0	0	2
Central – Rural	28	0	0	22	0	0	6
North – Urban	20	0	0	18	0	0	2
North – Suburban	3	0	0	2	0	0	1
North – Rural	52	1	0	43	0	0	8
South – Urban	11	0	0	10	0	0	1
South – Suburban	12	0	0	11	0	0	1
South – Rural	5	0	0	5	0	0	0
Total	**162**	**1**	**0**	**130**	**0**	**0**	**31**

Table A D.2. School participation status: survey of teachers – Montenegro, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Central – Urban	21	0	0	12	0	0	9
Central – Suburban	10	0	0	8	0	0	2
Central – Rural	28	0	0	23	0	0	5
North – Urban	20	0	0	15	0	0	5
North – Suburban	3	0	0	3	0	0	0
North – Rural	52	1	0	41	0	0	10
South – Urban	11	0	0	8	0	0	3
South – Suburban	12	0	0	11	0	0	1
South – Rural	5	0	0	5	0	0	0
Total	**162**	**1**	**0**	**126**	**0**	**0**	**35**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Montenegro, ISCED level 2

Participation status	Teachers
Participated	1 354
Absent	258
Left school permanently	5
Not part of sample	6
Total	**1 623**

Unclassified - Non classifié

Morocco: ISCED level 2

ISCED level 2 in Morocco consists of "*Enseignement secondaire collegial*" and "*Formation professionnelle/ spécialisation*" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between regions and between public and private schools.

Sample sizes: 33 schools were selected for the field trial; 400 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 2 only, ISCED levels 1 and 2), funding with two categories (public, private) and region with ten categories for public schools.

Implicit stratification: Organised by urbanisation with two categories (urban, rural).

Data sources: Data used for school sampling were obtained from the Ministry of National Education and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Morocco, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public – Tanger-Tetouan-Al Hoceima	32	0	0	32	0	0	0
ISCED 2 only – Public – Oriental	30	0	0	30	0	0	0
ISCED 2 only – Public – Fès-Meknès	40	0	0	40	0	0	0
ISCED 2 only – Public – Rabat-Salé-Kénitra	42	0	0	42	0	0	0
ISCED 2 only – Public – Béni Mellal-Khénifra	30	0	0	30	0	0	0
ISCED 2 only – Public – Casablanca-Settat	56	0	0	56	0	0	0
ISCED 2 only – Public – Marrakech-Safi	44	0	0	44	0	0	0
ISCED 2 only – Public – Drâa-Tafilalet	30	0	0	30	0	0	0
ISCED 2 only – Public – Souss-Massa	30	1	0	29	0	0	0
ISCED 2 only – Public – South	30	0	0	30	0	0	0
ISCED 2 only – Private	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Private	28	1	0	26	1	0	0
Total	**400**	**2**	**0**	**397**	**1**	**0**	**0**

Table A D.2. School participation status: survey of teachers – Morocco, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public – Tanger-Tetouan-Al Hoceima	32	0	0	32	0	0	0
ISCED 2 only – Public – Oriental	30	0	0	30	0	0	0
ISCED 2 only – Public – Fès-Meknès	40	0	0	40	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public – Rabat-Salé-Kénitra	42	0	0	42	0	0	0
ISCED 2 only – Public – Béni Mellal-Khénifra	30	0	0	30	0	0	0
ISCED 2 only – Public – Casablanca-Settat	56	0	0	56	0	0	0
ISCED 2 only – Public – Marrakech-Safi	44	0	0	44	0	0	0
ISCED 2 only – Public – Drâa-Tafilalet	30	0	0	30	0	0	0
ISCED 2 only – Public – Souss-Massa	30	1	0	29	0	0	0
ISCED 2 only – Public – South	30	0	0	30	0	0	0
ISCED 2 only – Private	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Private	28	1	0	26	1	0	0
Total	**400**	**2**	**0**	**397**	**1**	**0**	**0**

Table A D.3. Teacher participation status – Morocco, ISCED level 2

Participation status	Teachers
Participated	6 112
Absent	106
Left school permanently	38
Not part of sample	49
Total	**6 305**

Table A D.4. School participation status: survey of teachers – Morocco, TKS

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public – Tanger-Tetouan-Al Hoceima	32	0	0	32	0	0	0
ISCED 2 only – Public – Oriental	30	0	0	30	0	0	0
ISCED 2 only – Public – Fès-Meknès	40	0	0	40	0	0	0
ISCED 2 only – Public – Rabat-Salé-Kénitra	42	0	0	42	0	0	0
ISCED 2 only – Public – Béni Mellal-Khénifra	30	0	0	30	0	0	0
ISCED 2 only – Public – Casablanca-Settat	56	0	0	56	0	0	0
ISCED 2 only – Public – Marrakech-Safi	44	0	0	44	0	0	0
ISCED 2 only – Public – Drâa-Tafilalet	30	0	0	30	0	0	0
ISCED 2 only – Public – Souss-Massa	30	1	0	29	0	0	0
ISCED 2 only – Public – South	30	0	0	30	0	0	0
ISCED 2 only – Private	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Private	28	1	0	26	1	0	0
Total	**400**	**2**	**0**	**397**	**1**	**0**	**0**

Unclassified - Non classifié

Table A D.5. Teacher participation status – Morocco, TKS

Participation status	Teachers
Participated	4 584
Absent	72
Left school permanently	25
Not part of sample	29
Total	**4 710**

Unclassified - Non classifié

Netherlands: ISCED level 2

The target population comprises the European Netherlands, not including the Dutch Caribbean.

ISCED level 2 in the Netherlands consists of “Vocational education: training to assistant level; (level 1); full-time school based and dual programmes”, “Practical training”, “Prevocational secondary education (including programmes with prevocational content, general content and mixed content)” and “Junior general secondary education (first three grades of senior general secondary education [HAVO] and pre university education [VWO] and combined classes)” and comprises Grades 7 to 9/10, counting from the first year of ISCED level 1 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to increase availability of replacement schools.

Sample sizes: 30 schools were selected for the field trial; 150 schools were selected for the main survey.

Method of sample selection: Three-stage sampling design. First 150 school organisations were selected, then 1 school location per school organisation. Systematic random sampling with equal probabilities on the first level, systematic random sampling with probabilities proportional to school size on the second level.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by educational track with three categories (academic, vocational, mixed).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Education Implementation Service of the Ministry of Education, Culture and Science and referred to 2021.

Table A D.1. School participation status: survey of principals – Netherlands, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Academic	18	0	0	6	3	1	8
Vocational	20	0	0	11	1	0	8
Mixed	112	1	0	36	14	6	55
Total	**150**	**1**	**0**	**53**	**18**	**7**	**71**

Table A D.2. School participation status: survey of teachers – Netherlands, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Academic	18	0	0	5	1	1	11
Vocational	20	0	0	11	2	0	7
Mixed	112	1	0	40	17	7	47
Total	**150**	**1**	**0**	**56**	**20**	**8**	**65**

Table A D.3. Teacher participation status – Netherlands, ISCED level 2

Participation status	Teachers
Participated	1 271
Absent	454
Left school permanently	5
Not part of sample	18
Total	**1 748**

Unclassified - Non classifié

New Zealand: ISCED level 2

The target population comprises New Zealand, not including the associated states Cook Islands and Niue or the dependent territory Tokelau.

ISCED level 2 in New Zealand consists of "Intermediate level education (Years 7-8)" and "Lower secondary education (Years 9-10)" and comprises Grades 7 to 10 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between school types and equity index levels.

Sample sizes: 36 schools were selected for the field trial; 230 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 2 only, ISCED levels 1 and 2), school type with four categories (intermediate, secondary, full primary, composite) and equity index level with three categories (low or unknown, medium, high). Due to low participation rates, strata were collapsed after the survey administration.

Implicit stratification: Organised by language with two categories (Māori language education, no Māori language education) and funding with two categories (public private).

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – New Zealand, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Intermediate	28	1	0	9	8	1	9
ISCED 2 only – Secondary	146	0	0	35	12	0	99
ISCED 1 and ISCED 2 – Full primary	28	0	0	9	7	1	11
ISCED 1 and ISCED 2 – Composite	28	0	0	6	2	0	20
Total	**230**	**1**	**0**	**59**	**29**	**2**	**139**

Table A D.2. School participation status: survey of teachers – New Zealand, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Intermediate	28	1	0	7	7	1	12
ISCED 2 only – Secondary	146	0	0	41	19	0	86
ISCED 1 and ISCED 2 – Full primary	28	3	0	10	5	0	10
ISCED 1 and ISCED 2 – Composite	28	0	0	5	2	0	21
Total	**230**	**4**	**0**	**63**	**33**	**1**	**129**

Unclassified - Non classifié

Table A D.3. Teacher participation status – New Zealand, ISCED level 2

Participation status	Teachers
Participated	1 204
Absent	475
Left school permanently	18
Not part of sample	6
Total	**1 703**

Unclassified - Non classifié

North Macedonia: ISCED level 2

ISCED level 2 in North Macedonia consists of "Lower secondary education – regular" and comprises Grades 6 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 30 schools were selected for the field trial; 202 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by urbanisation with three categories (urban, mixed, rural).

Implicit stratification: Organised by language with three categories (Macedonian, mixed, Albanian).

Data sources: Data used for school sampling were obtained from the Ministry of Education and Science and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – North Macedonia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Urban	92	0	0	92	0	0	0
Mixed	24	0	0	23	0	0	1
Rural	86	0	0	86	0	0	0
Total	202	0	0	201	0	0	1

Table A D.2. School participation status: survey of teachers – North Macedonia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Urban	92	0	0	92	0	0	0
Mixed	24	0	0	24	0	0	0
Rural	86	0	0	86	0	0	0
Total	**202**	**0**	**0**	**202**	**0**	**0**	**0**

Table A D.3. Teacher participation status – North Macedonia, ISCED level 2

Participation status	Teachers
Participated	3 992
Absent	215
Left school permanently	45
Not part of sample	43
Total	**4 295**

Unclassified - Non classifié

Norway: ISCED level 2

ISCED level 2 in Norway consists of "Lower secondary level" and comprises Grades 8 to 10 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 30 schools were selected for the field trial; 212 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 2 only, ISCED levels 1 and 2).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Primary and Secondary School Information System and referred to the school year 2021/22.

Table A D.1. School participation status: survey of principals – Norway, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only	142	0	0	69	27	9	37
ISCED 1 and ISCED 2	70	1	0	25	10	7	27
Total	**212**	**1**	**0**	**94**	**37**	**16**	**64**

Table A D.2. School participation status: survey of teachers – Norway, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only	142	0	0	55	25	5	57
ISCED 1 and ISCED 2	70	1	0	16	10	1	42
Total	**212**	**1**	**0**	**71**	**35**	**6**	**99**

Table A D.3. Teacher participation status – Norway, ISCED level 2

Participation status	Teachers
Participated	1 528
Absent	550
Left school permanently	7
Not part of sample	14
Total	**2 099**

Unclassified - Non classifié

Poland: ISCED level 2

ISCED level 2 in Poland consists of "General primary 1st level music school (grades 5-8)", "Primary school for children and youth (grades 5-8)" and "Primary sports and sports masterclass school for youth (grades 5-8)" and comprises Grades 5 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to increase the number of big schools.

Sample sizes: 30 schools were selected for the field trial; 280 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by urbanisation with three categories (urban above 100 000 inhabitants, urban below 100 000 inhabitants, rural) and size with two categories (small, big).

Implicit stratification: Organised by urbanisation with six categories (capital city, big cities, towns, towns in urban-rural areas, villages in urban-rural areas, villages).

Data sources: Data used for school sampling were obtained from the Educational Information System and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – Poland, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Urban above 100 000 inhabitants – Small	32	0	0	27	2	3	0
Urban above 100 000 inhabitants – Big	46	0	0	43	3	0	0
Urban below 100 000 inhabitants – Small	46	0	0	43	2	0	1
Urban below 100 000 inhabitants – Big	54	0	0	51	3	0	0
Rural – Small	92	0	0	88	4	0	0
Rural – Big	10	0	0	10	0	0	0
Total	**280**	**0**	**0**	**262**	**14**	**3**	**1**

Table A D.2. School participation status: survey of teachers – Poland, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Urban above 100 000 inhabitants – Small	32	0	0	27	2	3	0
Urban above 100 000 inhabitants – Big	46	0	0	43	3	0	0
Urban below 100 000 inhabitants – Small	46	0	0	43	2	0	1
Urban below 100 000 inhabitants – Big	54	0	0	51	3	0	0
Rural – Small	92	0	0	88	4	0	0
Rural – Big	10	0	0	10	0	0	0
Total	**280**	**0**	**0**	**262**	**14**	**3**	**1**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Poland, ISCED level 2

Participation status	Teachers
Participated	3 783
Absent	211
Left school permanently	12
Not part of sample	3
Total	**4 009**

Table A D.4. School participation status: survey of teachers – Poland, TKS

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Urban above 100 000 inhabitants – Small	32	0	0	27	2	3	0
Urban above 100 000 inhabitants – Big	46	0	0	43	3	0	0
Urban below 100 000 inhabitants – Small	46	0	0	43	2	0	1
Urban below 100 000 inhabitants – Big	54	0	0	51	3	0	0
Rural – Small	92	0	0	88	4	0	0
Rural – Big	10	0	0	10	0	0	0
Total	**280**	**0**	**0**	**262**	**14**	**3**	**1**

Table A D.5. Teacher participation status – Poland, TKS

Participation status	Teachers
Participated	2 831
Absent	156
Left school permanently	10
Not part of sample	5
Total	**3 002**

Unclassified - Non classifié

Portugal: ISCED level 2

The target population comprises mainland Portugal, not including the Azores and Madeira.

ISCED level 2 in Portugal consists of "Lower secondary education – Regular", "Lower secondary education – Specialised artistic courses", "Lower secondary education – Vocational courses", "Lower secondary education – Education and training courses – Type 2" and "Lower secondary education – Education and training courses – Type 3" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between public and private schools.

Sample sizes: 32 schools were selected for the field trial; 230 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 2 only, ISCED levels 2 and 3) and funding with two categories (public, private).

Implicit stratification: Organised by region with five categories (Alentejo, Algarve, Centre, Lisbon, North) for public schools.

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2019/20.

Table A D.1. School participation status: survey of principals – Portugal, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public	94	0	0	93	1	0	0
ISCED 2 only – Private	10	1	0	9	0	0	0
ISCED 2 and ISCED 3 – Public	106	2	0	103	0	0	1
ISCED 2 and ISCED 3 – Private	20	1	0	18	0	0	1
Total	**230**	**4**	**0**	**223**	**1**	**0**	**2**

Table A D.2. School participation status: survey of teachers – Portugal, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public	94	0	0	93	1	0	0
ISCED 2 only – Private	10	1	0	9	0	0	0
ISCED 2 and ISCED 3 – Public	106	2	0	103	0	0	1
ISCED 2 and ISCED 3 – Private	20	1	0	18	0	0	1
Total	**230**	**4**	**0**	**223**	**1**	**0**	**2**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Portugal, ISCED level 2

Participation status	Teachers
Participated	3 511
Absent	296
Left school permanently	27
Not part of sample	107
Total	**3 941**

Table A D.4. School participation status: survey of teachers – Portugal, TKS

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Public	94	0	0	93	1	0	0
ISCED 2 only – Private	10	1	0	9	0	0	0
ISCED 2 and ISCED 3 – Public	106	2	0	103	0	0	1
ISCED 2 and ISCED 3 – Private	20	1	0	18	0	0	1
Total	**230**	**4**	**0**	**223**	**1**	**0**	**2**

Table A D.5. Teacher participation status – Portugal, TKS

Participation status	Teachers
Participated	2 634
Absent	242
Left school permanently	16
Not part of sample	60
Total	**2 952**

Unclassified - Non classifié

Romania: ISCED level 2

ISCED level 2 in Romania consists of "Lower secondary – gymnazium" and comprises Grades 6 to 9, counting from the first year of ISCED level 1 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students.

Sample sizes: 30 schools were selected for the field trial; 216 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by urbanisation with two categories (urban, rural).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education and Research and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Romania, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Urban	126	0	0	126	0	0	0
Rural	90	0	0	90	0	0	0
Total	**216**	**0**	**0**	**216**	**0**	**0**	**0**

Table A D.2. School participation status: survey of teachers – Romania, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Urban	126	0	0	126	0	0	0
Rural	90	0	0	90	0	0	0
Total	**216**	**0**	**0**	**216**	**0**	**0**	**0**

Table A D.3. Teacher participation status – Romania, ISCED level 2

Participation status	Teachers
Participated	3 873
Absent	102
Left school permanently	13
Not part of sample	11
Total	**3 999**

Unclassified - Non classifié

Saudi Arabia: ISCED level 2

ISCED level 2 in Saudi Arabia consists of "Intermediate education" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between public, private and international schools.

Sample sizes: 36 schools were selected for the field trial; 342 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by school type with three categories (public, private, international), gender with two categories (female, male) and region with two categories (region not excluded in 2018, region excluded in 2018) for public schools.

Implicit stratification: Organised by region with 13 categories.

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to 2022.

Table A D.1. School participation status: survey of principals – Saudi Arabia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Female – Region not excluded in 2018	126	2	0	117	0	0	7
Public – Female – Region excluded in 2018	12	0	0	12	0	0	0
Public – Male – Region not excluded in 2018	130	2	0	126	0	0	2
Public – Male – Region excluded in 2018	14	0	0	14	0	0	0
Private – Female	12	1	0	11	0	0	0
Private – Male	18	1	0	15	0	0	2
International – Female	16	2	0	11	0	0	3
International – Male	14	0	0	13	0	0	1
Total	**342**	**8**	**0**	**319**	**0**	**0**	**15**

Table A D.2. School participation status: survey of teachers – Saudi Arabia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Female – Region not excluded in 2018	126	2	0	122	0	0	2
Public – Female – Region excluded in 2018	12	0	0	11	0	0	1
Public – Male – Region not excluded in 2018	130	2	0	127	0	0	1
Public – Male – Region excluded in 2018	14	0	0	14	0	0	0
Private – Female	12	1	0	10	0	0	1

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Private – Male	18	1	0	17	0	0	0
International – Female	16	2	0	14	0	0	0
International – Male	14	0	0	11	0	0	3
Total	**342**	**8**	**0**	**326**	**0**	**0**	**8**

Table A D.3. Teacher participation status – Saudi Arabia, ISCED level 2

Participation status	Teachers
Participated	3 306
Absent	202
Left school permanently	62
Not part of sample	10
Total	**3** 580

Table A D.4. School participation status: survey of teachers – Saudi Arabia, TKS

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Female – Region not excluded in 2018	126	2	0	124	0	0	0
Public – Female – Region excluded in 2018	12	0	0	11	0	0	1
Public – Male – Region not excluded in 2018	130	2	0	126	0	0	2
Public – Male – Region excluded in 2018	14	0	0	14	0	0	0
Private – Female	11	1	0	10	0	0	0
Private – Male	18	1	0	17	0	0	0
International – Female	13	2	0	10	0	0	1
International – Male	13	0	0	12	0	0	1
Total	**337**	**8**	**0**	**324**	**0**	**0**	**5**

Table A D.5. Teacher participation status – Saudi Arabia, TKS

Participation status	Teachers
Participated	2 435
Absent	170
Left school permanently	48
Not part of sample	4
Total	**2 657**

Unclassified - Non classifié

Serbia: ISCED level 2

ISCED level 2 in Serbia consists of "Elementary school – second cycle (V-VIII grade)" and "Secondary musical education" and comprises Grades 5 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 30 schools were selected for the field trial; 200 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by region with three categories (Belgrade, Central Serbia, Vojvodina).

Implicit stratification: Organised by urbanisation with two categories (urban, rural).

Data sources: Data used for school sampling were obtained from the Ministry of Education, Science and Technological Development and referred to school year 2019/20.

Table A D.1. School participation status: survey of principals – Serbia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Belgrade	34	0	0	32	2	0	0
Central Serbia	110	0	0	110	0	0	0
Vojvodina	56	0	0	55	0	0	1
Total	**200**	**0**	**0**	**197**	**2**	**0**	**1**

Table A D.2. School participation status: survey of teachers – Serbia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Belgrade	34	0	0	32	2	0	0
Central Serbia	110	0	0	110	0	0	0
Vojvodina	56	0	0	55	0	0	1
Total	**200**	**0**	**0**	**197**	**2**	**0**	**1**

Table A D.3. Teacher participation status – Serbia, ISCED level 2

Participation status	Teachers
Participated	4 007
Absent	183
Left school permanently	27
Not part of sample	10
Total	**4 227**

Unclassified - Non classifié

Shanghai (China): ISCED level 2

ISCED level 2 in the People's Republic of China (hereafter China) consists of "Junior secondary education" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between public and private schools.

Sample sizes: 30 schools were selected for the field trial; 208 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by funding with two categories (public, private) and urbanisation with two categories (urban, suburban).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Shanghai Municipal Education Commission and referred to 2022.

Table A D.1. School participation status: survey of principals – Shanghai (China), ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Urban	58	2	0	56	0	0	0
Public – Suburban	116	0	0	116	0	0	0
Private – Urban	12	0	0	12	0	0	0
Private – Suburban	22	1	0	21	0	0	0
Total	**208**	**3**	**0**	**205**	**0**	**0**	**0**

Table A D.2. School participation status: survey of teachers – Shanghai (China), ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Urban	58	2	0	56	0	0	0
Public – Suburban	116	0	0	116	0	0	0
Private – Urban	12	0	0	12	0	0	0
Private – Suburban	22	1	0	21	0	0	0
Total	**208**	**3**	**0**	**205**	**0**	**0**	**0**

Table A D.3. Teacher participation status – Shanghai (China), ISCED level 2

Participation status	Teachers
Participated	4 078
Absent	67
Left school permanently	3
Not part of sample	2
Total	**4** 150

Unclassified - Non classifié

Singapore: ISCED level 2

ISCED level 2 in Singapore consists of "Secondary 1-2 – common to express and normal (academic or technical) course" and comprises Grades 7 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Census for public schools, sample of private schools.

Sample sizes: 15 schools were selected for the field trial; 159 schools were selected for the main survey.

Method of sample selection: Census for public schools and systematic random sampling with selection probabilities proportional to school size for private schools.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by funding with two categories (public, private).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Singapore, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public	146	1	0	144	0	0	1
Private	14	0	0	8	2	0	4
Total	**160**	**1**	**0**	**152**	**2**	**0**	**5**

Table A D.2. School participation status: survey of teachers – Singapore, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public	146	1	0	145	0	0	0
Private	14	0	0	9	2	0	3
Total	**160**	**1**	**0**	**154**	**2**	**0**	**3**

Table A D.3. Teacher participation status – Singapore, ISCED level 2

Participation status	Teachers
Participated	3 355
Absent	98
Left school permanently	50
Not part of sample	71
Total	**3 574**

Unclassified - Non classifié

Slovak Republic: ISCED level 2

ISCED level 2 in the Slovak Republic consists of "Basic school – 2nd stage", "Practical school", "Courses for complementing of lower secondary education", "Gymnasium – 8 years, grades 1-4" and "Dance conservatoire – 8 years, grades 1-4" and comprises Grades 5 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of teachers in ISCED level 2 schools.

Sample sizes: 30 schools were selected for the field trial; 242 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of teachers in ISCED level 2 schools.

Explicit stratification: Organised by school type with two categories (primary school, grammar school) and urbanisation with two categories (urban, rural).

Implicit stratification: Organised by region with eight categories (Banská Bratislava Region, Bystrica Region, Košice Region, Nitra Region, Prešov Region, Trenčín Region, Trnava Region, Žilina Region) and funding with two categories (public, private).

Data sources: Data used for school sampling were obtained from the Ministry of Education, Research, Development and Youth and the Slovak Centre of Scientific and Technical Information and referred to 2022.

Table A D.1. School participation status: survey of principals – Slovak Republic, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Primary school – Urban	126	0	0	121	2	0	3
Primary school – Rural	88	0	0	83	5	0	0
Grammar school – Urban	28	0	0	28	0	0	0
Total	**242**	**0**	**0**	**232**	**7**	**0**	**3**

Table A D.2. School participation status: survey of teachers – Slovak Republic, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Primary school – Urban	126	0	0	124	2	0	0
Primary school – Rural	88	0	0	83	5	0	0
Grammar school – Urban	28	0	0	28	0	0	0
Total	**242**	**0**	**0**	**235**	**7**	**0**	**0**

Table A D.3. Teacher participation status – Slovak Republic, ISCED level 2

Participation status	Teachers
Participated	4 190
Absent	168
Left school permanently	33
Not part of sample	57
Total	**4 448**

Unclassified - Non classifié

Slovenia: ISCED level 2

ISCED level 2 in Slovenia consists of "Basic education (grades 7-9)" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to reduce the number of big schools in the sample for overlap control.

Sample sizes: 30 schools were selected for the field trial; 264 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with equal probabilities for big schools; otherwise, systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by regions with four categories (northeast, southeast, central, west) and school size with two categories (big, small) for central, southeast and western regions.

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education, Science and Sport and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Slovenia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Northeast	62	0	0	54	0	0	8
Southeast – Big schools	12	0	0	8	0	0	4
Southeast – Small schools	52	0	0	37	3	0	12
Central – Big schools	36	0	0	26	0	0	10
Central – Small schools	39	0	0	30	0	0	9
West – Big schools	25	0	0	21	0	0	4
West – Small schools	38	0	0	28	0	0	10
Total	**264**	**0**	**0**	**204**	**3**	**0**	**57**

Table A D.2. School participation status: survey of teachers – Slovenia, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Northeast	62	0	0	54	0	0	8
Southeast – Big schools	12	0	0	11	0	0	1
Southeast – Small schools	52	0	0	38	3	0	11
Central – Big schools	36	0	0	30	0	0	6
Central – Small schools	39	0	0	33	0	0	6
West – Big schools	25	0	0	21	0	0	4
West – Small schools	38	0	0	32	0	0	6
Total	**264**	**0**	**0**	**219**	**3**	**0**	**42**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Slovenia, ISCED level 2

Participation status	Teachers
Participated	2 831
Absent	357
Left school permanently	13
Not part of sample	4
Total	**3 205**

Unclassified - Non classifié

South Africa: ISCED level 2

ISCED level 2 in South Africa consists of "Lower secondary education (Grades 8 to 9)" and comprises Grades 8 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between provinces and between public and private schools.

Sample sizes: 31 schools were selected for the field trial; 401 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of teachers in ISCED level 2 schools.

Explicit stratification: Organised by funding with two categories (public, private) and provinces with nine categories (Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West, Western Cape) within public schools.

Implicit stratification: Organised by provinces with nine categories (Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West, Western Cape) and urbanisation with three categories (urban, unknown, rural) for public schools.

Data sources: Data used for school sampling were obtained from the Education Management Information System and referred to 2021.

