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DIRECTORATE FOR EDUCATION AND SKILLS
EDUCATION POLICY COMMITTEE

EDU/INES/TALIS(2015)7
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Board of Participating Countries of the Teaching and Learning International Survey

DEVELOPMENT PLAN FOR THE OECD TEACHING AND LEARNING INTERNATIONAL SURVEY (TALIS) 2018

26-27 November, Copenhagen, Denmark

The TALIS Board of Participating Countries is invited to:
- ADVISE on the balance to be accorded between maintaining existing questions from TALIS 2013, revising questions so as to improve the measurement of existing constructs and introducing questions that address new topics that have emerged within the nominated themes given the constraint of maintaining an average response time of 45 minutes;
- COMMENT on the plan to keep the themes constant across ISCED levels 1, 2 and 3 while tailoring items to suit specific aspects of the ISCED level where necessary and appropriate;
- ADVISE on the alignment of TALIS 2018 with PISA 2018 in terms of instrument design, sample alignment and overlap control, and survey operations, especially around the directionality of alignment, given that the development process for PISA 2018 is already far advanced;
- ADVISE on the possibility of linking ITEL-TKS with TALIS 2018 and the role it is intended to play in the development process for TALIS 2018 over and beyond operational implications;
- ADVISE on whether some conceptual linking between the TALIS ISCED Level 1 work and the proposed ECEC staff survey should already be considered at this early stage of ECEC staff survey development.
- RECOMMEND additional QEG members, who would be invited to help on a temporary basis with specific aspects and perspectives.

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DEVELOPMENT PLAN FOR THE OECD TEACHING AND LEARNING INTERNATIONAL SURVEY (TALIS) 2018

Edited by John Ainley and Ralph Carstens

INTRODUCTION

1. The OECD Teaching and Learning International Survey (TALIS) was initiated in 2008 as an international, large-scale survey of school teaching workforces, teaching conditions, and learning environments in participating countries. The survey was repeated in 2013 in a manner that continued the focus and maintained many questions in an identical form so as to facilitate comparisons between the two cycles. However, TALIS 2013 did incorporate some new material so as to be relevant to emerging policy interests, as well as some modifications for improving the measurement of some ongoing interests. Overall, the framework and instrument development process for TALIS 2013 leaned towards modifications, changes and refinement, rather than keeping concepts, as well as materials, equivalent in the interest of generating information and data to report change over time.

2. The third cycle of TALIS (TALIS 2018) will continue to focus on providing useful and relevant information about teacher characteristics, teaching conditions and learning environments in participating countries. As a consequence, TALIS 2018 will result in data covering key issues based on three cycles over a ten-year period in addition to data concerning policy issues that have emerged since the first TALIS data collection.

3. This document presents a development plan for the TALIS 2018 Conceptual Framework and the subsequent instrument and indicator development work. The purpose of the conceptual framework is to articulate the research focus, theoretical underpinning, as well as existing knowledge and evidence. It also identifies the methods to be used to guide the development of instruments and operations. Therefore, TALIS 2018 will gather information about teacher characteristics, teaching conditions, practices, and learning environments that research evidence, and the experience of practitioners, suggests contribute to positive student learning. Of course, it will recognise that positive student learning may be influenced by other factors that cannot be examined through surveys such as TALIS that are based on teacher self-report instruments.

4. The TALIS Board of Participating Countries is invited to:

- **ADVISE** on the balance to be accorded between maintaining existing questions from TALIS 2013, revising questions so as to improve the measurement of existing constructs and introducing questions that address new topics that have emerged within the nominated themes given the constraint of maintaining an average response time of 45 minutes;

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- **ADVISE** on the possibility of linking ITEL-TKS with TALIS 2018 and the role it is intended to play in the development process for TALIS 2018 over and beyond operational implications;

- **ADVISE** on whether some conceptual linking between the TALIS ISCED Level 1 work and the proposed ECEC staff survey should already be considered at this early stage of ECEC staff survey development.

- **RECOMMEND** additional QEG members, who would be invited to help on a temporary basis with specific aspects and perspectives.

DEVELOPMENT PROCESS AND INPUTS

Process overview

5. This development plan for the TALIS 2018 Conceptual Framework envisages an iterative process in which concepts are formulated by academics and scholars, discussed with relevant stakeholders, and revised and reformulated as necessary. This document is, thus, part of a process that will result in a framework that will guide the development of the TALIS 2018 survey instruments and operations alike.

6. That framework will be developed by the Questionnaire Expert Group (QEG), which was convened by the IEA in July 2015 in line with the general start of Consortium activities. It includes education, policy and survey experts, as well as ex-officio members from the IEA (Steffen Knoll, Deana Desa), Statistics Canada (Jean Dumais), the OECD Secretariat (Karine Tremblay, Katarzyna Kubacka, Noémie Le Donné), and the Technical Advisory Group (TAG chair, Fons van de Vijver).

7. The current core experts are:

- Hilary Hollingsworth, Australian Council for Educational Research, Australia
- Heather Price, Basis Policy Research, United States
- Sigrid Blömeke, Centre for Educational Measurement (CEMO), Norway
- Ronny Scherer, Centre for Educational Measurement (CEMO), Norway
- Trude Nilsen, University of Oslo, Norway
- Daniel Muijs, University of Southampton, United Kingdom
- David Kaplan, University Wisconsin-Madison, United States[1]

8. The development of the conceptual framework is operating under the joint supervision and editorial guidance provided by Dr John Ainley from the Australian Council of Educational Research (framework lead) and Mr Ralph Carstens from the IEA (QEG Chair). The work of the QEG, including the supervision by ACER and the IEA, will be monitored by the TALIS team at the OECD Secretariat.

9. The QEG began its work with a virtual meeting on 25 August 2015 that introduced the content focus, inputs and related information, as well as the intended work process for the QEG. Following that meeting, members developed a set of draft concept notes, which were reviewed at a two-day meeting in Hamburg (24-25 September 2015). Those concept notes were further revised based on combined QEG feedback and discussions, re-structured (see skeleton below) and incorporated in this development plan before being integrated in revised form into the conceptual framework.

10. The framework will incorporate the interests and directions for the survey's focus of the TALIS Board of Participating Countries (BPC)[2]. A full draft of the conceptual framework will be developed for

1. Dr Kaplan's contribution to the QEG is methodological in nature rather than related to the survey's core themes. Additionally, Dr Kaplan provides an important liaison with the PISA 2015 and PISA 2018 QEGs.

2. TALIS Governing Board (TGB) from 2016 onwards.

presentation to the TGB in March 2016 (dates and location to be determined), along with draft instruments planned to be used in the pilot study (administered between April and June 2016).

Initial themes for TALIS 2018

11. The work on the development plan has been guided by the document entitled "Guiding the policy and content focus of TALIS 2018", prepared for the TALIS BPC by the OECD Secretariat (OECD, 2015a; EDU/INES/TALIS(2015)3). That document was based on BPC deliberations, additional inputs from the on-going policy dialogs and networks, and a priority rating exercise in 2015, during which countries were asked to respond to questions and provide a rating that would help to determine the structure to be used for the TALIS 2018 questionnaires and the themes and indicators to be included in TALIS 2018. As part of the development work, the QEG noted the general aim of reducing the number of themes covered by each cycle of the TALIS survey. Based on this evidence, the OECD Secretariat recommended nine themes (noting that theme 5 in the list incorporates the two elements of teacher feedback and teacher development in the original list based on TALIS 2013). The names in parentheses indicated the lead expert for each theme.[3]

1. Teachers' instructional practices and beliefs (Blömeke, Scherer and Nilsen)
2. School leadership (Muijs)
3. Teachers' professional practices, including mobility issues advocated by the European Commission (Hollingsworth)
4. Teacher education and initial preparation (Blömeke, Scherer and Nilsen)
5. Teacher feedback and development (combining teacher feedback and continuing development, Hollingsworth)
6. School climate (Price)
7. Job satisfaction (Price)
8. Teacher human resource issues and stakeholder relations (Muijs)
9. Teacher self-efficacy (Blömeke, Scherer and Nilsen)

12. The BPC discussions of the content focus document [EDU/INES/TALIS/M(2015)1] further made a number of suggestions for strengthening the themes on *teaching practices* and *school leadership*. It was also suggested including questions on *equity and diversity* and possibly improve questions on *teachers' working time*. Finally, they encouraged the development of questions in the principal questionnaire that "mirror" questions from the teacher questionnaire where that was feasible.

13. This development plan further includes a concept note on the cross-cutting issue or theme of *innovation* (Blömeke, Scherer, Nilsen), which the QEG saw as an important issue to be considered in response to the interests voiced by the content focus document. However, some conceptual vagueness and uncertainty emerged during the QEG discussions in September and it was thus decided to prepare a short set of notes on this topic. *Equity and diversity* were considered to be encapsulated in the substance of each

3. In some instances, co-operation between a lead and a supporting expert has been established in order to maximise exchange and review outside of QEG meetings.

of the nine themes and therefore a separate paper has not been prepared on this topic so far. *Equity and diversity*, as well as *innovation*, are currently treated as cross-cutting issues, in contrast to separate and stand-alone themes. An initial allocation into suitable intersections between these and the general nine themes has been made by the QEG in order to balance analytical potential, in addition to survey priorities and space.

Additional inputs and issues in developing the conceptual framework and instruments

Links with previous TALIS cycles

14. The TALIS 2018 Conceptual Framework will combine aspects from the TALIS 2013 framework and TALIS 2008 work with new aspects developed for TALIS 2018. It is envisaged that the framework for TALIS 2018 will be a refinement rather than a substantial or major re-development, and be based on the successful development of the framework for the survey and implementation of its instruments in TALIS 2013. We do not expect that the TALIS main policy issues and the retained themes and indicators will change in major ways. However, some of the themes and indicators will require re-orientation and the inclusion of additional aspects. Furthermore, TALIS 2018 needs to take into account changes in the contexts of teaching and learning that have occurred during the five years since the second cycle. New developments in the academic and public debate about the teaching profession, new priorities and emerging challenges in educational policies will require further attention and reflection (e.g. as evidenced by discussion at the 2015 International Summits on the Teaching Profession, www.istp2015.org/). In addition, research evidence and thinking about teaching practices has developed. In closing, an approach that aims at refinement rather than re-development therefore provides a more robust and sustainable platform and also provides a better basis for analyses.

Links with PISA 2018

15. There is an interest in strengthening the synergies between TALIS and PISA, voiced both by the TALIS BPC, as well as the OECD Secretariat. In mid-September, the OECD Secretariat provided two commissioned inputs to the Consortium and, by extension, the QEG, namely:

- a possible way of aligning and developing joint conceptual frameworks for TALIS and PISA (contextual) authored by Dr Ben Jensen and Samara Cooper [EDU/INES/TALIS(2015)6];

- a database of survey themes, indicators and questions from TALIS, PISA and PIAAC compiled by Dr Simone Bloem.

