

**DIRECTORATE FOR EDUCATION AND SKILLS
 EDUCATION POLICY COMMITTEE**

Group of National Experts on Effective Learning Environments

LEEP FIELD TRIAL IMPLEMENTATION REPORT

Learning Environments Evaluation Programme Series

This paper is included in the “Learning Environments Evaluation Programme Series”. The LEEP series present the work developed by the OECD LEEP programme. The reports and papers included in the LEEP series are the following:

LEEP Instrument Development: From the Framework to the Field Trial [EDU/EDPC/GNEELE(2017)4]

LEEP Field Trial Implementation Report [EDU/EDPC/GNEELE(2017)5]

An OECD Framework for a Physical Learning Environment Module – Revised edition [EDU/EDPC/GNEELE(2017)6]

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November 2017

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Further to the implementation of the LEEP Field Trial [October-November 2016] and the developments during the 5th meeting of the Group of National Experts on Effective Learning Environments [October 2017], the OECD Secretariat has revised the 2013 Framework [*Effectiveness, Efficiency and Sufficiency: An OECD Framework for a Physical Learning Environments Module*]. The new document is entitled “An OECD Framework for a Physical Learning Environments Module – Revised edition” and sets out the proposed revisions to the terms effectiveness, efficiency and sufficiency.

This Paper is prepared by the Learning Environments Evaluation Programme (LEEP) of OECD.

Our team at the OECD LEEP works with school leaders, researchers and policy makers to explore how investments in the learning environment, including the physical learning environment and technologies, translate into improved education, health, social and well-being outcomes.

(LEEP, www.oecd.org/edu/facilities)

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The LEEP Field Trial Implementation Report is a collaborative endeavour involving the Group of National Experts on Effective Learning Environments, the participating countries and Norway in particular, the OECD Secretariat and a number of different experts who contributed during the different phases of the project. The report was prepared by Katja Anger (OECD), Alastair Blyth (University of Westminster) and Julie Velissaratou (OECD). Administrative assistance was provided by Diana Tramontano. The report was edited for publication by Zoe Karathanasi-Rauchvarger.

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Executive Summary

This Report presents the implementation of the Field Trial for the Learning Environments Evaluation Programme (LEEP) Module.

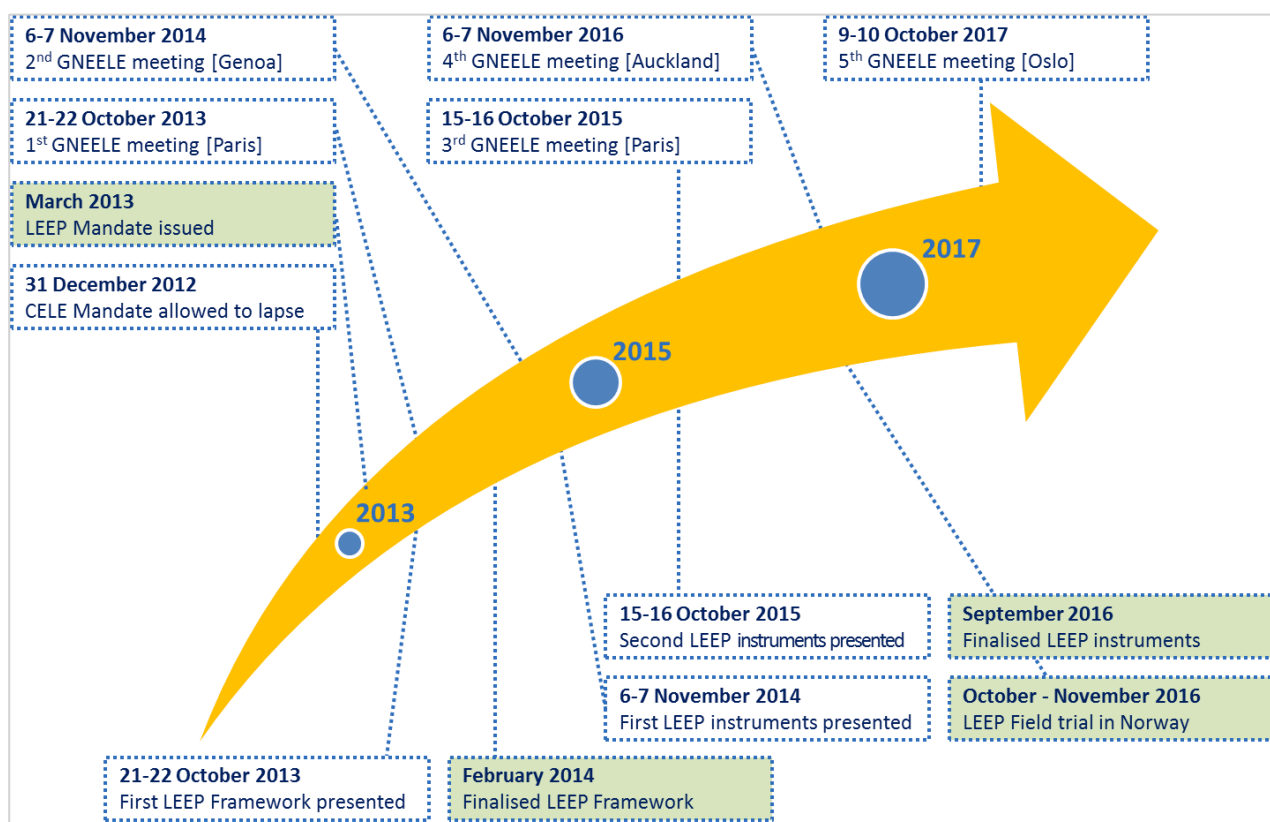
Work on this area began in 2013 with the development of the 2013 LEEP Framework, which set out the basis for the development of the LEEP instruments. The instruments' development phase began with the adoption of the LEEP Framework in 2013-2014 and ended with the finalised LEEP instruments, which went on Field Trial in October-November 2016. There is a separate OECD paper that presents the development of the instruments in detail, entitled "LEEP Instrument Development: From the Framework to the Field Trial". A revised Framework will guide the project after the 2016 Field Trial.

The LEEP instrument development took place between February 2014 and 2017 in three distinct phases:

- Phase 1 – Content development
- Phase 2 – Pilot testing
- Phase 3 – Field Trial and final questionnaires

The first draft of the questionnaires was presented to the GNEELE in November 2014 and the second draft in October 2015. Following advice from the GNEELE to reduce the complexity and scope of the questionnaires, the final draft was prepared for the Field Trial in September 2016.

The following figure presents the main milestones of the LEEP instrument development:



As the Module was finalised in September 2016, it was envisaged to function as a self-evaluation instrument and be implemented independently of any other assessment. The next step after the

finalisation of the Module was to **run the LEEP Field Trial** in order to **validate the Module instruments**. Once validated, the instruments would be made available for use as self-evaluation instruments by schools and education authorities. They could also be used along with existing cognitive tests for students.

The aim of the LEEP Field Trial was to test the quality and the content of the instruments and provide insights for a structured process for administering the survey across more schools. The objectives of the Field Trial were to test:

- Whether the data gathered would provide answers to the main questions of LEEP as articulated in the 2013 LEEP Framework.
- Whether the data gathered will show if the spaces in schools support 21st century teaching and learning practices.
- The relevance of the instruments in light of the school's needs.
- The relevance of the deliverables of the Field Trial amongst experts and to get feedback from the respondents and the policy makers about these deliverables.
- The process, and gather information and collect lessons learned to improve the operations; to get feedback from the respondents about the processes used.

This Report on the implementation of the Field Trial illustrates how the Field Trial was conducted, and presents the deliverables of the Field Trial. The Annex presents the sample "School Report" and the sample "Comparative Report", as well as the questionnaires used for the Field Trial.

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Chapter I

IMPLEMENTING THE FIELD TRIAL

I.1 Purpose and overview of the Field Trial

The **main purpose** of the LEEP Field Trial was **to validate the Module instruments**. Once validated, the instruments would be made available for use self-evaluation instruments for schools and education authorities. They could also be used along with existing cognitive tests for students. The aim of this Field Trial was to test the quality and the content of the instruments and provide insights for a structured process for administering the survey across more schools.

The objectives of the Field Trial were to test:

- Whether the data gathered would provide answers to the main questions of LEEP as articulated in the LEEP Framework.
- Whether the data gathered will show whether the spaces in schools support 21st century teaching and learning practices.
- The relevance of the instruments in light of the school needs.
- The relevance of the deliverables of the Field Trial amongst experts and to get feedback from the respondents and the policy makers about these deliverables.
- The process, and gather information and collect lessons learned to improve the operations; to get feedback from the respondents about the processes used.

This chapter contains information about the operations before and during the Field Trial [e.g. translation, data collection, confidentiality], as well as about the role of the National Co-Ordinator.

I.2 Structure of the LEEP finalised instruments

There are three LEEP questionnaires: the student, the teacher and the school questionnaire. The latter is to be completed by the school principal. Each questionnaire is structured in such a way that it is understandable and easy to use. Most of the questions have been developed so that responses are given using a scale. There are only a few open questions because the data process for such questions is more time-demanding. The responses are anonymous to protect the identity of individuals. The questions either specify a particular time period, which the respondent needs to consider, or they may ask about their perceptions in general.

Structure of the finalised LEEP instrument that went into Field Trial			
	Student questionnaire	Teacher questionnaire	School questionnaire
Section 1	About You 4	About You 8	About You 6
Section 2	Spaces you use 6	About your school 2	The physical environment of the school 4
Section 3	Comfort 8	Spaces you use 5	Technology at the school 3
Section 4	Safety and well being 2	Comfort 6	Overall satisfaction 1
Section 5	Overall satisfaction 1	Technology 2	
Section 6		Arrangement of the space 5	
Section 7		Space for admin work & class preparation 1	
Section 8		Overall satisfaction 1	

Figure I.1: Summary of the structure and the sections of the three questionnaires that went into Field Trial in October – November 2016.

Figure I.1 summarises the structure and the sections of the three questionnaires that went into **Field Trial in October-November 2016**. The common sections between questionnaires are the same colour. All questionnaires end with the same section/question about overall satisfaction. Annex 3 in this Report present the questionnaires used for the LEEP Field Trial.

I.3 Translation and cultural adaptations of the instrument

The LEEP questionnaires were finalised in September 2016. The international version of the questionnaires was drafted in English.

Initially, three countries offered to run the Field Trial: Greece, Mexico and Norway. The questionnaires would need to be translated into Greek and Spanish for the first two countries, while Norway opted to run the Field Trial with the international/English version.

The objective of cultural and national adaptation is to adjust the data collection instruments, so that they are appropriate for each participating country. Furthermore, a number of common rules for the use of language would apply: translations should have the same register (language level and degree of formality) as the source text; translated text should employ correct grammar; translated questionnaires and text should neither clarify, nor delete or add information; spelling, punctuation and capitalisation should be appropriate for the target language.

I.3.1 Translation and cultural adaptation into Greek

The OECD Secretariat translated the three questionnaires into Greek. There were no issues that would jeopardise the implementation of the LEEP trial arising from the translation and cultural adaptations of the instruments into Greek. Minor adaptations used for the Greek translations were also deemed necessary for the international English questionnaires. The translated questionnaires were also validated by an external expert in communications. The questionnaires were sent to the Greek Ministry of Education and the Permanent Delegation of Greece to the OECD in October 2016. The Institute responsible for the curriculum of the Greek public education system validated the questionnaires as appropriate for use in February 2017.

I.3.2 Translation and cultural adaptation into Spanish

The OECD Secretariat sent the LEEP questionnaires to the Mexican National Institute for Physical Infrastructure (INIFED), which is the Mexican representatives to the Group of National Experts on Effective Learning Environments (GNEELE); INIFED undertook the translation. There were a number of iterations between the OECD and the agency, until the questionnaires were finalised. INIFED suggested that a number of additional questions should be included on access to drinking water and on some specific elements of the physical environment, such as doors and windows. However, as these requirements were specific to the Mexican context, it was decided that an optional section covering the specific areas could be added to the main LEEP questionnaires. These questions were not integrated into the version that went on the Field Trial. Overall, there were no issues that would jeopardise the implementation of the LEEP trial arising from the translation and cultural adaptations of the instruments into Spanish.

I.3.3 Cultural adaptation for the Norwegian context

The three questionnaires were sent to the Norwegian representatives to the GNEELE, who reviewed the instruments and made two main comments/observations:

- Secondary education in Norway consists of 7 year levels/grades, rather than 6 years that were indicated in the international [English] version. Therefore, all relevant questions were adapted to provide for the 7 year levels/grades.
- Some of the terms, in particular the word 'humidity', were unfamiliar in the Norwegian context. Therefore, some of the questions had to be adjusted accordingly.

I.4 Online data collection

The online mode of questionnaire delivery was chosen over a paper-based survey, as it offered a number of advantages: operational benefits, such as ease of distribution of the survey and data collection; reduction of paper handling; reduction of survey set-up, data entry and other administration costs; as there would be no need to transcribe the data from the paper-based survey responses, the database of responses would be available more quickly. It was also anticipated that both teachers and students would be receptive to a more convenient, up-to-date mode of survey administration.