Table A D.1. School participation status: survey of principals – South Africa, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Eastern Cape	46	3	0	36	0	0	7
Public – Free State	30	2	0	21	0	0	7
Public – Gauteng	46	0	0	35	0	0	11
Public – KwaZulu-Natal	74	3	0	59	0	0	12
Public – Limpopo	38	0	0	37	0	0	1
Public – Mpumalanga	30	3	0	24	0	0	3
Public – Northern Cape	30	1	0	20	0	0	9
Public – North West	30	0	0	24	0	0	6
Public – Western Cape	31	1	0	22	0	0	8
Private	46	0	0	38	2	0	6
Total	**401**	**13**	**0**	**316**	**2**	**0**	**70**

Table A D.2. School participation status: survey of teachers – South Africa, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Eastern Cape	46	4	0	41	0	0	1
Public – Free State	30	2	0	25	0	0	3
Public – Gauteng	46	0	0	44	0	0	2
Public – KwaZulu-Natal	74	3	0	60	0	0	11
Public – Limpopo	38	0	0	38	0	0	0
Public – Mpumalanga	30	3	0	26	0	0	1
Public – Northern Cape	30	1	0	27	0	0	2

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – North West	30	0	0	29	0	0	1
Public – Western Cape	31	1	0	30	0	0	0
Private	46	0	0	39	2	0	5
Total	**401**	**14**	**0**	**359**	**2**	**0**	**26**

Table A D.3. Teacher participation status – South Africa, ISCED level 2

Participation status	Teachers
Participated	3 301
Absent	320
Left school permanently	91
Not part of sample	100
Total	**3 812**

Table A D.4. School participation status: survey of teachers – South Africa, TKS

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Eastern Cape	46	4	0	39	0	0	3
Public – Free State	30	2	0	25	0	0	3
Public – Gauteng	46	0	0	44	0	0	2
Public – KwaZulu-Natal	74	3	0	61	0	0	10
Public – Limpopo	38	0	0	38	0	0	0
Public – Mpumalanga	30	3	0	27	0	0	0
Public – Northern Cape	30	1	0	28	0	0	1
Public – North West	29	0	0	27	0	0	2
Public – Western Cape	31	1	0	30	0	0	0
Private	45	0	0	38	2	0	5
Total	**399**	**14**	**0**	**357**	**2**	**0**	**26**

Table A D.5. Teacher participation status – South Africa, TKS

Participation status	Teachers
Participated	2 376
Absent	222
Left school permanently	58
Not part of sample	64
Total	**2 720**

Unclassified - Non classifié

Spain: ISCED level 2

ISCED level 2 in Spain consists of "Compulsory lower secondary education" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between some of the communities.

Sample sizes: 30 schools were selected for the field trial; 507 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by community with 18 categories, funding with two categories (public, private) for Andalusia, Asturias, Balearic Islands, Canary Islands, Catalonia and Valencian Community, and overlap with two categories (with ISCED level 1, without ISCED level 1) for Cantabria and La Rioja.

Implicit stratification: Organised by funding with two categories (public, private).

Data sources: Data used for school sampling were obtained from the autonomous communities and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Spain, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Andalusia – Public	40	0	0	38	0	0	2
Andalusia – Private	10	0	0	10	0	0	0
Aragon	8	0	0	8	0	0	0
Asturias – Public	38	0	0	38	0	0	0
Asturias – Private	12	0	0	12	0	0	0
Balearic Islands – Public	36	0	0	36	0	0	0
Balearic Islands – Private	15	0	0	15	0	0	0
Basque Country	10	0	0	10	0	0	0
Canary Islands – Public	42	0	0	36	0	0	6
Canary Islands – Private	8	0	0	7	0	0	1
Cantabria – With ISCED 1	14	0	0	13	0	0	1
Cantabria – Without ISCED 1	36	0	0	35	0	0	1
Castile and Leon	10	0	0	10	0	0	0
Castilla-La Mancha	10	0	0	10	0	0	0
Catalonia – Public	38	0	0	37	1	0	0
Catalonia – Privat	12	0	0	11	0	0	1
Community of Madrid	26	0	0	26	0	0	0
Ceuta/Melilla	8	0	0	8	0	0	0
Extremadura	8	0	0	7	0	0	1
Galicia	10	0	0	10	0	0	0
La Rioja – With ISCED 1	21	0	0	21	0	0	0
La Rioja – Without ISCED 1	29	0	0	29	0	0	0
Navarre	8	0	0	8	0	0	0
Region of Murcia	8	0	0	8	0	0	0
Valencian Community – Public	38	0	0	38	0	0	0
Valencian Community – Private	12	0	0	12	0	0	0
Total	**507**	**0**	**0**	**493**	**1**	**0**	**13**

Unclassified - Non classifié

Table A D.2. School participation status: survey of teachers – Spain, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Andalusia – Public	40	0	0	40	0	0	0
Andalusia – Private	10	0	0	10	0	0	0
Aragon	8	0	0	8	0	0	0
Asturias – Public	38	0	0	38	0	0	0
Asturias – Private	12	0	0	12	0	0	0
Balearic Islands – Public	36	0	0	36	0	0	0
Balearic Islands – Private	15	0	0	15	0	0	0
Basque Country	10	0	0	10	0	0	0
Canary Islands – Public	42	0	0	42	0	0	0
Canary Islands – Private	8	0	0	8	0	0	0
Cantabria – With ISCED 1	14	0	0	14	0	0	0
Cantabria – Without ISCED 1	36	0	0	36	0	0	0
Castile and Leon	10	0	0	10	0	0	0
Castilla-La Mancha	10	0	0	10	0	0	0
Catalonia – Public	38	0	0	37	1	0	0
Catalonia – Privat	12	0	0	12	0	0	0
Community of Madrid	26	0	0	26	0	0	0
Ceuta/Melilla	8	0	0	8	0	0	0
Extremadura	8	0	0	8	0	0	0
Galicia	10	0	0	10	0	0	0
La Rioja – With ISCED 1	21	0	0	21	0	0	0
La Rioja – Without ISCED 1	29	0	0	29	0	0	0
Navarre	8	0	0	8	0	0	0
Region of Murcia	8	0	0	8	0	0	0
Valencian Community – Public	38	0	0	38	0	0	0
Valencian Community – Private	12	0	0	12	0	0	0
Total	**507**	**0**	**0**	**506**	**1**	**0**	**0**

Table A D.3. Teacher participation status – Spain, ISCED level 2

Participation status	Teachers
Participated	9 098
Absent	571
Left school permanently	40
Not part of sample	174
Total	**9 883**

Unclassified - Non classifié

Sweden: ISCED level 2

ISCED level 2 in Sweden consists of "Compulsory school, grades 7-9" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students.

Sample sizes: 30 schools were selected for the field trial; 210 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by overlap with two categories (preschool class and ISCED level 2 school, ISCED level 2 school) and funding with two categories (public, private).

Implicit stratification: Organised by urbanisation with three categories (metropolitan area, large cities, other areas) for ISCED 2 schools.

Data sources: Data used for school sampling were obtained from the Swedish National Agency for Education and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Sweden, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Preschool class and ISCED 2 school – Public	52	1	0	43	2	0	6
Preschool class and ISCED 2 school – Private	18	0	0	14	1	0	3
ISCED 2 school – Public	114	1	0	100	1	0	12
ISCED 2 school – Private	26	2	0	21	1	0	2
Total	**210**	**4**	**0**	**178**	**5**	**0**	**23**

Table A D.2. School participation status: survey of teachers – Sweden, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Preschool class and ISCED 2 school – Public	52	1	0	47	2	0	2
Preschool class and ISCED 2 school – Private	18	0	0	13	1	0	4
ISCED 2 school – Public	114	1	0	109	1	0	3
ISCED 2 school – Private	26	2	0	22	1	0	1
Total	**210**	**4**	**0**	**191**	**5**	**0**	**10**

Table A D.3. Teacher participation status – Sweden, ISCED level 2

Participation status	Teachers
Participated	3 065
Absent	949
Left school permanently	31
Not part of sample	58
Total	**4 103**

Unclassified - Non classifié

Türkiye: ISCED level 2

ISCED level 2 in Türkiye consists of “Lower secondary education”, “Open lower secondary education”, “Music and ballet lower secondary school” and “Imam and preacher lower secondary school” and comprises Grades 5 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 33 schools were selected for the field trial; 230 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by funding with 2 categories (public, private) and region with 12 categories for public schools.

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of National Education and referred to school year 2022/2023.

Table A D.1. School participation status: survey of principals – Türkiye, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Istanbul Region	24	0	0	22	0	0	2
Public – West Marmara Region	8	0	0	8	0	0	0
Public – Aegean Region	24	0	0	24	0	0	0
Public – East Marmara Region	18	0	0	18	0	0	0
Public – West Anatolia Region	18	0	0	18	0	0	0
Public – Mediterranean Region	30	0	0	30	0	0	0
Public – Central Anatolia Region	12	0	0	12	0	0	0
Public – West Black Sea Region	12	0	0	12	0	0	0
Public – East Black Sea Region	8	0	0	8	0	0	0
Public – Northeast Anatolia Region	8	0	0	8	0	0	0
Public – Central East Anatolia Region	14	0	0	14	0	0	0
Public – Southeast Anatolia Region	30	0	0	30	0	0	0
Private	24	0	0	22	0	0	2
Total	**230**	**0**	**0**	**226**	**0**	**0**	**4**

Table A D.2. School participation status: survey of teachers – Türkiye, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Istanbul Region	24	0	0	23	0	0	1
Public – West Marmara Region	8	0	0	8	0	0	0
Public – Aegean Region	24	0	0	24	0	0	0
Public – East Marmara Region	18	0	0	18	0	0	0
Public – West Anatolia Region	18	0	0	18	0	0	0
Public – Mediterranean Region	30	0	0	30	0	0	0
Public – Central Anatolia Region	12	0	0	12	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – West Black Sea Region	12	0	0	12	0	0	0
Public – East Black Sea Region	8	0	0	8	0	0	0
Public – Northeast Anatolia Region	8	0	0	8	0	0	0
Public – Central East Anatolia Region	14	0	0	14	0	0	0
Public – Southeast Anatolia Region	30	0	0	30	0	0	0
Private	24	0	0	24	0	0	0
Total	**230**	**0**	**0**	**229**	**0**	**0**	**1**

Table A D.3. Teacher participation status – Türkiye, ISCED level 2

Participation status	Teachers
Participated	4 932
Absent	140
Left school permanently	10
Not part of sample	16
Total	**5 098**

Unclassified - Non classifié

United Arab Emirates: ISCED level 2

ISCED level 2 in the United Arab Emirates consists of "Second cycle of basic education" and comprises Grades 5 to 8 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to improve overlap control between ISCED levels.

Sample sizes: 30 schools were selected for the field trial; 218 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by overlap with four categories (ISCED level 2 only; ISCED levels 1 and 2; ISCED levels 2 and 3; ISCED levels 1, 2 and 3) and emirates with three categories (Abu Dhabi, Dubai, other emirates).

Implicit stratification: Organised by language with two categories (Arabic, English).

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2023/24.

Table A D.1. School participation status: survey of principals – United Arab Emirates, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Abu Dhabi	8	0	0	8	0	0	0
ISCED 2 only – Dubai	8	0	0	8	0	0	0
ISCED 2 only – Other emirates	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Abu Dhabi	8	2	0	6	0	0	0
ISCED 1 and ISCED 2 – Dubai	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Other emirates	16	2	0	14	0	0	0
ISCED 2 and ISCED 3 – Abu Dhabi	10	0	0	10	0	0	0
ISCED 2 and ISCED 3 – Dubai	4	0	0	4	0	0	0
ISCED 2 and ISCED 3 – Other emirates	8	0	0	8	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Abu Dhabi	62	1	0	58	0	0	3
ISCED 1, ISCED 2 and ISCED 3 – Dubai	24	0	0	24	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Other emirates	54	0	0	54	0	0	0
Total	**218**	**5**	**0**	**210**	**0**	**0**	**3**

Table A D.2. School participation status: survey of teachers – United Arab Emirates, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 2 only – Abu Dhabi	8	0	0	8	0	0	0
ISCED 2 only – Dubai	8	0	0	8	0	0	0
ISCED 2 only – Other emirates	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Abu Dhabi	8	2	0	6	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 and ISCED 2 – Dubai	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Other emirates	16	2	0	14	0	0	0
ISCED 2 and ISCED 3 – Abu Dhabi	10	0	0	10	0	0	0
ISCED 2 and ISCED 3 – Dubai	4	0	0	4	0	0	0
ISCED 2 and ISCED 3 – Other emirates	8	0	0	8	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Abu Dhabi	62	1	0	60	0	0	1
ISCED 1, ISCED 2 and ISCED 3 – Dubai	24	0	0	24	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Other emirates	54	0	0	54	0	0	0
Total	**218**	**5**	**0**	**212**	**0**	**0**	**1**

Table A D.3. Teacher participation status – United Arab Emirates, ISCED level 2

Participation status	Teachers
Participated	4 369
Absent	73
Left school permanently	12
Not part of sample	0
Total	**4 454**

Unclassified - Non classifié

United States: ISCED level 2

The target population comprises the 50 states and Washington, DC, not including the territories.

ISCED level 2 in United States consists of "Middle education (grades 7-9)" and comprises Grades 7 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 students; then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 70 schools were selected for the field trial; 262 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 students in schools.

Explicit stratification: Organised by funding with two categories (public, private) and grade structure with three categories (grades 6-8,7-9 or 7-8; grades 9-12; other grade structure) for public schools and grade structure with two categories (grades 6-8,7-9, 7-8 or 9-12; other grade structure) for private schools.

Implicit stratification: Organised by region with four categories (Northeast, Midwest, South, West), urbanisation with three categories (city, suburb, town/rural), race with two categories (high proportion of non-white students, low proportion of non-white students) and state with 51 categories for public schools.

Data sources: Public schools: data used for school sampling were obtained from the Common Core of Data and referred to school year 2021/22. Private schools: data used for school sampling were obtained from the Private School Survey and referred to 2019/20.

Table A D.1. School participation status: survey of principals – United States, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Grades 6-8, 7-9 or 7-8	118	0	0	61	9	3	45
Public – Grades 9-12	70	0	0	32	6	1	31
Public – Other grade structure	48	3	0	25	1	3	16
Private – Grades 6-8, 7-9, 7-8 or 9-12	8	2	0	1	4	0	1
Private – Other grade structure	18	1	0	4	1	1	11
Total	**262**	**6**	**0**	**123**	**21**	**8**	**104**

Table A D.2. School participation status: survey of teachers – United States, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Grades 6-8, 7-9 or 7-8	118	0	0	62	7	3	46
Public – Grades 9-12	70	0	0	33	6	1	30
Public – Other grade structure	48	3	0	27	1	3	14
Private – Grades 6-8, 7-9, 7-8 or 9-12	8	2	0	1	4	0	1
Private – Other grade structure	18	1	0	4	1	1	11
Total	**262**	**6**	**0**	**127**	**19**	**8**	**102**

Unclassified - Non classifié

Table A D.3. Teacher participation status – United States, ISCED level 2

Participation status	Teachers
Participated	1 988
Absent	413
Left school permanently	13
Not part of sample	8
Total	**2 422**

Table A D.4. School participation status: survey of teachers – United States, TKS

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Grades 6-8, 7-9 or 7-8	118	0	0	59	7	3	49
Public – Grades 9-12	70	0	0	31	6	1	32
Public – Other grade structure	48	3	0	24	1	3	17
Private – Grades 6-8, 7-9, 7-8 or 9-12	8	2	0	1	3	0	2
Private – Other grade structure	18	1	0	4	1	1	11
Total	**262**	**6**	**0**	**119**	**18**	**8**	**111**

Table A D.5. Teacher participation status – United States, TKS

Participation status	Teachers
Participated	1 362
Absent	347
Left school permanently	11
Not part of sample	8
Total	**1 728**

Unclassified - Non classifié

Uzbekistan: ISCED level 2

ISCED level 2 in Uzbekistan consists of "Lower secondary education" and comprises Grades 5 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers; then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 30 schools were selected for the field trial; 210 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by region with 14 categories.

Implicit stratification: Organised by urbanisation with two categories (urban, rural).

Data sources: Data used for school sampling were obtained from the National Research Institute of Professional Development and Teaching New Methodologies to Teachers Named After A. Avloni and referred to school year 2023/24.

Table A D.1. School participation status: survey of principals – Uzbekistan, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Andijan Region	16	0	0	16	0	0	0
Bukhara Region	12	0	0	12	0	0	0
Fergana Region	22	0	0	22	0	0	0
Jizzakh Region	10	0	0	10	0	0	0
Karakalpakstan Republic	16	0	0	16	0	0	0
Kashkadarya Region	22	0	0	22	0	0	0
Khorezm Region	12	0	0	12	0	0	0
Navoiy Region	8	0	0	8	0	0	0
Namangan Region	14	0	0	14	0	0	0
Samarkand Region	24	0	0	24	0	0	0
Surkhandarya Region	18	0	0	18	0	0	0
Syrdarya Region	8	0	0	8	0	0	0
Tashkent City	14	0	0	14	0	0	0
Tashkent Region	14	0	0	14	0	0	0
Total	**210**	**0**	**0**	**210**	**0**	**0**	**0**

Table A D.2. School participation status: survey of teachers – Uzbekistan, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Andijan Region	16	0	0	16	0	0	0
Bukhara Region	12	0	0	12	0	0	0
Fergana Region	22	0	0	22	0	0	0
Jizzakh Region	10	0	0	10	0	0	0
Karakalpakstan Republic	16	0	0	16	0	0	0
Kashkadarya Region	22	0	0	22	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Khorezm Region	12	0	0	12	0	0	0
Navoiy Region	8	0	0	8	0	0	0
Namangan Region	14	0	0	14	0	0	0
Samarkand Region	24	0	0	24	0	0	0
Surkhandarya Region	18	0	0	18	0	0	0
Syrdarya Region	8	0	0	8	0	0	0
Tashkent City	14	0	0	14	0	0	0
Tashkent Region	14	0	0	14	0	0	0
Total	**210**	**0**	**0**	**210**	**0**	**0**	**0**

Table A D.3. Teacher participation status – Uzbekistan, ISCED level 2

Participation status	Teachers
Participated	4 431
Absent	61
Left school permanently	13
Not part of sample	2
Total	**4 507**

Unclassified - Non classifié

Viet Nam: ISCED level 2

ISCED level 2 in Viet Nam consists of "Lower secondary" and comprises Grades 6 to 9 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 2 teachers.

Sample sizes: 30 schools were selected for the field trial; 202 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 2 teachers in schools.

Explicit stratification: Organised by region with six categories (Central Highlands, Mekong Delta, Northern Midlands and Mountains, North Central and Central Coast, Red River Delta, Southeast).

Implicit stratification: Organised by urbanisation with three categories (urban, rural, remote area).

Data sources: Data used for school sampling were obtained from the Ministry of Education and Training and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Viet Nam, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Northern Midlands and Mountains	36	0	0	36	0	0	0
Red River Delta	46	0	0	46	0	0	0
North Central and Central Coast	44	0	0	44	0	0	0
Central Highlands	14	0	0	14	0	0	0
Southeast	28	0	0	28	0	0	0
Mekong Delta	34	0	0	34	0	0	0
Total	**202**	**0**	**0**	**202**	**0**	**0**	**0**

Table A D.2. School participation status: survey of teachers – Viet Nam, ISCED level 2

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Northern Midlands and Mountains	36	0	0	36	0	0	0
Red River Delta	46	0	0	46	0	0	0
North Central and Central Coast	44	0	0	44	0	0	0
Central Highlands	14	0	0	14	0	0	0
Southeast	28	0	0	28	0	0	0
Mekong Delta	34	0	0	34	0	0	0
Total	**202**	**0**	**0**	**202**	**0**	**0**	**0**

Table A D.3. Teacher participation status – Viet Nam, ISCED level 2

Participation status	Teachers
Participated	4 348
Absent	42
Left school permanently	13
Not part of sample	7
Total	**4 410**

Unclassified - Non classifié

Characteristics of national samples, ISCED level 1

Australia: ISCED level 1

ISCED level 1 in Australia consists of "Primary school" and comprises Grades 1 to 7 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 1 teachers, then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 32 schools were selected for the field trial; 208 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 1 only, ISCED levels 1 and 2) and sector with three categories (government, independent, Catholic).

Implicit stratification: Organised by socio-economic status with three categories (low, medium, high).

Data sources: Data used for school sampling were obtained from the Australian Council for Educational Research and referred to 2022.

Table A D.1. School participation status: survey of principals – Australia, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Government	124	0	0	68	27	7	22
ISCED 1 only – Independent	8	0	0	6	1	1	0
ISCED 1 only – Catholic	34	0	0	28	3	0	3
ISCED 1 and ISCED 2 – Government	10	0	0	6	2	0	2
ISCED 1 and ISCED 2 – Independent	24	0	0	17	4	0	3
ISCED 1 and ISCED 2 – Catholic	8	0	0	6	1	1	0
Total	**208**	**0**	**0**	**131**	**38**	**9**	**30**

Table A D.2. School participation status: survey of teachers – Australia, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Government	124	0	0	68	27	7	22
ISCED 1 only – Independent	8	0	0	6	1	1	0
ISCED 1 only – Catholic	34	0	0	28	3	0	3
ISCED 1 and ISCED 2 – Government	10	0	0	6	2	0	2
ISCED 1 and ISCED 2 – Independent	24	0	0	17	4	0	3
ISCED 1 and ISCED 2 – Catholic	8	0	0	6	1	1	0
Total	**208**	**0**	**0**	**131**	**38**	**9**	**30**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Australia, ISCED level 1

Participation status	Teachers
Participated	3 003
Absent	338
Left school permanently	12
Not part of sample	50
Total	**3 403**

Unclassified - Non classifié

Belgium: ISCED level 1

The target population comprises the Flemish and French Communities of Belgium, not including the German Community.

ISCED level 1 in the Flemish Community of Belgium consists of "Regular primary education" and "European school – regular primary education" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

ISCED level 1 in the French Community of Belgium consists of "Regular primary education" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to accommodate separate adjudication of communities.

Sample sizes: 30 schools were selected for the field trial; 412 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by community with two categories (Flemish Community, French Community), by funding with three categories (public at the state level, public at the local level, private) within the French Community, by socio-economic status with four categories (very disadvantaged, disadvantaged, advantaged, very advantaged) for public at the local level and private schools within the French Community, by overlap with two categories (ISCED level 1 only, ISCED levels 02 and 1) within the Flemish Community and by educational network with three categories (education organised by the Flemish Community, government-aided public education, government-aided private education) for ISCED levels 02 and 1 schools within the Flemish Community.

Implicit stratification: Organised by funding with two categories (public, private). within the Flemish Community and by socio-economic status with four categories (very disadvantaged, disadvantaged, advantaged, very advantaged) within the French Community.

Data sources: For the Flemish Community, data used for school sampling were obtained from the Ministry of Education and Training and referred to school year 2022/23. For the French Community, data used for school sampling were obtained from the General Administration of Education and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – Belgium, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Flemish Community – ISCED 1 only	18	0	0	6	4	1	7
Flemish Community – ISCED 02 and ISCED 1 – Education organised by the Flemish Community	38	1	0	19	4	3	11
Flemish Community – ISCED 02 and ISCED 1 – Government-aided public education	48	0	0	28	10	3	7
Flemish Community – ISCED 02 and ISCED 1 – Government-aided private education	106	0	0	44	19	17	26
French Community – Public at the state level	16	0	0	14	0	0	2
French Community – Public at the local level – Very disadvantaged schools	36	0	0	29	3	1	3

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
French Community – Public at the local level – Disadvantaged schools	26	0	0	21	2	1	2
French Community – Public at the local level – Advantaged schools	28	0	0	22	4	0	2
French Community – Public at the local level – Very advantaged schools	26	0	0	23	2	0	1
French Community – Private – Very disadvantaged schools	14	0	0	7	2	0	5
French Community – Private – Disadvantaged schools	18	0	0	12	3	0	3
French Community – Private – Advantaged schools	16	0	0	11	1	1	3
French Community – Private – Very advantaged schools	22	0	0	15	1	0	6
Total	**412**	**1**	**0**	**251**	**55**	**27**	**78**

Table A D.2. School participation status: survey of teachers – Belgium, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Flemish Community – ISCED 1 only	18	0	0	7	2	1	8
Flemish Community – ISCED 02 and ISCED 1 – Education organised by the Flemish Community	38	1	0	18	4	2	13
Flemish Community – ISCED 02 and ISCED 1 – Government-aided public education	48	0	0	23	10	4	11
Flemish Community – ISCED 02 and ISCED 1 – Government-aided private education	106	0	0	40	18	17	31
French Community – Public at the state level	16	0	0	15	0	0	1
French Community – Public at the local level – Very disadvantaged schools	36	0	0	29	2	1	4
French Community – Public at the local level – Disadvantaged schools	26	0	0	21	2	1	2
French Community – Public at the local level – Advantaged schools	28	0	0	21	4	0	3
French Community – Public at the local level – Very advantaged schools	26	0	0	24	2	0	0
French Community – Private – Very disadvantaged schools	14	0	0	8	2	1	3
French Community – Private – Disadvantaged schools	18	0	0	12	3	0	3
French Community – Private – Advantaged schools	16	0	0	11	1	1	3
French Community – Private – Very advantaged schools	22	0	0	17	2	0	3
Total	**412**	**1**	**0**	**246**	**52**	**28**	**85**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Belgium, ISCED level 1

Participation status	Teachers
Participated	4 913
Absent	919
Left school permanently	43
Not part of sample	117
Total	**5 992**

Unclassified - Non classifié

Flemish Community (Belgium): ISCED level 1

ISCED level 1 in the Flemish Community of Belgium consists of "Regular primary education" and "European school – regular primary education" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 1 teachers.

Sample sizes: 210 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 1 only, ISCED levels 02 and 1) and educational network with three categories (education organised by the Flemish Community, government-aided public education, government-aided private education) for ISCED levels 02 and 1 schools.

Implicit stratification: Organised by funding with two categories (public, private).

Data sources: Data used for school sampling were obtained from the Ministry of Education and Training and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – Flemish Community (Belgium), ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only	18	0	0	6	4	1	7
ISCED 02 and ISCED 1 – Education organised by the Flemish Community	38	1	0	19	4	3	11
ISCED 02 and ISCED 1 – Government-aided public education	48	0	0	28	10	3	7
ISCED 02 and ISCED 1 – Government-aided private education	106	0	0	44	19	17	26
Total	**210**	**1**	**0**	**97**	**37**	**24**	**51**

Table A D.2. School participation status: survey of teachers – Flemish Community (Belgium), ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only	18	0	0	7	2	1	8
ISCED 02 and ISCED 1 – Education organised by the Flemish Community	38	1	0	18	4	2	13
ISCED 02 and ISCED 1 – Government-aided public education	48	0	0	23	10	4	11
ISCED 02 and ISCED 1 – Government-aided private education	106	0	0	40	18	17	31
Total	**210**	**1**	**0**	**88**	**34**	**24**	**63**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Flemish Community (Belgium), ISCED level 1

Participation status	Teachers
Participated	2 258
Absent	308
Left school permanently	11
Not part of sample	66
Total	**2 643**

Unclassified - Non classifié

French Community (Belgium): ISCED level 1

ISCED level 1 in the French Community of Belgium consists of "Regular primary education" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 1 teachers.