16. Our understanding is that this intended alignment is relevant in general terms and not only for a potential TALIS-PISA link (in those countries that plan to participate in the link with PISA in 2018). This will involve reviewing common themes and some questions that are common to the TALIS and PISA teacher and principal questionnaires. Of course there will need to be appropriate adaptations given the limited alignment of survey populations (teachers eligible to teaching PISA students of age 15 rather than currently teaching at any grade level within ISCED 2). It further appears that any questionnaire module intended to capture aspects of the major domain of *reading* in PISA 2018 will be developed as part of PISA. Finally, it is our assumption that the TALIS 2018 materials will include formats similar to those used in TALIS 2013, but may evaluate and trial some formats or alternatives used in PISA 2018.

17. The intended synergies between TALIS and PISA raise some important questions and operate under substantial constraints. Most importantly, the development work for PISA 2018 commenced in 2014. Frameworks, including the contextual framework, will be close to final towards the end of 2015. Contractors for PISA 2018 will further be finalising field trial materials in Q1/2016, so at a time when

TALIS will present a draft framework to the TALIS Governing Board (TGB) and will only be preparing for the pilot. Starting in July/August 2015, the TALIS Consortium participated in discussions with the TALIS and PISA teams at the OECD Secretariat, as well as in exchanges with the PISA 2018 Contractors, most importantly ETS and DIPF on conceptual and instrument work, and with Westat for matters of operations and the sequencing of sample selection.

18. While more optimal alignment will only be possible when the surveys coincide again in 2024, an important consideration at the level of the BPC/TGB will be whether the QEG should, where appropriate, consider PISA materials and questions developed for 2018, rather than continuing with TALIS formulations, indicators and scales. Possible areas in which it has been suggested that consideration could be given to using PISA questions include programmes of initial teacher education (ITE) and school climate. An approach that aims to achieve a higher degree of alignment in 2018 will of course come at the expense of the potential for the analysis of trends.

Links with ISCED Level 1 and 3

19. While the core focus of TALIS 2018 is ISCED Level 2, it is intended to provide international options for ISCED 1 and ISCED 3, as done successfully in TALIS 2013. This is a consideration shaping the development of the conceptual framework and the instruments alike. The intention and tentative agreement in QEG is again to keep the themes constant across ISCED levels, while tailoring items to ISCED Level 1 and 3 where necessary and appropriate, e.g. with respect to the organisation of ISCED Level 1 curricula (with possible links to the proposed OECD survey of teaching staff in Early Childhood Education and Care) or Vocational Education and Training (VET) at upper-secondary level. This will maximise the analytical potential for comparisons and reporting across levels.

Links with the ITEL Teacher Knowledge Survey (ITEL-TKS)

20. Recently, a proposal for an *Innovative Teaching for Effective Learning* (ITEL) - *Teacher Knowledge Survey* (ITEL-TKS) (OECD, 2015b; EDU/CERI/CD(2015)21) emerged from the OECD Centre for Educational Research and Innovation (CERI). This ITEL-TKS proposes to study the pedagogical knowledge base of teachers and how new knowledge is incorporated into their teaching. It intends to survey teachers regarding their knowledge about creating effective teaching and learning environments, the extent to which they know about, and know about the relevance for teaching of, recent scientific research on learning (including neuroscience), as well as the teaching and learning of 21st century skills. It proposes to include objective measures of teacher knowledge in these domains and has developed an initial assessment framework.

21. The proposal canvasses the possibility of linking ITEL-TKS with TALIS 2018 by including additional instruments in the TALIS 2018 survey as a new international option. However, it is envisaged that the ITEL-TKS survey would take between 60 and 90 minutes to complete. If conducted concurrently with TALIS 2018, it would increase the response time threefold and could deleteriously impact on response rates. Advice from the BPC is invited already at this stage, while the Consortium will continue to evaluate operational and methodological feasibility and other types of impact on TALIS.

Balancing the interest in reporting over time versus new topics and issues

22. With the above in mind, advice is sought from the BPC regarding the balance to be accorded between maintaining existing questions from TALIS 2013, revising questions so as to improve the measurement of existing constructs, and introducing questions that address new topics that have emerged within the nominated themes. The possibility of improving the measurement of existing constructs will most often have arisen from reflections on the analyses of data from TALIS 2013. The possibility of

introducing questions about new topics within themes could have arisen from reflections on messages from recent research literature, or from interests expressed by participating countries through the BPC. It is necessary to achieve this balance within an average response time (for the English version) of 45 minutes. This limitation directly affects the flexibility to revise materials or introduce new materials and keep core questions constant for the purpose of trend and time series analyses.

23. For the field trial, it is envisaged that more material could be included through the use of overlapping or rotated forms of the teacher questionnaire (although not for the principal questionnaire). A possible design for the rotated forms of the teacher questionnaire in the field trial is outlined in a later section of this paper, but, ultimately, the limitation on time will remain relevant for the main survey instrument.

24. Obviously, the interest in seeking a larger conceptual alignment with PISA 2018, as well as with materials used therein, might further limit and impede on the extent to which materials can be designed to directly link back to 2013 and, by extension, to 2008.

Developing concept notes

25. For each of the nine themes listed above (and the cross-cutting issue of innovation) members of the QEG developed initial, free-format concept notes for the first QEG meeting in September 2015. Based on feedback at and after the meeting, experts then revised and standardised the concept notes around four headings (exceptions apply).

- Country priorities and other inputs:
  - interpretation of a theme in the BPC content focus paper;
  - PISA and other OECD documents.
- Theoretical background and justification:
  - general introduction into the issue, considering the established TALIS 2013 legacy;
  - general direction for developing the theme, e.g. new influences, paradigm shifts, incomplete coverage in 2008/2013;
  - brief review of relevant research literature, especially those establishing some evidence for plausible “causes of effects”;
  - focus on the nature of TALIS, teaching and learning from teachers’ perspective, as well as the working conditions of teachers;
  - a statement of “Why we want to know this?”.
- Key development directions and most important changes:
  - major areas of new developments, re-work, and shifts of focus;
  - high-level descriptions of materials (questions, items, scales) to be retained, re-worked, introduced or dropped (chopping board);

  - triangulation, possible harbouring of cross-cutting issues.

- Analytical potential and indicators:

  - high-level outlook and indication of the types of research questions about which data are being sought;

  - relationship to other themes and system, school, teacher characteristics, e.g. the link and interaction between climate and leadership;

  - policy-relevance and use (general, current, emerging);

  - brief sketch of potential indicators.

26. It is worth noting that the concept notes below are initial drafts that outline a range of possible directions for development. It is clear, though, that a full implementation of all changes would likely not retain a sufficiently high proportion of (key) materials to link back to 2013 and support trend analyses. Further, while the concept notes are intended to be similar in structure, the respective experts have been allowed to approach each theme and concept note in their preferred way. Harmonisation will be carried out at the time of integrating the materials below, as well as their refinements, which will follow in the next few months, in the development of the TALIS 2018 framework.

Outlook on further development

27. Each of the concept notes that follows is intended to provide the basis for a section of the conceptual framework, equivalent to Section II in the TALIS 2013 framework, and/or a refinement of existing themes. It is possible that additional themes will be developed in response to suggestions forwarded through the OECD Secretariat to the QEG. Concurrently the notes will be used to guide the development of instruments. The survey instruments will be used in small-scale pilots in the period between April and June 2016. The results of those pilots will inform the development of instruments to be subject to field trials in early 2017.

28. As stated above, the initial composition of the core QEG has been completed and an extended set of *ex-officio* members from the OECD, the OECD managed Technical Advisory Group (TAG), IEA and Statistics Canada were nominated. Future meetings have been tentatively scheduled for early December 2015 (virtual, 2-3h), mid-January 2016 (virtual, 2-3h), mid-February 2016 (face to face, 2-3 days, location to be determined), early July 2016 (face to face, location to be determined). Additional status and development calls between February and July will be scheduled in due time.

29. A long list of *extended* QEG members is currently being compiled, based on recommendations from QEG members and the Consortium. These members would be invited to help on a temporary basis, with specific aspects and perspectives. Most importantly, these are: 1) a review of all conceptual notions and materials from a Latin American perspective, 2) similar exercises from an Asian and possibly other regional perspectives, 3) expertise with teaching and learning contexts at the primary education level, and 4) expertise with teaching and learning contexts at ISCED level 3 and in VET. Recommendations from the BPC are welcome.

30. The Consortium is further working with the OECD, ETS and DIPF with respect to attendance at the upcoming PISA 2018 QEG meeting (Princeton, NJ, 16-18 December 2015) in order to strengthen the exchange of information and explore the extent to which alignment can already be achieved for 2018. One

of the dimensions for strong collaboration already agreed between PISA and TALIS contractors relates to the possible inclusion of survey experiments and alternatives.

31. At this stage, no information or inputs have been made available to the Consortium with respect to the upcoming OECD Early Childhood and Care (ECEC) staff survey. Consequently, we have not yet canvassed linking the TALIS ISCED Level 1 approach with this proposed survey of staff in ECEC settings but expect and are ready to engage in these discussions once the survey is allocated to a contractor and a respective instrument development group has been established.

DEVELOPMENT DIRECTIONS FOR CONTENT THEMES

1 – Teachers' instructional practices and beliefs

Country priorities and other inputs

32. Regarding teachers' instructional practices and beliefs, the BPC prioritised this theme, aiming to strengthen it in TALIS 2018. Specifically, the main goals the BPC communicated were: (1) describe profiles of teaching practices and beliefs with a focus on classroom management; (2) evaluate teachers' views on resources of effective teaching; (3) examine teachers' openness to adopting innovative teaching practices and their views on school conditions and incentives to foster innovation. A further exploration of the topic of innovation and the use of student assessments was desired. The BPC generally opted for stability in the TALIS assessments in order to monitor change. Nevertheless, the main focus shall be on depth rather than breadth of the assessments.

33. In addition to the BPC interests, Jensen and Cooper (2015; EDU/INES/TALIS(2015)6) recommended aligning the assessments of teaching practices in TALIS 2018 with PISA 2018. Whereas TALIS conceptualises teaching practices on a general level, PISA focuses on domain-specific instruction. Hence, the TALIS-PISA link may provide different perspectives on teaching practices, thus strengthening the reliability and validity of their assessment. Jensen pointed out that the framework of instructional quality, which was proposed by Klieme, Pauli, and Reusser (2009), can be used to operationalise teaching practices in TALIS and PISA.

Theoretical background and justification

34. Teachers' instructional practices comprise a number of aspects, which have been shown to be highly important for students' learning outcomes, such as achievement and motivation (Baumert et al., 2010; Creemers and Kyriakides, 2008; Fauth et al., 2014; Hattie, 2009; Kunter et al., 2013). Even though the concept is understood differently across the field, there is an agreement that instructional practices are multidimensional. More specifically, effective practices are characterised by: (1) classroom management (i.e. actions taken by the teacher to ensure an orderly environment and an effective use of time during lessons; van Tartwijk and Hammerness, 2011); (2) teacher support (i.e. teachers provide extra help when needed, listen to and respect students' ideas and questions, and care about and encourage students; Kane & Cantrell, 2010; Klieme, Pauli and Reusser et al., 2009); (3) cognitive activation (i.e. instructional activities, in which students have to evaluate, integrate, and apply knowledge in the context of problem solving; Lipowsky et al., 2009); (4) clarity of instruction (i.e. clear and comprehensive instruction and learning goals, connecting new and old topics, providing a summary at the end of a lesson; Hospel and Galand, forthcoming; Seidel, Rimmele and Prenzel, 2005). A great body of research exists on the impact of these four teaching practices on students' learning outcomes and progress. It is noteworthy that the relation between students' socio-economic status and their achievement may be mediated by the presence of these teaching practices (Rjosk et al., 2014).