It was decided that no paper version of the survey would be available for distribution, neither any other options, such as emailing PDF documents, or printing out the online questionnaires and mailing them to the National Coordinator, or the OECD Secretariat. There lies the only disadvantage of the online data collection (ODC): in cases where there is not sufficient access to computers for the respondents or online access is limited because of poor connections or download/upload speeds.

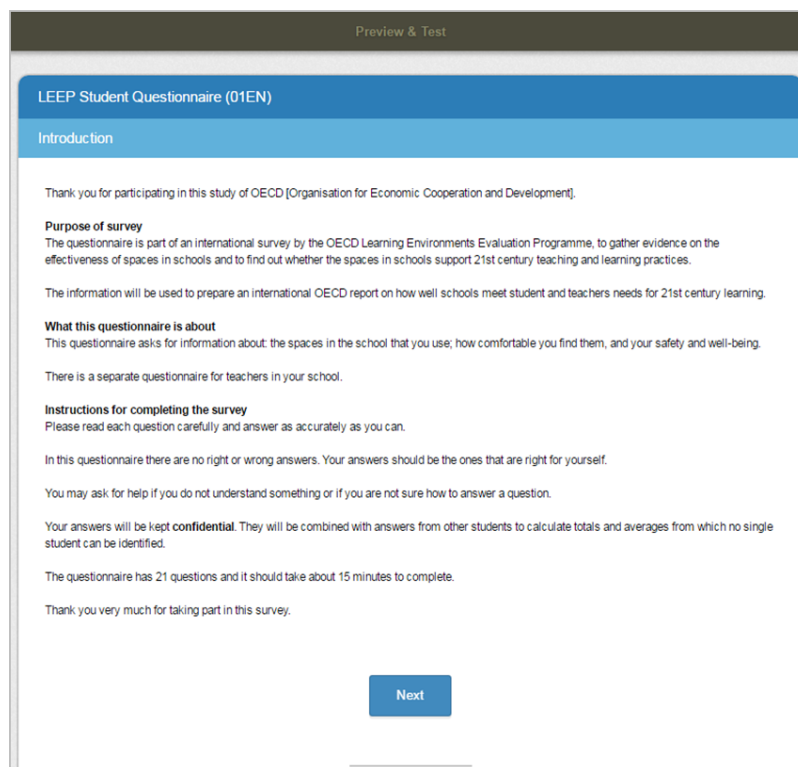
The image is a screenshot of a web browser displaying the 'Preview & Test' version of the 'LEEP Student Questionnaire (01EN)'. The page has a blue header with the title 'Introduction'. The main content area is white and contains the following text: 'Thank you for participating in this study of OECD [Organisation for Economic Cooperation and Development].', 'Purpose of survey: The questionnaire is part of an international survey by the OECD Learning Environments Evaluation Programme, to gather evidence on the effectiveness of spaces in schools and to find out whether the spaces in schools support 21st century teaching and learning practices. The information will be used to prepare an international OECD report on how well schools meet student and teachers needs for 21st century learning.', 'What this questionnaire is about: This questionnaire asks for information about: the spaces in the school that you use; how comfortable you find them, and your safety and well-being. There is a separate questionnaire for teachers in your school.', 'Instructions for completing the survey: Please read each question carefully and answer as accurately as you can. In this questionnaire there are no right or wrong answers. Your answers should be the ones that are right for yourself. You may ask for help if you do not understand something or if you are not sure how to answer a question. Your answers will be kept confidential. They will be combined with answers from other students to calculate totals and averages from which no single student can be identified. The questionnaire has 21 questions and it should take about 15 minutes to complete. Thank you very much for taking part in this survey.' At the bottom of the page, there is a blue button labeled 'Next'.

Figure I.2: Screenshot of the introduction to the LEEP student questionnaire

I.4.1 Selection of an online platform for the LEEP FT survey

The OECD considered a number of options for the online survey management: from using a proprietary survey platform to developing a bespoke platform. The advantage of using an existing online survey tool was that it reduced the cost and time that it would otherwise take to create the survey. The disadvantage was that each system would come with constraints on the survey configuration.

The OECD explored a number of proprietary survey tools and used a broad range of criteria for selection. The survey tool should be able to:

- Generate a user friendly interface for respondents
- Enable questions to be formatted in the required form, including the use of images

- Offer protection of data
- Enable the OECD to have data ownership
- Handle a significant number of respondents
- Convert the responses to an editable spreadsheet file

Although the proprietary systems had pre-designed question formats which could be selected, they would allow the user some latitude in formatting the design style.

SurveyMonkey was selected as the proprietary platform, because it offered the highest degree of flexibility according to the selection criteria. The OECD Directorate of Education possesses a platinum account with this provider, thanks to which more than 15 questions were included in a single questionnaire, as well as the option to collect more than 150 responses.

While this online survey platform enabled the OECD to take ownership of the data and of the survey itself, an economical and financially viable solution in the future would be to develop a bespoke survey platform. The OECD envisages the development of a specific survey tool for LEEP.

I.4.2 Look and feel of the online data collection

The online tool did not allow for a total customisation of the questionnaire lay out; however, the main criterion for choosing the particular template was the readability of the questions and answers. For example, the questions are displayed in a different shade of blue than the answers. The questions are also printed in a larger font than the answer options.

Preview & Test

LEEP Teacher Questionnaire (Q2EN)

SECTION 2: ABOUT YOUR SCHOOL

9. To what extent do you agree with the following statements about your school's leadership* and learning environment?
(Please tick one box in each row)
*Note: School leaders include the school principal, deputy principal and heads of department.

	Strongly agree	Agree	Disagree	Strongly disagree
School leaders* and teachers have a shared vision about how best to use the school buildings and learning spaces.	☐	☐	☐	☐
School leaders* encourage teachers to experiment with different ways of using the learning spaces we have.	☐	☐	☐	☐
The design of the school buildings and learning spaces encourages collaboration with other teachers.	☐	☐	☐	☐
The design of the school buildings and learning spaces encourages the use of a variety of teaching practices.	☐	☐	☐	☐
The school buildings and learning spaces suit my preferred teaching practice.	☐	☐	☐	☐
Our school timetabling enables us to make the most of the learning spaces we have.	☐	☐	☐	☐
I am provided with time to plan collaboratively with other teachers.	☐	☐	☐	☐
Teachers are provided with time to plan how best to use the school learning spaces.	☐	☐	☐	☐

10. To what extent do you think the buildings and facilities at your school have an impact on the following:
(Please tick one box in each row)

	Not at all	Very little	To some extent	A lot
Make you more inclined to stay at this school?	☐	☐	☐	☐
Make it easier to attract new teachers?	☐	☐	☐	☐
Make it easier to retain teachers?	☐	☐	☐	☐
Attract parents looking to place their children in this school?	☐	☐	☐	☐

Previous Next

Figure I.3: Screenshot of the LEEP teacher questionnaire, showing the different font and the "next" & "previous" buttons

The navigational concept for the online questionnaire had to be as similar as possible to that of a paper questionnaire. Respondents should be able to use the “next” and “previous” buttons to navigate to an adjacent page, as if they were flipping physical pages. Giving a response to every question was not made mandatory. Some questions used soft validation: for example, where a questions asked what percentage of time was devoted to an activity, the respondent’s answer had to add up to 100%, before the respondent could move on to the next question.

The online questionnaire was designed so that each section was presented on a separate page, therefore enabling navigation. The number of questions on each page was not fixed and was only determined by the number of the questions in each section. In some cases respondents would have to scroll down the computer window to see/access all questions of the page/section. No horizontal scrolling was required.

I.4.3 Preparation for the online data collection

The questionnaires were designed and finalised in terms of wording and translation using a paper-based format. Once they were ready, they were transcribed into the online tool and checked. A number of beta tests were run within the Secretariat and with ACER, to test the user experience, the potential errors and data collection. Questionnaires were updated with alert texts.

Respondents only needed an internet connection and a standard Internet browser. No additional software or particular operating system was required. Furthermore, no log in data [username and/or password] was necessary.

I.4.4 Data collection and storage

Neither the respondents, nor the National Co-ordinator have access to the back office system of the online survey tool. The survey platform enables the data to be exported to a spreadsheet file, or a proprietary statistical package. Data was collected and downloaded in Excel files; the option to download the data in the SPSS format was also available, although not utilised. For this Field Trial, the analysis was carried out by the OECD team using data exported to spreadsheet.

I.4.5 Potential risks

The OECD will have access to the data throughout the duration of the survey monkey subscription. Although the OECD is the owner of the data, the data is saved on a server, over which the OECD has no control. It is worth investigating the additional benefit of developing a customised survey tool that could operate from an OECD server. This may prove to be more economical, especially if the survey is conducted in more countries.

The use of a proprietary survey platform carries the risk that the terms and conditions of use may be changed by the provider at any time; another disadvantage is that the survey may outlast the contract itself. Although no such issue has arisen with the LEEP Field Trial, the use of proprietary systems demands careful management, and it is important to verify the duration of the contract with any online survey provider, before disseminating the survey link.

I.5 Anonymity and confidentiality

It was important that completed questionnaires and survey results were kept anonymous and confidential. This has been emphasised in the introductory text to the three questionnaires this issue was emphasised.

Introductory text Student questionnaire	<i>Your answers will be kept confidential. They will be combined with answers from other students to calculate totals and averages from which no single student can be identified.</i>
Introductory text Teacher questionnaire	<i>Your answers will be kept confidential. They will be combined with answers from other schools to calculate totals and averages from which no single school or school principal can be identified.</i>
Introductory text School questionnaire	<i>Your answers will be kept confidential. They will be combined with answers from other schools to calculate totals and averages from which no single school or school principal can be identified.</i>

Table I.1: Introduction to the three questionnaires

To ensure privacy, no student or teacher names were requested throughout the three questionnaires and anonymity was guaranteed. Each school that took part in the survey was allocated a unique code and each respondent within each school was also allocated a unique code.

A coding system was set in place to protect respondent anonymity and confidentiality. As the Field Trial took place in 6 schools in Norway, the schools were allocated different codes, according to the following system:

XXX.ABC.20XX

As an example, the first school code is 001.NOR.2016

- The first part of the code **XXX** is the number that was given to the school. This could range between 001 and 999. It was not expected that more than 1,000 schools country would participate in the Field Trial, therefore a 3-digit code was deemed sufficient. If more than 1,000 schools per country participated in the Field Trial, then the coding would have to change to XXXX.ABC.20XX.
- The second part of the code **ABC** corresponds to the first three letters of the participating country. In this case, NOR stands for Norway, GRE for Greece, and MEX for Mexico.
- The third part of the code **20XX** is the year that the specific school of the specific country participated in the LEEP test. In this case, it was the year 2016.

Although not necessary, a similar coding system is applied to the students, teachers and school principals of a participating school, as follows:

	Coding system	Example	Notes
Student	SXXX.XXX.ABC.20XX	S016.002.NOR.2016	The 16 th student of the 2 nd participating school
Teacher	TXXX.XXX.ABC.20XX	T008.003.NOR.2016	The 8 th teacher of the 3 rd participating school
School principal	ScXXX.XXX.ABC.20XX	Sc001.006.NOR.2016	The 1 st school principal of the 6 th participating school

The Sample School Report and the Comparative School Report presented in the Annex of this document do not reveal the names of the schools, and only the codes representing the schools are used.

I.6 The role of the National Co-ordinator

It is envisaged that, while the survey is made available to schools, it is co-ordinated by a National Co-ordinator appointed by the country.

The National Co-ordinator is appointed by the participating country to manage the process of using the instruments; this role includes liaising with the school principals of the schools that will participate in the Field Trial, or the actual Test.

I.6.1 Selection of Schools

LEEP is envisaged as a school level application and does not aim to generate country level data. Therefore, a sampling framework for each participating country has not been developed. The next stage will be to develop a school level sampling framework.

The initial aim of LEEP was to survey secondary schools, although it is envisaged that wider application may be possible in the future. Therefore, the instruments were meant to be tested in secondary schools. The role of the National Co-ordinator was to identify participating schools of secondary education level, liaise with schools and school principals to identify teachers and students to take part in the survey, send them the online survey links, address queries of the schools and co-ordinate feedback from the schools.

I.6.2 Contacting the participating schools

Once the schools that would participate in the Field Trial had been selected, the National Co-ordinator would liaise with them. The National Co-ordinator communicated the purpose of the survey and the process that was to be followed to the schools. It was up to the National Co-ordinator to decide whether this briefing would take place over the phone, via e-mail or as part of a live presentation at the school. The OECD Secretariat was not in direct communication or contact with the schools and any possible issues/questions were addressed by the National Co-ordinator.

The schools were not requested to nominate a School Field Trial Supervisor amongst the school staff to facilitate contact between the school and the National Co-ordinator. It was however expected that the National Co-ordinator would have a single point of contact in each school, whether it was the school principal or a teacher.