Sample sizes: 30 schools were selected for the field trial; 202 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by funding with three categories (public at the state level, public at the local level, private) and socio-economic status with four categories (very disadvantaged, disadvantaged, advantaged, very advantaged) for public at the local level and private schools.

Implicit stratification: Organised by socio-economic status with four categories (very disadvantaged, disadvantaged, advantaged, very advantaged).

Data sources: Data used for school sampling were obtained from the General Administration of Education and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – French Community (Belgium), ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public at the state level	16	0	0	14	0	0	2
Public at the local level – Very disadvantaged schools	36	0	0	29	3	1	3
Public at the local level – Disadvantaged schools	26	0	0	21	2	1	2
Public at the local level – Advantaged schools	28	0	0	22	4	0	2
Public at the local level – Very advantaged schools	26	0	0	23	2	0	1
Private – Very disadvantaged schools	14	0	0	7	2	0	5
Private – Disadvantaged schools	18	0	0	12	3	0	3
Private – Advantaged schools	16	0	0	11	1	1	3
Private – Very advantaged schools	22	0	0	15	1	0	6
Total	**202**	**0**	**0**	**154**	**18**	**3**	**27**

Table A D.2. School participation status: survey of teachers – French Community (Belgium), ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public at the state level	16	0	0	15	0	0	1
Public at the local level – Very disadvantaged schools	36	0	0	29	2	1	4
Public at the local level – Disadvantaged schools	26	0	0	21	2	1	2

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public at the local level – Advantaged schools	28	0	0	21	4	0	3
Public at the local level – Very advantaged schools	26	0	0	24	2	0	0
Private – Very disadvantaged schools	14	0	0	8	2	1	3
Private – Disadvantaged schools	18	0	0	12	3	0	3
Private – Advantaged schools	16	0	0	11	1	1	3
Private – Very advantaged schools	22	0	0	17	2	0	3
Total	202	0	0	158	18	4	22

Table A D.3. Teacher participation status – French Community (Belgium), ISCED level 1

Participation status	Teachers
Participated	2 655
Absent	611
Left school permanently	32
Not part of sample	51
Total	**3 349**

Unclassified - Non classifié

Brazil: ISCED level 1

ISCED level 1 in Brazil consists of "Fundamental education (Years 1-5)" and comprises Grades 1 to 5 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 1 teachers, then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 33 schools were selected for the field trial; 342 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 1 only, ISCED levels 1 and 2) and type with four categories (federal, regional, local, private).

Implicit stratification: Organised by region with five categories (Central-West, North, Northeast, South, Southeast).

Data sources: Data used for school sampling were obtained from the national School Census and referred to 2022.

Table A D.1. School participation status: survey of principals – Brazil, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Federal	8	0	0	4	0	0	4
ISCED 1 only – Regional	18	0	1	14	1	0	2
ISCED 1 only – Local	132	4	4	114	7	0	3
ISCED 1 only – Private	22	0	0	13	5	0	4
ISCED 1 and ISCED 2 – Federal	8	0	1	4	0	0	3
ISCED 1 and ISCED 2 – Regional	20	2	6	12	0	0	0
ISCED 1 and ISCED 2 – Local	80	1	6	65	4	0	4
ISCED 1 and ISCED 2 – Private	54	4	1	31	8	2	8
Total	**342**	**11**	**19**	**257**	**25**	**2**	**28**

Table A D.2. School participation status: survey of teachers – Brazil, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Federal	8	0	0	4	0	0	4
ISCED 1 only – Regional	18	0	1	14	1	0	2
ISCED 1 only – Local	132	4	4	113	7	0	4
ISCED 1 only – Private	22	0	0	12	5	0	5
ISCED 1 and ISCED 2 – Federal	8	0	1	4	0	0	3
ISCED 1 and ISCED 2 – Regional	20	2	6	11	0	0	1
ISCED 1 and ISCED 2 – Local	80	1	6	63	4	0	6
ISCED 1 and ISCED 2 – Private	54	4	1	31	8	2	8
Total	**342**	**11**	**19**	**252**	**25**	**2**	**33**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Brazil, ISCED level 1

Participation status	Teachers
Participated	2 994
Absent	111
Left school permanently	90
Not part of sample	69
Total	**3 264**

Unclassified - Non classifié

France: ISCED level 1

ISCED level 1 in France consists of "Primary education" and comprises Grades 1 to 5 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 1 teachers.

Sample sizes: 30 schools were selected for the field trial; 348 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of teachers in ISCED level 1 schools.

Explicit stratification: Organised by school sector with three categories (public school non-priority education, public school priority education, private school under contract with the state).

Implicit stratification: Organised by urbanisation with three categories (fewer than 10 000 inhabitants, 10 000 to 199 999 inhabitants, more than 199 999 inhabitants).

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – France, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public school non-priority education	232	2	0	210	3	0	17
Public school priority education	62	1	0	58	1	0	2
Private school under contract with the state	54	0	0	49	1	0	4
Total	**348**	**3**	**0**	**317**	**5**	**0**	**23**

Table A D.2. School participation status: survey of teachers – France, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public school non-priority education	232	25	0	183	4	0	20
Public school priority education	62	3	0	53	1	0	5
Private school under contract with the state	54	1	0	47	3	0	3
Total	**348**	**29**	**0**	**283**	**8**	**0**	**28**

Table A D.3. Teacher participation status – France, ISCED level 1

Participation status	Teachers
Participated	1 993
Absent	253
Left school permanently	0
Not part of sample	102
Total	**2 348**

Unclassified - Non classifié

Japan: ISCED level 1

ISCED level 1 in Japan consists of "Elementary school" and "Compulsory education school" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 1 teachers, then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 32 schools were selected for the field trial; 210 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 1 only, ISCED levels 1 and 2) and urbanisation with four categories (very large city, large city, small city, non-city area) for ISCED level 1 only schools.

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education, Culture, Sports, Science and Technology and referred to 2021.

Table A D.1. School participation status: survey of principals – Japan, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Very large city	50	0	0	48	2	0	0
ISCED 1 only – Large city	32	0	0	30	1	1	0
ISCED 1 only – Small city	96	0	0	79	13	0	4
ISCED 1 only – Non-city area	24	0	0	20	3	1	0
ISCED 1 and ISCED 2	4	0	0	3	1	0	0
Total	**206**	**0**	**0**	**180**	**20**	**2**	**4**

Table A D.2. School participation status: survey of teachers – Japan, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Very large city	50	0	0	48	2	0	0
ISCED 1 only – Large city	32	0	0	30	1	1	0
ISCED 1 only – Small city	96	0	0	79	13	0	4
ISCED 1 only – Non-city area	24	0	0	20	3	1	0
ISCED 1 and ISCED 2	4	0	0	3	1	0	0
Total	**206**	**0**	**0**	**180**	**20**	**2**	**4**

Table A D.3. Teacher participation status – Japan, ISCED level 1

Participation status	Teachers
Participated	3 356
Absent	73
Left school permanently	34
Not part of sample	4
Total	**3 467**

Unclassified - Non classifié

Korea: ISCED level 1

ISCED level 1 in Korea consists of "Elementary school" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 1 teachers, then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 34 schools were selected for the field trial; 224 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by local offices of education with 17 categories.

Implicit stratification: Organised by urbanisation with three categories (large city, city, town).

Data sources: Data used for school sampling were obtained from the Center for Educational Statistics (KEDI) and referred to 2021.

Table A D.1. School participation status: survey of principals – Korea, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Seoul	32	0	0	20	10	0	2
Busan	12	0	0	9	3	0	0
Daegu	10	0	0	6	2	0	2
Incheon	12	0	0	11	1	0	0
Gwangju	8	0	0	6	2	0	0
Daejeon	8	0	0	8	0	0	0
Ulsan	8	0	0	3	0	3	2
Sejong	8	0	0	8	0	0	0
Gyeonggi	52	0	0	27	14	1	10
Gangwon	8	0	0	5	1	0	2
Chungbuk	8	0	0	6	0	2	0
Chungnam	10	0	0	8	1	0	1
Jeonbuk	8	0	0	5	1	0	2
Jeonnam	8	0	0	5	2	0	1
Gyeongbuk	10	0	0	8	0	2	0
Gyeongnam	14	0	0	8	2	1	3
Jeju	8	0	0	5	2	0	1
Total	**224**	**0**	**0**	**148**	**41**	**9**	**26**

Table A D.2. School participation status: survey of teachers – Korea, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Seoul	32	0	0	15	9	0	8
Busan	12	0	0	9	3	0	0
Daegu	10	0	0	6	2	0	2
Incheon	12	0	0	7	1	0	4

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Gwangju	8	0	0	5	2	0	1
Daejeon	8	0	0	8	0	0	0
Ulsan	8	0	0	5	0	3	0
Sejong	8	0	0	5	0	0	3
Gyeonggi	52	0	0	24	13	1	14
Gangwon	8	0	0	5	1	0	2
Chungbuk	8	0	0	5	0	2	1
Chungnam	10	0	0	8	1	0	1
Jeonbuk	8	0	0	6	1	0	1
Jeonnam	8	0	0	6	2	0	0
Gyeongbuk	10	0	0	8	0	1	1
Gyeongnam	14	0	0	8	2	2	2
Jeju	8	0	0	5	3	0	0
Total	**224**	**0**	**0**	**135**	**40**	**9**	**40**

Table A D.3. Teacher participation status – Korea, ISCED level 1

Participation status	Teachers
Participated	3 124
Absent	323
Left school permanently	2
Not part of sample	12
Total	**3 461**

Unclassified - Non classifié

Morocco: ISCED level 1

ISCED level 1 in Morocco consists of "*Enseignement primaire*" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between regions and between public and private schools.

Sample sizes: 32 schools were selected for the field trial; 400 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 students in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 1 only, ISCED levels 1 and 2), funding with two categories (public, private) and region with ten categories for public schools.

Implicit stratification: Organised by urbanisation with two categories (urban, rural).

Data sources: Data used for school sampling were obtained from the Ministry of National Education and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Morocco, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Public – Tanger-Tetouan-Al Hoceima	32	0	0	32	0	0	0
ISCED 1 only – Public – Oriental	30	0	0	30	0	0	0
ISCED 1 only – Public – Fès-Meknès	36	0	0	36	0	0	0
ISCED 1 only – Public – Rabat-Salé-Kénitra	34	0	0	34	0	0	0
ISCED 1 only – Public – Béni Mellal-Khénifra	30	0	0	30	0	0	0
ISCED 1 only – Public – Casablanca-Settat	47	0	0	47	0	0	0
ISCED 1 only – Public – Marrakech-Safi	44	1	0	41	0	0	2
ISCED 1 only – Public – Drâa-Tafilalet	30	0	0	30	0	0	0
ISCED 1 only – Public – Souss-Massa	30	1	0	28	0	0	1
ISCED 1 only – Public – South	31	1	0	30	0	0	0
ISCED 1 only – Private	28	3	0	24	0	0	1
ISCED 1 and ISCED 2 – Private	30	2	0	27	0	0	1
Total	**402**	**8**	**0**	**389**	**0**	**0**	**5**

Table A D.2. School participation status: survey of teachers – Morocco, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Public – Tanger-Tetouan-Al Hoceima	30	0	0	30	0	0	0
ISCED 1 only – Public – Oriental	36	0	0	36	0	0	0
ISCED 1 only – Public – Fès-Meknès	34	0	0	34	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Public – Rabat-Salé-Kénitra	30	0	0	30	0	0	0
ISCED 1 only – Public – Béni Mellal-Khénifra	47	0	0	47	0	0	0
ISCED 1 only – Public – Casablanca-Settat	44	1	0	43	0	0	0
ISCED 1 only – Public – Marrakech-Safi	30	0	0	30	0	0	0
ISCED 1 only – Public – Drâa-Tafilalet	30	1	0	29	0	0	0
ISCED 1 only – Public – Souss-Massa	31	1	0	30	0	0	0
ISCED 1 only – Public – South	28	3	0	25	0	0	0
ISCED 1 only – Private	30	2	0	28	0	0	0
Total	**402**	**8**	**0**	**394**	**0**	**0**	**0**

Table A D.3. Teacher participation status – Morocco, ISCED level 1

Participation status	Teachers
Participated	4 905
Absent	61
Left school permanently	32
Not part of sample	37
Total	**5 035**

Unclassified - Non classifié

Netherlands: ISCED level 1

The target population comprises the European Netherlands, not including the Dutch Caribbean.

ISCED level 1 in the Netherlands consists of "Primary education group (class) 3-8" and comprises Grades 1 to 6, counting from the first year of ISCED level 1 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 1 students.

Sample sizes: 30 schools were selected for the field trial; 200 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 students in schools.

Explicit stratification: Organised by quintiles of disadvantage score with three categories (1st-3rd quintile, 4th quintile, 5th quintile).

Implicit stratification: Organised by region with four categories (east, middle, north, south).

Data sources: Data used for school sampling were obtained from the Education Implementation Service of the Ministry of Education, Culture and Science and referred to 2021.

T Table A D.1. School participation status: survey of principals – Netherlands, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Disadvantage score, 1st-3rd quintile	124	4	0	51	23	9	37
Disadvantage score, 4th quintile	38	0	0	20	4	4	10
Disadvantage score, 5th quintile	38	2	0	15	4	2	15
Total	**200**	**6**	**0**	**86**	**31**	**15**	**62**

Table A D.2. School participation status: survey of teachers – Netherlands, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Disadvantage score, 1st-3rd quintile	124	4	0	55	23	11	31
Disadvantage score, 4th quintile	38	0	0	20	5	4	9
Disadvantage score, 5th quintile	38	2	0	16	4	2	14
Total	**200**	**6**	**0**	**91**	**32**	**17**	**54**

Table A D.3. Teacher participation status – Netherlands, ISCED level 1

Participation status	Teachers
Participated	1 305
Absent	225
Left school permanently	5
Not part of sample	11
Total	**1 546**

Unclassified - Non classifié

New Zealand: ISCED level 1

The target population comprises New Zealand, not including the associated states Cook Islands and Niue or the dependent territory Tokelau.

ISCED level 1 in New Zealand consists of "Primary level education (Years 1 to 6)" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between school types and equity index levels.

Sample sizes: 42 schools were selected for the field trial; 245 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED level 1 only, ISCED levels 1 and 2), school type with three categories (contributing, full primary, composite) and equity index level with three categories (low or unknown, medium, high). Due to low participation rates, strata were collapsed after the survey administration.

Implicit stratification: Organised by language with two categories (Māori language education, no Māori language education) and funding with two categories (public, private).

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – New Zealand, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Contributing	126	0	0	46	29	1	50
ISCED 1 and ISCED 2 – Full primary	90	0	0	29	25	1	35
ISCED 1 and ISCED 2 – Composite	29	0	0	8	2	0	19
Total	**245**	**0**	**0**	**83**	**56**	**2**	**104**

Table A D.2. School participation status: survey of teachers – New Zealand, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Contributing	126	1	0	40	27	1	57
ISCED 1 and ISCED 2 – Full primary	90	0	0	27	23	2	38
ISCED 1 and ISCED 2 – Composite	29	0	0	7	3	0	19
Total	**245**	**1**	**0**	**74**	**53**	**3**	**114**

Table A D.3. Teacher participation status – New Zealand, ISCED level 1

Participation status	Teachers
Participated	1 529
Absent	378
Left school permanently	8
Not part of sample	12
Total	**1 927**

Unclassified - Non classifié

Saudi Arabia: ISCED level 1

ISCED level 1 in Saudi Arabia consists of "Elementary grades" and "Primary education" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between public, private and international schools.

Sample sizes: 34 schools were selected for the field trial; 232 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by school type with three categories (public, private, international) and gender with two categories (female, male).

Implicit stratification: Organised by region with 13 categories.

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to 2022.

Table A D.1. School participation status: survey of principals – Saudi Arabia, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Female	96	1	0	86	0	0	9
Public – Male	76	7	0	68	0	0	1
Private – Female	16	1	0	13	0	0	2
Private – Male	14	0	0	12	0	0	2
International – Female	22	1	0	18	0	0	3
International – Male	8	1	0	7	0	0	0
Total	**232**	**11**	**0**	**204**	**0**	**0**	**17**

Table A D.2. School participation status: survey of teachers – Saudi Arabia, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Female	96	1	0	95	0	0	0
Public – Male	76	7	0	68	0	0	1
Private – Female	16	1	0	15	0	0	0
Private – Male	14	0	0	14	0	0	0
International – Female	22	1	0	19	0	0	2
International – Male	8	1	0	7	0	0	0
Total	**232**	**11**	**0**	**218**	**0**	**0**	**3**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Saudi Arabia, ISCED level 1

Participation status	Teachers
Participated	3 783
Absent	212
Left school permanently	70
Not part of sample	5
Total	**4 070**

Unclassified - Non classifié

Slovenia: ISCED level 1

ISCED level 1 in Slovenia consists of "Basic education (grades 1-6)" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to reduce the number of big schools in the sample for overlap control.

Sample sizes: 30 schools were selected for the field trial; 264 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with equal probabilities for big schools; otherwise, systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 students in schools.

Explicit stratification: Organised by regions with four categories (central, northeast, southeast, west) and school size with two categories (big, small) for central, southeast and western regions.

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education, Science and Sport and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Slovenia, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Northeast	62	0	0	54	0	0	8
Southeast – Big schools	12	0	0	8	0	0	4
Southeast – Small schools	52	0	0	37	3	0	12
Central – Big schools	36	0	0	26	0	0	10
Central – Small schools	39	0	0	29	0	0	10
West – Big schools	25	0	0	21	0	0	4
West – Small schools	38	0	0	28	0	0	10
Total	**264**	**0**	**0**	**203**	**3**	**0**	**58**

Table A D.2. School participation status: survey of teachers – Slovenia, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Northeast	62	0	0	55	0	0	7
Southeast – Big schools	12	0	0	11	0	0	1
Southeast – Small schools	52	0	0	37	3	0	12
Central – Big schools	36	0	0	28	0	0	8
Central – Small schools	39	0	0	33	0	0	6
West – Big schools	25	0	0	21	0	0	4
West – Small schools	38	0	0	32	0	0	6
Total	**264**	**0**	**0**	**217**	**3**	**0**	**44**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Slovenia, ISCED level 1

Participation status	Teachers
Participated	3 615
Absent	343
Left school permanently	7
Not part of sample	15
Total	**3 980**

Unclassified - Non classifié

Spain: ISCED level 1

ISCED level 1 in Spain consists of "Primary education" and comprises Grades 1 to 6 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between some of the communities.

Sample sizes: 30 schools were selected for the field trial; 506 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by community with nine categories (Andalusia, Asturias, Balearic Islands, Canary Islands, Cantabria, Catalonia, La Rioja, Valencian Community, other communities), overlap with two categories (ISCED level 1 only, ISCED levels 02 and 1) and overlap with four categories (with ISCED level 2, without ISCED level 2, big schools without ISCED level 2, small schools without ISCED level 2) for Cantabria and La Rioja ISCED levels 02 and 1 schools.

Implicit stratification: Organised by community with 18 categories and funding with two categories (public, private) for ISCED levels 02 and 1 schools.

Data sources: Data used for school sampling were obtained from the autonomous communities and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Spain, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Andalusia – ISCED 1 only	8	0	0	8	0	0	0
Andalusia – ISCED 02 and ISCED 1	42	0	0	42	0	0	0
Asturias – ISCED 1 only	7	0	0	7	0	0	0
Asturias – ISCED 02 and ISCED 1	44	0	0	44	0	0	0
Balearic Islands – ISCED 1 only	6	0	0	6	0	0	0
Balearic Islands – ISCED 02 and ISCED 1	44	0	0	44	0	0	0
Canary Islands – ISCED 1 only	6	1	0	4	0	0	1
Canary Islands – ISCED 02 and ISCED 1	44	0	0	40	0	0	4
Cantabria – ISCED 1 only	5	0	0	5	0	0	0
Cantabria – ISCED 02 and ISCED 1 – With ISCED 2	12	0	0	9	0	0	3
Cantabria – ISCED 02 and ISCED 1 – Without ISCED 2	34	0	0	33	0	0	1
Catalonia – ISCED 1 only	8	0	0	7	0	0	1
Catalonia – ISCED 02 and ISCED 1	42	0	0	39	0	0	3
La Rioja – ISCED 1 only	1	1	0	0	0	0	0
La Rioja – ISCED 02 and ISCED 1 – With ISCED 2	11	0	0	11	0	0	0
La Rioja – ISCED 02 and ISCED 1 – Big schools without ISCED 2	16	0	0	15	0	0	1
La Rioja – ISCED 02 and ISCED 1 – Small schools without ISCED 2	22	0	0	22	0	0	0
Valencian Community – ISCED 1 only	8	0	0	8	0	0	0
Valencian Community – ISCED 02 and ISCED 1	42	0	0	42	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Other communities – ISCED 1 only	8	0	0	7	0	0	1
Other communities – ISCED 02 and ISCED 1	96	0	0	94	0	0	2
Total	**506**	**2**	**0**	**487**	**0**	**0**	**17**

Table A D.2. School participation status: survey of teachers – Spain, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Andalusia – ISCED 1 only	8	0	0	8	0	0	0
Andalusia – ISCED 02 and ISCED 1	42	0	0	42	0	0	0
Asturias – ISCED 1 only	7	0	0	7	0	0	0
Asturias – ISCED 02 and ISCED 1	44	0	0	44	0	0	0
Balearic Islands – ISCED 1 only	6	0	0	6	0	0	0
Balearic Islands – ISCED 02 and ISCED 1	44	0	0	44	0	0	0
Canary Islands – ISCED 1 only	6	1	0	4	0	0	1
Canary Islands – ISCED 02 and ISCED 1	44	0	0	44	0	0	0
Cantabria – ISCED 1 only	5	0	0	5	0	0	0
Cantabria – ISCED 02 and ISCED 1 – With ISCED 2	12	0	0	12	0	0	0
Cantabria – ISCED 02 and ISCED 1 – Without ISCED 2	34	0	0	34	0	0	0
Catalonia – ISCED 1 only	8	0	0	8	0	0	0
Catalonia – ISCED 02 and ISCED 1	42	0	0	41	0	0	1
La Rioja – ISCED 1 only	1	1	0	0	0	0	0
La Rioja – ISCED 02 and ISCED 1 – With ISCED 2	11	0	0	11	0	0	0
La Rioja – ISCED 02 and ISCED 1 – Big schools without ISCED 2	16	0	0	16	0	0	0
La Rioja – ISCED 02 and ISCED 1 – Small schools without ISCED 2	22	0	0	22	0	0	0
Valencian Community – ISCED 1 only	8	0	0	8	0	0	0
Valencian Community – ISCED 02 and ISCED 1	42	0	0	42	0	0	0
Other communities – ISCED 1 only	8	0	0	7	0	0	1
Other communities – ISCED 02 and ISCED 1	96	0	0	95	0	0	1
Total	**506**	**2**	**0**	**500**	**0**	**0**	**4**

Table A D.3. Teacher participation status – Spain, ISCED level 1

Participation status	Teachers
Participated	8 060
Absent	447
Left school permanently	46
Not part of sample	107
Total	**8 660**

Unclassified - Non classifié

Türkiye: ISCED level 1

ISCED level 1 in Türkiye consists of "Primary education" and "Music and ballet primary school" and comprises Grades 1 to 4 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 1 teachers, then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 35 schools were selected for the field trial; 238 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by funding with 2 categories (public, private) and region with 12 categories for public schools.

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of National Education and referred to school year 2022/2023.

Table A D.1. School participation status: survey of principals – Türkiye, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Istanbul Region	24	0	0	24	0	0	0
Public – West Marmara Region	8	0	0	8	0	0	0
Public – Aegean Region	26	0	0	24	0	0	2
Public – East Marmara Region	20	0	0	19	0	0	1
Public – West Anatolia Region	20	0	0	20	0	0	0
Public – Mediterranean Region	32	0	0	32	0	0	0
Public – Central Anatolia Region	12	0	0	12	0	0	0
Public – West Black Sea Region	12	0	0	12	0	0	0
Public – East Black Sea Region	8	0	0	8	0	0	0
Public – Northeast Anatolia Region	8	0	0	8	0	0	0
Public – Central East Anatolia Region	12	0	0	12	0	0	0
Public – Southeast Anatolia Region	30	0	0	30	0	0	0
Private	26	0	0	22	0	0	4
Total	**238**	**0**	**0**	**231**	**0**	**0**	**7**

Table A D.2. School participation status: survey of teachers – Türkiye, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Istanbul Region	24	0	0	24	0	0	0
Public – West Marmara Region	8	0	0	8	0	0	0
Public – Aegean Region	26	0	0	26	0	0	0
Public – East Marmara Region	20	0	0	19	0	0	1
Public – West Anatolia Region	20	0	0	19	0	0	1
Public – Mediterranean Region	32	0	0	31	0	0	1
Public – Central Anatolia Region	12	0	0	12	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – West Black Sea Region	12	0	0	12	0	0	0
Public – East Black Sea Region	8	0	0	8	0	0	0
Public – Northeast Anatolia Region	8	0	0	8	0	0	0
Public – Central East Anatolia Region	12	0	0	12	0	0	0
Public – Southeast Anatolia Region	30	0	0	30	0	0	0
Private	26	0	0	23	0	0	3
Total	**238**	**0**	**0**	**232**	**0**	**0**	**6**

Table A D.3. Teacher participation status – Türkiye, ISCED level 1

Participation status	Teachers
Participated	4 053
Absent	155
Left school permanently	7
Not part of sample	29
Total	**4 244**

Unclassified - Non classifié

United Arab Emirates: ISCED level 1

ISCED level 1 in the United Arab Emirates consists of "First cycle of basic education" and comprises Grades 1 to 4 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to improve overlap control between ISCED levels.

Sample sizes: 30 schools were selected for the field trial; 214 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 1 teachers in schools.

Explicit stratification: Organised by overlap with three categories (ISCED level 1 only; ISCED levels 1 and 2; ISCED levels 1, 2 and 3) and emirates with three categories (Abu Dhabi, Dubai, other emirates).

Implicit stratification: Organised by language with two categories (Arabic, English).

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2023/24.