35. In the context of TALIS, teaching practices are assessed by teachers' self-reports. Although these reports may be affected by social desirability (as evidenced previously in TALIS 2013), they still provide a teacher-centred perspective on instruction, contributing to an understanding of instructional quality (Kunter et al., 2008; Wagner et al., 2015). In addition, teachers' self-reports may provide valid information about their classroom perceptions of, for instance, classroom management, which is related to their well-being and risk of burnout (Aloe et al., 2014). Furthermore, there is a substantial relation between the quality of teachers' practices and their self-efficacy (Holzberger, Philipp and Kunter, 2014).

36. With the shift toward developing students' 21st century and innovation skills comes the challenge for teachers to adapt their teaching to novel forms of instruction (Dumont and Istance, 2010). The importance of these skills has been recognised widely; in fact, developing transferable knowledge and skills (e.g. problem solving, critical thinking, creativity, and collaboration) is considered to be one of the main goals of education (Binkley et al., 2012; Bohle Carbonell et al., 2014). Besides this, the current challenge of dealing with inequity and diversity in classrooms demands instructional practices that are sensitive toward individual differences (Dumont and Istance, 2010). This would entail extending the existing scale on teacher support, which is one of the four aspects of effective practices mentioned above.

37. Teachers' instructional beliefs relate to the nature of the subject and competences students are supposed to develop, the beliefs about students' ways of learning, and the beliefs about teaching and classroom practice. For instance, teachers with constructivist beliefs are more likely to provide cognitively activating learning environments than teachers with transmission views. There is a body of research suggesting that these beliefs are related to teachers' pedagogical knowledge, their instructional practices, and students' learning outcomes (e.g. Blömeke, 2014; Staub and Stern, 2002). However, there are contending reviews that support the effects of direct instruction on student achievement that also need to be considered (Hattie and Yates, 2014). Surveys of teaching practices need to be cognisant of a range of different approaches. Generally, teachers' instructional beliefs affect the way in which they perceive classroom situations and, in consequence, choose among a number of instructional practices (Fang, 1996; OECD, 2009).

Key development directions and most important changes

38. TALIS focuses on general, rather than domain-specific, instructional practices. As a consequence, it is worthwhile strengthening this theme by deepening its assessment. More specifically, since TALIS 2013 only assessed teaching practices of classroom management and aspects to teacher support, we suggest adding two dimensions that were identified as crucial aspects of instructional quality: cognitive activation (Baumert et al., 2010) and clarity of instruction (Kane and Cantrell, 2010; Scherer and Gustafsson, 2015). In fact, by extending the existing assessment, the general synergies, as well as, and, in particular, the TALIS-PISA international link option become more relevant and valuable, because PISA attempts to assess students' perceptions of classroom management, teacher support, and cognitive activation (OECD, 2013). Moreover, with respect to the BPC's interest in the themes of innovation, equity, and diversity, the assessment of teaching practices can be enhanced by developing new scales on "Teachers' instructional practices intended to foster students' 21st century and innovation skills" (e.g. fostering critical thinking, problem solving, and collaboration) and "Teachers' instructional practices to account for inequity and diversity in classrooms" (e.g. differentiated instruction).

39. Regarding the second dimension of this theme, teachers' instructional beliefs, previous findings from TALIS 2008 indicated that there is little variation in teachers' transmission view on instruction. Moreover, a strict dichotomy between constructivist and transmission views is not clear-cut and conceptually questionable, as instructional beliefs represent a continuum rather than a categorical entity (Schwartz and Jordan, 2011). We suggest, therefore, keeping the constructivist beliefs scale from TALIS 2013 as is, and exclude the transmission beliefs scale. Finally, to account for the notion of innovation in the beliefs dimension, we agree with the BPC's suggestion to add the construct of "Teachers' openness to adopting innovative teaching practices" to TALIS 2018. This construct is related to teachers' intentions and choices, and provides information on the potential barriers of innovation in instruction. Finally, we believe that "Teachers' views on resources of effective teaching" fits into the theme of school resources; moreover, "School conditions and incentives to foster innovation" may be regarded as an element of school climate.

Analytical potential and indicators

40. Assessing teachers' instructional practices and beliefs provides ground for a number of research questions that are concerned with: (1) the relations among teaching practices, beliefs, and teachers' background (e.g. teacher education); (2) profiles of teaching practices and potential determinants on the teacher level; (3) the relations between teachers' perceptions of their instructional practices and relevant teacher outcome measures, such as self-efficacy and job satisfaction; (4) cultural differences in instructional practices and beliefs; (5) profiles of general teaching practices (i.e. classroom management, teacher support, cognitive activation, and clarity of instruction) and specific practices to foster students' 21st century and innovation skills. In light of this potential, the concepts of teaching practices and beliefs can be linked to teachers' self-efficacy (e.g. classroom management and fostering innovation as aspects common to both themes), school climate (e.g. teaching practices feed into a school's academic climate), job satisfaction (e.g. classroom management as a potential determinant of job satisfaction), and innovation (e.g. establishing innovative teaching practices and/or fostering students' innovation skills). Moreover, this further opens avenues for some analytical potential specific to countries taking part in the TALIS-PISA link, namely the impact of teaching practices (possibly through their influence on the school's academic climate) on school-level achievement.

41. From a policy perspective, the assessment of teaching practices becomes highly relevant, as it provides information about aspects of instructional quality (Klieme, Pauli and Reusser, 2009). Moreover, information on different levels of classroom management, teacher support, cognitive activation and clarity of instruction may also reveal specific needs for teacher education and in-service training. Incorporating practices related to innovation, equity and diversity informs us about the extent to which teachers respond to crucial societal developments and whether they foster the development of transferable knowledge and skills. The latter are considered to be main outcomes of 21st century education (Pellegrino and Hilton, 2012).

Theme	Potential indicators
Teachers' instructional practices	Profile of teaching practices with respect to the dimensions of instructional quality: • Classroom management (as in TALIS 2008/2013) • Cognitive activation (new) • Teacher support (as in TALIS 2013) • Clarity of instruction (new) • Lesson time spent for these aspects (new) Profile of teaching practices with respect to 21st century instruction: • Fostering students' 21st century and innovation skills • Accounting for inequity and diversity in classrooms (e.g., by differentiated instruction)
Teachers' instructional beliefs	• Teachers' constructivist beliefs (as in TALIS 2008/2013) • Teachers' beliefs about their openness to adopting innovative instructional practices (new)

2 – School leadership

Country priorities and other inputs

42. The BPC expressed the desire to:

- repeat and add improved indicators on school leadership profile, role, and style;

- add new material on distributed and teacher leadership and on teachers' perception of school leadership.

43. The PISA principal survey also has a number of items on distributed leadership, combined into an index of school management teacher participation, confirming the importance of this factor, as well as indices on school goals and vision and curricular development, and instructional leadership, which link to the framework we propose below.

Theoretical background and justification

44. Leadership remains a key concern for the BPC and the world of education more generally. As stated in the discussion of the main findings of TALIS 2013: "Effective school leadership is a major factor in shaping the overall teaching and learning environment, raising aspirations and providing support for pupils, parents and staff, and thus in fostering higher achievement levels. But in most countries, school leaders' administrative activities have taken over an increasing share of their activities." (European Commission, 2014: 26). In terms of new developments in the field of leadership research, the main direction is the greater emphasis on both distributed and, in particular, teacher leadership, and on leadership beyond the school, known as "system leadership". The latter encompasses innovative collaboration with other schools, work with the community, and relationships with policymakers and other agencies (such as social services).

45. In addition, there has been a growing emphasis on linking leadership to student outcomes. Key findings suggest an indirect relationship where effective leadership creates the conditions under which teachers can optimise their effectiveness (Muijs, 2015; Hallinger, 2011). In their review of research, Day et al. (2010) identify eight key components of successful school leadership: defining vision and values, improving conditions for teaching and learning, redesigning and enriching the curriculum, restructuring the organisation, enhancing teacher quality, building relationships outside the school community, enhancing teaching and learning, and building relationships inside the school community. Research in educational effectiveness has identified leadership as the most important school-level factor in relation to student outcomes (Chapman et al, 2015).

46. If leadership is central to creating the school conditions under which teachers can be effective, then it is clearly important to collect data on what school leadership looks like, from the perspective of principals and teachers. The priority rankings from the BPC confirm this importance.

Key development directions and most important changes

47. In light of the importance of leadership, we propose retaining most scales from the 2013 Principal Questionnaire. This includes the sections on terms and conditions of employment, qualifications and experience, training and development, and role and function of the school leader, as well as distributed leadership, management autonomy and principal job satisfaction.

48. In light of BPC requests, we would wish to add items relating to attracting effective school leaders and principal self-efficacy. In addition to these we would suggest, in light of the research evidence on the impact of leadership, adding questions on principals' leadership in the eight key components presented by Day et al (2010) (see above), and items related to system leadership. We would suggest revising questions on principals' workload.

49. The TALIS 2013 Teacher Questionnaire asks minimal items about teachers' perceptions of school leadership. We suggest extending the items on distributed leadership to the Teacher Questionnaire for triangulation and analytic purposes, as suggested by Jensen and Cooper (2015). Moreover, "…we have

an understanding of which leadership practices have the greatest effect on student outcomes [from the PISA school and student surveys]….It would be beneficial for both [TALIS teacher and principal] surveys to include questions that can gather information on whether leaders are engaging in these practices." (Jensen and Cooper, 2015:21). We also suggest developing questions on teacher leadership and perceptions of principal leadership based on Day's (2010) eight categories.

Analytical potential and indicators

50. Leadership is key in terms of influencing teacher's work, the quality of teaching in schools, and, ultimately, pupil outcomes. The areas and items suggested will allow us to answer questions such as:

Principals' variation within and between countries

- What is the actual role of the principal in schools, does this differ between countries, and to what extent does this accord with what we know about effective leadership?
- What is the background of principals, how does this differ between countries, and how does this relate to developmental needs in the system?
- What is the relationship between principal roles, background and self-efficacy?

Principals' relationship to teachers and school climate

- What is the relationship between principal roles, background and self-efficacy, and:
  - school climate (discipline, innovation, and commitment to diversity)?
  - teacher outcomes (roles, self-efficacy, job satisfaction, perception of school climate, and feedback and appraisal)?
  - For TALIS-PISA link: what is the relationship between leadership characteristics, school characteristics and student outcomes?
- What is the extent of distributed and teacher leadership in schools? Does this differ within and between countries?
- What is the relationship between distributed and teacher leadership, and teacher outcomes (roles, self-efficacy, job satisfaction, and feedback and appraisal)?

51. There is strong policy relevance for these issues. The role of principals, and their recruitment and retention, are all key characteristics in light of the centrality to school effectiveness. These factors surveyed in TALIS will allow policymakers to benchmark leadership in their countries, and can aid in the development of policies regarding leadership training and continuing development.