Since a sampling framework within the school has not been developed, it was up to the school representative or the National Co-ordinator or both to decide on which teachers and the students/year levels that would participate in the survey. The primary participation goal for each school was that there will be at least 50 student respondents, 8 teachers and the school principal or deputy.

I.6.3 Planned administration of the questionnaires

The OECD Secretariat sent the links of the online questionnaires to the National Co-ordinator, who distributed the links to each school.

The **instructions** for the completion of the survey were included in each questionnaire [it is the landing page of each link]. The instructions specify issues, such as the purpose of the study, anonymity, and areas of focus of each questionnaire. The National Coordinator was given the option to share the instructions with the schools in advance, as they contain both generic and specific information about the LEEP survey. The introduction page to the student questionnaire is presented below:

INTRODUCTION

Thank you for participating in this study of OECD [Organisation for Economic Cooperation and Development].

Purpose of survey

The questionnaire is part of an international survey by the OECD Learning Environments Evaluation Programme, to gather evidence on the effectiveness of spaces in schools and to find out whether the spaces in schools support 21st century teaching and learning practices.

The information will be used to prepare an international OECD report on how well schools meet student and teachers needs for 21st century learning.

What this questionnaire is about

This questionnaire asks for information about: the spaces in the school that you use; how comfortable you find them, and your safety and well-being.

There is a separate questionnaire for teachers in your school.

Instructions for completing the survey

Please read each question carefully and answer as accurately as you can.

In this questionnaire there are no right or wrong answers. Your answers should be the ones that are right for yourself.

You may ask for help if you do not understand something or if you are not sure how to answer a question.

Your answers will be kept **confidential**. They will be combined with answers from other students to calculate totals and averages from which no single student can be identified.

The questionnaire has 21 questions and it should take about 15 minutes to complete.

Thank you very much for taking part in this survey.

Each school decided individually when and where the respondents would complete the survey, potentially after a consultation with the National Co-ordinator. There were a number of options available: the students could fill in the questionnaires sitting in the same room during class time, or during the break with or without teacher presence using the school's desktops/laptops; or they could fill in the questionnaires from their personal space outside the school building using their personal devices. The teachers had similar options. The ideal scenario was that students would fill in the questionnaire in the presence of a teacher or the School Field Trial Supervisor, who would then inform the National Coordinator.

I.6.4 Completion of panned data collection

Once the survey had been completed by the respondents, the main point of contact for the test for each participating school informed the National Co-ordinator. The National Co-ordinator gathered relevant information from all participating schools and in the end notified the OECD Secretariat. Data was collected directly on the online survey tool.

I.7 Processes and operations of the Field Trial

During the finalisation of the instruments, three countries had agreed to trial the questionnaires: Greece, Norway and Mexico. The instruments were translated into Greek and Spanish respectively, while Norway agreed to run the trial with the international English version of the LEEP questionnaires.

Before the actual Field Trial begun, three different types of tests took place:

- **A lab test at a school in Australia:** This was carried out by ACER, the contractor, in August 2016, to test the viability of the questionnaires with groups of teachers and students and a school principal.
- **Test/comments by countries:** The questionnaires and/or links to the online surveys were sent to three countries (Norway, Mexico and New Zealand) and comments were received and incorporated -where necessary- into the instruments.
- **Testing with peers:** The questionnaires and/or links to the online surveys were sent to experienced OECD colleagues and comments were received. Some of the comments were incorporated into the survey.

Further to the three different reviews, the questionnaires were fine-tuned, uploaded to the online survey tool, tested and further refined. The questionnaires' links were ready to be distributed at the beginning of October 2016. **Norway** was at that point **the only country available for the Field Trial**. Greece was screening the LEEP questionnaires and the evaluation process, which were validated later on [in February 2017]. Mexico was considering running the LEEP test alongside another evaluation programme, which was not fully scoped at the time.

I.7.1 Timeframe for the completion of the Field Trial

Both the actual Field Trial and the report deriving from the Field Trial were deliverables of the LEEP project, as described in the Programme of Work and Budget 2015-2016 of the OECD Directorate of Education. Since the questionnaires' links were ready to be distributed in October 2016, and the next annual meeting of the Group of National Experts on Effective Learning Environments was scheduled for the beginning of November 2016, there was obviously little time left to run the Field Trial.

Therefore, one of the main factors that contributed to the decision on the Field Trial participating countries was a country's readiness to mobilise resources and run the test within less than a month.

I.7.2 Selection of Schools for the Field Trial

The schools that participated in the LEEP Field Trial were selected by the LEEP National Co-ordinator [NC] of Norway; the NC had to address both the tight time schedule and the lack of national sampling framework.

The National Co-ordinator contacted only public schools located in different regions of the country, as there is a decentralised ownership system in Norway, and the goal was to depict this through the LEEP questionnaires. Three of the schools are located in a city (population of 100 000 to about 1 000 000 people), two in a town (15 000 to about 100 000 people) and one in a small town (3 000 to about 15 000 people). As well as contacting schools in different regions, the National Co-ordinator also decided to contact both high schools and lower secondary schools, keeping in mind that LEEP is mostly a school level diagnostic tool and does not aim to generate country level data. Additionally, the NC tried to create a good mix of smaller and larger schools.

The main characteristics of the six participating schools are as follows [table I.2]:

	School name	Location [city/town/ small town]	Type of school [High school/ lower secondary school]	Number of students enrolled in 2016
1.	001.NOR.2016	City	High school	676
2.	002.NOR.2016	Town	High school	1,400
3.	003.NOR.2016	Small town	High school	485
4.	004.NOR.2016	Town	High school	940
5.	005.NOR.2016	City	Lower secondary school	347
6.	006.NOR.2016	City	Lower secondary school	441

Table I.2: Main characteristics of the LEEP Field Trial participating schools

I.7.3 Contacting the participating schools during the Field Trial

The National Co-ordinator selected the six participating schools and notified them about the purpose and the format of the survey. The contact person at each school was either the school principal or a teacher. The participating schools did not nominate a School Field Trial Supervisor as such, although it was anticipated that there would be a School Field Trial Supervisor.

There was no information session held in each school to inform all potential respondents about the LEEP survey; nor was there a webinar or a video training session.

I.7.4 Actual administration of the questionnaires

The OECD Secretariat prepared and sent the links to the LEEP questionnaires to the LEEP National Co-ordinator for Norway. Only three links were sent: one for each questionnaire [student, teacher, school]. The six schools would use the same questionnaire links, as there were not separate set of links prepared for each school.

The school principal selected the teachers who would respond to the survey. The students of these teachers' classes were the ones who would complete the student questionnaires. The OECD Secretariat was not involved in this process. It was requested that for each school 50 to 60 students should respond to the questionnaires, and 8 to 12 teachers. The NC informed the schools about the tight timelines of the project. However, the schools did not set a specific deadline to the students and teachers for the completion of the questionnaires. Each participating teacher was responsible for conducting the test in his/her class within the allowed timeframe. The participating schools reacted very quickly and within eight days all data was collected (between 26 October and 3 November 2016).

Each participating school made its individual decision on the logistics of the online data collection. In the majority of schools, the students would fill in the questionnaires in the same space in the presence of their teacher. This teacher was also a LEEP questionnaire respondent.

I.7.5 Actual data collection and constraints

Since the OECD Secretariat had access to the back office of the online survey tool, it was able to have synchronous information and was aware of every questionnaire completed as it was happening real time. Once the National Co-ordinator had informed the OECD of the completion of the questionnaires by each school, the OECD Secretariat was then able to conduct a preliminary Field Trial analysis and present the results at the 4th annual meeting of the Group of National Experts on Effective Learning Environments, only three days after the data collection was completed [6-7 November 2016, Auckland, New Zealand].

Of the six participating schools, the school principals responded in all cases. Only two schools could provide respondents from both the teacher and student groups, while the other schools provided either students or teachers and in one school only the school principal [see also below: II.6.7 Main facts and figures of the Field Trial].

All questionnaires that contained at least one valid response were processed. Data cleaning was performed, and only in the case of one school was this deemed necessary: in School 006.NOR.2016 four –rather than one- school questionnaires were completed. There was no logical explanation why the school questionnaire was completed by four respondents rather than one. For the data analysis, one school questionnaire was selected from the four, as two school questionnaires were only partially completed (both had missing answers to four of the fourteen questions) and, as a general rule, one school questionnaire should be filled out per school.

While processing the data, the schools, students, teachers and school principals were assigned a code to protect anonymity and confidentiality. The schools were given different codes, according to the coding system described in Chapter II above: As an example, the first school code is 001.NOR.2016.

The main limitation that derived from the collected data is related to the lack of sampling both for the schools and the participating students and teachers. Thus, the collected data may or may not be representative of the schools building' performance or the school culture, and all findings and conclusions are processed with this limitation in mind. As this is not a sample-based survey, the collected data provides an indication of the participating schools' perceptions and is not statistically validated, so as to yield definite findings.

I.7.6 The data analysis plan

During the initial stage of the data analysis, the questionnaires would be matched up by school site. The teacher and student questionnaires ask 5 identical questions about the comfort of the environment, and the teacher and school questionnaires ask the same two questions concerning the physical environment in the school in section 2. These questions that are common to both questionnaires allow for a comparative analysis between different roles in one school. The last question in the overall satisfaction section is the same across all three questionnaires.

In addition, since the surveys were scheduled to be completed by 3 countries, information for a comparative analysis between countries at a student, teacher and school level is also collected. However, since only Norway participated in the LEEP Field Trial, the cross-country comparative analysis of schools was not considered. The comparative analysis that was actually conducted -and is presented in the Annex of this document as a sample Comparative Report- is of the six schools in Norway.

I.7.7 Main facts and figures of the Field Trial

When the OECD Secretariat started planning the Field Trial, the aim was to have three countries participate. The ideal scenario would be to collect questionnaires from a minimum of 6 schools [and a maximum of 12] per country. The relevant target groups for each school would be: between 50 and 60 students; between 8 and 12 teachers; and one school questionnaire. The age group of the students would be between 13 and 18 year olds, since the survey targeted 15-year-olds [the age of students taking the PISA test] and later expanded its reach to all secondary education levels.

The main facts and figures of the Field Trial that took place in Norway are as follows:

Field trial characteristics	Planned	Actual: Norway
Age group of students	13-18 year olds	13-18 year olds
Number of schools per country	6-12	6
Number of students per school	50-60	Min 20 – Max 71
Total student questionnaires per country	300-720	218
Number of teachers per school	8-12	Min 4 – Max 15
Total teacher questionnaires per country	48-144	24
Total school questionnaires per country	6-12	9

Table I.3: Main characteristics of the LEEP Field Trial

The questionnaires were answered by 218 students, 24 teachers and 9 school principals between 26 October and 3 November 2016. Only two schools collected responses in all three questionnaires of the instrument [student, teacher and school]: schools 003.NOR.2016 and 006.NOR.2016.

The table below summarises the responses collected from each school:

6 Schools of field trial in Norway	Student responses	Teacher responses	School responses
School 001.NOR.2016	71	0	1
School 002.NOR.2016	0	4	1
School 003.NOR.2016	58	5	1
School 004.NOR.2016	0	0	1
School 005.NOR.2016	20	0	1
School 006.NOR.2016	69	15	4
TOTAL	218	24	9

Table I.4: Number of responses per school during the LEEP Field Trial

CHAPTER II

MAIN DELIVERABLES OF THE FIELD TRIAL

II.1 Overview of the deliverables

The Field Trial indicated that the instruments would provide data on the physical learning environment. The analysed data is presented to the participating schools and the policy makers. It is important to present the data and the results in ways that will lead to policy discussion and subsequent school improvement.

The main deliverables of the Field Trial -and any other future test for that matter- are an individual school report and an aggregate report, if more than one school participates in the survey. The findings from a LEEP survey will be disseminated through:

- a **School Report** compiled for each school that participates and
- a **Comparative Report** that brings together the findings from a country's or education authority's participating schools.

The two Reports have been drafted so that they provide insightful conclusions for the policy makers and other stakeholders involved in the design and operations of a school and assist them in making decisions about school improvement. The two Reports can be used to inform future decisions about how schools might use their spaces and how they might improve the environment to better support their needs -whether through refurbishment or redesign.

Given that a sampling strategy was not applied, the data analysis for this Field Trial was essentially qualitative in nature and the findings must be read within the particular context of the population that responded to the questionnaires, rather than as a statistical representation of the particular school as a whole.

A sample School Report and a sample Comparative Report have been developed and are included in this Field Trial Implementation Report [see Annex 1 and Annex 2].

II.2 The sample School Report

The aim of the **School Report** is to:

- enable -and even encourage- schools to reflect on how they use the built environment, by providing insights into how the physical learning environment supports teaching and learning; and to
- suggest areas that the school may focus its improvement efforts on.

The sample School Report is presented in this document as Annex 1.