Table A D.1. School participation status: survey of principals – United Arab Emirates, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Abu Dhabi	8	0	0	8	0	0	0
ISCED 1 only – Dubai	8	0	0	8	0	0	0
ISCED 1 only – Other emirates	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Abu Dhabi	12	0	0	12	0	0	0
ISCED 1 and ISCED 2 – Dubai	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Other emirates	18	6	0	12	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Abu Dhabi	44	1	0	43	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Dubai	52	0	0	51	0	0	1
ISCED 1, ISCED 2 and ISCED 3 – Other emirates	56	0	0	56	0	0	0
Total	**214**	**7**	**0**	**206**	**0**	**0**	**1**

Table A D.2. School participation status: survey of teachers – United Arab Emirates, ISCED level 1

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1 only – Abu Dhabi	8	0	0	8	0	0	0
ISCED 1 only – Dubai	8	0	0	8	0	0	0
ISCED 1 only – Other emirates	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Abu Dhabi	12	0	0	12	0	0	0
ISCED 1 and ISCED 2 – Dubai	8	0	0	8	0	0	0
ISCED 1 and ISCED 2 – Other emirates	18	6	0	12	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Abu Dhabi	44	1	0	43	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1, ISCED 2 and ISCED 3 – Dubai	52	0	0	51	0	0	1
ISCED 1, ISCED 2 and ISCED 3 – Other emirates	56	0	0	56	0	0	0
Total	**214**	**7**	**0**	**206**	**0**	**0**	**1**

Table A D.3. Teacher participation status – United Arab Emirates, ISCED level 1

Participation status	Teachers
Participated	4 091
Absent	104
Left school permanently	9
Not part of sample	5
Total	**4 209**

Unclassified - Non classifié

Characteristics of national samples, ISCED level 3

Croatia: ISCED level 3

ISCED level 3 in Croatia consists of "Vocational education programmes within regular education in duration of one year, that enable access to labour market", "Vocational education programmes within regular education system in duration up to two years, that enable access to labour market", "Vocational education programmes within regular education system in duration of three or three years, that enable access to labour market or entry to ISCED level 03.08", "Vocational education programmes within regular education system in duration of four or more years, that enable access to labour market or entry to ISCED levels 5 and 6", "Art education – duration 4 years", "Grammar secondary school educational programs – duration 4 years" and comprises Grades 9 to 14 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 3 students.

Sample sizes: 30 schools were selected for the field trial; 200 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 3 students in schools.

Explicit stratification: Organised by programme with four categories (four- or five-year vocational programme, vocational-industrial-crafts programme, mixed type, gymnasium).

Implicit stratification: Organised by region with six categories (Central Croatia, City of Zagreb, Eastern Croatia, Northern Croatia, Southern Croatia, Western Croatia).

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2020/21.

Table A D.1. School participation status: survey of principals – Croatia, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Four- or five-year vocational programme	78	0	0	70	0	0	8
Vocational-industrial-crafts programme	40	0	0	36	0	0	4
Mixed type	34	0	0	30	0	0	4
Gymnasium	48	0	0	44	0	0	4
Total	**200**	**0**	**0**	**180**	**0**	**0**	**20**

Table A D.2. School participation status: survey of teachers – Croatia, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Four- or five-year vocational programme	78	0	0	75	0	0	3
Vocational-industrial-crafts programme	40	0	0	38	0	0	2
Mixed type	34	0	0	32	0	0	2
Gymnasium	48	0	0	47	0	0	1

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Total	**200**	**0**	**0**	**192**	**0**	**0**	**8**

Table A D.3. Teacher participation status – Croatia, ISCED level 3

Participation status	Teachers
Participated	3 497
Absent	583
Left school permanently	35
Not part of sample	13
Total	**4 128**

Unclassified - Non classifié

Denmark: ISCED level 3

The target population comprises metropolitan Denmark, not including the autonomous territories of the Faroe Islands and Greenland.

ISCED level 3 in Denmark consists of “PRE-International Baccalaureate”, “Upper secondary education”, “Admittance examinations for engineering programmes”, “Vocational educational training, basic course 1”, “Vocational educational training, basic course 2 and main course”, “Vocational educational training, others” and “Vocational educational training, basic course 2 and main course (access to higher level)” and comprises Grades 11 to 13 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between different programmes of vocational schools.

Sample sizes: 31 schools were selected for the field trial; 246 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 3 students in schools.

Explicit stratification: Organised by educational track with two categories (academic, vocational) and programme with seven categories (higher general examination programme, higher technical examination programme, higher commercial examination programme, care and health, mercantile, foods and farming, tech and building).

Implicit stratification: Organised by region with five categories (Capital Region of Denmark, Central Denmark Region, North Denmark Region, Region of Southern Denmark, Region Zealand).

Data sources: Data used for school sampling were obtained from the National Agency for IT and Learning and referred to school year 2020/21.

Table A D.1. School participation status: survey of principals – Denmark, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Academic – Higher general examination programme	78	0	0	47	16	3	12
Academic – Higher technical examination programme	10	1	0	6	2	0	1
Academic – Higher commercial examination programme	24	0	0	12	5	0	7
Vocational – Care and health	30	2	0	18	1	0	9
Vocational – Mercantile	30	4	0	17	2	0	7
Vocational – Foods and farming	30	3	0	20	3	0	4
Vocational – Tech and building	44	2	0	23	3	1	15
Total	**246**	**12**	**0**	**143**	**32**	**4**	**55**

Unclassified - Non classifié

Table A D.2. School participation status: survey of teachers – Denmark, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Academic – Higher general examination programme	78	0	0	47	16	3	12
Academic – Higher technical examination programme	10	1	0	6	2	0	1
Academic – Higher commercial examination programme	24	0	0	12	5	0	7
Vocational – Care and health	30	2	0	18	1	0	9
Vocational – Mercantile	30	4	0	18	2	0	6
Vocational – Foods and farming	30	3	0	20	3	0	4
Vocational – Tech and building	44	2	0	23	2	1	16
Total	**246**	**12**	**0**	**144**	**31**	**4**	**55**

Table A D.3. Teacher participation status – Denmark, ISCED level 3

Participation status	Teachers
Participated	2 550
Absent	360
Left school permanently	84
Not part of sample	79
Total	**3 073**

Unclassified - Non classifié

Flemish Community (Belgium): ISCED level 3

ISCED level 3 in Flemish Community (Belgium) consists of "Regular secondary education – 2nd stage ASO (ASO = general secondary education)", "European School – regular secondary education – 2nd stage", "Regular secondary education – 2nd stage KSO (KSO = artistic secondary education)", "Regular secondary education – 2nd stage TSO (= technical secondary education) and BSO (= vocational secondary education; including modular education)", "Regular secondary education – 3rd stage – 1st and 2nd year of the 3rd stage – ASO (general secondary education)", "Regular secondary education – 3rd stage – 1st and 2nd year of the 3rd stage – KSO (artistic secondary education)", "Regular secondary education – 3rd stage – 1st and 2nd year of the 3rd stage – BSO (vocational secondary education; including modular education)", "Regular secondary education – 3rd stage – 1st and 2nd year of the 3rd stage – TSO (technical secondary education)", "Regular secondary education – 3rd stage – 3rd year of the 3rd stage – BSO (vocational secondary education; including modular education)", "Part-time vocational secondary education" and "Apprenticeship (organised by SYNTRA – Flemish Agency for Entrepreneurial Training)" and comprises Grades 9 to 11 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 3 teachers.

Sample sizes: 210 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 3 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED 2 only, ISCED 2 and ISCED 3) and funding with two categories (public, private).

Implicit stratification: Organised by educational network with three categories (education organised by the Flemish Community, government-aided public education, government-aided private education).

Data sources: Data used for school sampling were obtained from the Ministry of Education and Training and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – Flemish Community (Belgium), ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 3 only – Public	22	0	0	16	3	1	2
ISCED 3 only – Private	40	0	0	17	9	3	11
ISCED 2 and ISCED 3 – Public	40	0	0	21	3	1	15
ISCED 2 and ISCED 3 – Private	108	0	0	46	17	0	45
Total	**210**	**0**	**0**	**100**	**32**	**5**	**73**

Unclassified - Non classifié

Table A D.2. School participation status: survey of teachers – Flemish Community (Belgium), ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 3 only – Public	22	0	0	16	3	1	2
ISCED 3 only – Private	40	0	0	17	10	1	12
ISCED 2 and ISCED 3 – Public	40	0	0	22	2	1	15
ISCED 2 and ISCED 3 – Private	108	0	0	51	17	0	40
Total	**210**	**0**	**0**	**106**	**32**	**3**	**69**

Table A D.3. Teacher participation status – Flemish Community (Belgium), ISCED level 3

Participation status	Teachers
Participated	2 427
Absent	380
Left school permanently	25
Not part of sample	30
Total	**2 862**

Unclassified - Non classifié

Portugal: ISCED level 3

The target population comprises mainland Portugal, not including the Azores and Madeira.

ISCED level 3 in Portugal consists of "Upper secondary education – Regular – Scientific-humanistic courses", "Upper secondary education – Regular – Technological courses", "Upper secondary education – Specialised artistic courses (young-oriented programmes) – Music", "Upper secondary education – Specialised artistic courses (young-oriented programmes) – Dance", "Upper secondary education – Specialised artistic courses (young-oriented programmes) – Audiovisual and visual arts", "Upper secondary education – Vocational courses", "Upper secondary education – Apprenticeship courses", "Upper secondary education – Education and training courses – Type 4", "Upper secondary education – Education and training courses – Complementary training type", "Upper secondary education – Education and training courses – Type 5", "Upper secondary education – Education and training courses – Type 6" and "Upper secondary education – Education and training courses – Type 7" and comprises Grades 10 to 12 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between public and private schools.

Sample sizes: 31 schools were selected for the field trial; 206 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 3 teachers in schools.

Explicit stratification: Organised by overlap with two categories (ISCED 3 only, ISCED 2 and ISCED 3) and funding with two categories (public, private).

Implicit stratification: Organised by region with five categories (Alentejo, Algarve, Centre, Lisbon, North) for public schools.

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2019/20.

Table A D.1. School participation status: survey of principals – Portugal, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 3 only – Public	30	0	0	30	0	0	0
ISCED 3 only – Private	20	2	0	17	1	0	0
ISCED 2 and ISCED 3 – Public	146	1	0	145	0	0	0
ISCED 2 and ISCED 3 – Private	10	0	0	10	0	0	0
Total	**206**	**3**	**0**	**202**	**1**	**0**	**0**

Table A D.2. School participation status: survey of teachers – Portugal, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 3 only – Public	30	0	0	30	0	0	0
ISCED 3 only – Private	20	2	0	17	1	0	0
ISCED 2 and ISCED 3 – Public	146	1	0	145	0	0	0
ISCED 2 and ISCED 3 – Private	10	0	0	10	0	0	0
Total	**206**	**3**	**0**	**202**	**1**	**0**	**0**

Unclassified - Non classifié

Table A D.3. Teacher participation status – Portugal, ISCED level 3

Participation status	Teachers
Participated	3 878
Absent	253
Left school permanently	19
Not part of sample	46
Total	**4 196**

Unclassified - Non classifié

Saudi Arabia: ISCED level 3

ISCED level 3 in Saudi Arabia consists of "General secondary education" and "Industrial secondary and building Institutes" and comprises Grades 10 to 12 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between public, private and international schools.

Sample sizes: 35 schools were selected for the field trial; 242 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 3 teachers in schools.

Explicit stratification: Organised by school type with three categories (public, private, international) and gender with two categories (female, male).

Implicit stratification: Organised by region with 13 categories.

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to 2022.

Table A D.1. School participation status: survey of principals – Saudi Arabia, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Female	96	2	0	89	0	0	5
Public – Male	86	2	0	78	0	0	6
Private – Female	12	1	0	10	0	0	1
Private – Male	18	0	0	17	0	0	1
International – Female	16	2	0	10	0	0	4
International – Male	14	1	0	10	0	0	3
Total	**242**	**8**	**0**	**214**	**0**	**0**	**20**

Table A D.2. School participation status: survey of teachers – Saudi Arabia, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Female	96	2	0	93	0	0	1
Public – Male	86	2	0	84	0	0	0
Private – Female	12	1	0	11	0	0	0
Private – Male	18	0	0	17	0	0	1
International – Female	16	2	0	11	0	0	3
International – Male	14	1	0	10	0	0	3
Total	**242**	**8**	**0**	**226**	**0**	**0**	**8**

Table A D.3. Teacher participation status – Saudi Arabia, ISCED level 3

Participation status	Teachers
Participated	3 952
Absent	239
Left school permanently	77
Not part of sample	3
Total	**4 271**

Unclassified - Non classifié

Slovenia: ISCED level 3

ISCED level 3 in Slovenia consists of "Short vocational upper secondary education", "Vocational upper secondary education", "Vocational-technical upper secondary education", "Technical upper secondary education", "General upper secondary education (general: *gimnazija* and classical *gimnazija*; *gimnazija* with specialisation: technical *gimnazija*, *gimnazija* of economics, *gimnazija* of art, international *gimnazija*)", "Vocational course and vocational *matura*" and "Matura course and general *matura*" and comprises Grades 10 to 13 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Census.

Sample sizes: 30 schools were selected for the field trial; 144 schools were selected for the main survey.

Method of sample selection: Census.

Measure of size: Number of ISCED level 3 students in schools.

Explicit stratification: Organised by school type with two categories (gymnasium, technical and vocational school) and regions with four categories (central, northeast, southeast, west).

Implicit stratification: Not used.

Data sources: Data used for school sampling were obtained from the Ministry of Education, Science and Sport and referred to school year 2021/22.

Table A D.1. School participation status: survey of principals – Slovenia, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Gymnasium – Northeast	11	0	0	9	0	0	2
Gymnasium – Southeast	8	0	0	8	0	0	0
Gymnasium – Central	16	1	0	12	0	0	3
Gymnasium – West	9	0	0	9	0	0	0
Technical and vocational school – Northeast	26	0	0	20	0	0	6
Technical and vocational school – Southeast	29	2	0	20	0	0	7
Technical and vocational school – Central	22	0	0	15	0	0	7
Technical and vocational school – West	23	1	0	11	0	0	11
Total	**144**	**4**	**0**	**104**	**0**	**0**	**36**

Table A D.2. School participation status: survey of teachers – Slovenia, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Gymnasium – Northeast	11	0	0	11	0	0	0
Gymnasium – Southeast	8	0	0	8	0	0	0
Gymnasium – Central	16	1	0	12	0	0	3
Gymnasium – West	9	0	0	9	0	0	0
Technical and vocational school – Northeast	26	0	0	21	0	0	5

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Technical and vocational school – Southeast	29	2	0	22	0	0	5
Technical and vocational school – Central	22	0	0	18	0	0	4
Technical and vocational school – West	23	1	0	12	0	0	10
Total	**144**	**4**	**0**	**113**	**0**	**0**	**27**

Table A D.3. Teacher participation status – Slovenia, ISCED level 3

Participation status	Teachers
Participated	2 717
Absent	539
Left school permanently	15
Not part of sample	23
Total	**3 294**

Unclassified - Non classifié

Türkiye: ISCED level 3

ISCED level 3 in Türkiye consists of “General upper secondary school”, “Open high school”, “Music and stage arts high school”, “Vocational and technical upper secondary school”, “Vocational education centers”, “Anatolian imam and preacher high school”, “Open vocational high school” and “Imam and preacher open high school” and comprises Grades 9 to 12/13 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 3 teachers, then adjusted to select a minimum of eight schools in the smaller strata.

Sample sizes: 35 schools were selected for the field trial; 204 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 3 teachers in schools.

Explicit stratification: Organised by funding with two categories (public, private) and region with 12 categories for public schools.

Implicit stratification: Organised by school type with three categories (Anatolian high school, vocational high school, religious high school) for public schools.

Data sources: Data used for school sampling were obtained from the Ministry of National Education and referred to school year 2022/23.

Table A D.1. School participation status: survey of principals – Türkiye, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Istanbul Region	24	0	0	23	0	0	1
Public – West Marmara Region	8	0	0	8	0	0	0
Public – Aegean Region	20	1	0	19	0	0	0
Public – East Marmara Region	16	0	0	15	0	0	1
Public – West Anatolia Region	16	0	0	16	0	0	0
Public – Mediterranean Region	24	0	0	24	0	0	0
Public – Central Anatolia Region	10	0	0	10	0	0	0
Public – West Black Sea Region	12	0	0	10	0	0	2
Public – East Black Sea Region	8	0	0	8	0	0	0
Public – Northeast Anatolia Region	8	0	0	8	0	0	0
Public – Central East Anatolia Region	10	0	0	10	0	0	0
Public – Southeast Anatolia Region	20	0	0	20	0	0	0
Private	28	0	0	26	0	0	2
Total	**204**	**1**	**0**	**197**	**0**	**0**	**6**

Table A D.2. School participation status: survey of teachers – Türkiye, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – Istanbul Region	24	0	0	24	0	0	0
Public – West Marmara Region	8	0	0	8	0	0	0
Public – Aegean Region	20	1	0	18	0	0	1
Public – East Marmara Region	16	0	0	16	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
Public – West Anatolia Region	16	0	0	16	0	0	0
Public – Mediterranean Region	24	0	0	24	0	0	0
Public – Central Anatolia Region	10	0	0	10	0	0	0
Public – West Black Sea Region	12	0	0	12	0	0	0
Public – East Black Sea Region	8	0	0	8	0	0	0
Public – Northeast Anatolia Region	8	0	0	7	0	0	1
Public – Central East Anatolia Region	10	0	0	10	0	0	0
Public – Southeast Anatolia Region	20	0	0	20	0	0	0
Private	28	0	0	28	0	0	0
Total	**204**	**1**	**0**	**201**	**0**	**0**	**2**

Table A D.3. Teacher participation status – Türkiye, ISCED level 3

Participation status	Teachers
Participated	4 976
Absent	236
Left school permanently	11
Not part of sample	23
Total	**5 246**

Unclassified - Non classifié

United Arab Emirates: ISCED level 3

ISCED level 3 in the United Arab Emirates consists of "General secondary cycle" and "Second cycle of vocational secondary" and comprises Grades 9 to 12 (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to improve overlap control between ISCED levels.

Sample sizes: 30 schools were selected for the field trial; 216 schools were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to school size.

Measure of size: Number of ISCED level 3 teachers in schools.

Explicit stratification: Organised by overlap with three categories (ISCED 3 only; ISCED 2 and ISCED 3; ISCED 1, ISCED 2 and ISCED 3) and emirates with three categories (Abu Dhabi, Dubai, other emirates).

Implicit stratification: Organised by language with two categories (Arabic, English).

Data sources: Data used for school sampling were obtained from the Ministry of Education and referred to school year 2023/24.

Table A D.1. School participation status: survey of principals – United Arab Emirates, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 3 only – Abu Dhabi	8	1	0	7	0	0	0
ISCED 3 only – Dubai	2	0	0	2	0	0	0
ISCED 3 only – Other emirates	4	0	0	4	0	0	0
ISCED 2 and ISCED 3 – Abu Dhabi	14	3	0	11	0	0	0
ISCED 2 and ISCED 3 – Dubai	4	0	0	4	0	0	0
ISCED 2 and ISCED 3 – Other emirates	10	0	0	10	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Abu Dhabi	80	6	0	71	0	0	3
ISCED 1, ISCED 2 and ISCED 3 – Dubai	26	0	0	26	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Other emirates	68	5	0	62	0	0	1
Total	**216**	**15**	**0**	**197**	**0**	**0**	**4**

Table A D.2. School participation status: survey of teachers – United Arab Emirates, ISCED level 3

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 3 only – Abu Dhabi	8	1	0	7	0	0	0
ISCED 3 only – Dubai	2	0	0	2	0	0	0
ISCED 3 only – Other emirates	4	0	0	4	0	0	0
ISCED 2 and ISCED 3 – Abu Dhabi	14	3	0	11	0	0	0
ISCED 2 and ISCED 3 – Dubai	4	0	0	4	0	0	0
ISCED 2 and ISCED 3 – Other emirates	10	0	0	10	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Abu Dhabi	80	6	0	73	0	0	1

Unclassified - Non classifié

Explicit stratum	Total sampled schools	Ineligible schools	Excluded schools	Participating sampled schools	Participating first replacements	Participating second replacements	Non-participating schools
ISCED 1, ISCED 2 and ISCED 3 – Dubai	26	0	0	26	0	0	0
ISCED 1, ISCED 2 and ISCED 3 – Other emirates	68	5	0	63	0	0	0
Total	**216**	**15**	**0**	**200**	**0**	**0**	**1**

Table A D.3. Teacher participation status – United Arab Emirates, ISCED level 3

Participation status	Teachers
Participated	4 228
Absent	50
Left school permanently	11
Not part of sample	1
Total	**4 290**

Unclassified - Non classifié

Characteristics of national samples, ISCED level 02

Chile: ISCED level 02

ISCED level 02 in Chile consists of "Pre-primary education (upper middle level, 1st transition level and 2nd transition level)" (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 02 children, then adjusted to select a minimum of eight settings in the smaller strata.

Sample sizes: 50 settings were selected for the field trial; 205 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of ISCED level 02 children in settings.

Explicit stratification: Organised by overlap with two categories (ISCED level 02 only, ISCED levels 02 and 2), by setting type with seven categories (public school, private school with public funds, private school, Integra kindergarten, Junji kindergarten, private kindergarten, public funds delegated administration kindergarten) and size with two categories (small schools, big schools) for ISCED level 02 and ISCED level 2 settings.

Implicit stratification: Not used.

Data sources: Data used for setting sampling were obtained from the Undersecretariat of Early Childhood Education and referred to 2021.

Table A D.1. Setting participation status: survey of leaders – Chile, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only – Public school	8	0	0	8	0	0	0
ISCED 02 only – Private school with public funds	8	1	0	7	0	0	0
ISCED 02 only – Private school	8	2	0	3	1	0	2
ISCED 02 only – Integra kindergarten	14	2	0	11	1	0	0
ISCED 02 only – Junji kindergarten	10	0	0	9	0	0	1
ISCED 02 only – Private kindergarten	8	0	0	6	0	1	1
ISCED 02 only – Public funds, delegated administration kindergarten	16	1	0	13	1	1	0
ISCED 02 and ISCED 2 – Public school – Small schools	30	0	0	25	4	0	1
ISCED 02 and ISCED 2 – Public school – Big schools	16	0	0	8	1	0	7
ISCED 02 and ISCED 2 – Private school with public funds – Small schools	26	1	1	15	3	1	5
ISCED 02 and ISCED 2 – Private school with public funds – Big schools	39	0	0	20	6	1	12
ISCED 02 and ISCED 2 – Private school – Small schools	8	1	0	4	1	0	2
ISCED 02 and ISCED 2 – Private school – Big schools	14	0	0	6	2	1	5
Total	**205**	**8**	**1**	**135**	**20**	**5**	**36**

Unclassified - Non classifié

Table A D.2. Setting participation status: survey of staff – Chile, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only – Public school	8	0	0	8	0	0	0
ISCED 02 only – Private school with public funds	8	1	0	6	0	0	1
ISCED 02 only – Private school	8	2	0	2	1	0	3
ISCED 02 only – Integra kindergarten	14	2	0	9	1	0	2
ISCED 02 only – Junji kindergarten	10	0	0	9	0	0	1
ISCED 02 only – Private kindergarten	8	0	0	6	0	0	2
ISCED 02 only – Public funds, delegated administration kindergarten	16	1	0	12	1	1	1
ISCED 02 and ISCED 2 – Public school – Small schools	30	0	0	23	5	0	2
ISCED 02 and ISCED 2 – Public school – Big schools	16	0	0	8	2	0	6
ISCED 02 and ISCED 2 – Private school with public funds – Small schools	26	1	1	13	3	1	7
ISCED 02 and ISCED 2 – Private school with public funds – Big schools	39	0	0	14	5	1	19
ISCED 02 and ISCED 2 – Private school – Small schools	8	1	0	4	0	0	3
ISCED 02 and ISCED 2 – Private school – Big schools	14	0	0	5	2	1	6
Total	**205**	**8**	**1**	**119**	**20**	**4**	**53**

Table A D.3. Staff participation status – Chile, ISCED level 02

Participation status	Staff
Participated	741
Absent	100
Left setting permanently	0
Not part of sample	0
Total	**841**

Unclassified - Non classifié

Colombia: ISCED level 02

ISCED level 02 in Colombia consists of "Early childhood educational development" and "Pre-primary level: grades of pre-K, Kindergarten and transition (or grade zero)" (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 02 children.

Sample sizes: 42 settings were selected for the field trial; 230 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of ISCED level 02 children in settings.

Explicit stratification: Organised by overlap with two categories (ISCED level 02 only, ISCED levels 02 and 2), funding with two categories (public, private), urbanisation with two categories (urban, rural) for public schools and responsibility with two categories (Colombian Institute for Family Welfare [ICBF], Ministry of National Education [SIMAT MEN]).

Implicit stratification: Not used.

Data sources: Data used for setting sampling were obtained from the Columbian Institute for Family Welfare and the Ministry of National Education and referred to 2023.

Table A D.1. Setting participation status: survey of leaders – Colombia, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only – Public – Urban – ICBF	98	0	0	50	10	2	36
ISCED 02 only – Public – Urban – SIMAT MEN	28	0	0	17	4	0	7
ISCED 02 only – Public – Rural – ICBF	16	0	0	7	1	0	8
ISCED 02 only – Public – Rural – SIMAT MEN	14	0	0	7	2	0	5
ISCED 02 only – Private – SIMAT MEN	22	0	0	4	7	1	10
ISCED 02 and ISCED 2 – Public – Urban – SIMAT MEN	24	0	0	20	1	0	3
ISCED 02 and ISCED 2 – Public – Rural – SIMAT MEN	10	0	0	6	1	0	3
ISCED 02 and ISCED 2 – Private – SIMAT MEN	18	0	0	16	1	0	1
Total	**230**	**0**	**0**	**127**	**27**	**3**	**73**

Table A D.2. Setting participation status: survey of staff – Colombia, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only – Public – Urban – ICBF	98	0	0	48	8	2	40
ISCED 02 only – Public – Urban – SIMAT MEN	28	0	0	17	4	0	7
ISCED 02 only – Public – Rural – ICBF	16	0	0	6	1	0	9

Unclassified - Non classifié

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only – Public – Rural – SIMAT MEN	14	0	0	7	2	0	5
ISCED 02 only – Private – SIMAT MEN	22	0	0	5	7	0	10
ISCED 02 and ISCED 2 – Public – Urban – SIMAT MEN	24	0	0	20	1	0	3
ISCED 02 and ISCED 2 – Public – Rural – SIMAT MEN	10	0	0	6	1	0	3
ISCED 02 and ISCED 2 – Private – SIMAT MEN	18	0	0	14	1	0	3
Total	**230**	**0**	**0**	**123**	**25**	**2**	**80**

Table A D.3. Staff participation status – Colombia, ISCED level 02

Participation status	Staff
Participated	553
Absent	27
Left setting permanently	2
Not part of sample	0
Total	**582**

Unclassified - Non classifié

Denmark: ISCED level 02

The target population comprises metropolitan Denmark, not including the autonomous territories of the Faroe Islands and Greenland.

ISCED level 02 in Denmark consists of "Kindergarten" (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between small, medium-sized and large settings.