52. In TALIS 2013, the majority of items on leadership employed four-point scales. Generally speaking, these worked well, so we suggest maintaining this format and employing them for new items to maximise consistency. For questions also asked about school leadership on the PISA principal questionnaire, we advise identical question and answer wording.

3 – Teachers' professional practices

Country priorities and other inputs

53. Interest in *teachers' professional practices* as a TALIS theme acknowledges the complex and multi-faceted dimensions of teaching as a profession. The theme encompasses a range of professional activities that teachers engage in within and beyond the classroom, including collaboration, participation in school decision-making and involvement in teaching activities outside of teachers' own countries (i.e. mobility).

54. In line with the guiding policy and content focus provided by the BPC (May, 2015), the main focus for this theme in 2018 will be on collaboration. A key finding of TALIS 2013 highlighted the complex forms of collaboration that teachers engage in. Teachers' views on conditions and resources needed to foster deep forms of collaboration in schools, and between schools and external stakeholders, is of high interest for TALIS 2018, as is the extent to which there is alignment between teacher and principal views regarding collaboration. There is also interest in the role of collaboration in teacher professional development and in teachers' professional experimentation with innovative pedagogies. Jensen and Cooper (2015; EDU/INES/TALIS(2015)6) report that "collaboration can support new ideas and challenge existing ones, which can be a powerful form of teacher learning." (p. 21). New material will be developed focusing on these areas, and repeat and improved indicators will enable comparisons with TALIS 2013 data.

55. Teachers' involvement in school decision-making processes is another area of focus for this theme, for which repeat and improved indicators will be developed. There is interest in understanding the extent to which synergies exist between teachers' and principals' views of decision-making processes in schools. There is also interest in some countries about opportunities afforded by the transnational mobility of teachers and potential links between teacher mobility and continuing professional development, collaboration and innovation.

Theoretical background and justification

56. Collaboration is a professional practice of high interest to teachers and policymakers alike. As noted in the TALIS 2013 Conceptual Framework [EDU/INES/TALIS(2013)4], collaboration among teachers has repeatedly been found to be a "particularly important professional practice" as it is seen to play a role in various elements of teachers' work including teaching practice, teacher learning, decision making, teacher job satisfaction, and school culture (see, for example, Desimone, 2009; Goddard, Goddard and Tschannen-Moran, 2007; Timperley et al., 2007).

57. However, collaboration is very complex and its status has sometimes been elevated without foundation. Some researchers have cautioned about this. For example, Little (1990) contends:

> The term collegiality has remained conceptually amorphous and ideologically sanguine. Advocates have imbued it with a sense of virtue – the expectations that any interaction that breaks the isolation of teachers will contribute in some fashion to the knowledge, skill, judgment, or commitment that individuals bring to their work, and will enhance the collective capacity of groups or institutions… Teachers' collaborations sometimes serve the purposes of well-conceived change, but the assumed link between increased collegial contact and improvement-oriented change does not seem to be warranted. (p. 508)

58. Researchers have also highlighted the interrelationship of collaboration and collegiality. For example, Kelchtermans (2006) writes:

> In the literature teacher collaboration is often mentioned in the same breath together with (or even subsumed in) "collegiality". Although indeed closely connected, both terms are not identical. Whereas collaboration is a descriptive term, referring to cooperative actions, collegiality refers to the quality of the relationships among staff members in a school. Often the term carries with it a positive value, referring to "good" (supportive, stimulating, rewarding, equal/democratic) relationships among equals. As such collegiality implies a normative dimension that goes beyond mere description and refers to an aspect of the school's organisational culture.
>
> Collaboration and collegiality constitute and reflect one another. The actual actions of working together are determined by the quality of the relationships among staff members. They "reflect" collegiality. At the same time, however, the actual actions contribute to the meaning and value of the professional relationships. This mutual constitution and reflection is an ongoing process and therefore, both their appearance and meaning may develop and shift over time.

59. There is potential for the relationship between collaboration and collegiality to be further elaborated in the TALIS 2018 Conceptual Framework.

60. Collaborative activities can take many forms. In TALIS 2013, teachers were asked about the frequency of their involvement in different types of collaborative activities (TT2G33). However, there were no questions that specifically focused on the *impact* of teachers' collaboration with respect to the ways in which collaborative activities support or hinder teachers' professional work and the ways that collaborative activities might shape teachers' attitudes about their professional work.

61. Kelchtermans (2006) notes:

> In order to properly understand and evaluate (value) collaboration and collegiality more, in particular one has to (a) distinguish between different forms of teacher collaboration, (b) develop a more balanced view on the value of both teachers' collaboration and autonomy, and (c) take into account the content or the agenda of teacher collaboration (collaboration for what?).

62. He also reports:

> The particular form, content, meaning and impact of teacher collaboration have to be understood as determined by the organisational context of the school in which it takes place. In other words: the cultural and structural working conditions in schools determine and mediate actual teacher collaboration, as well as the way "collegiality" is experienced and valued by the staff members involved.

63. Areas for possible further consideration/elaboration in the development of the conceptual framework include a focus on the conditions under which collaboration can (effectively) occur, forms of collaboration that might impact teaching practices and student learning (e.g. collaboration that clearly involves teachers in dialogue about teaching, collaboration within professional learning communities), and the distinction between collaboration and co-operation. Kelchtermans (2006) draws attention to the fact that:

> … teacher collaboration is not new, but over the past 25 years its focus and ambitions have shifted remarkably. Early optimistic claims and hopes were outbalanced by empirical work. More recently the concepts of teacher collaboration and collegiality are often discussed as part of the idea of "professional learning communities" or "communities of practice" (see e.g. Bolan/McMahon 2004)

64. Ideas related to collaboration and collegiality as part of professional learning communities and communities of practice are other areas of potential focus for the TALIS 2018 Conceptual Framework.

Key development directions and most important changes

65. Initial discussions of the QEG related to major areas of new development, re-work and shifts of focus for this theme included:

- Collaboration

  It is suggested that questions be developed that focus on:

  – conditions under which collaboration can (effectively) occur;

  – the nature or forms of collaboration – specifically those forms that might impact student learning (e.g. collaboration that engages teachers in dialogue about teaching), the role of collaboration in professional development;

  – the role of collaboration in professional experimentation with innovative pedagogies;

  – the alignment between teachers' and principals' views of collaboration.

  It is recommended that links between collaboration and student-centred learning (TT2G32, TTG233) be explored.

- Participation in school decision-making processes

  – It is recommended that the wording of 2013 principal and teacher questions TC2G22 and TT2G44 be retained (good alignment).

  – Additional teacher questions might be developed to enable further analysis of teacher results in relation to principal results.

- Mobility

  – Consider the possibility of questions related to mobility being an internationally co-ordinated national option (as in 2013), rather than part of the core material, as mobility is a high priority for some countries, but not others.

  – Consider developing questions related to the duration of mobility opportunities.

  – Consider developing some additional questions that focus on links between mobility and opportunities for continuing professional development, collaboration and innovation.

Analytical potential and indicators

66. In addition to the key research questions examined in TALIS 2013 ("TALIS 2013 Proposed Main Study Analysis Plan"; EDU/INES/TALIS(2012)39/REV1) related to the profiles of teachers' professional practices, the types of questions that could be answered about the directions and changes presented above, include:

- What forms of collaboration do teachers perceive as impacting on their teaching practices and student learning?
- What do teachers and principals perceive are the conditions under which collaboration can effectively occur?
- What connections exist between collaboration and development? Do teachers perceive collaboration to be a feature of effective professional development? Does collaboration stimulate further teacher professional development?

67. In what ways does collaboration stimulate and support innovation in teaching practice? These questions have relationships with other themes, including:

- teachers' instructional practices and beliefs (professional experimentation; salient outcomes; beliefs);
- teacher feedback and development (role of collaboration);
- school leadership (instructional leadership; support; resources);
- self-efficacy and job satisfaction (confidence; professional reflection and analysis);
- school climate (learning community; fostering effective teaching and learning).

68. The proposed questions with their relationship to other TALIS 2018 themes, as well as their relationship to system, school and teacher characteristics, have high policy relevance. Following TALIS 2013 there has been much interest generated towards understanding what quality teacher collaboration looks like and ways that deeper forms of collaboration might be supported and resourced, as collaboration is regarded as having significant impact on teachers' professional work.

4 – Initial teacher education (ITE)

Country priorities and other inputs

69. This discussion focuses on initial teacher education for teachers at ISCED 2. There may be a need for more specific response categories appropriate to ISCED levels 1 and 3 with respect to a few items. This concept paper focuses on the general survey.

70. For these and a number of other constructs, attention will be given to assessing whether questions have been understood in similar ways, and whether responses have generated comparable measures, across countries. With regard to psychometric issues, it is probably difficult to achieve full measurement invariance of ITE indicators. A need exists to apply advanced techniques to deal with this issue (e.g. Bayesian elastic constraints). In addition to modelling relations on the country level, ITE data should also be analysed by subgroups (e.g. latent profiles of "opportunity to learn" or OTL) – similar to Vieluf et al. (2012), but in the sense that the profiles should be used as predictors of outcomes.

Theoretical background and justification

71. Assuming a relationship between opportunities to learn (OTL) provided during teacher education and knowledge acquired by teachers – which, in turn, is significantly related to student achievement (Baumert et al., 2010; Hill, Rowan and Ball, 2005; Kersting et al., 2012) mediated by differences in the instructional quality delivered (Blömeke, Gustafsson and Shavelson, 2015) –, we can begin to understand

how the outcomes of education were achieved and where potentia starting points for reforms may lie. OTL in teacher education can be regarded as intentionally developed by educational policy makers and teacher education institutions (Stark and Lattuca, 1997). National and programme specifications of OTL reflect particular visions of the knowledge and skills lower secondary teachers are expected to have in a country (Blömeke and Kaiser, 2012; Schmidt, Blömeke and Tatto, 2011).

72. The Teacher Education and Development Study in Mathematics (TEDS-M) – carried out in 2008 under the supervision of the International Association for the Evaluation of Educational Achievement (IEA) – offered the first chance to examine OTL in teacher education across 15 countries (Tatto et al., 2012). Prior to TEDS-M, only crude data existed about teacher education, which led to inconsistent results about its effectiveness (Cochran-Smith and Zeichner, 2005). In many studies, only the type of license or the number of courses taken was used to define OTL. These quantitative measures reflected the amount of content coverage without taking into account which content was offered and how this was done, thereby ignoring qualitative similarities or differences between countries or teacher education programmes. Pure structural features do not appear to have significant effects on outcomes of teacher education, such as teacher knowledge, teacher retention or student achievement (Goldhaber and Liddle, 2012). In contrast, evidence suggests that the quality of programmes does have an impact on teacher education outcomes (Boyd et al., 2009; Constantine et al., 2009).