Although it is important to refer to the full document to get a better understanding of the findings and the data analysis, the conclusions presented in the sample School Report are summarised below. This chapter of the School Report aims to provide practical suggestions regarding steps that the school can take based on the Report's findings and some practical ways forward that school may wish to further investigate.

Practical suggestions for next steps presented in the sample School Report		
a/a	Type of suggestion	Detailed suggestion
1.	In-school workshop to discuss the report's findings	Set up a workshop or meeting amongst school leadership, teachers and students and potentially also parents (this may include -but doesn't have to - participants from the survey) to discuss the report's findings so as to use the findings as a tool for self-reflection and self-improvement.
2.	Meeting / workshop with other schools that participated in the survey	Arrange a workshop / meeting with a school/group of similar schools that participated in the survey to identify what works well. Exchanging ideas with other schools on similar challenges and/or solutions can provide valuable insights and contribute to positive change in the perception and/or use of the spaces; "audit" or "shadow" another school's operations to get a better understanding of the link between spaces and pedagogy.
3.	Carry out an in-depth evaluation	Request the OECD LEEP team to undertake a more comprehensive evaluation, in order to attain a deeper understanding of their physical learning environment and how it impacts teaching and learning and obtain concrete recommendations on specific issues and challenges that have been identified in the data analysis. Depending on the school's needs, a tailored approach can be defined. The in-depth evaluation could include school expert visits, interviews, focus groups and observation.
4.	Conduct a pre- and post-evaluation if a renovation is planned	Conduct the LEEP Survey before and after a school renovation takes place and after the newly renovated buildings have been in use for some time and compare findings in order to evaluate the renovation's impact. This applies only in the case of a school that is about to be renovated (or partially renovated). Such a pre- and post-evaluation could help draw conclusions about how renovations impact on the flexibility of the learning environments and the instructional methods, comfort and security, the perceived impact of the school facilities on attracting and retaining teachers, change in school culture, etc.
5.	Ideas for concrete	The figure below summarises the ideas for concrete steps that

	steps the school can take	the school can take to generate improvements in the learning environment.
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Table II.1: Practical suggestions for next steps presented in the sample School Report

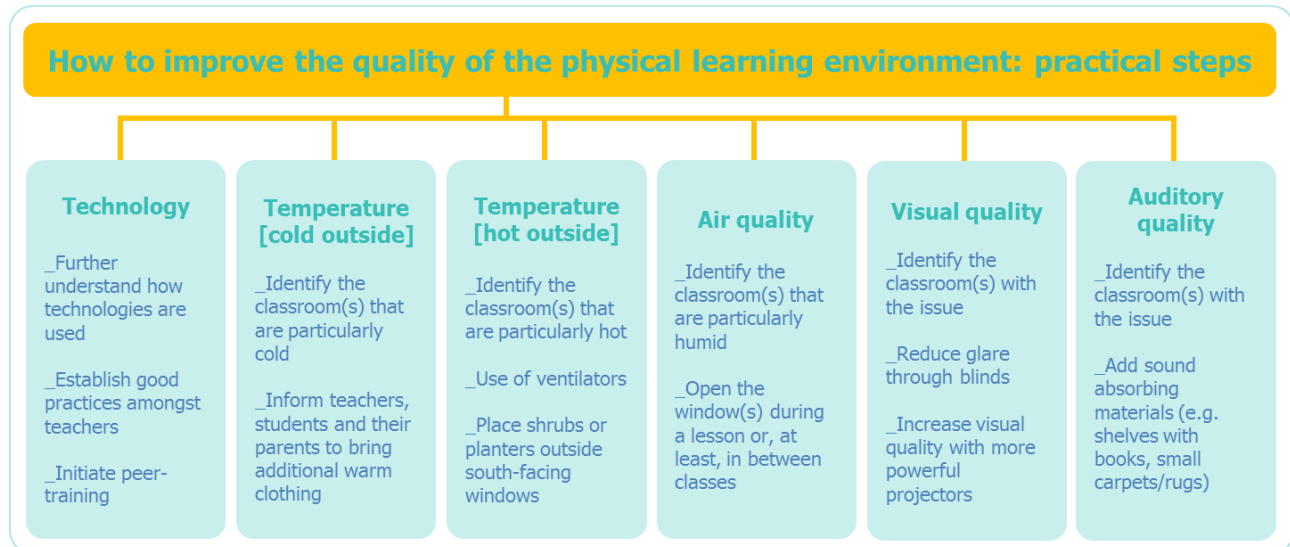


Figure II.1: Ideas for concrete steps from the sample School Report

As the School Report is the main tool for the dissemination of the results from the LEEP survey, it is important that the Report provides answers to questions, such as:

- Has the Report illustrated the aspects of the participating school that work well, as well as the aspects of the school that don't?
- Has the School Report provided insights about the participating school?
- Has the School Report revealed findings about the participating school, of which the school leadership was not aware before taking the test?
- Has the School Report provided useful recommendations for an in-depth analysis of the participating school [workshops organised by the school, focus groups and site visits organised by independent consultants/experts]?

It is envisaged that future developments of the LEEP instrument will continuously improve the reporting of the results.

II.3 The sample Comparative Report

A Comparative Report will be produced if more than one school participates in the survey. The aim of the **Comparative Report** is to:

- highlight examples of good practices, as well as identify weaknesses amongst participating schools; and to
- enable decision makers at national or local government level, as well as other stakeholders involved in the management, use and design of schools to reflect on and introduce improvements to the use of learning environments.

The sample Comparative Report is presented in this document as Annex 2. Although it is important to refer to the full document to get a better understanding of the findings and the data analysis, the conclusions presented in the sample Comparative Report are summarised below. The Comparative Report chapter aims to present the findings from the different schools that participated in the survey, as well as research findings and good examples in terms of the physical learning environment. These can promote school renovation efforts and future construction efforts, as well as better use of the spaces.

Good examples of use of learning spaces presented in the sample Comparative Report		
a/a	Area	Information supported by the data analysis
	Flexible Learning Environments	School 006.NOR.2016 is a good example of the flexibility of spaces and the possibility to create layouts that support a diversity of instructional methods. The majority of teachers reported that they find it easy to move the furniture. They frequently adapt the layouts to suit their preferred instructional methods and they use a variety of teaching methods.
	Supportive school leadership and school climate	School 006.NOR.2016 provides a good example of how school leadership and school climate can have a positive influence on how teachers use space. Teachers at this school reported that: ▪ the design of the school buildings and learning spaces encourages collaboration between teachers, ▪ school leaders encourage teachers to experiment with different ways of using the learning spaces, ▪ the school buildings and learning spaces suit teachers' preferred instructional methods and allow for a variety of teaching practices, and that ▪ school leaders and teachers have a shared vision of how best to use the school buildings and learning spaces.
	Technology	School 002.NOR.2016 is a good example of technology integration in teaching and learning. Almost all learning spaces are equipped with interactive whiteboards, wireless internet, audio-visual tools, such as projectors, and all teachers and students have a laptop, either an in-school laptop or their own device. Teachers in school 002.NOR.2016 reported making use of most types of technology on a daily basis.
	Comfort	School 002.NOR.2016 is a good example of the comfort that can be provided at a school. Teachers and students responded positively on the temperature, air quality, light quality, visual quality, auditory quality, comfort of desks and chairs, finding shade on the school grounds in the summer. The majority of students reported feeling safe in different parts of the school.

Table II.2: Good examples of the use of learning spaces presented in the sample Comparative Report

Additionally to the list of good examples in different areas, other ways to gain insights into the learning environments are presented in the sample Comparative Report. The Comparative Report should not be read independently, but alongside the School Report. These practical suggestions are similar to the recommendations presented in the sample School Report and are summarised below:

Practical suggestions for next steps presented in the sample Comparative Report		
a/a	Type of suggestion	Detailed suggestion
1.	Conduct a pre- and post-evaluation if a renovation is planned	Conduct the LEEP Survey before and after a school renovation takes place and after the newly renovated buildings have been in use for some time and compare findings in order to evaluate the renovation's impact. This applies only in the case of a school that is about to be renovated (or partially renovated). Such a pre- and post-evaluation could help draw conclusions about how the renovations impact, for example, flexibility of the learning environments and instructional methods, comfort and security, perceived impact of the school facilities on attracting and retaining teachers, change of school culture, etc.
2.	Take the LEEP survey alongside PISA Based Test for Schools	Take the LEEP survey together with the PISA based Test for Schools, if a school or local or regional authority is interested in getting more detailed information on how the physical learning environment is connected to learning outcomes in one or several schools.
3.	Meeting / workshop with other schools in the survey	Arrange a workshop / meeting with a school/group of similar schools that participated in the survey to identify what works well. Exchanging ideas with other schools on similar challenges and/or solutions can provide valuable insights and contribute to positive change in the perception and/or use of the spaces; "audit" or "shadow" another school's operations to get a better understanding of the link between spaces and pedagogy.
4.	Carry out an in-depth evaluation	Request the OECD LEEP team to undertake a more comprehensive evaluation, if the schools would like/wish to attain a deeper understanding of their physical learning environment and of how it impacts teaching and learning and obtain concrete recommendations (e.g. on how they could address specific issues and challenges identified in the data analysis). Depending on the schools' needs, a tailored approach could be defined this in-depth evaluation could include school expert visits, interviews, focus groups and observation.

Table II.3: Practical suggestions for next steps presented in the sample Comparative Report

It is envisaged that future developments of the LEEP instrument will continuously improve the reporting of the results on an individual level (School Report) and on a collective level (Comparative Report).

CHAPTER III

OPERATIONAL ANALYSIS OF THE FIELD TRIAL

III.1 Introduction

This chapter presents an ex-post evaluation of the operational aspects of the Field Trial, such as anonymity/confidentiality, the participation/response rates, the time requested to complete the questionnaires, the role of the National Coordinator, the advantages and disadvantages of the on-line data collection method, the (lack of) validation of the translation, and the (lack of) sampling framework. All lessons learned from running the Field Trial will be used for the improvement of the operations and the scaling of the test in more schools and countries.

III.2 Ex-post analysis of the Field Trial data collection

The following section presents the ex-post analysis of anonymity/confidentiality, participation/response rates, time requested to complete the questionnaires, and the (lack of) sampling framework.

Anonymity/confidentiality

Anonymity and confidentiality of the respondents was maintained during the implementation of the Field Trial and there has been no accidental disclosure of the respondents' names. A coding system was used in the School and the Comparative Report, so that no school, school principal, teacher or student is identifiable. The coding system with three components [XXX.ABC.20XX] (see Chapter III.4) proved successful and may be even used for larger sample sizes.

The OECD Secretariat asked the schools for their permission to share the survey data with the Group of National Experts on Effective Learning Environments. However, even in the publication of the data and analysis, all schools are presented using the coding system and all student, teacher and school principal answers remain anonymous.

Participation rate

In total, 218 students between grades eight and thirteen responded to the LEEP questionnaire, that is 5% of the total student population from the six schools. The teacher questionnaire was completed by twenty-four teachers. Nine school principals completed the school questionnaire. Taking into account that the aim of the Field Trial was to have the questionnaires completed by 50-60 students and 8-12 teachers in each school, the following table summarises this activity:

6 Schools of field trial in Norway	Student responses	Goal: 50-60 students per school	Teacher responses	Goal: 8-12 teachers per school
001.NOR.2016	71	✓	0	✗
002.NOR.2016	0	✗	4	✗
003.NOR.2016	58	✓	5	✗
004.NOR.2016	0	✗	0	✗
005.NOR.2016	20	✗	0	✗
006.NOR.2016	69	✓	15	✓
TOTAL	218		24	

Table III.4: participation per school of the Field Trial

All questionnaires that had at least one valid response were deemed "adequate" and were processed in the analysis of the data.

Additionally, since the survey asks for data for the total student population in each school, LEEP may calculate the percentage of students who completed the survey. On the other hand, there is not sufficient information about the percentage of teachers who completed the survey. These percentages are useful to the readers of the report(s), the school leadership and the policy makers in order to evaluate the depth of the findings.