Sample sizes: 30 settings were selected for the field trial; 186 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of ISCED level 02 children in settings.

Explicit stratification: Organised by size with three categories (small setting, medium-sized setting, large setting).

Implicit stratification: Organised by funding with three categories (public, self-governing, private).

Data sources: Data used for setting sampling were obtained from the National Agency for IT and Learning and referred to 2020.

Table A D.1. Setting participation status: survey of leaders – Denmark, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Small settings	30	2	0	12	7	3	6
Medium-sized settings	80	1	0	42	12	12	13
Large settings	76	1	0	47	9	6	13
Total	**186**	**4**	**0**	**101**	**28**	**21**	**32**

Table A D.2. Setting participation status: survey of staff – Denmark, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Small settings	30	2	0	12	8	3	5
Medium-sized settings	80	1	0	41	11	12	15
Large settings	76	1	0	47	8	6	14
Total	**186**	**4**	**0**	**100**	**27**	**21**	**34**

Table A D.3. Staff participation status – Denmark, ISCED level 02

Participation status	Staff
Participated	946
Absent	111
Left setting permanently	41
Not part of sample	59
Total	**1 157**

Unclassified - Non classifié

Finland: ISCED level 02

ISCED level 02 in Finland consists of "Centre-based early childhood education and care [ECEC] activities (3-5 year-old children)", "Family day care (3-5 year-old children)" and "Pre-primary education for 6-year-old children in ECEC centres and comprehensive schools" (UNESCO Institute of Statistics, 2017[1]). Family day care settings are home-based settings that do not belong to the Teaching and Learning International Survey (TALIS) ISCED level 02 target population.

Sample allocation: Disproportional allocation to allow comparisons between Finnish and Swedish settings and between urban/semi-urban and rural settings.

Sample sizes: 32 settings were selected for the field trial; 220 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of ISCED level 02 children in settings.

Explicit stratification: Organised by language with two categories (Finnish, Swedish), by region with four categories (Helsinki/Uusimaa, Northern and Eastern, Southern, Western) for Finnish schools and by urbanisation with two categories (urban and semi-urban, rural) for Finnish schools in Northern and Eastern, Southern, and Western and for Swedish schools.

Implicit stratification: Organised by region with four categories (Eastern, Northern, Lapland, Western and Inland,) for Finnish settings in Northern and Eastern.

Data sources: Data used for setting sampling were obtained from Statistics Finland and the Finnish National Agency for Education and referred to 2022.

Table A D.1. Setting participation status: survey of leaders – Finland, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Finnish – Helsinki/Uusimaa	62	3	0	53	5	0	1
Finnish – Southern – Urban and semi-urban	30	0	0	27	2	0	1
Finnish – Southern – Rural	8	0	0	8	0	0	0
Finnish – Western – Urban and semi-urban	38	2	0	32	2	0	2
Finnish – Western – Rural	8	0	0	7	0	0	1
Finnish – Northern and Eastern – Urban and semi-urban	32	1	0	30	1	0	0
Finnish – Northern and Eastern – Rural	8	1	0	7	0	0	0
Swedish – Urban and semi-urban	26	1	0	24	0	0	1
Swedish – Rural	8	2	0	6	0	0	0
Total	**220**	**10**	**0**	**194**	**10**	**0**	**6**

Unclassified - Non classifié

Table A D.2. Setting participation status: survey of staff – Finland, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Finnish – Helsinki/Uusimaa	62	3	0	53	5	0	1
Finnish – Southern – Urban and semi-urban	30	0	0	27	2	0	1
Finnish – Southern – Rural	8	0	0	8	0	0	0
Finnish – Western – Urban and semi-urban	38	2	0	32	2	0	2
Finnish – Western – Rural	8	0	0	7	0	0	1
Finnish – Northern and Eastern – Urban and semi-urban	32	1	0	30	1	0	0
Finnish – Northern and Eastern – Rural	8	1	0	7	0	0	0
Swedish – Urban and semi-urban	26	1	0	24	0	0	1
Swedish – Rural	8	2	0	6	0	0	0
Total	**220**	**10**	**0**	**194**	**10**	**0**	**6**

Table A D.3. Staff participation status – Finland, ISCED level 02

Participation status	Staff
Participated	1 386
Absent	67
Left setting permanently	30
Not part of sample	42
Total	**1 525**

Unclassified - Non classifié

Flemish Community (Belgium): ISCED level 02

ISCED level 02 in the Flemish Community of Belgium consists of "European school – regular nursery education" and "Regular nursery education" (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 02 staff.

Sample sizes: 190 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of ISCED level 02 staff in settings.

Explicit stratification: Organised by overlap with two categories (ISCED level 02 only, ISCED levels 02 and 1) and educational network with three categories (education organised by the Flemish Community, government-aided public education, government-aided private education) for ISCED levels 02 and 1 schools.

Implicit stratification: Organised by funding with two categories (public, private).

Data sources: Data used for setting sampling were obtained from the Ministry of Education and Training and referred to school year 2022/23.

Table A D.1. Setting participation status: survey of leaders – Flemish Community (Belgium), ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only	18	0	0	11	3	1	3
ISCED 02 and ISCED 1 – Education organised by the Flemish Community	30	0	0	20	4	1	5
ISCED 02 and ISCED 1 – Government-aided public education	38	0	0	27	5	1	5
ISCED 02 and ISCED 1 – Government-aided private education	104	0	0	64	17	4	19
Total	**190**	**0**	**0**	**122**	**29**	**7**	**32**

Table A D.2. Setting participation status: survey of staff – Flemish Community (Belgium), ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only	18	0	0	11	3	1	3
ISCED 02 and ISCED 1 – Education organised by the Flemish Community	30	0	0	21	5	1	3
ISCED 02 and ISCED 1 – Government-aided public education	38	0	0	27	5	1	5
ISCED 02 and ISCED 1 – Government-aided private education	104	0	0	67	17	5	15
Total	**190**	**0**	**0**	**126**	**30**	**8**	**26**

Unclassified - Non classifié

Table A D.3. Staff participation status – Flemish Community (Belgium), ISCED level 02

Participation status	Staff
Participated	1 143
Absent	135
Left setting permanently	4
Not part of sample	15
Total	**1 297**

Unclassified - Non classifié

Germany: ISCED level 02

ISCED level 02 in Germany consists of “Kindergarten”, “Mixed-age settings (for children aged 3 years to school entry)”, “Family day care (for children aged 3 years to school entry)”, “School kindergarten” and “Preschool classes” (UNESCO Institute of Statistics, 2017[1]). Family day care settings are home-based settings that do not belong to the TALIS ISCED level 02 target population.

Sample allocation: Proportional to the number of ISCED level 02 settings, then adjusted to select a minimum of eight settings in the smaller strata.

Sample sizes: 36 settings were selected for the field trial; 210 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with equal probabilities.

Measure of size: None.

Explicit stratification: Organised by region with two categories (Eastern Germany, Western Germany) and funding with three categories (public, private, missing information).

Implicit stratification: Organised by state with 16 categories and provider with eight categories (public providers, the Workers’ Welfare Association [AWO] or affiliated organisations, the German Red Cross or affiliated organisations, providers affiliated to the Protestant Church, providers affiliated to the Catholic Church, other private non-profit providers, private for-profit providers, missing information).

Data sources: Data used for setting sampling were obtained from the 16 German states and referred to 2022.

Table A D.1. Setting participation status: survey of leaders – Germany, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
U3 and ISCED 02 – Eastern Germany – Public	10	0	0	4	1	0	5
U3 and ISCED 02 – Eastern Germany – Private	22	0	0	11	2	2	7
U3 and ISCED 02 – Eastern Germany – Missing information	10	1	0	4	3	1	1
U3 and ISCED 02 – Western Germany – Public	50	2	0	21	7	6	14
U3 and ISCED 02 – Western Germany – Private	110	9	0	46	13	13	29
U3 and ISCED 02 – Western Germany – Missing information	8	1	0	3	1	0	3
Total	**210**	**13**	**0**	**89**	**27**	**22**	**59**

Table A D.2. Setting participation status: survey of staff – Germany, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
U3 and ISCED 02 – Eastern Germany – Public	10	0	0	4	1	0	5
U3 and ISCED 02 – Eastern Germany – Private	22	0	0	11	2	3	6
U3 and ISCED 02 – Eastern Germany – Missing information	10	1	0	4	3	1	1

Unclassified - Non classifié

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
U3 and ISCED 02 – Western Germany – Public	50	2	0	22	6	6	14
U3 and ISCED 02 – Western Germany – Private	110	9	0	49	14	12	26
U3 and ISCED 02 – Western Germany – Missing information	8	1	0	3	1	0	3
Total	**210**	**13**	**0**	**93**	**27**	**22**	**55**

Table A D.3. Staff participation status – Germany, ISCED level 02

Participation status	Staff
Participated	810
Absent	175
Left setting permanently	11
Not part of sample	3
Total	**999**

Unclassified - Non classifié

Ireland: ISCED level 02

ISCED level 02 in Ireland consists of "Early start" and "Privately provided pre-primary education – Early Childhood Care and Education Scheme and the Community Childcare Subvention Programme" (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between deprivation categories.

Sample sizes: 40 settings were selected for the field trial; 200 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of places in settings.

Explicit stratification: Organised by overlap with two categories (ISCED level 02 only, U3 and ISCED level 02) and deprivation with three categories (disadvantaged, average, affluent). Additional strata with self-representing replacements were created after the survey administration; these replacements would have replaced other participating settings.

Implicit stratification: Organised by region with three categories (Eastern and Midland Region, Northern and Western Region, Southern Region) and urbanisation with two categories (urban, rural).

Data sources: Data used for setting sampling were obtained from the Child and Family Agency and referred to 2023.

Table A D.1. Setting participation status: survey of leaders – Ireland, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only – Disadvantaged	8	0	0	3	0	0	5
ISCED 02 only – Average	40	0	0	16	5	4	15
ISCED 02 only – Affluent	8	0	0	3	1	2	2
U3 and ISCED 02 – Disadvantaged	22	0	0	9	6	2	5
U3 and ISCED 02 – Average	94	2	0	33	13	9	37
U3 and ISCED 02 – Affluent	28	1	0	7	2	3	15
ISCED 02 only – Disadvantaged – Self-representing	2	0	0	0	1	1	0
ISCED 02 only – Average – Self-representing	9	0	0	0	2	7	0
U3 and ISCED 02 – Disadvantaged – Self-representing	5	0	0	0	2	3	0
U3 and ISCED 02 – Average – Self-representing	16	0	0	0	3	11	2
U3 and ISCED 02 – Affluent – Self-representing	1	0	0	0	0	1	0
Total	**233**	**3**	**0**	**71**	**35**	**43**	**81**

Table A D.2. Setting participation status: survey of staff – Ireland, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only – Disadvantaged	8	0	0	5	0	0	3
ISCED 02 only – Average	40	0	0	19	5	5	11

Unclassified - Non classifié

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only – Affluent	8	0	0	3	1	2	2
U3 and ISCED 02 – Disadvantaged	22	0	0	8	7	2	5
U3 and ISCED 02 – Average	94	2	0	38	16	10	28
U3 and ISCED 02 – Affluent	28	1	0	9	3	4	11
ISCED 02 only – Disadvantaged – Self-representing	2	0	0	0	1	1	0
ISCED 02 only – Average – Self-representing	9	0	0	0	2	7	0
U3 and ISCED 02 – Disadvantaged – Self-representing	5	0	0	0	2	3	0
U3 and ISCED 02 – Average – Self-representing	16	0	0	0	3	13	0
U3 and ISCED 02 – Affluent – Self-representing	1	0	0	0	0	1	0
Total	**233**	**3**	**0**	**82**	**40**	**48**	**60**

Table A D.3. Staff participation status – Ireland, ISCED level 02

Participation status	Staff
Participated	690
Absent	225
Left setting permanently	3
Not part of sample	3
Total	**921**

Unclassified - Non classifié

Israel: ISCED level 02

ISCED level 02 in Israel consists of “Pre-primary education, public (supervised by Ministry of Education)”, “Pre-primary education – government-dependent private institutions (supervised by Ministry of Labor)” and “Pre-primary education – private institutions” (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to oversample specific orientations.

Sample sizes: 60 settings were selected for the field trial; 416 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with equal probabilities.

Measure of size: None.

Explicit stratification: Organised by orientation with six categories (Hebrew secular, Hebrew religious, Arabic Arab, Arabic Druze, Arabic Bedouin, Hebrew ultra-Orthodox) and gender with three categories (male, female, mixed) for Hebrew ultra-Orthodox.

Implicit stratification: Organised by region with two categories (north, south) for Arabic Bedouin, socio-economic status with three categories (low, medium, high) for Hebrew secular, Hebrew religious, Arabic Arab, Arabic Druze and Hebrew ultra-Orthodox and age with two categories (not including age 5, including age 5).

Data sources: Data used for setting sampling were obtained from the Ministry of Education and referred to school year 2023/24.

Weighting: The strata “Hebrew ultra-Orthodox – Male”, “Hebrew ultra-Orthodox – Female” and “Hebrew ultra-Orthodox – Mixed” were treated as excluded because few settings participated.

Table A D.1. Setting participation status: survey of leaders – Israel, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Hebrew secular	158	4	0	131	13	0	10
Hebrew religious	82	2	0	65	5	0	10
Arabic Arab	44	0	0	43	1	0	0
Arabic Druze	8	0	0	8	0	0	0
Arabic Bedouin	24	1	0	19	0	0	4
Hebrew ultra-Orthodox – Male	48	0	48	0	0	0	0
Hebrew ultra-Orthodox – Female	44	0	44	0	0	0	0
Hebrew ultra-Orthodox – Mixed	8	0	8	0	0	0	0
Total	**416**	**7**	**100**	**266**	**19**	**0**	**24**

Table A D.2. Setting participation status: survey of staff – Israel, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Hebrew secular	158	4	0	133	13	0	8
Hebrew religious	82	2	0	67	6	0	7
Arabic Arab	44	0	0	43	1	0	0
Arabic Druze	8	0	0	8	0	0	0
Arabic Bedouin	24	1	0	20	0	0	3
Hebrew ultra-Orthodox – Male	48	0	48	0	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Hebrew ultra-Orthodox – Female	44	0	44	0	0	0	0
Hebrew ultra-Orthodox – Mixed	8	0	8	0	0	0	0
Total	**416**	**7**	**100**	**271**	**20**	**0**	**18**

Table A D.3. Staff participation status – Israel, ISCED level 02

Participation status	Staff
Participated	1 153
Absent	186
Left setting permanently	0
Not part of sample	1
Total	**1 340**

Unclassified - Non classifié

Japan: ISCED level 02

ISCED level 02 in Japan consists of "Integrated centre for early childhood education and care", "Kindergarten" and "Day care centre" (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between setting types and between public and private settings.

Sample sizes: 33 settings were selected for the field trial; 200 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of ISCED level 02 staff in settings.

Explicit stratification: Organised by setting type with three categories (kindergarten, nursery centre, centre of ECEC) and by funding with two categories (public, private).

Implicit stratification: Organised by urbanisation with two categories (major city, no major city).

Data sources: Data used for setting sampling were obtained from the Ministry of Education, Culture, Sports, Science and Technology, the Ministry of Health, Labour and Welfare and the Cabinet Office and referred to 2021.

Table A D.1. Setting participation status: survey of leaders – Japan, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Kindergarten – Public	30	1	0	22	5	1	1
Kindergarten – Private	30	0	0	15	5	7	3
Nursery centre – Public	30	0	0	23	7	0	0
Nursery centre – Private	40	0	0	24	11	2	3
Centre of ECEC – Public	30	0	0	28	1	1	0
Centre of ECEC – Private	40	0	0	30	6	1	3
Total	**200**	**1**	**0**	**142**	**35**	**12**	**10**

Table A D.2. Setting participation status: survey of staff – Japan, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Kindergarten – Public	30	1	0	22	5	1	1
Kindergarten – Private	30	0	0	15	5	7	3
Nursery centre – Public	30	0	0	23	7	0	0
Nursery centre – Private	40	0	0	24	11	2	3
Centre of ECEC – Public	30	0	0	28	1	1	0
Centre of ECEC – Private	40	0	0	30	6	1	3
Total	**200**	**1**	**0**	**142**	**35**	**12**	**10**

Unclassified - Non classifié

Table A D.3. Staff participation status – Japan, ISCED level 02

Participation status	Staff
Participated	1 283
Absent	14
Left setting permanently	5
Not part of sample	12
Total	**1 314**

Unclassified - Non classifié

Morocco: ISCED level 02

ISCED level 02 in Morocco consists of "*Enseignement préscolaire*" (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between regions.

Sample sizes: 60 settings were selected for the field trial; 500 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with equal probabilities.

Measure of size: None.

Explicit stratification: Organised by region with ten categories.

Implicit stratification: Organised by setting type with four categories (public, private, unstructured schools, schools with partnership) and urbanisation with two categories (urban, rural).

Data sources: Data used for setting sampling were obtained from the Ministry of National Education and referred to school year 2021/22.

Table A D.1. Setting participation status: survey of leaders – Morocco, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Tanger-Tetouan-Al Hoceima	54	6	0	42	5	0	1
Oriental	34	4	0	30	0	0	0
Fès-Meknès	54	6	0	48	0	0	0
Rabat-Salé-Kénitra	58	8	0	42	7	0	1
Béni Mellal-Khénifra	34	3	0	30	0	0	1
Casablanca-Settat	74	5	0	69	0	0	0
Marrakech-Safi	68	7	0	55	4	0	2
Drâa-Tafilalet	38	7	0	31	0	0	0
Souss-Massa	56	15	0	35	5	0	1
South	30	2	0	25	1	0	2
Total	**500**	**63**	**0**	**407**	**22**	**0**	**8**

Table A D.2. Setting participation status: survey of staff – Morocco, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Tanger-Tetouan-Al Hoceima	54	6	0	42	5	0	1
Oriental	34	4	0	29	0	0	1
Fès-Meknès	54	6	0	47	0	0	1
Rabat-Salé-Kénitra	58	8	0	42	7	0	1
Béni Mellal-Khénifra	34	3	0	30	0	0	1
Casablanca-Settat	74	5	0	69	0	0	0
Marrakech-Safi	68	7	0	55	4	0	2
Drâa-Tafilalet	38	7	0	31	0	0	0
Souss-Massa	56	15	0	35	5	0	1
South	30	2	0	26	1	0	1
Total	**500**	**63**	**0**	**406**	**22**	**0**	**9**

Unclassified - Non classifié

Table A D.3. Staff participation status – Morocco, ISCED level 02

Participation status	Staff
Participated	954
Absent	9
Left setting permanently	13
Not part of sample	3
Total	**979**

Unclassified - Non classifié

New Zealand: ISCED level 02

The target population comprises New Zealand, not including the associated states Cook Islands and Niue or the dependent territory Tokelau.

ISCED level 02 in New Zealand consists of "Centre-based early childhood education" and "Kōhanga Reo" (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between setting types.

Sample sizes: 57 settings were selected for the field trial; 216 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of staff in ISCED level 02 settings.

Explicit stratification: Organised by overlap with two categories (ISCED level 02 only, U3 and ISCED level 02) and setting type with four categories (education and care service, free kindergarten, playcentre, Te Kōhanga Reo [Māori language immersion environment for children and families]) for U3 and ISCED level 02 settings.

Implicit stratification: Organised by setting type with three categories (education and care service, free kindergarten, Te Kōhanga Reo [Māori language immersion environment for children and families]) for ISCED level 02 only settings and region with four categories (central northern, central southern, northern, southern).

Data sources: Data used for setting sampling were obtained from the Ministry of Education and referred to 2022.

Weighting: Due to very low participation rates, it was decided to calculate weights without non-response adjustments. The resulting outcomes represent the part of the population that would have participated in TALIS, given they were sampled. Stratum "U3 and ISCED level 02 – Te Kōhanga Reo (Māori language immersion environment for children and families)" was treated as excluded because no setting participated.

Table A D.1. Setting participation status: survey of leaders – New Zealand, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only	18	0	0	4	0	1	13
U3 and ISCED 02 – Education and care service	108	2	0	25	2	1	78
U3 and ISCED 02 – Free kindergarten	30	0	0	1	1	0	28
U3 and ISCED 02 – Playcentre	30	0	0	3	0	0	27
U3 and ISCED 02 – Te Kōhanga Reo (Māori language immersion environment for children and families)	30	1	29	0	0	0	0
Total	**216**	**3**	**29**	**33**	**3**	**2**	**146**

Unclassified - Non classifié

Table A D.2. Setting participation status: survey of staff – New Zealand, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
ISCED 02 only	18	0	0	5	0	1	12
U3 and ISCED 02 – Education and care service	108	2	0	22	2	0	82
U3 and ISCED 02 – Free kindergarten	30	0	0	1	1	0	28
U3 and ISCED 02 – Playcentre	30	0	0	3	0	0	27
U3 and ISCED 02 – Te Kōhanga Reo (Māori language immersion environment for children and families)	30	1	29	0	0	0	0
Total	**216**	**3**	**29**	**31**	**3**	**1**	**149**

Table A D.3. Staff participation status – New Zealand, ISCED level 02

Participation status	Staff
Participated	163
Absent	60
Left setting permanently	2
Not part of sample	0
Total	**225**

Unclassified - Non classifié

Norway: ISCED level 02

ISCED level 02 in Norway consists of "Kindergartens and family kindergartens, 3-5 years" (UNESCO Institute of Statistics, 2017[1]). Family kindergartens are home-based settings that do not belong to the TALIS ISCED level 02 target population.

Sample allocation: Proportional to the number of staff, then adjusted to select a minimum of eight settings in the smaller strata.

Sample sizes: 33 settings were selected for the field trial; 191 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of staff in ISCED level 02 settings.

Explicit stratification: Organised by funding with two categories (public, private) and number of inhabitants with three categories (fewer than 5 000 inhabitants, 5 000 to 19 999 inhabitants, 20 000 or more inhabitants).

Implicit stratification: Organised by region with four categories (Central and Northern Norway, Eastern Norway, Greater Oslo Region, Southern and Western Norway,).

Data sources: Data used for setting sampling were obtained from the Norwegian Directorate for Education and Training and referred to 2021.

Table A D.1. Setting participation status: survey of leaders – Norway, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Public – Fewer than 5 000 inhabitants	12	0	0	5	1	2	4
Public – 5 000 to 19 999 inhabitants	25	1	0	10	3	1	10
Public – 20 000 or more inhabitants	60	2	0	17	5	1	35
Private – Fewer than 5 000 inhabitants	8	1	0	2	0	0	5
Private – 5 000 to 19 999 inhabitants	18	0	0	6	0	2	10
Private – 20 000 or more inhabitants	68	1	0	17	9	3	38
Total	**191**	**5**	**0**	**57**	**18**	**9**	**102**

Table A D.2. Setting participation status: survey of staff – Norway, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Public – Fewer than 5 000 inhabitants	12	0	0	4	1	2	5
Public – 5 000 to 19 999 inhabitants	25	1	0	10	2	0	12
Public – 20 000 or more inhabitants	60	2	0	13	3	1	41
Private – Fewer than 5 000 inhabitants	8	1	0	1	0	0	6
Private – 5 000 to 19 999 inhabitants	18	0	0	6	0	2	10
Private – 20 000 or more inhabitants	68	1	0	13	7	3	44
Total	**191**	**5**	**0**	**47**	**13**	**8**	**118**

Unclassified - Non classifié

Table A D.3. Staff participation status – Norway, ISCED level 02

Participation status	Staff
Participated	377
Absent	145
Left setting permanently	0
Not part of sample	0
Total	**522**

Unclassified - Non classifié

Spain: ISCED level 02

ISCED level 02 in Spain consists of “Early childhood education – Second cycle” (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to allow comparisons between some of the communities.

Sample sizes: 32 settings were selected for the field trial; 498 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of ISCED level 02 staff in settings.

Explicit stratification: Organised by community with nine categories (Andalusia, Asturias, Balearic Islands, Canary Islands, Cantabria, Catalonia, La Rioja, Valencian Community, other communities), overlap with two categories (ISCED level 02 only, ISCED levels 02 and 1) and overlap with four categories (with ISCED level 2, without ISCED level 2, big schools without ISCED level 2, small schools without ISCED level 2) for Cantabria and La Rioja ISCED levels 02 and 1 schools.

Implicit stratification: Organised by community with 18 categories and funding with 2 categories (public, private) for ISCED levels 02 and 1 school.

Data sources: Data used for setting sampling were obtained from the autonomous communities and referred to school year 2021/22.

Table A D.1. Setting participation status: survey of leaders – Spain, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Andalusia – ISCED 02 only	8	0	0	8	0	0	0
Andalusia – ISCED 02 and ISCED 1	42	0	0	41	0	0	1
Asturias – ISCED 02 only	5	0	0	5	0	0	0
Asturias – ISCED 02 and ISCED 1	46	0	0	46	0	0	0
Balearic Islands – ISCED 02 only	8	0	0	8	0	0	0
Balearic Islands – ISCED 02 and ISCED 1	42	0	0	42	0	0	0
Canary Islands – ISCED 02 only	8	1	0	7	0	0	0
Canary Islands – ISCED 02 and ISCED 1	42	2	0	38	0	0	2
Cantabria – ISCED 02 only	8	0	0	7	0	0	1
Cantabria – ISCED 02 and ISCED 1 – With ISCED 2	9	0	0	8	0	0	1
Cantabria – ISCED 02 and ISCED 1 – Without ISCED 2	34	0	0	34	0	0	0
Catalonia – ISCED 02 only	8	3	0	5	0	0	0
Catalonia – ISCED 02 and ISCED 1	42	1	0	41	0	0	0
La Rioja – ISCED 02 only	1	0	0	1	0	0	0
La Rioja – ISCED 02 and ISCED 1 – With ISCED 2	12	0	0	12	0	0	0
La Rioja – ISCED 02 and ISCED 1 – Big schools without ISCED 2	16	0	0	15	0	0	1
La Rioja – ISCED 02 and ISCED 1 – Small schools without ISCED 2	21	0	0	21	0	0	0
Valencian Community – ISCED 02 only	8	0	0	8	0	0	0
Valencian Community – ISCED 02 and ISCED 1	42	0	0	42	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Other communities – ISCED 02 only	8	1	0	7	0	0	0
Other communities – ISCED 02 and ISCED 1	88	0	0	85	0	0	3
Total	**498**	**8**	**0**	**481**	**0**	**0**	**9**

Table A D.2. Setting participation status: survey of staff – Spain, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Andalusia – ISCED 02 only	8	0	0	8	0	0	0
Andalusia – ISCED 02 and ISCED 1	42	0	0	42	0	0	0
Asturias – ISCED 02 only	5	0	0	5	0	0	0
Asturias – ISCED 02 and ISCED 1	46	0	0	46	0	0	0
Balearic Islands – ISCED 02 only	8	0	0	8	0	0	0
Balearic Islands – ISCED 02 and ISCED 1	42	0	0	42	0	0	0
Canary Islands – ISCED 02 only	8	1	0	7	0	0	0
Canary Islands – ISCED 02 and ISCED 1	42	2	0	40	0	0	0
Cantabria – ISCED 02 only	8	0	0	8	0	0	0
Cantabria – ISCED 02 and ISCED 1 – With ISCED 2	9	0	0	9	0	0	0
Cantabria – ISCED 02 and ISCED 1 – Without ISCED 2	34	0	0	34	0	0	0
Catalonia – ISCED 02 only	8	3	0	5	0	0	0
Catalonia – ISCED 02 and ISCED 1	42	1	0	41	0	0	0
La Rioja – ISCED 02 only	1	0	0	1	0	0	0
La Rioja – ISCED 02 and ISCED 1 – With ISCED 2	12	0	0	12	0	0	0
La Rioja – ISCED 02 and ISCED 1 – Big schools without ISCED 2	16	0	0	16	0	0	0
La Rioja – ISCED 02 and ISCED 1 – Small schools without ISCED 2	21	0	0	21	0	0	0
Valencian Community – ISCED 02 only	8	0	0	7	0	0	1
Valencian Community – ISCED 02 and ISCED 1	42	0	0	42	0	0	0
Other communities – ISCED 02 only	8	1	0	7	0	0	0
Other communities – ISCED 02 and ISCED 1	88	0	0	88	0	0	0
Total	**498**	**8**	**0**	**489**	**0**	**0**	**1**

Table A D.3. Staff participation status – Spain, ISCED level 02

Participation status	Staff
Participated	3 576
Absent	122
Left setting permanently	11
Not part of sample	57
Total	**3 766**

Unclassified - Non classifié

Sweden: ISCED level 02

ISCED level 02 in Sweden consists of “Preschool classes” and “Preschool, for children 3 years of age or older” (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Disproportional allocation to increase the sample size for pre-schools and allow comparisons between pre-schools and pre-school classes.