73. TEDS-M followed the IEA tradition of connecting educational opportunity and educational achievement to determine whether cross-national differences in teacher knowledge were caused by differences in the teachers' OTL (McDonnell, 1995). TEDS-M framed OTL in terms of content coverage, specifically as "the content of what is being taught, the relative importance given to various aspects" (Travers and Westbury, 1989), as well as in terms of professional preparation and teaching methods experienced. These were surveyed via self-reports of the future teachers based on Shulman's (1986) distinction between teachers' content knowledge, pedagogical content knowledge and general pedagogical knowledge, as well as practical experiences. The indicators were closely linked to the daily work of teachers in the classroom, thus acknowledging that effective professional education is grounded in the practices of the profession (Ball and Cohen, 1999).

74. Teacher education programmes can vary greatly from university to university and from country to country (Blömeke, Kaiser, and Lehmann, 2010; Tatto et al., 2012). TEDS-M had revealed that lower secondary teacher education prepares, in many countries, for teaching in grades 7 through 9. However, in some countries, preparation covers lower and/or higher grades. In most countries, one teacher education programme for future lower-secondary teachers exists. However, in some countries several programmes exist in parallel to each other. Teacher education can furthermore be organised in a concurrent or consecutive way. The length of teacher education programmes can also vary, as well as the number of subjects and the amount of OTL in these. The entrance requirement for teacher education is typically a high-school exit exam, but exceptions exist. Only few countries are able to recruit from the upper half of the school achievement distribution.

75. Content courses deliver the body of deep knowledge necessary to present the content to learners in a meaningful way and to connect the topics to one another, as well as to the learner's prior knowledge and future learning objectives (Wilson, Floden and Ferrini-Mundy, 2001; Cochran-Smith and Zeichner 2005). However, knowing the content provides only a foundation for teaching; student achievement is higher if a strong content background is combined with strong educational credentials (Clotfelter, Ladd and Vigdor, 2007). Pedagogical content knowledge links general pedagogical knowledge and content knowledge (Shulman, 1986). The importance of such a professional preparation, which links content knowledge to an understanding of how learners acquire knowledge, how to teach students that are diverse with respect to achievement, motivation, socio-economic background or language background using a wide array of instructional strategies, represents a robust finding in this context (Constantine et al., 2009;

NRC, 2010). A third robust finding on the impact of OTL on the outcomes of teacher education is the quality of the teaching methods experienced, in particular, the opportunity to engage in actual teaching practices, such as planning a lesson or analysing student work, rather than only listening to lectures (Boyd et al., 2009).

Key development directions and most important changes

76. TALIS 2018 shall describe ITE profiles and allow in-depth analyses of their effects on outcomes such as teacher self-efficacy or job satisfaction of lower-secondary teachers. In addition, the connection of ITE and continuous professional development is of interest. Understanding the different profiles of ITE leading into teaching and how they are connected to outcomes is highly relevant because countries need to recruit the best teachers. Many countries struggle with retaining teachers in the profession.

77. Teacher education changes substantially over time, though. Its effects are probably washed out the longer a teacher is in the profession because other characteristics come into play. In addition, the different competencies acquired during teacher education become more and more integrated, so that it is no longer possible to disentangle the effects of single teacher education characteristics on single competencies. It is, therefore, necessary to distinguish between different cohorts of teachers by asking when they had finished their ITE programme.

Analytical potential and indicators

78. Based on the state of research, the following indicators seem to be important:

- year when ITE has been completed;
- level of formal degree (tertiary/post-secondary or secondary level);
- alternative pathways into teaching;
- type of institution (university, pedagogical college, school);
- duration of teacher education;
- concurrent or consecutive programme;
- grade range teachers were prepared for to teach (e.g., 1-8, 7-9, 5-10, 5-12);
- type of school teachers were prepared to teach at;
- entrance requirements (school exam, university exam, practical experience);
- school grade in comparison to the age cohort;
- degree of subject specialisation (number of majors and minors, training as generalists);
- major in the subject being taught;
- relative emphasis to learn content knowledge, pedagogical content knowledge and general pedagogical knowledge, as well as practical experience;

- sense of preparedness for different teacher tasks, such as teaching content, classroom management or dealing with heterogeneity and responding effectively to individual learning needs;
- number of subjects covered in ITE;
- amount of teaching in subjects that have not been part of ITE (out of field teaching);
- job motivation;
- teaching as a life-long career (could also be an outcome variable).

79. As Jensen and Cooper (2015, p. 29) point out, one important objective in this area should be to phrase PISA and TALIS questions in the same way. Currently, several indicators are supposed to cover the same construct but look different.

80. Based on prior research, it can be hypothesised that the ITE features listed are significantly related to different types of outcomes, such as teachers' beliefs and practices, their innovativeness, job satisfaction and self-efficacy. If a link to PISA is established, the relation to student achievement can be examined as well. However, one has to be aware that complex models may have to be applied in this case because many characteristics of teachers, context and students mediate this relationship.

5 – Teacher feedback and development

Country priorities and other inputs

81. The link between teaching quality and student learning outcomes is well evidenced in the research literature (see, for example, Darling-Hammond, 2000; Hattie, 2009; Rowe, 2003: Wenglinsky, 2002) and so there is great interest at every level of the education community in the ways that teacher professional development and feedback can contribute to teacher learning and improved instruction.

82. In TALIS 2008 and 2013, professional development and feedback were areas of high priority represented in two separate themes – *Teacher education, from initial education through induction to in-service professional development* and *Teacher appraisal and feedback*. In TALIS 2018, both areas remain a high priority, however, it is proposed that they are combined in one theme, *Teacher feedback and development*. This acknowledges their relationship and connectedness to one another and to their role in teachers' ongoing professional learning.

83. In line with the guiding policy and content focus provided by the BPC (May, 2015; EDU/INES/TALIS(2015)3), repeat and improved indicators related to sources, types and perceived impact of feedback and professional development activities will be developed for TALIS 2018. In addition, new material will be developed related to teachers' views about effective forms of feedback and professional development, connections between professional development and innovation, and connections between feedback and professional development.

84. In their 2015 report considering opportunities for greater synergies between the 2018 TALIS and PISA surveys, Jensen and Cooper [EDU/INES/TALIS(2015)6] suggest possible areas of convergence related to feedback between the two surveys, as well as ways that professional development measures from the two surveys might be compared to determine relevant correlations with student outcomes. They also point out ways that TALIS-PISA link schools might be able to provide rich data. These suggestions will be considered in the development plan for this theme.

Theoretical background and justification

85. As noted above, the impact of teaching quality on student learning outcomes makes the areas of teacher feedback and development of high interest in education communities globally. From policy makers to practitioners, instructional improvement is typically a key priority, and teacher feedback and development are considered levers to achieving teaching quality.

86. The comprehensive discussion of the theoretical background and justification for the foci on teacher feedback and development prepared for the TALIS 2013 Conceptual Framework has relevance to the development of material for TALIS 2018. Areas for possible further consideration and/or elaboration in the development of the TALIS 2018 Conceptual Framework, include, but are not limited to:

- *Distinguishing between different purposes of teacher feedback* – Teacher feedback can take various forms and be provided by different sources for different purposes. For example, with respect to purpose, feedback can have an appraisal/accountability focus (e.g. for the purpose of career and salary advances), feedback can have a learning/professional growth focus (e.g. for the purpose of improving instruction), or feedback can juxtapose these two foci. Of interest are the ways that different types of feedback impact teaching practices and other aspects of teachers' working lives (e.g. self-efficacy, job satisfaction, school climate). Important elements related to the impact of feedback include transparency and trust with respect to its purpose. Richer detail about different *forms* of feedback, the *quality* of feedback and the *impact* of feedback is sought.
- *A focus on effective teacher professional development including activities that are sustained, collaborative and school-embedded or contextualised* – A growing body of research points to features common to effective professional development (Desimone, 2009; Hattie, 2009; Ingvarson, Meiers and Beavis, 2005; Timperley et al., 2001; Yoon et al., 2007). While TALIS 2013 questions provided insight into the kinds of professional development *content* that makes a difference to teaching practice, Jensen and Cooper (2015: 22; EDU/INES/TALIS(2015)6) report that "…the opportunity is missed to link particular *forms* of professional development with their perceived impact on teaching…". Jensen and Cooper point out that "…information about the form is equally important as the content.", and they note the potential for better co-ordinating questions about form and content between the TALIS and PISA surveys to enable comparisons and potential correlation to student outcomes.
- *Connections between teacher feedback and development* – Engaging in the process of seeking, receiving and responding to feedback can be a rich source of professional learning. And, including opportunities for professional development participants "…to benefit from rich and frequent feedback…" is a key feature of effective professional development design (Ingvarson et al., 2005). Connections between feedback and teacher development are of interest because of their relationship and connectedness to one another and to their role in teachers' ongoing professional learning.
- *Connections between professional development and innovation* – Professional development experiences can motivate, inform and support innovation in teaching practice. Areas of interest related to connections between professional development and innovation include: stimuli for new ideas, professional experimentation, and contextual factors that facilitate or hinder innovation (Clarke and Hollingsworth, 2002).

Key development directions and most important changes

87. Initial discussions of the QEG related to major areas of new development, re-work and shifts of focus for this theme included:

- Teacher feedback

  - There is a need to separate teacher feedback and teacher appraisal. In particular, there needs to be revisions to the existing question concerned with these issues to (i) distinguish between these two aspects, and (ii) ascertain further information specific to feedback and appraisal processes (for example: whether feedback is perceived as useful, whether feedback received is acted on, whether adjustments to practice in response to feedback are evaluated or followed up). It was noted that teachers might not be able to select one option on the scale to accurately represent their view of both appraisal and feedback processes. It was also noted that the terms "formal" and "informal" might be confusing.

  - Other questions also mix elements of feedback and appraisal processes and require some revision.

  - In the questions concerned with methods used to provide feedback, and the emphasis placed on different aspects of teaching as part of feedback, there is a need to include some additional items and review the existing scales.

  - The introduction of new questions related to the impact of feedback, and connections between feedback and professional development, is recommended.

- Teacher development

  - While it is considered important to retain a focus on induction because of the link between participation in induction and continued professional learning, it is recommended to better define formal and informal induction.

  - It is suggested that the questions on professional development need substantial re-working, as some items were problematic and the two-column format is awkward. Such changes may have consequences for the linked question on participation in professional development. The goal will be to develop a better measure of what effective professional development activities entail.

  - Questions on needs for and barriers to professional development will be reviewed to include elements of interest both now and predicted for 2018. For example, in an item related to 21st century skills is proposed. It is proposed that the item "no relevant *or appropriate* professional development" be amended to encompass content and *form*.

  - The introduction of new questions related to (i) the impact of different professional development "forms", and (ii) connections between professional development and innovation, is recommended.

Analytical potential and indicators

88. In addition to the key research questions examined in TALIS 2013 ("TALIS 2013 Proposed Main Study Analysis Plan"; EDU/INES/TALIS(2012)39/REV1), the types of questions that could be answered about the directions and changes presented above, include:

- What *forms* of feedback are provided to teachers? What *forms* of feedback do teachers perceive impact their teaching and other aspects of their professional practice?

- What *forms* of professional development do teachers perceive impact their teaching and other aspects of their professional practice?

- What connections exist between teacher feedback and development? Do teachers perceive feedback to be a feature of effective professional development? Does feedback stimulate further teacher professional development?