Response rate

The questions had a varying response rate, with the overall response rate being 92.68% for students, 89.31% for teachers and 95.24% for school questionnaires. The following figure shows the response rate per question per questionnaire:

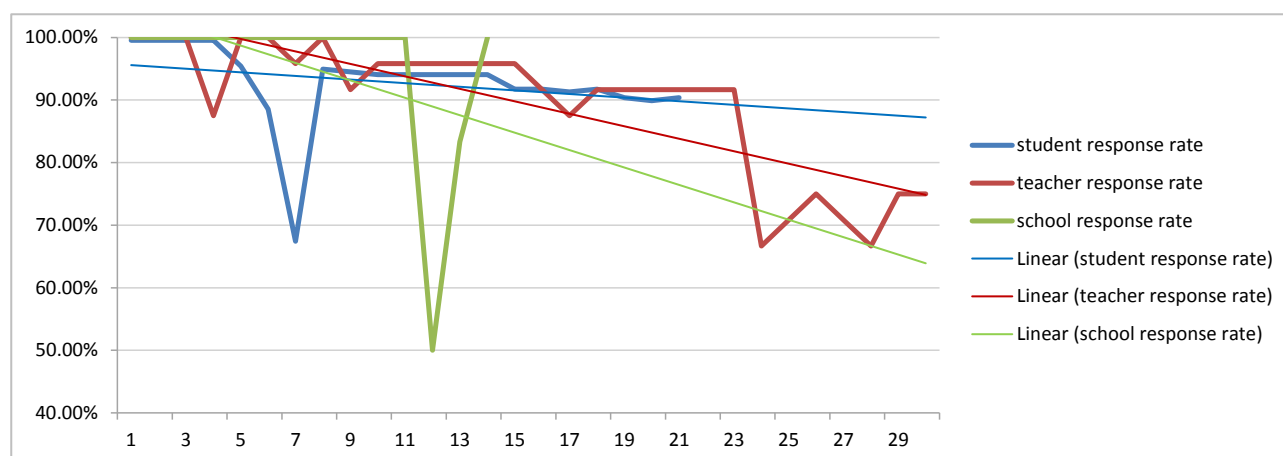


Figure III.4: response rate of the Field Trial report

The three different groups /demonstrated a big drop in the response rate, in comparison to their average response rate, in the following questions:

no	Question	Response rate of this question	Average response rate
StQ07	During lesson time, which of the following external (outside) spaces in your school have you used over the last week?	67.43%	92.68%
TQ04	When were you born? (Please write the year you were born)	87.50%	89.31%
TQ24	Thinking about your current teaching, how often do you use the following spatial arrangements?	66.67%	89.31%
TQ25	Thinking about the spaces/rooms in which you teach, how often do you: [...]	70.83%	89.31%
TQ26	Thinking about the spaces/rooms in which you teach and what supports or hinders the use of different spatial settings, how much do you agree with the following statements?	75%	89.31%
TQ27	When you need to, in what proportion of the spaces/rooms in which you teach can you quickly rearrange the furniture to create any of the following arrangements?	70.83%	89.31%
TQ28	If you could, how often do you think that you would use any of the following spatial arrangements for teaching?	66.67%	89.31%
TQ29	How satisfied are you with the provision of: (space for administrative work)	75%	89.31%
TQ30	In general, how satisfied are you with the the spaces/rooms in which you teach?	75%	89.31%
SQ12	Are students required to bring their own device (leased, bought, or regularly take home a school-owned device)?	50%	95.24%
SQ13	What is the speed of the school's internet access?	83.33%	95.24%

Questionnaire fatigue might have been regarded as a point for further improvement in the teacher questionnaire, as this is the longest one and has the biggest drops in response rates in the last seven questions. It is interesting that all the questions related to spatial arrangements in the

teacher questionnaire showed the lowest response rate. All response rate drops are being re-examined for the proposed improvements to the instruments.

Response time

The average response time from all respondent groups (students, teachers and school principals) proved that the time needed for the completion of the questionnaires is relatively short and that time does not seem to be an issue, at least for the first two respondent groups.

On average, students took nine minutes and ten seconds to respond to the questionnaire, which is below the estimated 15 minutes that were anticipated as an average time for a student to fill out the questionnaire. Teachers took nineteen minutes and thirty seconds to respond to the questionnaire, which lies within the estimated time to fill out the questionnaire; and the school leader or administration at took eighteen minutes and fifty seconds to respond to the questionnaire, which is almost double than what was anticipated in terms of the average time needed to fill out the questionnaire.

	Number of questions	Anticipated time	Average actual time	
Student questionnaire	21	15 min	9 min 10"	✓
Teacher questionnaire	30	15 – 20 min	19 min 30"	✓
School questionnaire	14	10 min	18 min 50"	✗

III.3 Ex-post analysis of the Field Trial operations

The following section presents the ex-post analysis of the role of the National Coordinator, the on-line data collection method, the feedback mechanisms and the (lack of) validation of the translation. All lessons learned from running the Field Trial will be used for the improvement of the operations and the scaling of the test in more schools and countries.

The on-line data collection method

The proprietary online survey platform that was used was an effective method of survey dissemination enabling the OECD to take ownership of the data and the survey itself. A proprietary platform was used to keep the survey set-up costs to a minimum and it was the only solution that would not incur any additional costs for the participating countries. Using the specific online tool also safeguarded that OECD remained the owner of the collected data. This would not have been possible if another platform had been selected or an external contractor had run the survey. Developing a bespoke survey platform may prove more economical in the future.

Although it was not deemed necessary to train the National Co-ordinator to use the survey platform in this trial, some training might be required in the future in order to familiarise the National Co-ordinator with accessing the survey and distributing and managing the survey links. The survey platform has its own help and support instructions, but guidelines can be created for use with the LEEP survey.

There were no reports about broken links and/or delays related with the tool, other than a few instances when the link did not work for a few hours in the first day.

In this trial, all schools were given the same links for the three questionnaires [one link per questionnaire]. While this worked, it relied on the survey respondents accurately stating the school they attended/they were employed and for the data to be sorted by school during analysis. To reduce the risk of errant responses and to simplify the data analysis process, schools could be given individual links.

Although the OECD is the owner of the data, the data is stored in a server external to OECD servers. It is worth investigating the additional benefit of creating a customised survey that would be operating from an OECD server. Once the survey is conducted in more countries and schools, a cost-benefit analysis looking at developing a bespoke survey platform should be developed to assist in the decision making process.

The use of a proprietary survey platform carries the risk that the terms and conditions of use may be changed by the provider at any time; another disadvantage is that the survey may outlast the contract itself. Although no such issue has arisen with the LEEP Field Trial, the use of proprietary systems demands careful management, and it is important to verify the duration of the contract with any online survey provider, before disseminating the survey link.

Co-ordination of the LEEP Field Trial at a national level

The concept of engaging a National Coordinator in the process was successful and effective. The National Co-ordinator was appointed by the participating country to manage the process of using the instruments, which included liaising with the school principals of the six participating schools. The National Co-ordinator disseminated the questionnaire links to the participating schools. Although there have not been any issues with the test administration, further guidance for the role may be useful, particularly in order to help the National Co-ordinator engage participating schools.

The instructions to respondents were given on the front page of the questionnaires. Although the purpose of the survey was explained to school principals and teachers by the National Co-ordinator, further specific guidance for schools and teachers would be useful, particularly to help them engage respondents in the schools, but also to describe the benefits of using the LEEP Module.

In this context, it is worth investigating whether appointing a School Test Supervisor to liaise directly with the National Co-ordinator would be beneficial to the process. In this case, it might be useful to provide guidance for the School Test Supervisor to co-ordinate the survey.

Validation of the international version and the translations

The instruments were developed in English, and translations were made into Greek and Spanish in anticipation of testing them in Greece and Mexico in time for the Field Trial. A cognitive laboratory test on the instruments had already been carried out in Australia for the international English version. However, for this Field Trial it was not possible to confirm the inclusion of countries other than Norway.

Although the instrument was tested in a non-native English speaking country, Norway, the English version of the questionnaires was used. This was a common decision between OECD Secretariat, the National Coordinator from Norway and the participating schools. Therefore, the English version of the questionnaires was tested by an audience of non-native English speakers. Additionally, the translations of the questionnaires in Greek and Spanish were not tested.

Sampling framework

There was no sampling framework set in place for the selection of the schools or the selection of the students within a school. Therefore, one cannot draw statistically valid conclusions for the whole school and the data analysis is rather qualitative. The findings must be interpreted with caution and only in regard to the population that responded to the questionnaires. For example, in one of the schools, 99% of the student respondents were from grade 9 only.

The OECD Secretariat plans to develop a sampling framework to sample across the school and use this as a guiding tool for the selection of schools/students with the help of the National Coordinator. However, the sampling framework will be necessary only if a country wants to draw nation-wide conclusions. If a country wants to use LEEP as an assessment tool for an individual school, then the country will focus only on the school(s) they want to assess.

Feedback mechanism

During this ex-post evaluation, the feedback mechanism proved to be one of the missing elements of the Field Trial. Receiving feedback both from the National Co-ordinator and the participating schools was not planned nor built into the process in advance. When reporting the findings, it became clear that feedback is essential and that a feedback mechanism should be put in place.

The feedback mechanism may consist of a simple form/report with a few yes-or-no questions and room for open ended comments by the respondents. The feedback mechanism will be especially useful when the LEEP evaluation module rolls out and the lessons learned are systematically documented and stored, and used for the improvement of the operations.

Chapter IV

CONCLUSIONS

The overall aim of the Learning Environments Evaluation Programme (LEEP) is to generate evidence and provide information and advice that can be used by individual schools, local authorities and the wider community to support school improvement. Running the field trial in Norway was an opportunity for the LEEP team to understand the possibilities and limitations of the LEEP survey questionnaires. The survey data demonstrates the value of the instruments:

- for diagnostic purposes;
- for informing the decision-making process regarding improvements to the physical environment;
- for drawing a comparison with other schools in the same education system.

However, there are two important caveats with regard to the implementation of the Module instruments:

- There is no international benchmarking with results from the LEEP module, because the questionnaire items do not exist in the main PISA study.
- The LEEP Module is primarily designed to assist school improvement efforts. It does not therefore seek to address the system level.

The main conclusions of the Field Trial and the options for the future development of the LEEP instruments are presented below. The Field Trial also suggested areas where questionnaires could be amended to improve clarity, and where further questions could be included that might provide useful findings.

Defined purpose of the LEEP survey

The LEEP instruments are intended to be used by schools as **a tool for self-assessment and self-improvement** in highlighting what works and what does not in the physical environment, according to the different users. The Field Trial indicated that the instruments provide data on the physical learning environment. This data can be used to inform future decisions by schools on how they might use their spaces, and how they might improve the environment to better support their needs -whether through refurbishment or redesign.

While the survey data might assist those considering a design for a new school -for example by providing good examples and precedents to steer the design team and indicate specific aspects

that do or do not work well- the survey is not designed as a stand-alone tool for the design of a new school. Neither can the survey be used to create a new Schedule of Accommodation.

Importance of the findings, despite the lack of sampling strategy

As a sampling strategy was not applied, the data analysis for this Field Trial was essentially qualitative in nature; therefore the findings must be read in the context of the population that responded to the questionnaires, rather than as a statistical representation of the particular school as a whole. Nevertheless, the analysis of such data may be used as the basis for the redesign of educational and other spaces, refurbishment and quality maintenance of the building(s).

Additionally, the reported data may result to reflection on some questions and topics amongst different school stakeholders (school leadership, teachers and students) on how they use or feel about their learning environments and what they could improve. The larger objective would be to trigger positive change.

Frequency of use of the LEEP instrument

A school could choose to take LEEP once or repetitively to assess the impact of changes they have made to the physical environment. Such a pre- and post-evaluation could help demonstrate how the changes impact, for example, flexibility of the learning environments and instructional methods, comfort and security, perceived impact of the school facilities on attracting and retaining teachers, change of school culture, etc.

The LEEP instrument can be customised

Schools or countries may have specific issues they wish to explore in addition to those already covered by the LEEP questionnaires. Some countries may wish to further examine the extent to which their schools meet the basic requirements of a healthy and safe infrastructure, such as the provision of drinking water, power, or roofs, doors and windows. Such topics could be covered by including an extra set of questions agreed with the country or school as an additional component to the questionnaire.

Additionally to the above need, a school or a system may need to explore specific subject areas and the particular spaces where these subjects are being taught. Currently, the questionnaires yield data on perceptions of the whole school, but they could easily be adapted to generate data only on specific spaces.

The LEEP survey can be linked with student learning outcomes

While the questionnaires yield data on student and teacher perceptions of how the physical environment supports teaching and learning, they are not currently linked to specific outcome measures. For a measure of student learning outcomes, the intention is that schools could choose to adopt their own national standardised test, or perhaps the PISA based test for schools. Neither option was used in this Field Trial. The PISA test would limit the survey measure to 15-year olds and the impact of the environment on where they study English (native language), science and a specialist subject.

The 2013 LEEP Framework notes that learning outcomes may include better test scores, greater engagement in teaching and learning; and development of critical thinking skills, self-managed learning, digital literacy, environmental awareness, etc. Specific questions could be included within the LEEP instruments to address some of these learning outcomes. For example, environmental awareness may be addressed, by asking students whether they have learnt about environmental issues in class, whether their school engages in environmental practices and whether environmental sustainability is important to the school/education.

The LEEP instruments may include new questions

The questionnaires are not currently linked to health and well-being, social, emotional and behavioural outcomes. In order to address this, additional questions may be included in the questionnaires.

- **Social outcomes** may include perceptions of improved student/teacher relations, more effective teaching strategies, stronger engagement with local communities and businesses, etc.
- **Emotional outcomes** (the manner in which people deal with things emotionally) may include a greater sense of belonging and self-efficacy on the part of both teachers and students.
- **Health and wellbeing outcomes** may include improved physical and emotional health and wellbeing.
- **Behavioural outcomes** may include improved school retention, and reduced vandalism, absenteeism and disruption in class. While data can be collected on absenteeism, relating this to specific aspects of the school environment may be harder, unless there is a comparison before and after an intervention, for example a refurbishment of a school.