Sample sizes: 38 settings were selected for the field trial; 218 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of ISCED level 02 children in settings.

Explicit stratification: Organised by setting type with three categories (pre-school, pre-school class, pre-school class and ISCED level 2 school) and funding with two categories (public, private).

Implicit stratification: Not used.

Data sources: Data used for setting sampling were obtained from the Swedish National Agency for Education and referred to school year 2021/22.

Table A D.1. Setting participation status: survey of leaders – Sweden, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Preschool – Public	142	3	0	128	2	0	9
Preschool – Private	38	0	0	38	0	0	0
Preschool class – Public	14	1	0	12	0	0	1
Preschool class – Private	8	0	0	6	0	0	2
Preschool class and ISCED 2 school – Public	8	0	0	5	0	0	3
Preschool class and ISCED 2 school – Private	8	1	0	6	0	0	1
Total	**218**	**5**	**0**	**195**	**2**	**0**	**16**

Table A D.2. Setting participation status: survey of staff – Sweden, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Preschool – Public	142	3	0	135	2	0	2
Preschool – Private	38	0	0	37	0	0	1
Preschool class – Public	14	1	0	13	0	0	0
Preschool class – Private	8	0	0	7	0	0	1
Preschool class and ISCED 2 school – Public	8	0	0	7	0	0	1
Preschool class and ISCED 2 school – Private	8	1	0	7	0	0	0
Total	**218**	**5**	**0**	**206**	**2**	**0**	**5**

Unclassified - Non classifié

Table A D.3. Staff participation status – Sweden, ISCED level 02

Participation status	Staff
Participated	1 219
Absent	198
Left setting permanently	18
Not part of sample	31
Total	**1 466**

Unclassified - Non classifié

Türkiye: ISCED level 02

ISCED level 02 in Türkiye consists of “Pre-primary education (ages 3-5)” (UNESCO Institute of Statistics, 2017[1]).

Sample allocation: Proportional to the number of ISCED level 02 staff, then adjusted to select a minimum of eight settings in the smaller strata.

Sample sizes: 59 settings were selected for the field trial; 278 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of ISCED level 02 staff in settings.

Explicit stratification: Organised by funding with 2 categories (public, private) and region with 12 categories.

Implicit stratification: Not used.

Data sources: Data used for setting sampling were obtained from the Ministry of National Education and referred to school year 2022/23.

Table A D.1. Setting participation status: survey of leaders – Türkiye, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Public – Istanbul Region	22	1	0	21	0	0	0
Public – West Marmara Region	8	0	0	8	0	0	0
Public – Aegean Region	22	1	0	21	0	0	0
Public – East Marmara Region	18	0	0	18	0	0	0
Public – West Anatolia Region	14	0	0	14	0	0	0
Public – Mediterranean Region	26	0	0	26	0	0	0
Public – Central Anatolia Region	10	0	0	10	0	0	0
Public – West Black Sea Region	10	0	0	10	0	0	0
Public – East Black Sea Region	8	0	0	8	0	0	0
Public – Northeast Anatolia Region	8	0	0	8	0	0	0
Public – Central East Anatolia Region	10	0	0	10	0	0	0
Public – Southeast Anatolia Region	26	0	0	26	0	0	0
Private – Istanbul Region	8	0	0	8	0	0	0
Private – West Marmara Region	8	1	0	7	0	0	0
Private – Aegean Region	8	0	0	8	0	0	0
Private – East Marmara Region	8	2	0	6	0	0	0
Private – West Anatolia Region	8	0	0	7	0	0	1
Private – Mediterranean Region	8	1	0	7	0	0	0
Private – Central Anatolia Region	8	0	0	8	0	0	0
Private – West Black Sea Region	8	0	0	8	0	0	0
Private – East Black Sea Region	8	0	0	8	0	0	0
Private – Northeast Anatolia Region	8	1	0	6	0	0	1
Private – Central East Anatolia Region	8	0	0	8	0	0	0
Private – Southeast Anatolia Region	8	0	0	6	0	0	2
Total	**278**	**7**	**0**	**267**	**0**	**0**	**4**

Unclassified - Non classifié

Table A D.2. Setting participation status: survey of staff – Türkiye, ISCED level 02

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Public – Istanbul Region	22	1	0	21	0	0	0
Public – West Marmara Region	8	0	0	8	0	0	0
Public – Aegean Region	22	1	0	20	0	0	1
Public – East Marmara Region	18	0	0	18	0	0	0
Public – West Anatolia Region	14	0	0	12	0	0	2
Public – Mediterranean Region	26	0	0	26	0	0	0
Public – Central Anatolia Region	10	0	0	10	0	0	0
Public – West Black Sea Region	10	0	0	10	0	0	0
Public – East Black Sea Region	8	0	0	8	0	0	0
Public – Northeast Anatolia Region	8	0	0	8	0	0	0
Public – Central East Anatolia Region	10	0	0	10	0	0	0
Public – Southeast Anatolia Region	26	0	0	26	0	0	0
Private – Istanbul Region	8	0	0	8	0	0	0
Private – West Marmara Region	8	1	0	6	0	0	1
Private – Aegean Region	8	0	0	8	0	0	0
Private – East Marmara Region	8	2	0	6	0	0	0
Private – West Anatolia Region	8	0	0	8	0	0	0
Private – Mediterranean Region	8	1	0	7	0	0	0
Private – Central Anatolia Region	8	0	0	8	0	0	0
Private – West Black Sea Region	8	0	0	8	0	0	0
Private – East Black Sea Region	8	0	0	8	0	0	0
Private – Northeast Anatolia Region	8	1	0	7	0	0	0
Private – Central East Anatolia Region	8	0	0	8	0	0	0
Private – Southeast Anatolia Region	8	0	0	6	0	0	2
Total	**278**	**7**	**0**	**265**	**0**	**0**	**6**

Table A D.3. Staff participation status – Türkiye, ISCED level 02

Participation status	Staff
Participated	1 289
Absent	21
Left setting permanently	12
Not part of sample	23
Total	**1 345**

Unclassified - Non classifié

Characteristics of national samples, children under three years of age (U3)

Flemish Community (Belgium): U3

Sample allocation: Disproportional allocation to allow comparisons between subsidy types, then adjusted to select a minimum of eight settings in the smaller strata.

Sample sizes: 47 settings were selected for the field trial; 270 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of U3 places in settings.

Explicit stratification: Organised by setting type with two categories (centre-based, home-based) and subsidy type with four categories (basic subsidy + income-related fee + subsidy, basic subsidy + income-related fee, basic subsidy, no subsidy).

Implicit stratification: Not used.

Data sources: Data used for setting sampling were obtained from the agency Growing Up and referred to 2022.

Weighting: The strata "Centre-based settings – No subsidy" and "Home-based settings – No subsidy" were treated as excluded because very few settings participated.

Table A D.1. Setting participation status: survey of leaders – Flemish Community (Belgium), U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Centre-based settings – Basic subsidy + income-related fee + subsidy	22	0	0	9	3	4	6
Centre-based settings – Basic subsidy + income-related fee	116	0	0	46	15	6	49
Centre-based settings – Basic subsidy	40	0	0	5	3	1	31
Centre-based settings – No subsidy	22	1	21	0	0	0	0
Home-based settings – Basic subsidy + income-related fee + subsidy	8	1	0	4	0	1	2
Home-based settings – Basic subsidy + income-related fee	46	2	0	16	6	3	19
Home-based settings – Basic subsidy	8	0	0	1	1	1	5
Home-based settings – No subsidy	8	0	8	0	0	0	0
Total	**270**	**4**	**29**	**81**	**28**	**16**	**112**

Table A D.2. Setting participation status: survey of staff – Flemish Community (Belgium), U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Centre-based settings – Basic subsidy + income-related fee + subsidy	22	0	0	10	2	4	6
Centre-based settings – Basic subsidy + income-related fee	116	0	0	46	15	6	49
Centre-based settings – Basic subsidy	40	0	0	5	4	2	29
Centre-based settings – No subsidy	22	1	21	0	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Home-based settings – Basic subsidy + income-related fee + subsidy	8	1	0	4	0	1	2
Home-based settings – Basic subsidy + income-related fee	46	2	0	16	7	3	18
Home-based settings – Basic subsidy	8	0	0	1	1	1	5
Home-based settings – No subsidy	8	0	8	0	0	0	0
Total	**270**	**4**	**29**	**82**	**29**	**17**	**109**

Table A D.3. Staff participation status – Flemish Community (Belgium), U3

Participation status	Staff
Participated	499
Absent	108
Left setting permanently	18
Not part of sample	13
Total	**638**

Unclassified - Non classifié

Germany: U3

Sample allocation: Proportional to the number of U3 settings, then adjusted to select a minimum of eight settings in the smaller strata.

Sample sizes: 62 settings were selected for the field trial; 270 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with equal probabilities.

Measure of size: None.

Explicit stratification: Organised by overlap with two categories (U3 only, U3 and ISCED level 02), region with two categories (Eastern Germany, Western Germany) for U3 and ISCED level 02 settings and funding with three categories (public, private, missing information) for U3 and ISCED level 02 settings.

Implicit stratification: Organised by region with two categories (Eastern Germany, Western Germany), funding with three categories (public, private, missing information), state with 16 categories and provider with eight categories (public providers, the Workers' Welfare Association [AWO] or affiliated organisations, the German Red Cross or affiliated organisations, providers affiliated to the Protestant Church, providers affiliated to the Catholic Church, other private non-profit providers, private for-profit providers, missing information).

Data sources: Data used for setting sampling were obtained from the 16 German states and referred to 2022.

Table A D.1. Setting participation status: survey of leaders – Germany, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
U3 only	14	1	0	7	1	3	2
U3 and ISCED 02 – Eastern Germany – Public	12	0	0	6	1	0	5
U3 and ISCED 02 – Eastern Germany – Private	26	3	0	11	4	1	7
U3 and ISCED 02 – Eastern Germany – Missing information	12	0	0	7	1	2	2
U3 and ISCED 02 – Western Germany – Public	64	16	0	26	4	7	11
U3 and ISCED 02 – Western Germany – Private	134	25	0	51	17	13	28
U3 and ISCED 02 – Western Germany – Missing information	8	2	0	2	1	0	3
Total	**270**	**47**	**0**	**110**	**29**	**26**	**58**

Table A D.2. Setting participation status: survey of staff – Germany, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
U3 only	14	1	0	7	1	3	2
U3 and ISCED 02 – Eastern Germany – Public	12	0	0	5	1	0	6
U3 and ISCED 02 – Eastern Germany – Private	26	3	0	12	4	1	6

Unclassified - Non classifié

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
U3 and ISCED 02 – Eastern Germany – Missing information	12	0	0	7	1	2	2
U3 and ISCED 02 – Western Germany – Public	64	16	0	27	4	7	10
U3 and ISCED 02 – Western Germany – Private	134	25	0	53	17	13	26
U3 and ISCED 02 – Western Germany – Missing information	8	2	0	1	1	0	4
Total	**270**	**47**	**0**	**112**	**29**	**26**	**56**

Table A D.3. Staff participation status – Germany, U3

Participation status	Staff
Participated	876
Absent	113
Left setting permanently	14
Not part of sample	5
Total	**1 008**

Unclassified - Non classifié

Ireland: U3

Sample allocation: Proportional to the number of places.

Sample sizes: 40 settings were selected for the field trial; 250 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of places in settings.

Explicit stratification: Organised by deprivation with three categories (disadvantaged, average, affluent). Additional strata with self-representing replacements were created after the survey administration; these replacements would have replaced other participating settings.

Implicit stratification: Organised by region with three categories (Eastern and Midland Region, Northern and Western Region, Southern Region) and urbanisation with two categories (urban, rural).

Data sources: Data used for setting sampling were obtained from the Child and Family Agency and referred to 2023.

Table A D.1. Setting participation status: survey of leaders – Ireland, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Disadvantaged	34	1	0	16	5	0	12
Average	166	3	0	67	25	8	63
Affluent	50	3	0	14	6	2	25
Disadvantaged – Self-representing	9	0	0	0	5	3	1
Average – Self-representing	34	0	0	0	13	16	5
Affluent – Self-representing	3	0	0	0	1	2	0
Total	**296**	**7**	**0**	**97**	**55**	**31**	**106**

Table A D.2. Setting participation status: survey of staff – Ireland, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Disadvantaged	34	1	0	17	5	1	10
Average	166	3	0	72	28	10	53
Affluent	50	3	0	18	7	3	19
Disadvantaged – Self-representing	9	0	0	0	5	4	0
Average – Self-representing	34	0	0	0	13	21	0
Affluent – Self-representing	3	0	0	0	1	2	0
Total	**296**	**7**	**0**	**107**	**59**	**41**	**82**

Table A D.3. Staff participation status – Ireland, U3

Participation status	Staff
Participated	899
Absent	284
Left setting permanently	27
Not part of sample	0
Total	**1 210**

Unclassified - Non classifié

Israel: U3

Sample allocation: Disproportional allocation to oversample specific orientations.

Sample sizes: 60 settings were selected for the field trial; 362 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of U3 children in centre-based settings; number of U3 staff in home-based settings.

Explicit stratification: Organised by setting type with two categories (centre-based, home-based), orientation with four categories (Hebrew-speaking, Arabic-speaking, ultra-Orthodox, mixed) and subsidy with two categories (subsidised, not subsidised) for centre-based settings.

Implicit stratification: Organised by socio-economic status with three categories (low, medium, high) and districts with six categories (Haifa, Jerusalem, Tel Aviv, districts other than Jerusalem, districts other than Haifa, districts other than Tel Aviv) for home-based settings Hebrew-speaking high socio-economic status, home-based settings Arabic-speaking, home-based settings ultra-Orthodox high socio-economic status and home-based settings mixed high socio-economic status.

Data sources: Data used for setting sampling were obtained from the Ministry of Education and the Ministry of Labor and referred to school year 2023/24.

Table A D.1. Setting participation status: survey of leaders – Israel, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Centre-based – Hebrew speaking – Subsidised	68	2	1	51	6	3	5
Centre-based – Hebrew speaking – Not subsidised	82	2	2	62	4	1	11
Centre-based – Arabic speaking – Subsidised	36	0	0	33	1	0	2
Centre-based – Arabic speaking – Not subsidised	34	2	0	25	4	1	2
Centre-based – Ultra-Orthodox – Subsidised	32	0	0	20	2	0	10
Centre-based – Ultra-Orthodox – Not subsidised	8	0	0	4	1	0	3
Home-based – Hebrew speaking	20	7	0	12	0	0	1
Home-based – Arabic speaking	40	2	0	28	2	3	5
Home-based – Ultra-Orthodox	26	4	0	15	0	0	7
Home-based – Mixed	16	2	0	11	0	0	3
Total	**362**	**21**	**3**	**261**	**20**	**8**	**49**

Unclassified - Non classifié

Table A D.2. Setting participation status: survey of staff – Israel, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Centre-based – Hebrew speaking – Subsidised	68	2	1	51	6	3	5
Centre-based – Hebrew speaking – Not subsidised	82	2	2	63	5	1	9
Centre-based – Arabic speaking – Subsidised	36	0	0	33	1	0	2
Centre-based – Arabic speaking – Not subsidised	34	2	0	26	5	1	0
Centre-based – Ultra-Orthodox – Subsidised	32	0	0	22	3	0	7
Centre-based – Ultra-Orthodox – Not subsidised	8	0	0	5	1	0	2
Home-based – Hebrew speaking	20	7	0	12	0	0	1
Home-based – Arabic speaking	40	2	0	28	2	3	5
Home-based – Ultra-Orthodox	26	4	0	15	0	0	7
Home-based – Mixed	16	2	0	11	0	0	3
Total	**362**	**21**	**3**	**266**	**23**	**8**	**41**

Table A D.3. Staff participation status – Israel, U3

Participation status	Staff
Participated	1 505
Absent	257
Left setting permanently	20
Not part of sample	7
Total	**1 789**

Unclassified - Non classifié

New Brunswick (Canada): U3

Sample allocation: Disproportional allocation to increase the number of home-based settings.

Sample sizes: 33 settings were selected for the field trial; 254 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of children in U3 settings.

Explicit stratification: Organised by setting type with two categories (centre-based, home-based) and language with two categories (anglophone, francophone).

Implicit stratification: Not used.

Data sources: Data used for setting sampling were obtained from the New Brunswick Department of Education and Early Childhood Development and referred to 2022.

Table A D.1. Setting participation status: survey of leaders – New Brunswick (Canada), U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Home-based – Anglophone	50	9	0	14	0	0	27
Home-based – Francophone	40	2	0	15	3	0	20
Centre-based – Anglophone	104	5	0	18	2	0	79
Centre-based – Francophone	60	3	0	28	2	2	25
Total	**254**	**19**	**0**	**75**	**7**	**2**	**151**

Table A D.2. Setting participation status: survey of staff – New Brunswick (Canada), U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Home-based – Anglophone	50	9	0	14	0	0	27
Home-based – Francophone	40	2	0	15	3	0	20
Centre-based – Anglophone	104	5	0	20	2	0	77
Centre-based – Francophone	60	3	0	30	2	2	23
Total	**254**	**19**	**0**	**79**	**7**	**2**	**147**

Table A D.3. Staff participation status – New Brunswick (Canada), U3

Participation status	Staff
Participated	275
Absent	42
Left setting permanently	19
Not part of sample	10
Total	**346**

Unclassified - Non classifié

New Zealand: U3

The target population comprises New Zealand, not including the associated states Cook Islands and Niue or the dependent territory Tokelau.

Sample allocation: Disproportional allocation to increase the number of home-based settings.

Sample sizes: 55 settings were selected for the field trial; 214 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of staff in U3 settings.

Explicit stratification: Organised by overlap with two categories (U3 only, U3 and ISCED level 02) and setting type with five categories (education and care service, free kindergarten, home-based network, playcentre, Te Kōhanga Reo [Māori language immersion environment for children and families]).

Implicit stratification: Organised by region with four categories (central northern, central southern, northern, southern).

Data sources: Data used for setting sampling were obtained from the Ministry of Education and referred to 2022.

Weighting: Due to very low participation rates, it was decided to calculate weights without non-response adjustments. The resulting outcomes represent the part of the population that would have participated in TALIS, given they were sampled. The strata "U3 and ISCED level 02 – Free kindergarten", "U3 and ISCED level 02 – Playcentre" and "U3 and ISCED level 02 – Te Kōhanga Reo [Māori language immersion environment for children and families]" were treated as excluded because no setting participated.

Table A D.1. Setting participation status: survey of leaders – New Zealand, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
U3 only – Education and care services	8	0	0	4	0	0	4
U3 only – Home-based network	38	8	0	3	0	0	27
U3 and ISCED 02 – Education and care service	110	5	0	21	5	1	78
U3 and ISCED 02 – Free kindergarten	8	0	8	0	0	0	0
U3 and ISCED 02 – Playcentre	26	1	25	0	0	0	0
U3 and ISCED 02 – Te Kōhanga Reo (Māori language immersion environment for children and families)	24	0	24	0	0	0	0
Total	**214**	**14**	**57**	**28**	**5**	**1**	**109**

Table A D.2. Setting participation status: survey of staff – New Zealand, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
U3 only – Education and care services	8	0	0	4	0	0	4
U3 only – Home-based network	38	8	0	3	0	0	27
U3 and ISCED 02 – Education and care service	110	5	0	19	6	1	79
U3 and ISCED 02 – Free kindergarten	8	0	8	0	0	0	0

Unclassified - Non classifié

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
U3 and ISCED 02 – Playcentre	26	1	25	0	0	0	0
U3 and ISCED 02 – Te Kōhanga Reo (Māori language immersion environment for children and families)	24	0	24	0	0	0	0
Total	**214**	**14**	**57**	**26**	**6**	**1**	**110**

Table A D.3. Staff participation status – New Zealand, U3

Participation status	Staff
Participated	164
Absent	56
Left setting permanently	1
Not part of sample	0
Total	**221**

Unclassified - Non classifié

Norway: U3

Sample allocation: Proportional to the number of staff, then adjusted to select a minimum of eight settings in the smaller strata.

Sample sizes: 32 settings were selected for the field trial; 190 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of staff in U3 settings.

Explicit stratification: Organised by funding with two categories (public, private) and number of inhabitants with three categories (fewer than 5 000 inhabitants, 5 000 to 19 999 inhabitants, 20 000 or more inhabitants).

Implicit stratification: Organised by region with four categories (Central and Northern Norway, Eastern Norway, Greater Oslo Region, Southern and Western Norway).

Data sources: Data used for setting sampling were obtained from the Norwegian Directorate for Education and Training and referred to 2021.

Table A D.1. Setting participation status: survey of leaders – Norway, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Public – Fewer than 5 000 inhabitants	12	1	0	1	1	0	9
Public – 5 000 to 19 999 inhabitants	24	0	0	9	6	0	9
Public – 20 000 or more inhabitants	60	1	0	18	4	1	36
Private – Fewer than 5 000 inhabitants	8	0	0	3	1	0	4
Private – 5 000 to 19 999 inhabitants	18	0	0	6	0	2	10
Private – 20 000 or more inhabitants	68	2	0	15	6	3	42
Total	**190**	**4**	**0**	**52**	**18**	**6**	**110**

Table A D.2. Setting participation status: survey of staff – Norway, U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Public – Fewer than 5 000 inhabitants	12	1	0	1	1	0	9
Public – 5 000 to 19 999 inhabitants	24	0	0	9	5	0	10
Public – 20 000 or more inhabitants	60	1	0	16	3	1	39
Private – Fewer than 5 000 inhabitants	8	0	0	2	1	0	5
Private – 5 000 to 19 999 inhabitants	18	0	0	5	0	2	11
Private – 20 000 or more inhabitants	68	2	0	14	6	2	44
Total	**190**	**4**	**0**	**47**	**16**	**5**	**118**

Table A D.3. Staff participation status – Norway, U3

Participation status	Staff
Participated	367
Absent	144
Left setting permanently	0
Not part of sample	3
Total	**514**

Unclassified - Non classifié

Quebec (Canada): U3

Sample allocation: Proportional to the number of children in U3 settings.

Sample sizes: 35 settings were selected for the field trial; 188 settings were selected for the main survey.

Method of sample selection: Systematic random sampling with selection probabilities proportional to setting size.

Measure of size: Number of children in U3 settings.

Explicit stratification: Organised by setting type with two categories (centre-based, home-based) and detailed setting type with four categories (childcare centre, subsidised day care centre, non-subsidised day care centre, home childcare service).

Implicit stratification: Not used.

Data sources: Data used for setting sampling were obtained from the Ministry of Families and referred to 2022.

Table A D.1. Setting participation status: survey of leaders – Quebec (Canada), U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Centre-based – Childcare centre	66	0	0	18	10	10	28
Centre-based – Subsidised day care centre	34	1	0	6	4	2	21
Centre-based – Non-subsidised day care centre	44	0	0	7	3	5	29
Home-based – Home childcare service	44	14	0	7	7	6	10
Total	**188**	**15**	**0**	**38**	**24**	**23**	**88**

Table A D.2. Setting participation status: survey of staff – Quebec (Canada), U3

Explicit stratum	Total sampled settings	Ineligible settings	Excluded settings	Participating sampled settings	Participating first replacements	Participating second replacements	Non-participating settings
Centre-based – Childcare centre	66	0	0	16	11	8	31
Centre-based – Subsidised day care centre	34	1	0	6	6	1	20
Centre-based – Non-subsidised day care centre	44	0	0	7	3	4	30
Home-based – Home childcare service	44	14	0	7	7	6	10
Total	**188**	**15**	**0**	**36**	**27**	**19**	**91**

Table A D.3. Staff participation status – Quebec (Canada), U3

Participation status	Staff
Participated	311
Absent	144
Left setting permanently	14
Not part of sample	7
Total	**476**

Unclassified - Non classifié

References

UNESCO Institute of Statistics (2017), *International Standard Classification of Education (ISCED) Data Mapping*, https://isced.uis.unesco.org/data-mapping/. [1]

Annex E. Listing and tracking forms

This annex presents the listing and tracking forms that were used during the OECD Teaching and Learning International Survey (TALIS) survey administration. In the listing forms, school/setting co-ordinators were asked to list all eligible teachers/staff of their school/setting. The tracking forms indicated which teachers/staff were sampled, and they were used to indicate which teachers/staff participated in the survey.