- In what ways does professional development stimulate and support innovation in teaching practice?

89. These questions have relationships with other themes, including:

- teachers' instructional practices and beliefs (professional experimentation; salient outcomes; beliefs);

- teachers' professional practices (collaboration);

- school leadership (instructional leadership; support; resources);

- self-efficacy and job satisfaction (confidence; professional reflection and analysis);

- school climate (learning community; fostering effective teaching and learning);

90. The proposed questions, with their relationship to other TALIS 2018 themes, as well as their relationship to system, school and teacher characteristics, have high policy relevance. As noted earlier, links between teaching quality and student learning outcomes are well evidenced, and teacher feedback and development are critical levers to achieving teaching quality.

6 – School climate

Country priorities and other inputs

91. The BPC expressed the desire to:

- repeat and improve indicators on teacher-student relations and classroom disciplinary climate;

- add new material on teachers' views on the school climate conditions needed to foster effective teaching and learning (for example, teacher leadership structure);

- integrate aspects of conditions of equity/diversity and innovation.

92. PISA has similar indicators on school disciplinary climate. Indicators could be mirrored in verbiage for triangulation. PISA only assesses school climate while TALIS assesses school and classroom climate.

Theoretical background and justification

93. Research shows that a positive school climate is a powerful influence on many elements affecting both students and teachers. School climate relates to student learning (Bryk and Schneider, 2002; Hoy, Tartar, & Hoy, 2006; Nilsen and Gustafsson, 2014; Martin et al. 2013; Thapa et al., 2013) as well as teacher effectiveness, confidence, and commitment to teaching (Fulton, Yoon, & Lee, 2005; Hoy and

Woolfolk, 1993; Weiss, 1999). For instance, a safe environment in which no bullying prevails is associated with high quality relations between students and teachers (Eliot et al., 2010).

94. In a recent review of school climate, Wang and Degol (2015) identify four dimensions of school climate: academic, community, safety, and institutional (see Table 1). "Academic" focuses on the overall quality of the academic atmosphere, including the "academic press" in the school, leadership, teachers' instructional quality and their professional development (Hoy et al., 2006; Martin et al., 2013; Nilsen and Gustafsson, 2014; Wang and Degol, 2015: 3). "Community" emphasises the quality of interpersonal relationships between stakeholders (Barth, 2006; Bryk and Schneider, 2002; Thapa et al., 2013; Wang and Degol, 2015: 3). "Safety" refers to the degree of physical and emotional security, as well as an orderly disciplinary climate (Goldstein, Young and Boyd, 2008; Gregory, Cornell and Fan, 2012; Wang and Degol, 2015: 3). "Institutional" reflects the organisational and structural features of the school environment related to effective teaching and learning (Thapa et al., 2013; Wang and Degol, 2015: 3).

95. If school climate creates conditions for effective teacher instruction, as well as motivates student learning and success, then it is clearly important to collect data on the four dimensions of the school climate from the teachers' perspective. TALIS allows the link of school climate to teachers' instructional practices, self-efficacy, and job satisfaction, while PISA provides the link of school climate from the students' perspective as it relates to student outcomes. Moreover, the convergence of the two surveys is beneficial, as "…multiple perspectives on disciplinary climate, student-teacher relations, and general school climate for learning offers insight on the validity of responses." (Jensen and Cooper, 2015: 30). School climate is an area of school policy that lies within the power of policymakers to adjust and revise to improve educational outcomes.

Table 1. School climate framework, Wang and Degol, 2015

Academic			**Community**			
Leadership Principals and administration support teachers, openness of communication	**Academic Press in Learning** Quality of instruction, assessments, teacher Expectations of students, achievement goal structure	**Professional Development** Opportunities and programmes for growth and development	**Partnership** Role of community members and parents in schooling, stakeholder involvement	**Relationships** Trust, interpersonal relationships between staff and students	**Connectedness** Cohesion, sense of belonging, student activities	**Respect diversity** Fairness, autonomy, stakeholders' opportunities for decision making, cultural awareness

Safety			**Institutional**		
Social and Emotional Bullying, accessible counselling	**Discipline and Order** Clarity, fairness and consistency of rules, belief in school rules, conflict resolution	**Physical** Level of violence or aggression, students and staff feeling safe, security measures	**Environmental** Heating, lighting, AC, acoustical control, cleanliness, upkeep of maintenance, quality of building	**Structural Organisation** Class size, school size, ability tracking, time use	**Availability of Resources** Adequacy of supplies, resources, and materials, technology, sharing of resources

Source: Wang, M.-T. and J.L. Degol (2015), "School climate: a Review of the construct, measurement, and impact on student outcomes", Educational Psychology Review, 23 June, p. 4.

Key development directions and most important changes

96. TALIS does assess the safety and institutional dimensions quite thoroughly, but only partially assesses other dimensions. Current questions on professional development and common goals among teachers in a school attend to most of the academic climate characteristics, but there lacks measurement of

several key academic press characteristics. Similarly, current questions on relations between teachers and with students and principals address some, but not many of the community characteristics.

97. Given the BPC priorities and burgeoning research on school climate, items related to teachers' perceptions of leadership, expectations and achievement goals for students, relations with parents, trust, and equity/diversity would be recommended. In addition to these dimensions, and in light of the BPC and ministerial priorities, we also recommend a set of items assessing climate of innovation in the school.

98. The continuance of two-tiered questions assessing school and classroom climate maximises potential for multiple perspectives and offers triangulation opportunities across stakeholders. Due to low variation on a few physical violence questions, these items could be dropped without impact to trend analyses.

Analytical potential and indicators

99. The four school climate dimensions can allow direct analysis to answer questions such as:

School and classroom climate variation within and between countries

- To what extent does school and classroom climate vary within and between countries?
- What is the extent of interrelationships between the four dimensions of school climate? Does this vary between countries?
- How varied are classroom climates within schools? To what extent does school climate explain classroom climate?

School and classroom climate relationship to teacher and school outcomes

- What is the relationship of academic, community, safety, and institutional climates to:
  - school composition?
  - school leadership practices?
  - teachers' instructional practices and beliefs, self-efficacy, and job satisfaction?
  - appraisal and feedback?
  - practicing innovation among teachers?
  - levels of tolerance, equity, and diversity in schools?

100. Unlike school demographic or economic conditions, school climate is a condition that policymakers can more readily change in order to affect student and teacher outcomes. It is important for shaping teacher education and training policies.

101. To maintain consistency in comparisons and trend analysis, question wording between TALIS and PISA on school climate should remain identical when possible and the classroom climate questions should remain unchanged. Other, well-established surveys, such as TIMSS, provide established scales to assess aspects of academic climate.

7 – Job satisfaction

Country priorities and other inputs

102. The BPC expressed the desire to:

- repeat and improve indicators on overall job satisfaction and teacher perception of the value of the teaching profession;
- add new material on teachers' views on the factors that would increase their job satisfaction and perception of the value of the profession.

103. PISA has identical items on job satisfaction of teachers (Bloem, 2015). This allows for triangulation of data. As discussed in Jensen and Cooper (2015), the items on PISA can only be evaluated at the school level, whereas TALIS allows for analysis and comparison on job satisfaction at the teacher level. TALIS also has questions on job satisfaction for the principal.

Theoretical background and justification

104. Job satisfaction refers to a sense of fulfilment and gratification from working in an occupation (Locke, 1969). While research shows that teachers are generally satisfied with the aspects of their job that relate to their teaching work (e.g. work tasks, professional growth), teachers tend to be dissatisfied with the aspects surrounding the performance of their job (e.g. working conditions, interpersonal relations, salary; Butt et al., 2005; Crossman and Harris, 2006; Dinham and Scott, 1998).

105. Research shows a positive relationship between teachers' job satisfaction and job performance (Lortie, 1975; Renzulli, Parrott, and Beattie, 2011). Job satisfaction plays a key role in teachers' attitudes, efforts, and confidence (self-efficacy) in their daily work with children (Caprara et al., 2003; Klassen et al., 2009; Tschannen-Moran and Hoy, 2007). Exploring the relationship between teachers' job satisfaction and teacher outcomes is important because it has a real impact on teachers' retention, attrition, absenteeism, commitment to educational goals, job performance and, by extension, on the academic achievement of students (Brief and Weiss, 2002; Ingersoll, 2001; Kardos and Johnson, 2007; Klassen et al., 2009; Lee, Carswell and Allen, 2000; Lortie, 1975; Price and Collett, 2012; Renzulli, Parrott and Beattie, 2011; Somech and Bogler, 2002).

106. Recent research suggests factors related to school organisation can improve and sustain teachers' job satisfaction. In particular, job satisfaction is shown to vary by the level of professional community, collaboration, and teacher autonomy in the school (Stearns et al., 2015). Teachers' relationships with their principals, both socio-emotionally, as well as organisationally with regards to leadership opportunities and professional discretion over classroom policies, are factors influencing teachers' job satisfaction and commitment (Price, 2012; Rosenholtz, 1989; Stearns et al., 2015; Weiss, 1999). At the resource level, it is shown that the absence of proper classroom support for students with special needs and basic classroom materials also heightens dissatisfaction (NAEd, 2008; OECD, 2013).

Key development directions and most important changes

107. Given the important consequences related to teachers' job satisfaction, we propose retaining the 2013 scales in TALIS on job satisfaction. They align with PISA items and assess two dimensions of job satisfaction: school and general professional. These scales worked well in TALIS 2013.

108. Notably missing is satisfaction with target classroom, a desired item expressed by the BPC. The principal questionnaire could also address the BPC theme 4.1 on teacher attrition and turnover rates using

questions about the frequency of teacher attrition, absenteeism, and turnover. These data points could be linked to the school climate and other factors related to teacher's job commitment and satisfaction.

109. In consideration of the BPC requests to extrapolate the factors associated with overall job satisfaction, items about satisfaction with school leadership, leadership opportunities, terms of contracts, and educational policy on teaching (autonomy), as well as appreciation by stakeholders would be suggested.

Analytical potential and indicators

110. The importance of job satisfaction on commitment to teaching is critical to attract and retain quality teachers in the profession. The areas and items suggested would allow us to answer questions such as:

Job satisfaction variation within and between countries

- What is the variation of teachers' job satisfaction within schools, within countries, and between countries?
- What is the relationship between teachers' job satisfaction with their classroom, school, and the profession?

Relationship of job satisfaction to other educational factors

- To what extent is the variation in teachers' job satisfaction explained by:
  - terms of contracts and other educational policies?
  - material resources?
  - school climate?
  - principal leadership?
  - teacher autonomy?
  - external appreciation by parents and society in general?

Relationship of job satisfaction to teacher outcomes

- To what extent does teachers' job satisfaction relate to:
  - teachers' self-efficacy and commitment to teaching?
  - teacher attrition, absenteeism, and turnover, at the school level?

8 – Teacher human resource issues and stakeholder relations

Country priorities and other inputs

111. The BPC expressed a desire to assess career structures of teachers, including incentives and stakeholder relations. In particular, the BPC expressed a desire to:

- add new material on linking teacher perception of the value of the profession, with more specific links to:
  - stakeholders (parents, students, school leaders, media and society at large);
  - teachers' views regarding the professionalism of teaching and for improving the status of teaching (including horizontal and vertical career trajectories and teachers' involvement in educational reforms).
- add new material on teachers' perception of linking pay to (student) performance and assessments.