Questions could be added to the LEEP questionnaires to address the outcomes noted above in the following way:

Social	A question could be added to address how students perceive their relationships with teacher.
Emotional	A number of PISA questions relate to this and could be employed here; also, how students perceive their interactions with others, such as whether they prefer to work individually or as a team, which can be linked to whether the spaces are available to support these types of interaction.
Health and wellbeing	In terms of physical health ask what physical activities students engage in at school and link to sports facilities available in the school.
Behavioural	Data on absenteeism. A question could be added to LEEP to ask students to self-report absenteeism

Develop a platform to bring together the LEEP evaluation results for schools

LEEP promises to bring together significant amounts of data from a potentially wide range of schools. Such data would provide a rich resource of examples for all those involved in the decision-making process about investment in school facilities, managing and working in schools, as well as those involved in designing and developing new schools. While the contexts of schools that take part in a LEEP evaluation may be different, the findings should provide some insights that will be more widely useful. Such an interactive web-based tool could also provide discussion forums and showcase good practice. It may be possible to adapt the existing Database of Best Practice in Education Facilities Investment to this end (<http://edfacilitiesinvestment-db.org/>).

Possibility to create a satisfaction index

The question on overall satisfaction is indirectly linked to the questions about comfort, teaching methods, perceptions of the school vision, variety and flexibility of space, allocation of rooms and spatial layouts. The collected data may be used to create a satisfaction index, once we have a statistically significant sample.

ANNEX A1

SAMPLE LEEP SCHOOL REPORT

A1.1 Introduction

This report is part of a study conducted by the Learning Environments Evaluation Programme (LEEP) of the Organisation for Economic Co-operation and Development (OECD) to gather insights into whether the spaces in schools support twenty-first century teaching and learning practices.

The report is based on answers to questionnaires addressed to three different groups - students, teachers and school principals - to gain information about the lived experience of space. This report includes information on the school, its population and its physical learning environment (including integration of technology), how teachers and students make use of the spaces and spatial arrangements, their comfort, safety and well-being¹ and their perceptions on the impact of the school's spaces on teaching and learning.

¹ PISA (2015) indicates that "students' well-being refers to the psychological, cognitive, social and physical qualities that students need to live a happy and fulfilling life".

A1.2 The LEEP Survey

This section sets out the LEEP survey rationale and explains how the survey was implemented at School 006.NOR.2016.

A1.2.1 Why a survey on learning environments?

The physical learning environment is an influential element in the complex and highly contextualised nature of learning, characterised by dynamics and interactions between the learner, teacher, content, equipment and technology (OECD, 2013a). It is assumed that good architectural and educational design leads to good teaching practice and improved learning, because the quality of the building design affects teacher and student behaviour, morale and practices and therefore learning outcomes (OECD, 2013c). However, there still exists a lack of overall empirical evidence (Woolner et al., 2007).

The OECD's Learning Environments Evaluation Programme (LEEP) aims to show how learning environments can most effectively support teaching and learning and, more concretely, to look at the pedagogies, curriculum, assessment and organisational forms necessary to develop students' competencies for the 21st century. For that purpose, LEEP produces instruments, such as survey questionnaires, to gain insights about how investments in learning environments, including educational spaces and the different types of technology, translate into improved learning, health, social and well-being outcomes. The findings are intended to be used to provide information and advice to individual schools, local authorities and the wider community to support school improvement.

As defined by the LEEP, to achieve successful education outcomes, the physical learning environment needs to be:

- **adequate:** meet the minimum requirements to ensure users' comfort, access, health, safety and security. These represent the baseline components of the built environment which are considered necessary conditions most likely to impact on student learning;
- **effective:** so that it supports the varied demands of teaching and learning to enable a school to achieve its education objectives; and
- **efficient:** so that it maximises the use and management of space and resources to achieve maximum output in terms of students and teacher outcomes.

The characteristics of the physical learning environment influence processes that can lead to different outcomes and wider benefits for the teachers and the learners.

Space (and place as natural and built environments) "shapes" social relations and practices in schools and communities (Leemans and von Ahlefeld, 2013; Lefebvre, 1991; McGregor, 2003, 2004; Massey, 1994, 2005). In turn, social practices, formal instruction and informal social interactions change the nature, use and experience of space. This can vary for individuals and groups according to gender, ethnicity, race, religion and disability.

To better understand how space shapes practices in schools, the LEEP survey includes a range of questions related to the use of space. School leaders, teachers and students are asked about **the allocation of different learning spaces (including inside/indoor and outside/outdoor spaces) and their use**, as this can provide indications on how these spaces might be conducive to health and well-being, learning and social outcomes. For example, the provision and frequency of use of a sports field can provide an indication of physical exercise of the students, which in turn is a significant factor in regards to health and well-being (Dagkas and Stathi, 2007; Davidson, 2007). The provision of community spaces, such as a canteen or outside spaces for play, may

relate to students' social behaviour; and whether students have access to spaces for collaboration or for quiet work can impact their learning.

The survey also asks the three constituent groups about their **comfort in the spaces**, including temperature, air quality, lighting (natural and artificial) and acoustics (i.e. noise levels). Teachers also report on the extent to which they can control these elements and students also report on the comfort of chairs and desks. Research has shown that the quality of air, sound, sight, temperature etc. has a significant impact on health and well-being (Higgins et al., 2005) and thus on learning.

Teachers are asked questions about the **flexibility of the spaces, their furniture and ICT, for different teaching methods**. Research has shown that the built environment can act as a catalyst (or hindrance) and opportunity for innovation and more modern teaching methods and learning processes (Blackmore et al., 2011; Lingard et al., 2003; Hattie, 2011; Oblinger, 2006; OECD, 2013a; Thomson, Jones and Hall, 2009). For example, group work for students or teachers is not contingent on, but can be encouraged and facilitated by spatial configuration. Although Blackmore et al. (2011) note that teachers can change their pedagogy towards group work at any time, flexibility of space and adaptability of furniture and technology can enable or constrain such activities. Woodman (2011) found that teachers see flexibility as about how to make a better and a more pedagogical use of the space both for them and the students, i.e. by engaging students, by meeting their diverse needs and by using multiple teaching repertoires, resources and activities.

The survey also collects answers from school leaders and teachers regarding their **perception of the impact of the learning environment**, for example, on attracting parents to place their students in the school or on attracting and retaining teachers. Studies carried out in the UK (PricewaterhouseCoopers, 2003) and in New Zealand (ACNeilsen, 2004) indicate strong links between the physical learning environment and student, teacher and parent perceptions. Blackmore et al. (2010) suggest that it is these perceptual and affective dimensions which play a key role in how teachers and students use different spaces (Abdul-Samad and Macmillan, 2005; Cotterell, 1984). Both students and teachers identify with their school's image and reputation, preferring a reasonable standard of physical maintenance, a "good working environment", resources and buildings that are "inspiring" and "exciting", with little noise or distraction (Flutter, 2006; Kumar, O'Malley and Johnston 2008; Rudd, Reed and Smith, 2008). Lack of maintenance and care for appearance has a downward effect on how students, teachers and communities perceive their school in the long run (Plank, Bradshaw and Young, 2009).

Learning spaces and technology mediate the relationship of teaching and learning, and are two factors among many in the complex relationships of teaching that inform learning in schools (Oblinger, 2006). Teachers and students decide on how technology is mobilised in different spaces (Bissell, 2002) and, therefore, the survey asks both school leaders and teachers to report on technology and connectivity in the spaces, including their ease of access, frequency of use, speed of network and bandwidth, etc.

There is a time dimension to the development, use and impact of learning spaces. Changes in the nature and use of different physical spaces (open/closed; indoor/outdoor; physical/virtual; core/non-core hours) are related pedagogically and organisationally to changes in time organisation. Personalised learning, individual pathway planning, team teaching, inquiry approaches, student teamwork, problem solving, rich tasks and community-based service learning have different time demands (Anderson-Butcher et al., 2010). Large spaces require more planning and synchronicity of activities due to sound (Bruckner, 1997). To better understand the impact of time, the survey asks school principals and teachers about some of the behaviours and perceived hindrances to reconfiguring learning spaces, such as lack of time to (re)organise the space.

A1.2.2 The LEEP survey at School 006.NOR.2016

The survey was sent to six Norwegian schools, including School 006.NOR.2016, through the LEEP National Co-ordinator, and was conducted online. At School 006.NOR.2016, the questionnaires were answered by sixty-nine students, fifteen teachers and four representatives of the school leadership on 26 and 27 October 2016. For the analysis of the information, one school questionnaire was selected from the four, as two school questionnaires were only partially completed (there were missing answers to four of the fourteen questions in both questionnaires) and, as a general rule, one school questionnaire should be filled out per school.

Response rates to the questionnaires vary, with an overall response rate of 96% for students and 91% for teachers. The response rate from School 006.NOR.2016 lies slightly above the average response rate of all the six schools that responded to the questionnaires in Norway, which is 93% for students and 89% for teachers.

On average, students at School 006.NOR.2016 took nine minutes and fifteen seconds to respond to the questionnaire, which is below the estimated 15 minutes that were anticipated as the average time for a student to fill out the questionnaire. Teachers took sixteen minutes and thirty seconds to respond to the questionnaire, which lies within the estimated time to fill out the questionnaire; and the school leader or administration at School 006.NOR.2016 took nineteen minutes and forty seconds to respond to the questionnaire, which is almost double than what was anticipated in terms of the average time needed to fill out the questionnaire.

	Number of questions	Anticipated time	Average actual time	Avg time/question
Student questionnaire	21	15 min	9 min 15"	26" – 27"
Teacher questionnaire	30	15 – 20 min	16 min 30"	33"
School questionnaire	14	10 min	19 min 40"	1min 24"

A1.2.3 Main facts and figures about School 006.NOR.2016 and the respondents to the survey

School 006.NOR.2016 is a public school, which means that the school is managed directly or indirectly by a public education authority, government agency, or governing board appointed by government or elected by public franchise. All of the funding of the school comes from government (includes departments, local, regional, state and national).

The classrooms/ learning areas of School 006.NOR.2016 are primarily located in school buildings that are six to ten years old.

During the field trial run a total of 441 students were enrolled in the school. The distribution of the total student population between male and female students is 45% male and 55% female.

The number of students registered in each grade/year is as follows:

Student population of School 006.NOR.2016, Norway					
	Total	Number of male students	Percentage of male students	Number of female students	Percentage of female students
Year 8	150	66	44%	84	56%
Year 9	144	70	48%	74	52%
Year 10	147	63	43%	84	57%
Total/Avg	441	199	45%	242	55%

Amongst these 441 students, 69 students responded to the LEEP questionnaire, that is **16% of the total student population**. The distribution of the survey participants between male and female students is 43% male and 57% female, which approximately reflects the overall student population of the school. 99% of the respondent students were attending grade 9 at the time of the survey. 1% attended grade 8.

The teacher questionnaire in School 006.NOR.2016 was completed by fifteen teachers, seven of whom are female (46%). The average age of the respondent teachers is thirty-five years old, ranging from twenty-six to fifty-one years. The average age of male teachers is thirty-seven, with the majority of male teachers being in their mid-thirties. The average age of female teachers is slightly younger at 33, with the majority of female teachers being in their late twenties or early thirties. Male teachers have, on average, two and a half to three years more experience teaching at School 006.NOR.2016 than female teachers, but only one more year of work experience as a teacher in total.

86% of respondent teachers are working full time and 13% part-time (equivalent to three days a week, or more) and, on average, teachers have been working for five years at School 006.NOR.2016. Six out of fifteen teachers have been recently employed at School 006.NOR.2016 and have been working there between one and three years, and only one teacher has been working at School 006.NOR.2016 for more than ten years.

The respondent teachers are teaching a first, second, third or fourth subject at Grade 9 (thirteen out of fifteen teachers), followed by grade 8 (seven out of fifteen teachers) and grade 10 (five out of fifteen teachers). They are teaching a variety of subjects including the Norwegian language, a second language (English, German, French), science, mathematics, social sciences, sports, health and nutrition, music, religion and programming. The majority of the respondent teachers are teaching language subjects (Norwegian, English, and German).

The main characteristics of the fifteen respondent teachers to the LEEP survey at School 006.NOR.2016 are as follows:

	Characteristics of teacher/LEEP respondents of School 006.NOR.2016, Norway			
Number of respondents	15	Gender	53% male	47% female
Age (in years)	25-35: 66%	35 to 45: 20%	45 to 55: 14%	Average age: 35
Employment	Full-time: 87%		Part-time (3 days or more): 13%	
Average years of work experience	Years working as a teacher in total: 8 years			
	Years working as a teacher at the current school: 5 years			
	Years working in other jobs: 5 years			
	Years working in other education roles: 3 years			

A1.3 Summary of main findings

Students, teachers and school leadership at School 006.NOR.2016 are all satisfied with the school buildings, whilst the school leadership is most satisfied (average satisfaction rate of 85%), followed by students (75%) and then teachers (65%).