Unclassified - Non classifié

International Standard Classification of Education (ISCED) levels 1, 2 and 3

Figure A E.1. Listing form for ISCED levels 1, 2 and 3

TALIS 2024 MS - [ISCED Level x] Teacher Listing Form

TALIS Country/Region	
School Name	
School ID	
School Coordinator	

❶	❷	❷	❸	❹	❺	❻
Teacher Name	Sequence Number	Sequence Number	Exemption	Year of Birth	Gender	Main Subject Domain at [ISCED Level x]

③ **Exemption:** 1 = This teacher also took part in the 2023 Field Trial
④ **Year of Birth:** YYYY
⑤ **Gender:** 1 = Female; 2 = Male; 3 = Non-binary/diverse; 9 = Refused
⑥ **Main Subject Domain when teaching classes at [ISCED Level x]:**
1 = Language (mother tongue, foreign language); 2 = Human Sciences (History, Geography, Civics, Economics...); 3 = Mathematics & Science (Physics, Chemistry, Geology, Biology...); 4 = Other (Music, Art, Ethics/Religion, Physical Education, Home Economics...); 9 = Not specified

Unclassified - Non classifié

Figure A E.2. Tracking form for ISCED levels 1, 2 and 3

TALIS 2024 MS [ISCED LEVEL x] Teacher Tracking Form

TALIS Country/Region	
School Name	
School ID	
School Coordinator	

❶	❷	❷	❸	❹	❺	❻	❼	❽
Teacher Name	**Teacher ID**	**Teacher ID**	**Year Of Birth**	**Gender**	**Main Subject Domain for [ISCED Level x] classes**	**Teacher Questionnaire**	**Teacher Questionnaire Mode**	**Teacher Questionnaire Return Status**

③ **Year of Birth:** YYYY; 9999 = Not specified
④ **Gender:**
1 = Female; 2 = Male; 3 = Non-binary/diverse; 9 = Refused
⑤ **Main Subject Domain when teaching [ISCED Level x] classes:**
1 = Language (mother tongue, foreign language) ; 2 = Human Sciences (History, Geography, Civics, Economics...) ;
3 = Mathematics & Science (Physics, Chemistry, Geology, Biology...) ; 4 = Other (Music, Art, Ethics/Religion, Physical Education, Home Economics...); 9 = Not specified
⑥ **Teacher questionnaire:**
FOR CORE SURVEY => A = Form A; B = Form B; C = Form C;
FOR TKS => 1 = Form 1; 2 = Form 2; 3 = Form 3; 4 = Form 4
⑦ **Teacher Questionnaire Mode:**
1 = Online; 2 = Paper
⑧ **Teacher Questionnaire Return Status:**
1 = Returned (online); 2 = Returned (paper); 3 = Not returned; 4 = Left school permanently; 5 = Teacher should have been out-of-scope; 9 = Unknown

Unclassified - Non classifié

ISCED level 02 and children under the age of three (U3)

Figure A E.3. Listing form for ISCED level 02 and U3

TALIS Starting Strong 2024 MS - [level] Listing Form

Country/Region	
ECEC Setting Name	
ECEC Setting ID	

❶	❷	❷	❸	❹	❺	❻	❼
Name	**Sequence Number**	**Sequence Number**	**Exemption**	**Leader Role**	**Staff Role**	**Year of Birth**	**Gender**

③ **Exemption:** 1 = This person also took part in the 2023 Field Trial
④ **Leader Role:** 1 = Leader of this ECEC setting
⑤ **Staff Role:** 1 = <Only leader (no pedagogical work)>; 2 = <Teacher>; 3 = <Assistant>; 4 = <Staff for individual children>;
5 = <Staff for special tasks>; 6 = <Intern>; 7 = <country-specific>; 8 = <country-specific>; 9 = <country-specific>; 10 = <country-specific>; 11 = <country-specific>; 12 = <country-specific>
⑥ **Year of Birth:** YYYY; 9999 = Not specified
⑦ **Gender**: 1 = Female; 2 = Male; 3 = Non-binary/diverse; 9 = Refused

Unclassified - Non classifié

Figure A E.4. Tracking form for ISCED level 02 and U3

TALIS Starting Strong 2024 MS - [level] Tracking Form

Country/Region	
ECEC Setting Name	
ECEC Setting ID	

❶	❷	❷	❸	❹	❺	❻	❼	❽
Name	**ID**	**ID**	**Year Of Birth**	**Gender**	**Staff Role**	**Questionnaire**	**Questionnaire Mode**	**Questionnaire Return Status**

③ **Year of Birth**: YYYY; 9999 = Not specified
④ **Gender:**
1 = Female; 2 = Male; 3 = Non-binary/diverse; 9 = Refused
⑤ **Staff categories:**
1 = <Only leader (no pedagogical work)>; 2 = <Teacher>; 3 = <Assistant>; 4 = <Staff for individual children>; 5 = <Staff for special tasks>; 6 = <Intern>; 7 = <country-specific>; 8 = <country-specific>; 9 = <country-specific>; 10 = <country-specific>; 11 = <country-specific>; 12 = <country-specific>
⑥ **Questionnaire:**
10 = Leader Questionnaire; 21 = Staff Questionnaire; 30 = Combined Questionnaire -Main; 31 = Combined Questionnaire -Short
⑦ **Questionnaire Mode:**
1 = Online; 2 = Paper
⑧ **Questionnaire Return Status:**
1 = Returned (online); 2 = Returned (paper); 3 = Not returned; 4 = Left ECEC setting permanently; 5 = Person should have been out-of-scope; 9 = Unknown

Unclassified - Non classifié

Annex F. Unweighted and weighted participation rates

This annex presents participation rates for every module, population and country/territory. Both unweighted and weighted participation rates and participation rates before and after the use of replacements are given. For the teacher/staff population, the school/setting level and the teacher/staff level within participating schools/settings are distinguished; the overall participation rate is the multiplication of both levels.

Participation rates for International Standard Classification of Education (ISCED) level 2

Table A F.1. Participation rates (%) for ISCED level 2 schools and principals

Participating country/territory	Unweighted		Weighted	
	Before replacement	After replacement	Before replacement	After replacement
Albania	99.6	100.0	99.6	100.0
Alberta (Canada)	43.0	49.8	38.5	50.3
Australia	65.2	88.7	63.0	89.9
Austria	83.6	96.7	79.6	96.2
Azerbaijan	99.1	99.6	99.7	100.0
Bahrain	99.1	99.1	99.1	99.1
Belgium	65.0	73.4	63.1	72.4
Flemish Community (Belgium)	57.1	66.2	56.0	66.1
French Community (Belgium)	76.2	83.7	76.0	83.8
Brazil	87.0	91.8	89.9	94.3
Bulgaria	97.2	98.6	97.7	98.7
Chile	61.1	78.2	70.0	84.3
Colombia	63.8	68.5	62.2	68.3
Costa Rica	85.7	87.1	85.8	86.7
Croatia	87.5	87.5	87.8	87.8
Cyprus	99.0	99.0	99.0	99.0
Czechia	99.7	100.0	99.8	100.0
Denmark	54.9	79.7	54.9	80.9
Estonia	94.1	94.1	93.9	93.9
Finland	99.6	100.0	99.7	100.0
France	85.3	86.8	86.0	87.0
Hungary	93.5	93.9	93.3	93.8

Unclassified - Non classifié

Participating country/territory	Unweighted		Weighted	
	Before replacement	After replacement	Before replacement	After replacement
Iceland	77.9	77.9	77.9	77.9
Israel	92.5	93.0	90.3	91.6
Italy	97.5	98.0	97.7	98.0
Japan	89.7	98.0	89.5	98.1
Kazakhstan	98.1	98.1	99.1	99.1
Korea	65.3	85.6	62.2	83.4
Kosovo	99.1	99.1	99.1	99.1
Latvia	96.3	97.7	96.3	97.9
Lithuania	99.5	100.0	98.7	100.0
Malta	90.9	90.9	90.9	90.9
Montenegro	80.7	80.7	80.7	80.7
Morocco	99.7	100.0	98.5	100.0
Netherlands	35.6	52.3	33.7	51.9
New Zealand	25.8	39.3	27.2	51.4
North Macedonia	99.5	99.5	99.6	99.6
Norway	44.6	69.7	41.8	66.7
Poland	93.6	99.6	93.4	99.6
Portugal	98.7	99.1	98.8	99.3
Romania	100.0	100.0	100.0	100.0
Saudi Arabia	95.5	95.5	95.6	95.6
Serbia	98.5	99.5	98.3	99.4
Shanghai (China)	100.0	100.0	100.0	100.0
Singapore	95.6	96.9	86.9	92.8
Slovak Republic	95.9	98.8	95.7	99.0
Slovenia	77.3	78.4	77.4	79.1
South Africa	81.4	82.0	84.4	84.6
Spain	97.2	97.4	97.7	97.9
Sweden	86.4	88.8	85.1	88.2
Türkiye	98.3	98.3	98.5	98.5
United Arab Emirates	98.6	98.6	98.8	98.8
United States	48.0	59.4	44.9	54.3
Uzbekistan	100.0	100.0	100.0	100.0
Viet Nam	100.0	100.0	100.0	100.0

Unclassified - Non classifié

Table A F.2. Participation rates (%) for ISCED level 2 teachers

Participating country/territory	Unweighted				Weighted			
	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation
Albania	99.6	100.0	99.4	99.4	99.8	100.0	99.4	99.4
Alberta (Canada)	47.7	54.8	81.5	44.7	46.4	56.4	82.2	46.4
Australia	65.2	87.7	87.0	76.3	66.6	88.5	86.7	76.7
Austria	77.5	89.8	85.9	77.2	77.0	89.9	84.8	76.2
Azerbaijan	99.1	99.6	98.5	98.0	99.5	100.0	98.4	98.4
Bahrain	100.0	100.0	97.7	97.7	100.0	100.0	97.3	97.3
Belgium	67.5	76.5	84.5	64.6	67.2	76.1	84.3	64.2
Flemish Community (Belgium)	58.1	68.1	84.2	57.4	58.1	68.3	84.2	57.5
French Community (Belgium)	81.0	88.4	84.7	74.9	81.1	88.2	84.3	74.4
Brazil	85.7	89.6	95.5	85.5	89.9	92.4	95.2	87.9
Bulgaria	98.1	99.5	99.2	98.7	97.9	99.6	99.1	98.7
Chile	59.8	76.2	81.7	62.3	66.2	79.8	84.0	67.0
Colombia	71.7	77.2	91.9	70.9	72.2	76.6	91.2	69.9
Costa Rica	87.6	89.0	94.2	83.8	89.1	89.5	91.7	82.1
Croatia	90.5	90.5	82.6	74.8	90.7	90.7	80.3	72.9
Cyprus	99.0	99.0	91.2	90.3	99.2	99.2	90.3	89.5
Czechia	99.7	100.0	98.4	98.4	99.9	100.0	98.3	98.3
Denmark	54.9	79.7	85.0	67.8	53.5	80.0	85.6	68.5
Estonia	97.5	97.5	89.1	86.9	97.6	97.6	88.8	86.7
Finland	99.6	100.0	94.8	94.8	99.6	100.0	94.1	94.1
France	80.2	81.7	76.4	62.4	80.3	81.8	75.7	61.9

Unclassified - Non classifié

Participating country/territory	Unweighted				Weighted			
	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation
Hungary	95.1	95.5	92.6	88.4	94.8	95.5	91.9	87.8
Iceland	94.2	94.2	81.6	76.9	93.8	93.8	81.5	76.4
Israel	92.0	92.0	87.4	80.5	90.7	90.7	84.4	76.6
Italy	98.5	99.0	92.4	91.5	98.7	99.0	92.0	91.1
Japan	90.2	98.5	97.7	96.2	91.2	98.5	97.5	96.1
Kazakhstan	99.7	99.7	99.5	99.3	99.8	99.8	99.6	99.3
Korea	65.3	83.7	91.0	76.2	63.1	83.5	89.9	75.1
Kosovo	99.1	99.1	91.4	90.6	99.2	99.2	87.0	86.3
Latvia	97.2	98.6	91.0	89.8	97.4	98.9	89.9	88.9
Lithuania	99.1	99.5	97.1	96.6	98.4	99.6	96.0	95.6
Malta	87.3	87.3	81.4	71.0	88.6	88.6	81.3	72.0
Montenegro	78.3	78.3	84.0	65.7	73.7	73.7	84.0	61.9
Morocco	99.7	100.0	98.3	98.3	99.2	100.0	98.1	98.1
Netherlands	37.6	56.4	73.7	41.5	34.9	56.4	71.0	40.0
New Zealand	27.9	42.9	71.7	30.8	28.1	43.0	73.1	31.5
North Macedonia	100.0	100.0	94.9	94.9	100.0	100.0	94.1	94.1
Norway	33.6	53.1	73.5	39.0	34.1	53.9	73.1	39.4
Poland	93.6	99.6	94.7	94.4	93.6	99.5	93.6	93.1
Portugal	98.7	99.1	92.2	91.4	98.9	99.3	91.7	91.1
Romania	100.0	100.0	97.4	97.4	100.0	100.0	96.1	96.1
Saudi Arabia	97.6	97.6	94.2	92.0	98.1	98.1	94.6	92.8
Serbia	98.5	99.5	95.6	95.2	98.5	99.5	94.7	94.2
Shanghai (China)	100.0	100.0	98.4	98.4	100.0	100.0	98.4	98.4
Singapore	96.9	98.1	97.2	95.3	94.3	96.4	96.9	93.4

Unclassified - Non classifié

Participating country/territory	Unweighted				Weighted			
	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation
Slovak Republic	97.1	100.0	96.1	96.1	96.9	100.0	95.6	95.6
Slovenia	83.0	84.1	88.8	74.7	82.7	84.2	89.1	75.0
South Africa	92.8	93.3	91.2	85.0	93.3	93.6	89.7	84.0
Spain	99.8	100.0	94.1	94.1	99.7	100.0	93.4	93.4
Sweden	92.7	95.1	76.4	72.7	92.4	94.6	74.9	70.9
Türkiye	99.6	99.6	97.2	96.8	99.6	99.6	96.9	96.6
United Arab Emirates	99.5	99.5	98.4	97.9	99.7	99.7	97.3	97.0
United States	49.6	60.2	82.8	49.8	48.9	58.7	81.8	48.0
Uzbekistan	100.0	100.0	98.6	98.6	100.0	100.0	98.7	98.7
Viet Nam	100.0	100.0	99.0	99.0	100.0	100.0	98.9	98.9

Unclassified - Non classifié

Participation rates for ISCED level 1

Table A F.3. Participation rates (%) for ISCED level 1 schools and principals

Participating country/territory	Unweighted		Weighted	
	Before replacement	After replacement	Before replacement	After replacement
Australia	63.0	85.6	64.8	85.3
Belgium	61.1	81.0	58.4	80.0
Flemish Community (Belgium)	46.4	75.6	46.1	75.6
French Community (Belgium)	76.2	86.6	74.8	85.8
Brazil	82.4	91.0	84.1	93.2
France	91.9	93.3	91.8	93.0
Japan	87.4	98.1	86.2	97.9
Korea	66.1	88.4	63.0	87.5
Morocco	98.7	98.7	98.4	98.4
Netherlands	44.3	68.0	43.8	68.3
New Zealand	33.9	57.6	34.8	58.1
Saudi Arabia	92.3	92.3	92.8	92.8
Slovenia	76.9	78.0	77.1	78.8
Spain	96.6	96.6	97.2	97.2
Türkiye	97.1	97.1	97.1	97.1
United Arab Emirates	99.5	99.5	99.6	99.6

Unclassified - Non classifié

Table A F.4. Participation rates (%) for ISCED level 1 teachers

Participating country/territory	Unweighted				Weighted			
	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation
Australia	63.0	85.6	89.9	76.9	62.4	85.4	89.7	76.6
Belgium	59.9	79.3	84.2	66.8	56.6	77.4	83.3	64.5
Flemish Community (Belgium)	42.1	69.9	88.0	61.5	42.1	69.7	87.7	61.1
French Community (Belgium)	78.2	89.1	81.3	72.4	78.1	88.7	78.5	69.6
Brazil	80.8	89.4	96.4	86.2	81.0	90.9	97.4	88.5
France	88.7	91.2	88.7	80.9	89.1	91.2	88.9	81.1
Japan	87.4	98.1	97.9	96.0	87.9	98.0	97.8	95.9
Korea	60.3	82.1	90.6	74.4	59.9	81.9	89.8	73.6
Morocco	100.0	100.0	98.8	98.8	100.0	100.0	99.1	99.1
Netherlands	46.9	72.2	85.3	61.6	46.5	72.2	85.0	61.3
New Zealand	30.3	53.3	80.2	42.7	30.6	54.7	79.5	43.5
Saudi Arabia	98.6	98.6	94.7	93.4	99.1	99.1	94.6	93.8
Slovenia	82.2	83.3	91.3	76.1	81.8	83.5	91.5	76.4
Spain	99.2	99.2	94.7	94.0	99.0	99.0	93.0	92.1
Türkiye	97.5	97.5	96.3	93.9	97.3	97.3	96.3	93.7
United Arab Emirates	99.5	99.5	97.5	97.0	99.5	99.5	96.8	96.2

Unclassified - Non classifié

Participation rates for ISCED level 3

Table A F.5. Participation rates (%) for ISCED level 3 schools and principals

Participating country/territory	Unweighted		Weighted	
	Before replacement	After replacement	Before replacement	After replacement
Croatia	90.0	90.0	90.0	90.0
Denmark	61.1	76.5	54.4	77.1
Flemish Community (Belgium)	47.6	65.2	45.5	65.0
Portugal	99.5	100.0	98.9	100.0
Saudi Arabia	91.5	91.5	92.5	92.5
Slovenia	74.3	74.3	74.3	74.3
Türkiye	97.0	97.0	96.3	96.3
United Arab Emirates	98.0	98.0	98.3	98.3

Unclassified - Non classifié

Table A F.6. Participation rates (%) for ISCED level 3 teachers

Participating country/territory	Unweighted				Weighted			
	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation
Croatia	96.0	96.0	85.7	82.3	95.9	95.9	85.0	81.5
Denmark	61.5	76.5	87.6	67.0	58.3	79.3	86.1	68.3
Flemish Community (Belgium)	50.5	67.1	86.5	58.1	50.7	67.2	86.0	57.8
Portugal	99.5	100.0	93.9	93.9	99.6	100.0	93.9	93.9
Saudi Arabia	96.6	96.6	94.3	91.1	98.7	98.7	94.1	92.9
Slovenia	80.7	80.7	83.4	67.4	79.9	79.9	82.6	66.0
Türkiye	99.0	99.0	95.5	94.5	99.2	99.2	95.1	94.3
United Arab Emirates	99.5	99.5	98.8	98.3	99.6	99.6	98.6	98.2

Unclassified - Non classifié

Participation rates for the Teacher Knowledge Survey (TKS)

Table A F.7. Participation rates (%) for TKS teachers

Participating country/territory	Unweighted				Weighted			
	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation
Chile	57.6	73.8	79.9	59.0	64.4	78.5	80.5	63.2
Croatia	88.5	88.5	81.6	72.2	88.8	88.8	80.3	71.3
Morocco	99.7	100.0	98.5	98.5	99.3	100.0	98.1	98.1
Poland	93.6	99.6	94.8	94.4	93.5	99.5	93.5	93.0
Portugal	98.7	99.1	91.6	90.8	98.9	99.3	91.0	90.3
Saudi Arabia	98.5	98.5	93.5	92.1	98.6	98.6	93.4	92.1
South Africa	92.7	93.2	91.5	85.3	93.2	93.4	90.0	84.1
United States	46.5	56.6	79.7	45.1	46.1	55.4	79.9	44.3

Unclassified - Non classifié

Participation rates for ISCED level 02

Table A F.8. Participation rates (%) for ISCED level 02 settings and leaders

Participating country/territory	Unweighted		Weighted	
	Before replacement	After replacement	Before replacement	After replacement
Chile	68.9	81.6	78.6	88.3
Colombia	55.2	68.3	52.9	65.6
Denmark	55.5	82.4	52.9	82.0
Finland	92.4	97.1	92.9	96.9
Flemish Community (Belgium)	64.2	83.2	62.7	83.2
Germany	45.2	70.1	45.2	70.3
Ireland	36.0	59.9	37.1	59.7
Israel	86.1	92.2	86.0	92.2
Japan	71.4	95.0	67.9	94.2
Morocco	93.1	98.2	93.3	98.3
New Zealand	17.9	20.7	19.7	22.9
Norway	30.6	45.2	31.5	46.4
Spain	98.2	98.2	97.9	97.9
Sweden	91.5	92.5	91.7	92.8
Türkiye	98.5	98.5	99.4	99.4

Unclassified - Non classifié

Table A F.9. Participation rates (%) for ISCED level 02 staff

Participating country/territory	Unweighted				Weighted			
	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation
Chile	60.7	73.0	88.1	64.3	70.7	79.5	88.0	70.0
Colombia	53.5	65.2	95.3	62.2	55.3	65.2	97.7	63.6
Denmark	54.9	81.3	89.5	72.8	54.9	81.3	89.5	72.8
Finland	92.4	97.1	95.4	92.7	91.7	97.2	94.7	92.1
Flemish Community (Belgium)	66.3	86.3	89.4	77.2	67.1	86.4	88.2	76.2
Germany	47.2	72.1	82.2	59.3	46.6	72.4	81.5	59.0
Ireland	41.6	69.5	73.9	51.4	44.0	69.9	71.6	50.0
Israel	87.7	94.2	86.1	81.1	88.1	94.4	82.5	77.8
Japan	71.4	95.0	98.9	93.9	65.9	94.0	98.9	92.9
Morocco	92.9	97.9	99.1	97.0	91.1	98.0	99.2	97.2
New Zealand	16.8	19.0	73.1	13.9	17.6	20.4	72.7	14.8
Norway	25.3	36.6	72.2	26.4	25.5	37.6	73.8	27.8
Spain	99.8	99.8	96.7	96.5	100.0	100.0	96.7	96.7
Sweden	96.7	97.7	86.0	84.0	97.0	98.0	86.2	84.5
Türkiye	97.8	97.8	98.4	96.2	97.7	97.7	97.9	95.7

Unclassified - Non classifié

Participation rates for children under the age of three (U3)

Table A F.10. Participation rates (%) for U3 settings and leaders

Participating country/territory	Unweighted		Weighted	
	Before replacement	After replacement	Before replacement	After replacement
Flemish Community (Belgium)	34.2	52.7	34.9	53.4
Germany	49.3	74.0	49.5	74.2
Ireland	39.9	58.8	39.6	59.5
Israel	77.2	85.5	76.0	83.0
New Brunswick (Canada)	31.9	35.7	31.3	35.9
New Zealand	19.6	23.8	21.1	24.8
Norway	28.0	40.9	27.5	40.8
Quebec (Canada)	22.0	49.1	23.4	59.8

Unclassified - Non classifié

Table A F.11. Participation rates (%) for U3 staff

Participating country/territory	Unweighted				Weighted			
	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation	Schools before replacement	Schools after replacement	Teachers in participating schools	Overall teacher participation
Flemish Community (Belgium)	34.6	54.0	82.2	44.4	35.8	55.3	83.6	46.2
Germany	50.2	74.9	88.6	66.3	50.5	76.0	87.8	66.7
Ireland	44.0	66.3	75.2	49.8	44.0	66.4	74.0	49.1
Israel	78.7	87.9	85.4	75.1	78.2	88.4	84.7	74.9
New Brunswick (Canada)	33.6	37.4	86.8	32.5	34.7	38.6	85.4	33.0
New Zealand	18.2	23.1	74.5	17.2	17.8	23.9	73.0	17.4
Norway	25.3	36.6	71.8	26.3	26.2	36.8	73.4	27.0
Quebec (Canada)	20.8	47.4	68.4	32.4	23.3	49.7	75.0	37.3

Unclassified - Non classifié

Annex G. Construction and validation of scales

Table A G.1. Descriptive statistics of the TALIS core survey scale scores for the pooled ISCED level 2 data

Scale	Mean (weighted)	Mean (unweighted)	Standard deviation (unweighted)	Lowest score	Highest score
Teacher scales					
T4PDSUBMP	9.874	9.926	2.013	6.521	13.488
T4PDGENP	10.192	10.239	2.012	6.249	13.981
T4PDIV	10.289	10.305	2.003	6.210	13.868
T4PDBR	9.478	9.440	1.996	5.475	14.529
T4COLES	8.990	8.992	2.040	4.716	14.661
T4EXINF	11.106	11.107	2.012	5.889	14.517
T4SEENG	12.196	12.171	2.006	4.837	14.963
T4SEINS	12.909	12.893	2.001	4.916	15.589
T4SECLS	12.863	12.830	2.011	5.176	15.373
T4SEMUL	11.560	11.523	1.995	5.766	14.465
T4GROMST	10.803	10.771	1.988	6.029	14.257
T4SESEN	10.551	10.505	2.006	5.550	14.403
T4COMSEL	12.171	12.138	1.997	5.828	15.022
T4SEDRT	11.442	11.461	1.995	5.585	14.332
T4BLFDRT	11.945	11.937	2.022	5.801	15.512
T4ADVDRT	10.772	10.796	2.007	4.965	15.110
T4STESE	10.662	10.687	1.988	5.824	14.015
T4TCHCLC	10.849	10.875	1.990	5.499	14.909
T4CLAIN	12.889	12.904	1.993	5.402	15.569
T4COGAC	10.194	10.188	2.000	4.656	14.888
T4CLASM	11.651	11.676	1.981	5.919	14.174
T4DRTWCI	9.261	9.293	2.014	5.140	14.318
T4DRTIIA	9.475	9.510	2.015	5.700	14.081
T4CLSDIS	7.729	7.733	2.000	5.347	13.336
T4ADLE	12.567	12.535	1.993	5.066	15.524
T4PBLE	11.764	11.760	1.993	5.395	15.241
T4AUTCH	12.374	12.304	2.004	5.609	15.172
T4FULFIL	12.389	12.356	2.000	4.926	15.578
T4EMPS	12.775	12.689	2.012	5.411	15.196

Unclassified - Non classifié

Scale	Mean (weighted)	Mean (unweighted)	Standard deviation (unweighted)	Lowest score	Highest score
T4SESDEV	12.097	12.099	1.990	5.626	14.941
T4OPPART	11.570	11.551	2.000	6.179	15.092
T4TLEAD	12.321	12.314	1.997	6.097	15.799
T4STUD	13.674	13.576	2.006	6.085	16.666
T4RELEAD	12.669	12.668	1.989	6.735	15.242
T4INSTLE	12.612	12.602	1.998	6.723	15.150
T4CLIBUL	13.836	13.779	2.009	6.087	16.461
T4STUHAR	8.561	8.576	1.979	5.369	14.352
T4CHFAT	8.512	8.498	1.987	4.817	13.573
T4MOPU	12.487	12.464	2.004	6.327	14.784
T4MOSU	13.248	13.211	2.007	5.974	15.200
T4WELS	9.191	9.176	2.002	5.778	13.650
T4WLOADT	9.464	9.468	2.003	5.877	13.893
T4STBEH	9.146	9.157	1.996	5.722	13.342
T4JSPROT	12.101	12.102	1.994	6.023	15.415
T4JSENVT	11.843	11.814	1.998	6.056	14.651
T4VALP	9.108	9.141	2.023	6.046	14.115
T4JOYTCH	14.045	14.010	2.006	6.379	16.314
T4JOBSAT	10.000	9.984	1.995	3.155	13.533
T4SELF	10.000	9.972	2.007	1.164	13.053
Principal scales					
T4PLEADS	9.795	9.813	1.965	6.792	13.168
T4PTLEAD	10.705	10.706	1.998	5.817	14.135
T4POPPART	10.729	10.736	2.026	5.999	13.954
T4PACADT	11.153	11.128	2.011	6.307	13.678
T4PDELI	8.959	9.143	2.002	5.995	13.591
T4PDIVBF	12.059	12.028	2.004	6.631	13.733
T4PLEADESE	10.665	10.703	1.970	5.778	14.089
T4PATBRCC	8.708	8.736	1.991	5.600	13.705
T4PINBRCC	8.966	8.963	2.006	5.935	13.443
T4PWELS	9.569	9.555	2.004	5.778	14.046
T4PWLOAD	9.596	9.660	2.016	5.371	14.065
T4PJSPROT	10.925	10.973	1.990	6.112	14.049
T4PJSENVT	11.671	11.706	2.009	6.168	13.915
T4PJOBSAT	10.000	10.048	1.999	4.090	13.106