112. Add new material on teachers' views on: stakeholder relations, relations between the unions and the government, on the extent to which they feel governments relate to teachers, and on their desired focus of educational reforms. One of the most reported and striking findings of TALIS 2013 was the overall low rating of teachers' perception of the value of teaching by society. TALIS 2018 provides the opportunity to test hypotheses of the relation of career structures and professionalism to this finding.

Theoretical background and justification

113. While teacher human resource issues and stakeholder relations are not generally found to be directly related to pupil outcomes, they can significantly impact the recruitment of teachers to the profession, the retention of teachers in the profession, job satisfaction, and teaching and learning conditions. As such, they form a part of the school context that creates conditions for effectiveness, as shown in various educational effectiveness models, including the Dynamic Model (Creemers and Kyriakides, 2008).

114. Human resources and stakeholder issues is not a discrete section in TALIS 2013. Instead, different aspects were addressed at different points in the surveys. Three main themes from the BPC include human relations issues and stakeholder relations: Teachers' professional practices, attracting good students into teaching, recognition, reward and evaluation of teachers, and teachers working time.

Key development directions and most important changes

115. Separating professional characteristics from the stakeholder beliefs will help to better understand why teachers believe there is a low value of teaching in society. Determining the source of this sentiment can guide policy to alleviate it, with the expectation that improving the perceived value of teaching would improve recruitment to and retention of the brightest and most talented citizens to the teaching profession.

116. Adding items on the teacher questionnaire to evaluate teachers' perceptions of various stakeholders on the value of teaching would include questions on teachers' perceptions of parents, students, principals, and the media, at the local and national levels.

117. Reworking the current section on appraisal could put more emphasis on the characteristics of teaching as a profession, as compared to a semi-profession. Characteristics of professionals include incentives and autonomy rather than just formal reward and appraisal systems. New material on recognition, reward and appraisal would include areas of recognition for innovation in pedagogical practices, interventions to address underperformance, career structure and prospects of teachers, teachers' perceptions of linking pay to achievement, and assessing unmet needs from current appraisal and feedback processes. Teacher work time allocation, which needs revision, also defines the professional state of teaching.

118. Lastly, in light of BPC requests, it would be useful to add items on teachers' participation in policy making, and on their views (and those of principals) on their educational policy priorities particularly with regards to resource allocation within education systems. This also aligns with the issue of teacher leadership.

Analytical potential and indicators

119. Teacher human resource issues are key to the recruitment and retention of teachers, the development of effective schools and learning climates and, ultimately, the quality of teaching in schools and, therefore, pupil outcomes. The areas and items suggested will allow us to answer questions such as:

Conditions of human resources and stakeholder relations

- What variation exists in teachers' working conditions within and between countries?
- What variation exists in the perceived appreciation of teachers in different countries? To what extent do they feel involved and listened to in policy making?
- What variation exists in systems of appraisal of, and incentives for, teachers in different countries?
- What is the relationship between teachers' working conditions, appraisal systems and job satisfaction, self-efficacy and intentions to continue in teaching careers?

Outcomes related to human resources and stakeholder relations

- What is the relationship of teaching profession characteristics to teachers' perception of the value of teaching?
- What is the relationship between perceived appreciation of teachers and teachers' job satisfaction and self-efficacy?
- What is the relationship between teacher working conditions and teacher professional development?

120. The policy relevance of these issues and areas is potentially strong. Teacher working conditions and incentive structures are likely to be related to teacher recruitment and retention which influences school effectiveness, and are amenable to policy intervention. The latter is less immediately the case for perceptions of the appreciation of teachers, but these may shed light on cultural conditions that may affect recruitment and retention to the profession.

121. Where possible it would make sense to retain items and item formats (e.g. four and five point scales) used in TALIS 2013 for consistency and comparability, and to use similar formats for new items. However, some of the time-related items may need revisiting.

9 – Teacher self-efficacy (TSE)

Country priorities and other inputs

122. The BPC communicated its interest in maintaining the TSE scale in TALIS 2018 in order to establish comparability and provide resources of monitoring progress over time. TSE is considered to be an important outcome measure in TALIS, which, in addition, describes a goal of teacher education. Specifically, the BPC points out that strengthening TSE, particularly in the beginning of teachers' service in schools, poses the need for a thorough assessment of the construct. At the same time, the BPC communicated some concerns regarding the accuracy of the current TSE scales, because social desirability

may bias teachers' responses to the TSE items. Hence, there is a need for improving this scale. Besides these recommendations, the BPC proposed adding teachers' self-assessment of their general pedagogical content knowledge in order to link TALIS 2018 with the ITEL study. Moreover, a general focus on innovation, equity, and diversity is desirable. In addition to the recommendations of the BPC, the Jensen and Cooper (2015; EDU/INES/TALIS(2015)6) paper stressed that a link between TSE in general instruction in TALIS 2018 and students' achievement and assessments of instructional quality in PISA 2018 could provide information on how teachers' self-beliefs relate to educational outcomes.

Theoretical background and justification

123. Currently, there is an enhanced awareness of the importance of teachers' self-beliefs in the fields of teacher education and educational effectiveness (Klassen et al., 2011; Klassen and Tze, 2014; Tschannen-Moran and Hoy, 2001). This increased attention might be due to a number of reasons: first, teachers' self-efficacy is considered to be an essential teacher characteristic that is related to their teaching practices and the quality of their instruction (Holzberger, Philipp and Kunter, 2013). Second, these teaching practices are, in turn, correlated with students' achievement and motivation, which represent essential educational outcomes (Caprara et al., 2006; Muijs and Reynolds, 2002; Hoy and Davis, 2006). Third, teachers with high self-efficacy show higher job satisfaction and commitment, and are less likely to be affected by burnout, indicating the importance of the construct for their well-being (Avanzi et al., 2013; Chesnut and Burley, 2015; Klusmann et al., 2008; Skaalvik and Skaalvik, 2010). As a consequence, TSE has received much attention in both national and international assessments. For instance, besides investigating teachers' characteristics, professional development, appraisal and feedback, and perceptions of school leadership, TALIS 2013 has put emphasis on the assessment of teachers' self-efficacy and related constructs, such as their job satisfaction (Desa, 2014; OECD, 2014). In sum, TSE is an essential construct that may shape creating effective teaching and learning environments (OECD, 2009).

Key development directions and most important changes

124. The assessment of TSE in TALIS 2013 covers the essential aspects of the constructs. In fact, there is a great body of research on the validity of this measure with respect to its internal structure, the relations to external constructs, and the generalisability across countries and cultures (Klassen et al., 2009; Pfitzner-Eden, Thiel and Horsley, 2014; Tschannen-Moran and Hoy, 2001; Vieluf, Kunter and van de Vijver, 2013). The three aspects of TSE (classroom management, student engagement, and instruction) cover, moreover, elements of teachers' self-assessment of their general pedagogical knowledge. Against this background, we opt for keeping the TSE scales from TALIS 2013. Nevertheless, in order to address the concerns about response bias due to social desirability, we suggest developing and introducing anchoring vignettes in TALIS 2018. Anchoring vignettes could provide teachers with a description of different situations, in which different levels of TSE are presented. We would be careful to ensure that these did not involve an excessive amount of response time or a heavy reading load, given concerns from experts, as well as experiences from other large-scale assessments. On the basis of teachers' evaluation of these situational anchors, their self-reported TSE can be adjusted for response styles that may be culturally driven (Bolt, Lu and Kim, 2014; Kyllonnen and Bertling, 2014). We suggest developing such vignettes for the three core dimensions of TSE.

125. In order to address the concepts of innovation, equity, and diversity in the context of TSE, new scales may be developed. Specifically, the following scales can be added: (1) TSE in fostering students' innovation and 21st century skills; (2) TSE in innovative teaching practices; (3) TSE in dealing with inequalities and diversity in classrooms. Adding these three aspects provides a much broader view on TSE on the one hand, and tailors the construct toward 21st century education.

Analytical potential and indicators

126. The incorporation of teachers' self-efficacy in TALIS 2018 provides opportunities for addressing research questions that are concerned with: (1) the extent to which teachers feel capable of performing general teaching practices and specific instruction to foster 21st century skills; (2) the relations between TSE, job satisfaction, and further relevant teacher outcomes (Skaalvik and Skaalvik, 2010); (3) the differences in TSE across cultures, countries, and educational systems (Vieluf et al., 2013); (4) the relation between TSE and teaching practices (Holzberger, Philipp and Kunter, 2014) and, for countries participating in the TALIS-PISA link, their relations to student characteristics and outcomes at the school level; (5) individual differences in TSE with respect to teachers' age, education, gender, school environment, and further factors (Klassen and Chiu, 2010); (6) the impact of a school climate of innovation and TSE in innovation (Michael, Hou and Fan, 2011); (7) impact of anchoring vignettes on the accuracy and validity of the TSE assessment (Bolt, Lu and Kim, 2014).

127. Moreover, identifying the relation between TSE and teaching practices on the one hand, and the level of TSE on the other hand, may provide some ground for inferences on potential interventions to strengthen TSE. In fact, some research indicates that strengthening TSE can result in higher levels of reported instructional quality (Holzberger, Philipp and Kunter, 2013).

128. In light of these considerations, there are direct links between TSE and teachers' job satisfaction, and TSE and teaching practices (self-beliefs in their instructional capabilities and self-reports of their instruction). Moreover, the link to the concept of innovation can be established in two ways: (1) operationalising teachers' self-efficacy in fostering students' 21st century skills; (2) looking at teachers' openness toward innovative teaching practices. The latter will be described under the theme "teaching practices and beliefs". It is noteworthy that self-efficacy in innovative teaching practices is directly linked to innovative teaching practices (Nie et al., 2013). Following the same line of reasoning, it is also possible to look at teachers' self-beliefs in dealing with inequality and diversity in classrooms. This aspect of TSE is of particular importance, as it may reveal specific needs in preparing teachers for education in changing societies.

Theme	Potential indicators
Teachers' self-efficacy	Teachers' general self-efficacy in three core dimensions (as in TALIS 2013): • Classroom management • Student engagement • Instruction Anchoring vignettes on the three TSE core dimensions to correct for potential social desirability response tendencies Teachers' specific self-efficacy in: • Fostering 21st century and innovation skills • Establishing innovative teaching practices • Dealing with inequality and diversity in classrooms

10 – Innovation

Conceptualisation of the theme

129. Rapidly changing societies, economies and technologies have led to frequent calls for innovation also in the field of education. The 2015 International Summit of the Teaching Profession lists "Encouraging innovation to create twenty-first-century learning environments" as one of three crucial criteria that have to be in place if an education system nowadays is to succeed (ISTP, 2015). How to define innovation and which fields to include, is not entirely clear though? One of the recent TALIS reports

defined innovation "*a new idea or a further development of an existing product, process or method that is applied in a specific context with the intention to create a value added"* (Vieluf et al., 2012). The report pointed out that incremental adaptations of existing characteristics are more common when it comes to innovation than radical changes.