School 006.NOR.2016 has a wide variety of modern and well-equipped spaces, which offer students multiple opportunities to engage in different indoor and outdoor learning and leisure activities conducive to their overall well-being and academic achievement.

Both teachers and students reported that in a typical week during lesson time they mostly use the hall/auditorium and a classroom with direct access to other rooms (a cluster of rooms), followed by the canteen and a regular classroom within the school buildings. Outside lesson time, students mostly use the school canteen, the library and a classroom with direct access to other rooms. Both students and teachers have access to quiet spaces and collaborative work spaces. In terms of outside spaces, students and teachers use outside grassed areas or external classrooms slightly more than external sports fields.

The physical learning environment at School 006.NOR.2016 is sufficiently flexible, so that it can be changed according to the needs of the teachers and students and in line with the pedagogical goals, educational programmes and instructional strategies.

The majority of teachers reported that they find it is easy to move the furniture in the school spaces and teachers frequently adapt the layouts to suit their preferred instruction methods. Teachers use a variety of teaching methods, but make use of some more often than others, i.e. teachers make use of student group work and team teaching methods slightly more often than explicit instruction or independent student work. The reconfiguration of the learning spaces is often undertaken collaboratively with the students because teachers perceive the time before lessons as too limited to set them up on their own. Female teachers more frequently rearrange the spaces than their male counterparts.

The school leadership and school climate have a positive influence on how teachers use space. Teachers' and school leaders' responses also reveal that **factors contributing to 21st century teaching and learning practices, such as a strong collaborative practice amongst teachers, are related to the physical learning environment and a supportive school culture.** School leadership and teachers agree that:

- the design of the school buildings and learning spaces encourages collaboration between teachers,
- school leaders encourage teachers to experiment with different ways of using the learning spaces,
- the school buildings and learning spaces suit teachers' preferred teaching practice and allow for a variety of teaching practices, and that
- school leaders and teachers have a shared vision about how best to use the school buildings and learning spaces.

There exists a good level of comfort at School 006.NOR.2016, but some further improvements could be made to render the learning spaces even more comfortable.

Both students and teachers indicated that they are satisfied with temperature, air quality, light quality, visual quality, auditory quality/ acoustics, comfort of desks and chairs or with regard to finding shade on the school grounds in the summer. However, some adjustments could be made to a few of the spaces in terms of temperature, air quality (circulation of air) or to the acoustic environment (in some spaces sound echoes).

Students feel safe at school.

In terms of safety, the large majority of students at School 006.NOR.2016 **feel safe at school** and, on average, female students feel just as safe as male students.

School 006.NOR.2016 is well equipped in terms of technology.

All of the spaces are equipped with wireless internet and almost all of the spaces provide interactive whiteboards and the possibility of projecting sound and vision for a class of students, such as through a projector or a large TV. The data reveal that availability of equipment and the frequency of its usage go hand in hand, i.e. **teachers make good use of the available technology to enrich teaching and learning. Female teachers make more frequent use of technology than male teachers** in the spaces in which they teach, especially regarding interactive whiteboards, projectors/TVs and in-school laptops. The only exception is the use of tablets, which are slightly more often used by male teachers. Older teachers also make slightly less often use of technologies in their classrooms, with the exception of one older male teacher who uses most types of technology on a daily basis.

Perceptions of the physical learning environment and its impact at School 006.NOR.2016 are rather positive.

School principals and teachers believe that their buildings and facilities have an impact at least to some extent on attracting parents looking to place their children in the school, on making teachers more inclined to stay at their school and on attracting and retaining new teachers. Studies have shown that there is a strong link between the physical learning environment and student, teacher and parent perceptions. It has also been found that poorly maintained schools can have negative effects on teacher and student morale and engagement, and hence student outcomes.

Overall, the findings from the survey at School 006.NOR.2016 provide a strong indication that their physical learning environment allows for 21st century teaching and learning, and for providing a quality education to their students.

A1.4 Detailed findings

The detailed findings of the LEEP field trial report at School 006.NOR.2016 are presented in the following section categorised into four areas of focus:

- the physical environment and its use;
- the use of technology; comfort and safety;
- perception of learning environments; and,
- overall satisfaction with the school facilities.

A1.4.1 The physical environment and its use

The classrooms / learning areas of School 006.NOR.2016 are located in buildings that are between six to ten years old. However, what is more important than the age of the buildings is the infrastructure quality and the overall building condition, as research shows that students generally perform better in modernised or new environments (Blincoe, 2008).

A1.4.1.1 Types of spaces inside the school buildings and their use during lesson time

The types of spaces, their spatial organisation, the allocation and frequency of use by students and teachers provide valuable information about the organisation and practices of teaching and learning. This in turn can provide indications on how the spaces might shape teaching and learning processes, impact health and well-being, as well as learning and social outcomes.

At School 006.NOR.2016, in terms of allocation of classrooms, most teachers teach collaboratively (team teach) and share spaces designed for larger, single year-level groups. This practice distinguishes School 006.NOR.2016 from the other five schools in Norway that participated in the survey, with the majority of teachers using many different classrooms for different subjects and/or year levels.

This collaborative/team teaching practice is also reflected in the student-teacher ratio in the classroom. The number of teachers in a classroom/space at School 006.NOR.2016 varies from two to four, while the average number of teachers in a classroom is three, and the average number of students in a classroom is 60.

Number of teachers in a class (response percent)	2 (33%)	3 (60%)	4 (7%)
Number of students in a class (response percent)	30 (20%)	60 (40%)	90 (40%)

Regarding the types of spaces and the frequency of use of these spaces (see Figure A1.1), both teachers and students reported that in a typical week during lesson time they make most use of the **hall/auditorium** and **a classroom with direct access to other rooms (a cluster of rooms)**. All of the teachers teach in the hall/auditorium at least two to four times a week and 75% of students have used the hall/auditorium during lesson time over the past week. A classroom with direct access to other rooms is used by 92% of teachers at least once a week and 77% of students have used such a classroom over the past week.

The **school canteen** and a **regular classroom** are also amongst the spaces used most frequently for lesson time by teachers and students during a typical week. 36% of teachers use the school canteen for teaching purposes at least two to four times a week and 70% of students used the canteen during lesson times over the past week. 28% of teachers use a classroom every day and 46% of students have used a classroom over the past week.

Regarding the use of the **library**, 50% of teachers use the library 2-4 times a week for teaching and 38% of students have used the library during lesson time over the past week. **Spaces equipped with furniture or technology for subjects such as art, music or design** were used by 46% of the students, and 33% of teachers teach in these types of spaces two to four times a week or every day. The use of such spaces depends strongly on the teachers' disciplinary content/ subject matter, and for the survey, two teachers out of fifteen reported teaching music as a second subject. A **workshop space for woodwork, metalwork, catering or similar** is used by only 13% of teachers in a typical week and 29% of students indicated to have made use of such spaces over the past week.

The two spaces that show some inconsistencies between teacher and student responses are the science laboratories and a space in a corridor outside the classroom. Regarding the **science laboratories**, whereas 36% of teachers use them two to four times a week, only 13% of students have used them over the past week. Furthermore, 36% of teachers teach in **a space in the corridor outside the classroom**, whereas 46% of students indicated to use such a space during lesson time. This inconsistency could be due to the response rate, which is not representative of the overall school population.

Teachers and students both identified **other spaces** that they use during lesson time in a typical week (this was asked as an open ended question, hence, response appear as originally described by respondents). Both teachers and students reported that they use the **gym** as well as the **quiet room**. In addition, teachers reported also teaching in an **open plan classroom** and in the **school kitchen**, and students reported to also make use of the **reading room, wardrobe** and **bathroom** during lesson time.

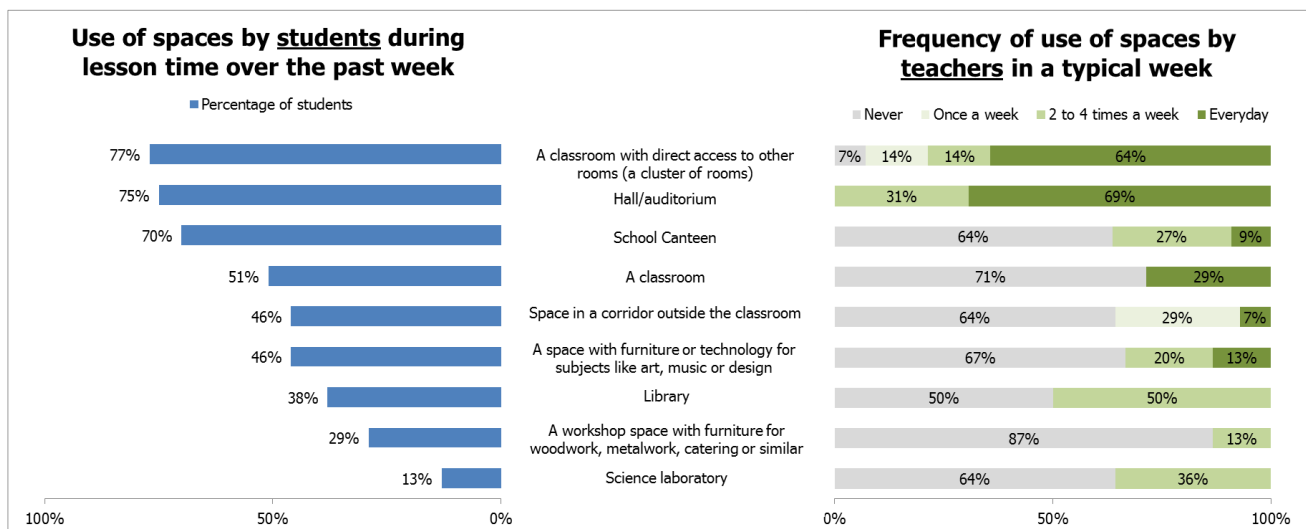


Figure A1.1: Frequency of use of spaces by students and teachers in a typical week

When comparing the use of spaces by students **during lesson time** over the past week, the responses of students from School 006.NOR.2016 show some differences compared to the responses of students from the other schools that participated in the field trial (see Figure A1.2).

The most notable difference is that, whereas the majority of students at School 006.NOR.2016 mostly use a classroom with direct access to other rooms or the hall/auditorium, students at the other schools mostly make use of a classroom (without direct access to other rooms) or the school canteen. The benefit of having a classroom that has access to other rooms, depending on the specific design, can provide greater choice for teachers and students in terms of making use of such a cluster of rooms, for example, by moving between spaces for different activities. The

Government of Alberta/Canada has recognised this and finds that moving between classrooms can help students learn to moderate their behaviour and/or independently move between classrooms, which reduces stress and maximises instructional time (Alberta Education, 2011).

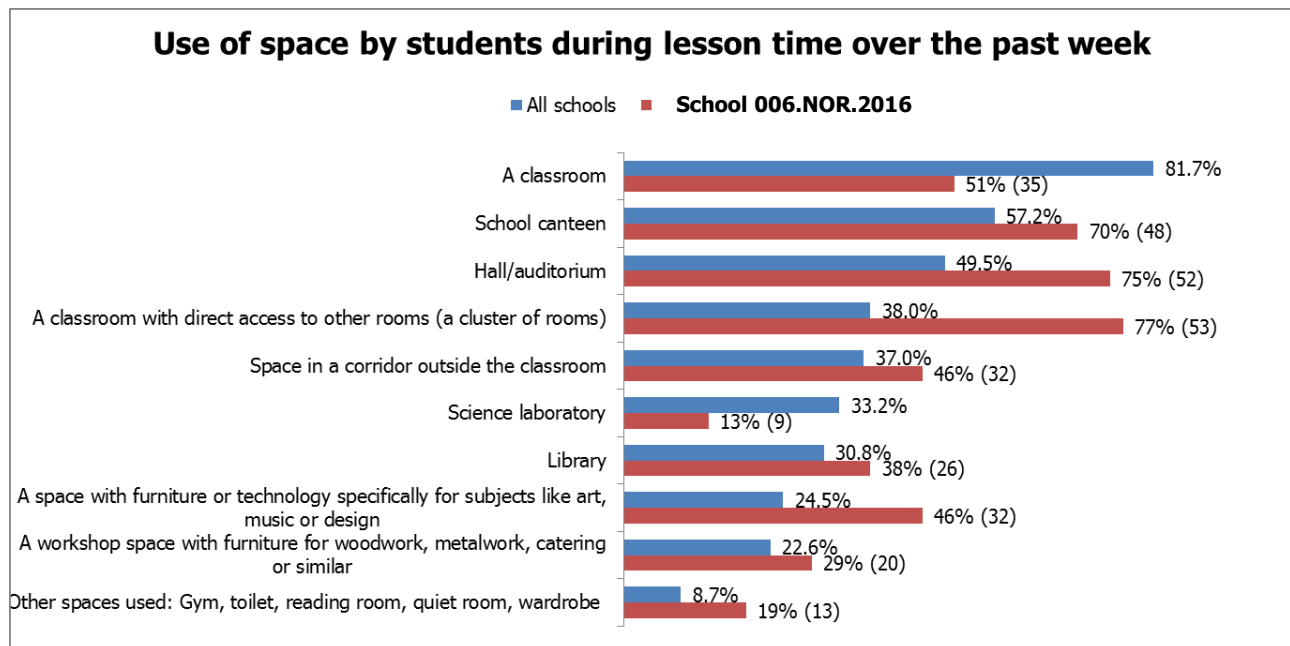


Figure A1.2: Use of spaces by students during lesson time across all Field Trial participating schools

Key findings: Types of spaces inside the school buildings and their use during lesson time

On average, there are three teachers and 60 students in a learning space and most teachers teach collaboratively (team teach) and share spaces designed for larger, single year-level groups. Teachers and students at School 006.NOR.2016 mostly use the hall/auditorium and a classroom with direct access to other rooms (a cluster of rooms) during a typical week. A classroom with direct access to other rooms can add movement to a class and the option to break out for group work or access more specialised learning spaces, depending on the set up. As reported by teachers and school leadership, the collaborative practices of the teachers as well as their willingness to experiment with different ways of using the learning spaces is at least partially influenced by the design of the physical learning environment, a supportive school leadership and, more generally, school culture.