Note: Alberta (Canada), the Flemish Community (Belgium), the French Community (Belgium), the Netherlands, New Zealand and Norway were excluded from the pooled ISCED level 2 data. Due to missing scale scores resulting from the non-administration of at least one item from the scale, Slovenia (for scale T4ADLE), Azerbaijan, Bahrein, Israel, Kazakhstan, Morocco, Singapore, Türkiye, the United Arab Emirates and Uzbekistan (for scale T4STUHAR) and Viet Nam (for scale T4WELS) were excluded from the pooled ISCED level 2 data as well. The weighted standard deviation of the international pooled ISCED level 2 data always equals 2.
ISCED: International Standard Classification of Education; TALIS: Teaching and Learning International Survey.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Table A G.2. Descriptive statistics of the TALIS Starting Strong scale scores for the pooled ISCED level 02 data

Scale	Mean (weighted)	Mean (unweighted)	Standard deviation (unweighted)	Lowest score	Highest score
Staff scales					
S2PDNPED	9.801	9.871	1.962	6.159	13.908
S2PDIVR	10.393	10.483	1.969	6.711	13.943
S2PAAD	9.217	9.302	2.029	5.038	14.206
S2SELF	10.852	10.837	2.027	5.801	14.697
S2SELFC	11.473	11.460	2.022	6.349	14.268
S2PROLIR	10.968	11.041	2.029	5.286	15.028
S2PRONUR	10.032	10.141	2.055	5.762	14.284
S2PRSOC	13.279	13.330	2.002	6.175	14.845
S2PRINTR	12.012	12.013	2.003	6.394	14.335
S2CCAFL	11.178	11.199	2.026	6.312	14.176
S2PREMR	12.568	12.641	1.976	6.057	14.250
S2PRLANR	12.590	12.765	2.014	6.268	15.709
S2PRACTR	11.671	11.777	1.982	5.998	15.110
S2SOCIALR	13.028	13.191	1.985	6.425	15.745
S2COLLR	11.021	11.027	1.976	5.381	15.240
S2PARENR	10.899	10.913	1.976	5.743	15.198
S2SSLEAD	12.292	12.286	2.019	5.973	15.149
S2JOBSAR	12.696	12.694	2.013	6.083	15.424
S2PROSAR	12.550	12.520	1.999	4.948	14.805
S2STRESS	8.981	8.961	1.967	5.406	13.679
S2STRESO	9.551	9.611	1.963	5.326	14.177
S2STRESC	9.364	9.399	1.964	5.454	14.010
S2STRESR	10.000	10.053	1.959	5.490	15.144
Leader scales					
S2LDLEAD	10.375	10.297	2.030	5.513	14.521
S2LEADSPL1	9.678	9.671	2.001	6.130	13.802
S2LEADSPL2	9.007	9.064	2.057	4.211	14.196
S2LJOBSAR	11.290	11.305	1.997	6.082	14.297
S2LNIGHBR	8.398	8.362	1.997	5.075	13.921
S2LPDEV	10.119	10.234	2.082	4.917	15.181
S2LPDLS	10.396	10.412	2.058	6.174	14.116
S2LPDPL	10.009	10.133	2.078	5.097	14.874
S2LSQPRS	9.303	9.313	2.108	6.513	13.216
S2LSQSET	11.662	11.747	2.015	6.142	14.475
S2LSQSTA	8.712	8.631	2.093	5.144	14.096
S2LSTRESG	9.589	9.523	2.080	4.409	15.153
S2LSTRESL	9.302	9.193	2.013	5.486	14.070
S2LSTRESP	9.560	9.599	2.070	5.063	14.535
S2LSTRES	10.000	10.006	2.079	4.447	15.939
S2LDLEAD	10.375	10.297	2.030	5.513	14.521

Note: New Zealand was excluded from the pooled ISCED level 02 data. Due to missing scale scores resulting from the non-administration of at least one of the items from the scale, Israel was excluded from the pooled ISCED level 02 data for scales S2LSTRESG and S2LSTRESP as well. The weighted standard deviation of the international pooled ISCED level 02 data always equals 2.

Unclassified - Non classifié

Source: OECD, TALIS 2024 database.

Table A G.3. Descriptive statistics of the scale scores specific to the TKS for the international pooled data

Scale	Mean (weighted)	Mean (unweighted)	Standard deviation (unweighted)	Lowest score	Highest score
TKS specific scales					
T4OTLAS	11.005	10.982	1.974	5.491	14.610
T4OTLAP	10.261	10.225	1.999	5.268	14.487
T4OTLCI	11.284	11.306	1.985	5.270	14.825
T4OTLSL	10.649	10.634	2.014	5.236	14.614

Note: The weighted standard deviation of the international pooled data always equals 2.
TKS: Teacher Knowledge Survey.
Source: OECD, TALIS 2024 database.

Unclassified - Non classifié

Annex H. Coding for conditioning

			Conditioning variables	
Variable	**Variable label**	**Response options**	**Scaling variable**	**Missing indicator**
IDLANG_TQ	Language of uestionnaire	1: English; 53: Arabic	*Saudi Arabia only:* Dummy coding (English=1, Arabic=0)	No missing values
SubjectDomain	Main Subject Domain	1: Language & Arts; 2: Human Sciences; 3: Mathematics & Science; 4: Other	Dummy coding of categories (3 dummies, 1, M = reference)	Valid=0, M=1
GPK_Mean	GPK average of all other teachers at the school	IRT scores (WLE)	As is	No missing values
NR_Number	Number of not reached responses	Raw numbers	As is	No missing values
IDSTRATE	Explicit sampling strata	Country-specific categories	Dummy coding (largest stratum as reference category)	No missing values
TT4G01	Background/ Gender	1: Female; 2: Male; 3: <country-specific>	1=1, 2, 3=0, M=0	Valid=0, M=1
TT4G02	Background/ Age	Calendar years (open-ended)	M=Mean, else=copy	Valid=0, M=1
TT4G03	Background/ Highest level of formal education completed	1: Below <ISCED 2011 Level 3>; 2: <ISCED 2011 Level 3>; 3: <ISCED 2011 Level 4>; 4: <ISCED 2011 Level 5>; 5: <ISCED 2011 Level 6>; 6: <ISCED 2011 Level 7>; 7: <ISCED 2011 Level 8>	Dummy coding of categories (6, with cat. 4 as reference)	Valid=0, M=1
TT4G04	Background/ First teaching qualification	1: A <regular teacher education or training programme>; 2: A <fast-track/shorter or specialised teacher education or training programme>; 3: Subject-specific <education or training> only; 4: I have another formal qualification not listed above.; 5: I have	Dummy coding of categories (4, with cat. 1 as reference)	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	Variable label	Response options	Scaling variable	Missing indicator
		no formal qualification related to the subject I am teaching or to any type of pedagogical education.		
TT4G05	Background/ Year of completion first teaching qualification	Calendar years (open-ended)	M=Median, else=copy	Valid=0, M=1
TT4G08	Background/ Teaching as the first choice as a career	1: Yes; 2: No	1=1, 2=0, M=0	Valid=0, M=1
TT4G13B	Current Work/ Years of work experience, regardless of full-time or part-time/ As a teacher in total	Number of years (open-ended)	M=Mean, else=copy	Valid=0, M=1
TT4G13C	Current Work/ Years of work experience, regardless of full-time or part-time/ In other education roles	Number of years (open-ended)	M=Mean, else=copy	Valid=0, M=1
TT4G13D	Current Work/ Years of work experience, regardless of full-time or part-time/ Other non-education roles	Number of years (open-ended)	M=Mean, else=copy	Valid=0, M=1
KTA4G08A1	Background/ Formal <education or training>/ Reading, writing and literature/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08A2	Background/ Formal <education or training>/ Reading, writing and literature/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08B1	Background/ Formal <education or training>/ Mathematics/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08B2	Background/ Formal <education or training>/ Mathematics/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08C1	Background/ Formal <education or training>/ Science/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08C2	Background/ Formal <education or training>/ Science/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08D1	Background/ Formal <education or training>/ Social studies/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08D2	Background/ Formal <education or training>/ Social studies/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08E1	Background/ Formal <education or training>/ Modern foreign languages/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08E2	Background/ Formal <education or training>/ Modern foreign languages/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08F1	Background/ Formal <education or training>/ Ancient Greek and/or Latin/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	Variable label	Response options	Scaling variable	Missing indicator
KTA4G08F2	Background/ Formal <education or training>/ Ancient Greek and/or Latin/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08G1	Background/ Formal <education or training>/ Technology/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08G2	Background/ Formal <education or training>/ Technology/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08H1	Background/ Formal <education or training>/ Arts/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08H2	Background/ Formal <education or training>/ Arts/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08I1	Background/ Formal <education or training>/ Physical education/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08I2	Background/ Formal <education or training>/ Physical education/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08J1	Background/ Formal <education or training>/ Religion and/or ethics/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08J2	Background/ Formal <education or training>/ Religion and/or ethics/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08K1	Background/ Formal <education or training>/ Practical and vocational skills/ Included in formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08K2	Background/ Formal <education or training>/ Practical and vocational skills/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08L1	Background/ Formal <education or training>/ Other/ Included my formal <education or training>	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
KTA4G08L2	Background/ Formal <education or training>/ Other/ I teach it to students this year	1: Checked; 2: Not checked	1=1, 2=0, M=0	Valid=0, M=1
TT4G10	Current Work/ Currently working as a teacher of <ISCED 2011 level x> at another school	1: Yes; 2: No	1=1, 2=0, M=0	Valid=0, M=1
TT4G11	Current Work/ Count of other schools currently work as a <ISCED 2011 level x> teacher	Number of schools (open-ended)	M=Mean, else=copy	Valid=0, M=1
KTB4G111A	Opportunities to learn/ Classroom instruction/ Lesson design	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G111B	Opportunities to learn/ Classroom instruction/ Long-term planning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G111C	Opportunities to learn/ Classroom instruction/ Time management in the classroom	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	Variable label	Response options	Scaling variable	Missing indicator
KTB4G111D	Opportunities to learn/ Classroom instruction/ Student behaviour and classroom management	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G111E	Opportunities to learn/ Classroom instruction/ Collaborative learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G111F	Opportunities to learn/ Classroom instruction/ Adaptive teaching	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G111G	Opportunities to learn/ Classroom instruction/ Classroom discourse and dialogue	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G111H	Opportunities to learn/ Classroom instruction/ Setting clear learning expectations	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G111I	Opportunities to learn/ Classroom instruction/ Student-centred approaches	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G111J	Opportunities to learn/ Classroom instruction/ Teaching clarity	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G121A	Opportunities to learn/ Student learning/ Educational theories of learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G121B	Opportunities to learn/ Student learning/ Student individual differences	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G121C	Opportunities to learn/ Student learning/ Identification of learning difficulties	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G121D	Opportunities to learn/ Student learning/ Psychological theories of child development	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G121E	Opportunities to learn/ Student learning/ Science of learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G121F	Opportunities to learn/ Student learning/ Taxonomies of learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G121G	Opportunities to learn/ Student learning/ Self-regulated learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G121H	Opportunities to learn/ Student learning/ Affective-motivational impacts on learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G131A	Opportunities to learn/ Assessment/ Different purposes for assessment	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G131B	Opportunities to learn/ Assessment/ Standards used to assess students	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	Variable label	Response options	Scaling variable	Missing indicator
KTB4G131C	Opportunities to learn/ Assessment/ Creating and using rubrics for assessment	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G131D	Opportunities to learn/ Assessment/ Peer and/or self-assessment	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G131E	Opportunities to learn/ Assessment/ Standardised tests	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G131F	Opportunities to learn/ Assessment/ Grades and grading	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G131G	Opportunities to learn/ Assessment/ Providing effective feedback to students	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G131H	Opportunities to learn/ Assessment/ Data literacy	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G131I	Opportunities to learn/ Assessment/ Monitoring learning progress	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141A	Opportunities to learn/ Additional topics/ Teaching in a multicultural setting	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141B	Opportunities to learn/ Additional topics/ Teaching in a multilingual setting	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141C	Opportunities to learn/ Additional topics/ Teaching students socio-economically disadvantaged homes	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141F	Opportunities to learn/ Additional topics/ Methods for inclusion and inclusive pedagogies	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141D	Opportunities to learn/ Additional topics/ Accommodating students with special education needs	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141E	Opportunities to learn/ Additional topics/ Identifying and/or meeting the learning needs of gifted students	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141G	Opportunities to learn/ Additional topics/ Teaching cross-disciplinary	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141H	Opportunities to learn/ Additional topics/ Using <digital resources and tools> in instruction	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141I	Opportunities to learn/ Additional topics/ Classroom climate	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
KTB4G141J	Opportunities to learn/ Additional topics/ Students' social and emotional development	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	Variable label	Response options	Scaling variable	Missing indicator
KTB4G141K	Opportunities to learn/ Additional topics/ Identifying and intervening	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27A	Teaching in General/ Self-efficacy in teaching/ Get students to believe they can do well in school work	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27B	Teaching in General/ Self-efficacy in teaching/ Help students value learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27C	Teaching in General/ Self-efficacy in teaching/ Craft good questions for students	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27D	Teaching in General/ Self-efficacy in teaching/ Control disruptive behaviour in the classroom	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27E	Teaching in General/ Self-efficacy in teaching/ Motivate students who show low interest in school work	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27F	Teaching in General/ Self-efficacy in teaching/ Make my expectations about student behaviour clear	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27G	Teaching in General/ Self-efficacy in teaching/ Help students think critically	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27H	Teaching in General/ Self-efficacy in teaching/ Get students to follow classroom rules	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27I	Teaching in General/ Self-efficacy in teaching/ Calm a student who is disruptive or noisy	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27J	Teaching in General/ Self-efficacy in teaching/ Use a variety of assessment strategies	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27K	Teaching in General/ Self-efficacy in teaching/ Provide an altern. explanation for example when students are confused	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27L	Teaching in General/ Self-efficacy in teaching/ Vary instructional strategies in my classroom	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27M	Teaching in General/ Self-efficacy in teaching/ Support learning through the use of <digital resources and tools>	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27N	Teaching in General/ Self-efficacy in teaching/ Help every student progress	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27O	Teaching in General/ Self-efficacy in teaching/ Reduce achievement gaps among students	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G27P	Teaching in General/ Self-efficacy in teaching/ Support students' social and emotional learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	**Variable label**	**Response options**	**Scaling variable**	**Missing indicator**
TT4G74	Occupational Perceptions/ How many more years want to continue to work as a teacher	Number of years (open-ended)	M=Mean, else=copy	Valid=0, M=1
TT4G77A	Occupational Perceptions/ Sources of stress in work/ Having too much lesson preparation	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77B	Occupational Perceptions/ Sources of stress in work/ Having too many lessons to teach	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77C	Occupational Perceptions/ Sources of stress in work/ Having too much marking	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77D	Occupational Perceptions/ Sources of stress in work/ Having too much administrative work to do (e.g. filling out forms)	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77E	Occupational Perceptions/ Sources of stress in work/ Having extra duties due to absent teachers	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77F	Occupational Perceptions/ Sources of stress in work/ Being held responsible for students' achievement	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77G	Occupational Perceptions/ Sources of stress in work/ Maintaining classroom discipline	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77H	Occupational Perceptions/ Sources of stress in work/ Being intimidated or verbally abused by students	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77I	Occupational Perceptions/ Sources of stress in work/ Keeping up with changing requirements from authorities	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77J	Occupational Perceptions/ Sources of stress in work/ Addressing parent or guardian concerns	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77K	Occupational Perceptions/ Sources of stress in work/ Modifying lessons for students with special education needs	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77L	Occupational Perceptions/ Sources of stress in work/ Being held responsible for students' well-being	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77M	Occupational Perceptions/ Sources of stress in work/ Keeping up with curriculum or programme changes in this school	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77N	Occupational Perceptions/ Sources of stress in work/ Having too much work on diversity and equity issues	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G77P	Occupational Perceptions/ Sources of stress in work/ Keeping up with professional learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G80A	Occupational Perceptions/ Experience as a teacher/ I like the subject(s) that I teach	1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	Variable label	Response options	Scaling variable	Missing indicator
TT4G80B	Occupational Perceptions/ Experience as a teacher/ I often feel happy while I teach	1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G80C	Occupational Perceptions/ Experience as a teacher/ I generally teach with enthusiasm	1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G80D	Occupational Perceptions/ Experience as a teacher/ The interesting challenges of teaching give me satisfaction	1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G26A	Teaching in General/ Engagement in collaborative activities/ Teach jointly as a team in the same class	1: Never; 2: Once a year or less; 3: 2-4 times a year; 4: 5-10 times a year; 5: 1-3 times a month; 6: Once a week or more	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, M=Median	Valid=0, M=1
TT4G26B	Teaching in General/ Engagement in collaborative activities/ Observe other teachers' classes and provide feedback	1: Never; 2: Once a year or less; 3: 2-4 times a year; 4: 5-10 times a year; 5: 1-3 times a month; 6: Once a week or more	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, M=Median	Valid=0, M=1
TT4G26C	Teaching in General/ Engagement in collaborative activities/ Engage in joint activities	1: Never; 2: Once a year or less; 3: 2-4 times a year; 4: 5-10 times a year; 5: 1-3 times a month; 6: Once a week or more	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, M=Median	Valid=0, M=1
TT4G26D	Teaching in General/ Engagement in collaborative activities/ Exchange teaching materials with colleagues	1: Never; 2: Once a year or less; 3: 2-4 times a year; 4: 5-10 times a year; 5: 1-3 times a month; 6: Once a week or more	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, M=Median	Valid=0, M=1
TT4G26E	Teaching in General/ Engagement in collaborative activities/ Engage in discussions about learning development	1: Never; 2: Once a year or less; 3: 2-4 times a year; 4: 5-10 times a year; 5: 1-3 times a month; 6: Once a week or more	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, M=Median	Valid=0, M=1
TT4G26F	Teaching in General/ Engagement in collaborative activities/ Work with other teachers to ensure common standards	1: Never; 2: Once a year or less; 3: 2-4 times a year; 4: 5-10 times a year; 5: 1-3 times a month; 6: Once a week or more	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, M=Median	Valid=0, M=1
TT4G26G	Teaching in General/ Engagement in collaborative activities/ Take part in collaborative professional learning	1: Never; 2: Once a year or less; 3: 2-4 times a year; 4: 5-10 times a year; 5: 1-3 times a month; 6: Once a week or more	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, M=Median	Valid=0, M=1
TT4G26H	Teaching in General/ Engagement in collaborative activities/ Collaborate with parents or guardians	1: Never; 2: Once a year or less; 3: 2-4 times a year; 4: 5-10 times a year; 5: 1-	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, M=Median	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	Variable label	Response options	Scaling variable	Missing indicator
		3 times a month; 6: Once a week or more		
TT4G46	Teaching in the <Target Class>/ Enrollment in <target class>	Number of students (open-ended)	M=Mean, else=copy	Valid=0, M=1
TT4G47A	Teaching in the <Target Class>/ Percentage student characteristics/ Students with difficulties understanding instruction	1: None; 2: 1% to 10%; 3: 11% to 30%; 4: 31% to 60%; 5: 61% to 90%; 6: 91% to 99%; 7: All	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, 7=6, M=Median	Valid=0, M=1
TT4G47C	Teaching in the <Target Class>/ Percentage student characteristics/ Low academic achievers	1: None; 2: 1% to 10%; 3: 11% to 30%; 4: 31% to 60%; 5: 61% to 90%; 6: 91% to 99%; 7: All	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, 7=6, M=Median	Valid=0, M=1
TT4G47E	Teaching in the <Target Class>/ Percentage student characteristics/ Students with special education needs	1: None; 2: 1% to 10%; 3: 11% to 30%; 4: 31% to 60%; 5: 61% to 90%; 6: 91% to 99%; 7: All	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, 7=6, M=Median	Valid=0, M=1
TT4G47F	Teaching in the <Target Class>/ Percentage student characteristics/ Students with behavioural problems	1: None; 2: 1% to 10%; 3: 11% to 30%; 4: 31% to 60%; 5: 61% to 90%; 6: 91% to 99%; 7: All	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, 7=6, M=Median	Valid=0, M=1
TT4G47G	Teaching in the <Target Class>/ Percentage student characteristics/ From <socio-economically disadvantaged homes>	1: None; 2: 1% to 10%; 3: 11% to 30%; 4: 31% to 60%; 5: 61% to 90%; 6: 91% to 99%; 7: All	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, 7=6, M=Median	Valid=0, M=1
TT4G47I	Teaching in the <Target Class>/ Percentage student characteristics/ Male students	1: None; 2: 1% to 10%; 3: 11% to 30%; 4: 31% to 60%; 5: 61% to 90%; 6: 91% to 99%; 7: All	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, 7=6, M=Median	Valid=0, M=1
TT4G47J	Teaching in the <Target Class>/ Percentage student characteristics/ Immigrants or with migrant background	1: None; 2: 1% to 10%; 3: 11% to 30%; 4: 31% to 60%; 5: 61% to 90%; 6: 91% to 99%; 7: All	1=0, 2=1, 3=2, 4=3, 5=4, 6=5, 7=6, M=Median	Valid=0, M=1
TT4G50A	Teaching in the <Target Class>/ Percentage of <class> time typically spent on activities/ Administrative tasks	Percentages (open-ended)	M=Mean, else=copy	Valid=0, M=1
TT4G50B	Teaching in the <Target Class>/ Percentage of <class> time typically spent on activities/ Keeping order in classroom	Percentages (open-ended)	M=Mean, else=copy	Valid=0, M=1
TT4G50C	Teaching in the <Target Class>/ Percentage of <class> time typically spent on activities/ Actual teaching and learning	Percentages (open-ended)	M=Mean, else=copy	Valid=0, M=1
TT4G51A	Teaching in the <Target Class>/ Teaching practices/ I present a summary of recently learned content	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51B	Teaching in the <Target Class>/ Teaching practices/ I set goals at the beginning of instruction	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	Variable label	Response options	Scaling variable	Missing indicator
TT4G51C	Teaching in the <Target Class>/ Teaching practices/ I explain what I expect the students to learn	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51D	Teaching in the <Target Class>/ Teaching practices/ I explain how new and old topics are related	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51E	Teaching in the <Target Class>/ Teaching practices/ I present tasks for which there is no obvious solution	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51F	Teaching in the <Target Class>/ Teaching practices/ I give tasks that require students to think critically	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51G	Teaching in the <Target Class>/ Teaching practices/ I have students work in small groups to come up with a solution	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51H	Teaching in the <Target Class>/ Teaching practices/ I ask students to decide on own procedures for solving complex tasks	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51I	Teaching in the <Target Class>/ Teaching practices/ I tell students to follow classroom rules	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51J	Teaching in the <Target Class>/ Teaching practices/ I tell students to listen to what I say	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51K	Teaching in the <Target Class>/ Teaching practices/ I calm students who are disruptive	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51L	Teaching in the <Target Class>/ Teaching practices/ When the lesson begins, I tell students to quiet down quickly	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51M	Teaching in the <Target Class>/ Teaching practices/ I refer to a problem from everyday life or work to demonstrate	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51N	Teaching in the <Target Class>/ Teaching practices/ I give students projects that require at least one week to complete	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G51O	Teaching in the <Target Class>/ Teaching practices/ I encourage students to question and critique arguments	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G53A	Teaching in the <Target Class>/ Use methods assessing student learning/ I administer an assessment	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G53B	Teaching in the <Target Class>/ Use methods assessing student learning/ I give a <mark> to communicate to students	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G53C	Teaching in the <Target Class>/ Use methods assessing student learning/ I provide oral or written feedback	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G53D	Teaching in the <Target Class>/ Use methods assessing student learning/ I ask students to assess their own progress	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	Variable label	Response options	Scaling variable	Missing indicator
TT4G53E	Teaching in the <Target Class>/ Use methods assessing student learning/ I observe students on tasks and provide feedback	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G53F	Teaching in the <Target Class>/ Use methods assessing student learning/ I use assessments	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G55A	Teaching in the <Target Class>/ Performed actions/ I consider students' prior knowledge and needs	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G55B	Teaching in the <Target Class>/ Performed actions/ I point students to different materials	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G55C	Teaching in the <Target Class>/ Performed actions/ I change my way of explaining	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G55D	Teaching in the <Target Class>/ Performed actions/ I adapt my teaching methods to students' needs	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G55E	Teaching in the <Target Class>/ Performed actions/ I ask questions at various difficulty levels	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G56A	Teaching in the <Target Class>/ Performed actions/ I let students review multiple examples	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G56B	Teaching in the <Target Class>/ Performed actions/ I select tasks for student practice	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G56C	Teaching in the <Target Class>/ Performed actions/ I prepare students for difficulties	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G56D	Teaching in the <Target Class>/ Performed actions/ I let students practise similar tasks	1: Never or almost never; 2: Occasionally; 3: Frequently; 4: Always	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G58A	Teaching in the <Target Class>/ Achieved aims/ Presenting the content in a comprehensible way	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G58B	Teaching in the <Target Class>/ Achieved aims/ Engaging students in work that challenges them	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G58C	Teaching in the <Target Class>/ Achieved aims/ Providing students with feedback to support their learning	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G58D	Teaching in the <Target Class>/ Achieved aims/ Offering students opportunities to practice what they learned	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G58E	Teaching in the <Target Class>/ Achieved aims/ Adapting teaching to meet the different needs of students	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1
TT4G58F	Teaching in the <Target Class>/ Achieved aims/ Helping students to manage their own emotions, thoughts, and behaviour	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1

Unclassified - Non classifié

			Conditioning variables	
Variable	**Variable label**	**Response options**	**Scaling variable**	**Missing indicator**
TT4G58G	Teaching in the <Target Class>/ Achieved aims/ Managing student behaviour	1: Not at all; 2: To some extent; 3: Quite a bit; 4: A lot	1=0, 2=1, 3=2, 4=3, M=Median	Valid=0, M=1

Unclassified - Non classifié