130. Specifically with respect to innovation in education, the literature discusses at least four perspectives on education where a need of innovation is seen:

1. Innovation of educational *outcomes* in terms of 21st century skills.

   In addition to well-established literacies, such as reading or mathematics literacy, the next generations of students are seen in need of additional broader and/or more complex skills. Only then would they have a fair chance of succeeding in complex modern societies and on rapidly changing global labour markets. Creativity, problem solving and critical thinking are skills mentioned most often in this context (OECD, 2015c). Teachers need to be prepared for fostering such skills in students.

2. Innovation of teaching practices that support the acquisition of these 21st century skills.

   The integration of digital technologies into current teaching practices is one topic often mentioned in this context. It may be meaningful to link TALIS 2018 to the IEA studies about the implementation of computer and information technology in education SITES-M1 and SITES-M2, as well as ICILS 2013, by using some of the scales implemented here (Fraillon et al., 2014). The integration of digital technologies into practice has an affective-motivational prerequisite, and that is an attitude that is positive towards technologies in terms of technological innovativeness. Such teachers are more likely to use digital technologies and they are willing to take risks in their use (Yi, Fiedler and Park, 2006). This construct is a domain-specific version of the more generic innovativeness of teachers (see 3). The application of innovative teaching practices that cross traditional subject borders and support interdisciplinary approaches, but also collaboration between students and inquiry learning, is another topic in this context (OECD, 2013). For this topic, see the concept paper about teaching practices.

3. A general orientation towards innovation of teachers as core actors in educational processes.

   An innovation is "…an idea, practice, or project that is perceived as new by an individual or other unit of adoption…" (Rogers, 2003: 12) and a teacher's individual innovativeness expresses his or her willingness to change and to adopt the innovation (Hurt, Joseph and Cook, 1977). Such individual innovativeness is an indispensable precondition for educational systems to change. The literature indicates that, based on the time when teachers adopt an innovation, they can most probably be classified into five different groups when it comes to their innovativeness, namely Innovators, Early Adopter, Early Majority, Late Majority and Laggards (Rogers, 2003). Without the willingness of teachers to take risks and without their openness to experiences and an ability to stand the uncertainty that comes with change, innovation is hard to accomplish because it always breaks up routines. Openness and extraversion are facets of plasticity, a personality trait that promotes adjustment to changing environments and is a prerequisite for innovativeness (DeYoung, Peterson and Higgins, 2002). Hanfstingl and Mayr (2007) summarised the state of research with respect to these as follows: Extraversion and openness are significantly related to teacher performance in the classroom as perceived by the teachers or rated by their students, acknowledging that reliability concerns may apply. Extraversion has mainly direct effects whereas openness has mainly indirect effects via teacher knowledge. These teacher characteristics are also related to teachers' self-efficacy. Tschannen-Moran and Hoy (2001)

pointed out that teachers with high self-efficacy are more open to new experiences and are more willing to implement innovations. Other characteristics to be considered in this context (Tellis, 2009) is novelty seeking because it plays an essential role in the early stages of adoption of new products (Manning, Bearden and Madden, 1995) and to seek variety for the purpose of decreasing boredom or obtaining a change of pace (Steenkamp and Baumgartner, 1992).

4. A *school context* that is set up in an innovation-friendly way.

   Teachers are working in an organisational context that mediates or moderates the impact of their cognitive and non-cognitive personality characteristics on their performance and well-being (Job-Demand-Resources model, JD-R; Bakker and Demerouti, 2007). Job resources are school conditions that buffer potentially negative effects on teachers' classroom performance and health, but which enhance, in contrast, their work engagement and well-being (Bakker, 2011). Typical characteristics that work as barriers against innovations are lack of time and infrastructure needed (Andrews, 2007).

131. Besides an innovation-friendly climate on the school level and principals that support change, system characteristics that make it easier for schools to adapt to rapid developments are another important precondition of innovation. The 2012 TALIS report about pedagogical innovation (Vieluf et al., 2012) pointed to the value added of professional learning communities because they would constantly provide feedback to teachers, support, therefore, incremental changes, and have positive effects on instructional quality and student achievement (Bolam et al., 2005; Louis and Marks, 1998).

Potential indicators

132. Innovation feeds into different themes in TALIS 2018. We suggest using a number of indicators:

- Preparedness for fostering innovative educational outcomes ("21st century skills") such as creativity, problem solving, and critical thinking.
- Integration of digital technologies into teaching practices (scales from ICILS 2013?) and technological innovativeness.
- The Individual Innovativeness Scale was designed by Hurt, Joseph, and Cook (1977). The scale has good psychometric properties (Pallister and Foxall, 1998; Simonson, 2000). It has already been applied in many countries (see, for example, Celik, 2013). It measures the general innovativeness of individuals using 20 items that reflect sub-constructs of innovativeness, such as risk-taking, resistance to change or opinion-leading. Openness and extraversion can be surveyed with the corresponding BIG-five scales.
- School climate for innovativeness and professional learning communities.

SURVEY DESIGN CONSIDERATIONS

133. The primary purpose of this development plan is to describe the general development aims, possibilities and implications that have been identified by the QEG thus far on the basis of a large range of inputs and interests. Related to this, the IEA-led proposal and the initial discussion within the QEG, the TAG chair and the OECD Secretariat yielded a number of operational and methodological considerations and implications for the sample and instrument design. These are briefly described in the following section, together with issues that will be discussed further with the Technical Advisory Group, once established.

Sample design aspects

134. The sample design for the field trial, and the main survey, will be developed by the sampling team led by Mr Jean Dumais and team from Statistics Canada. It is currently envisaged that the sample size for the field trial will be slightly increased to 30 schools in each country (with 20 teachers selected in each sampled school). This increase is considered necessary to allow for the use of rotated forms (so as to trial more material) and alternative question formats (see below).

135. Regardless of whether a TALIS-PISA link is implemented in a given country, there will be general sampling issues that arise from conducting both TALIS and PISA in 2018. For countries in which the TALIS-PISA link is not implemented, the project team is developing procedures for sampling that minimise overlap and give appropriate attention to the sequence of selection, to the extent that this applies to countries operating under the same schedule. Some of those procedures may involve sampling of schools and others may involve within-school sampling (so that the number of teachers selected in both samples is minimised). It is important that the burden on schools of managing two surveys is contained and that the probability of schools and teachers being selected in both surveys is also limited.

136. For countries that implement a TALIS-PISA link, there remains the issue of correctly identifying members of each target population, since not all ISCED 2 teachers would be "PISA teachers" and not all "PISA teachers" would be ISCED 2 teachers. There are also questions as to whether the implementation would involve inclusion of core variables measured on common scales across the TALIS and PISA surveys, or the administration of full TALIS instruments to participating schools, with some consequences for response burden and the sense of antagonism towards the inclusion of similar questions on both. We currently assume that no country will opt for the administration of the TALIS-PISA link and a questionnaire for teacher of reading-related subjects at the same time. Consequently, the overlap of materials might be most pronounced for the respective principal questionnaires.

Field trial teacher questionnaire design

137. We propose a field trial design that allows for more materials to be trialled by means of partially overlapping forms (i.e. a partially rotated design). We assume that three forms could be used for teachers within each ISCED population, but one common form only for principals (since no related constraint exists there).The full set of field trial items could be divided into, say, four modules of items: the general background information and three disjoint modules of theme/policy-related items, say A, B and C. Each form would cover general background material and contain two of the three policy-related modules, for example, background, A and C. Each theme would thus appear in at least two out of the three forms and thus also allow for correlational analyses across all themes. The need for such correlational analysis across two or more themes will be discussed with the QEG in due time on the basis of the intended field trial analysis.

138. A second key reason for such a partially rotated form design relates to the trialling of alternatives. This could be in the context of alternative question formats under otherwise equivalent constant thematic content or the parallel and comparative trialling of a new set of items vis-à-vis an established set from 2013[4].

139. The rotation specifics will be determined in view of the importance of each module and the amount of material in each. Designs such as these exist primarily for assessments using multiple-matrix sampling, but have recently been used successfully, for example in the IEA ICCS 2016 field trial. These can be adapted readily for the TALIS field trial. Depending on the amount of common materials for all forms, each form would include approximately 70-80% of all materials, which, in turn, could increase the total amount of materials that could be trialled from 45 to about 55 to 65 minutes. Such an approach may imply a slightly larger numbers of schools and teachers in the field trial. To provide a conservative (i.e. highest assumed) estimate, we currently plan to require a minimum field trial sample size of 30 schools and 20 teachers each.

140. For various scientific and analytical reasons, we explicitly and clearly do not intend to use a rotational design in the main survey. A single, common teacher questionnaire for each target population will be used in the main survey

Survey instrument innovations

141. For most of the constructs being measured we intend to continue with the same item types and formats that were used successfully in TALIS 2013. However, we are currently exploring the use of two promising approaches for increasing the validity of the measures concerned with instruction in the field trial: *anchoring vignettes* or *situational judgment* items.

- Anchoring vignettes would provide teachers with a description of typical classroom scenarios. On the basis of these scenarios, teachers subsequently work on a number of questions that refer to different attributes of the scenarios, which could, for instance, address the degree to which teachers think specific instructional practices or beliefs are presented. Responses to such anchors could be used to adjust teachers' self-reports on instruction and instructional beliefs in order to correct for general response styles or cultural biases. Even though experiences from PISA 2012 and 2015 (FT stage) do not provide a very clear or optimistic outlook on the potential, this approach could be more productive with teacher, rather than student, respondents.

- Situational judgments also provide stimulus materials that are based on descriptions of classroom situations, but the focus is on assessing teachers' instructional skills. Technically, item layouts would be similar to those already used in 2013, but situational judgments might entail an element of evaluation or coding at national level.

142. These approaches are used in occupational selection and have been used in some assessment programmes. However, it will be necessary to use the field trial to evaluate the reading load and response time requirements involved. These represent two tentative possibilities for extending and improving the relevance of TALIS within the constraints of a cross-sectional and self-reporting survey.

4. For example, the substantial redesign of teaching practices materials in the 2013 field trial could have benefited from the parallel retention of 2008 materials as some "insurance".

Survey operations

143. TALIS 2018 will mostly re-use tried and successful operational approaches established by the IEA for 2008 and 2013. It will be necessary to update the technical standards to be consistent with the demands and design parameters flowing from the conceptual work.

144. Further, the default survey mode for TALIS 2018 will be online through the Internet. This means that the complexity and error sources associated with the production and delivery of the questionnaires to teachers and principals can be handled through an electronic system. The platform for managing, translating and delivering all TALIS 2018 questionnaire materials in an online, collaborative platform, is the IEA eAssessment System that is currently in use for ePIRLS and eTIMSS and in preparation for the next cycle of ICILS, the IEA's Computer and Information Literacy Survey. This system will cover all aspects of national instrument production, including adaptation, after the international source versions are created and finalised by the QEG and until delivery and data collation within countries. The system will also be used to produce paper-and-pencil questionnaire templates should they be needed for countries or schools that are not willing or able to make use of the online delivery of instruments in full, partially or in the case of refusal.

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