A1.4.1.2 Rearranging the spaces inside the school buildings to meet instructional methods

The following spatial layout types are referred to when discussing spatial arrangements:



Presentation:

Layouts that support explicit instruction/presentation to the whole group.



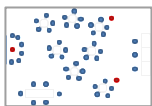
Group:

Layouts that support approaches where students are required to collaborate and work in small groups, to share ideas and help each other.



Individual:

Layouts that support approaches where students work independently to write, read, research, think and reflect.



Team teaching:

Layouts that support approaches where two or more teachers work collaboratively with groups of students sharing the same space.

Research suggests that flexible spaces can encourage more effective teaching (Anderson-Butcher et al., 2010; Oblinger, 2006), team teaching, better planning, making use of more diverse pedagogies, and focusing on personalised learning. Flexible spaces can also encourage students to be self-reliant learners capable of working in groups (Dekker, Elshout-Mohr and Wood, 2006; Fielding, 2006).

The survey results at School 006.NOR.2016 show that the physical learning environment is sufficiently flexible to suit a variety of different instructional methods and is conducive particularly to those coined relevant for 21st century teaching and learning, such as student group work and team teaching. Research shows that student group work can lead to more active and sustained engagement, connectedness and higher-order inferential joint reasoning amongst students (Blatchford et al, 2006).

In terms of flexibility and adjustability of the spaces (ease of arranging and re-arranging furniture) (see Figure A1.3):

- **The majority (82%) of teachers at School 006.NOR.2016 agree that it is easy to move the furniture;** only 18% of teachers (exclusively male teachers) disagree with this statement. 73% of teachers also agree that there is enough space to arrange furniture in different ways and more than half (55%) of teachers agree that the furniture can easily be moved during lesson time. But only 20% of teachers agree that there is enough time to rearrange the furniture before classes begin, 80% disagree (out of which 30% strongly disagree). That is why, at School 006.NOR.2016, on average, teachers mostly encourage students to move around a space during a class or to move the furniture to suit group work (see Figure A1.4). Almost half (45%) of the teachers encourage students to move around a

space during a class at least once a week, whereas a little more than a third (36%) of the teachers encourage students to do so one to three times a month. A little less than a third (27%) of teachers also encourage students to move furniture during class once a week to suit group formation or participation in activities. Another 27% do so 1-3 times a month. Teachers by themselves move the furniture around less frequently prior to or during a class. More than half (55%) of the teachers never rearrange tables, chairs or other elements of the space (e.g. sliding partitions) prior to the start of a lesson and 45% of teachers only do so 1-4 times a month. Female teachers more frequently change the spatial arrangements in the classrooms where they teach. Older and more experienced teachers never or hardly ever change them.

- **Teachers do not find it easy to move the technology equipment**, such as data projectors and white boards to support different furniture arrangements. Only 18% reported that they find it easy. 18% disagreed and 64% strongly disagreed.

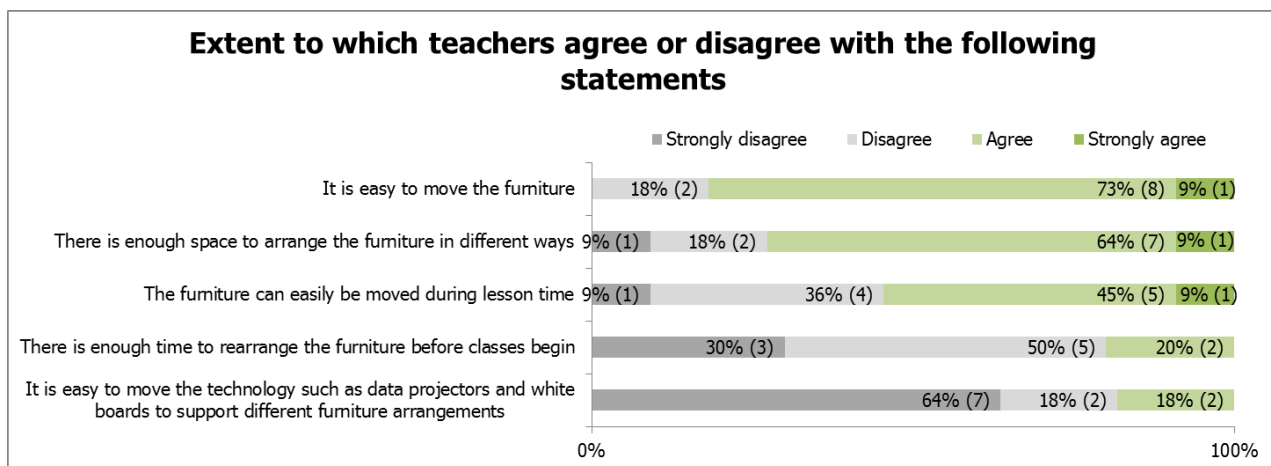


Figure A1.3: Teachers agreement with statements about moving furniture

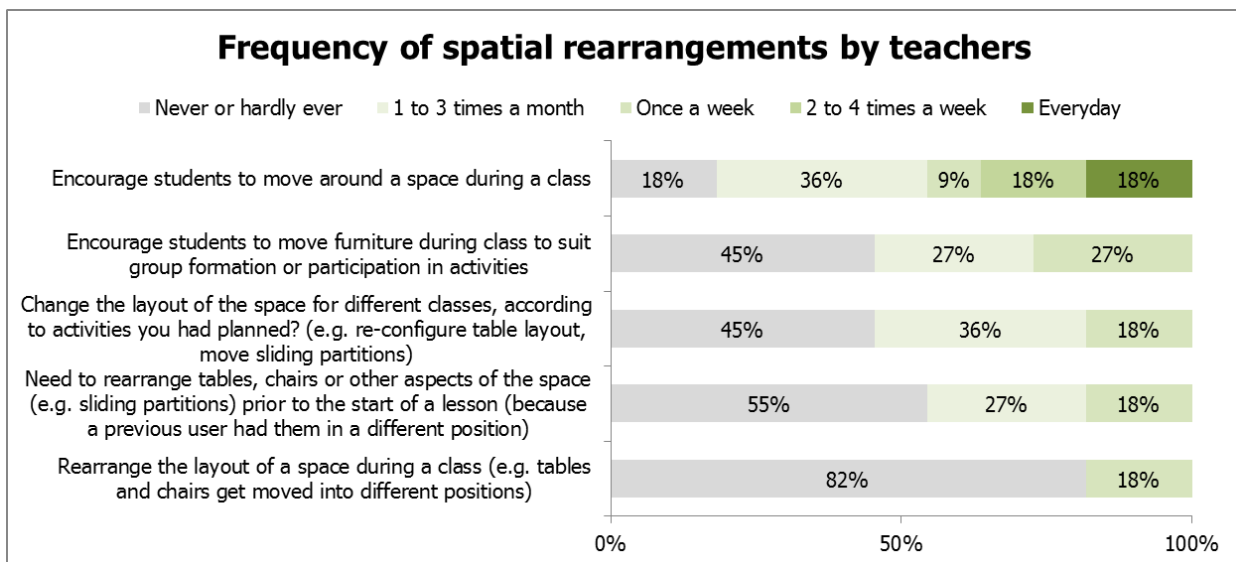


Figure A1.4: Frequency of spatial arrangements by teachers

In terms of instructional methods, teachers at School 006.NOR.2016 use a variety of instructional approaches and methods, such as student group work and team teaching, are used slightly more often than explicit instruction or independent student work. The responses also show that the spaces are sufficiently flexible to rearrange the furniture according to these different instruction methods (see Figure A1.5 and A1.6):

- **The majority (80%) of teachers use spatial arrangements that support students working in small groups every day**, and another 20% use them between 1-4 times a week. The responses reveal that the flexibility of the learning spaces is related to the frequent use of this teaching practice: For layouts that support students working in small groups, 40% of teachers agree that they could quickly (in less than five minutes) rearrange furniture in most of the spaces and 60% agree that this could be done in many or at least in some of the spaces. If they could (i.e. if the space would more easily allow for it), even more teachers would use layouts that support students working in small groups: 90% of teachers would use such layouts on a daily basis and 10% would use them two to four times a week.
- **Half (50%) of the teachers use layouts that support team teaching every day** and the other half (50%) use them between one and four times a week. For layouts that support team teaching, 50% of teachers agree that they could quickly (in less than five minutes) rearrange furniture in most of the spaces. The remaining 50% agree that this could be done in at least some of the spaces. If they could (i.e. if the space would more easily allow for it), 20% more teachers would use layouts that support team teaching on a daily basis.

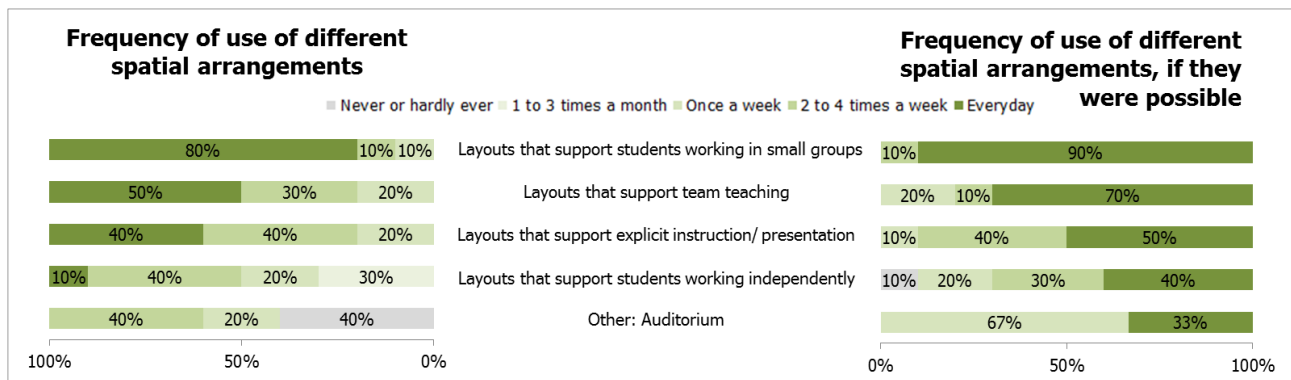


Figure A1.5: Actual and potential frequency of use of different spatial arrangements

- Teachers also use layouts that support explicit instruction or independent student work. **40% of teachers use layouts that support explicit instruction on a daily basis** and 60% use them between one and four times a week. For layouts that support explicit instruction/ presentation, fewer than a third (30%) of teachers agreed that they could quickly (in less than five minutes) rearrange furniture in most of the spaces. 70% agreed that this could be done in at least some of the spaces. If they could, half (50%) of teachers would use layouts that support explicit instruction/ presentation on a daily basis and the other half (50%) would use them 1-4 times a week.
- **10% of teachers use layouts that support students working independently every day**, 60% of teachers use layouts between one and four times a week and 30% between one and three times a month. For layouts that support students working independently, 20% of teachers agreed that they could quickly (in less than five minutes) rearrange furniture in most of the spaces. 70% agreed that this could be done in many or at least some of the spaces. 10% reported that this could not be done in any of the spaces. If they could, 40% of teachers would use such layouts on a daily basis and 50% would use them 1-4 times a week. However, 10% would never use them.
- Other layouts used by teachers are the **auditorium** (this was asked as an open ended question, hence, responses appear as originally described by respondents). 71% of the teachers agreed that the furniture could be rearranged in most or in at least some of the auditorium spaces, 29% indicated that the furniture can be changed in a few or none of these

spaces. If they could, 67% of teachers would use the auditorium spaces on a daily basis and 33% would use them once a week.

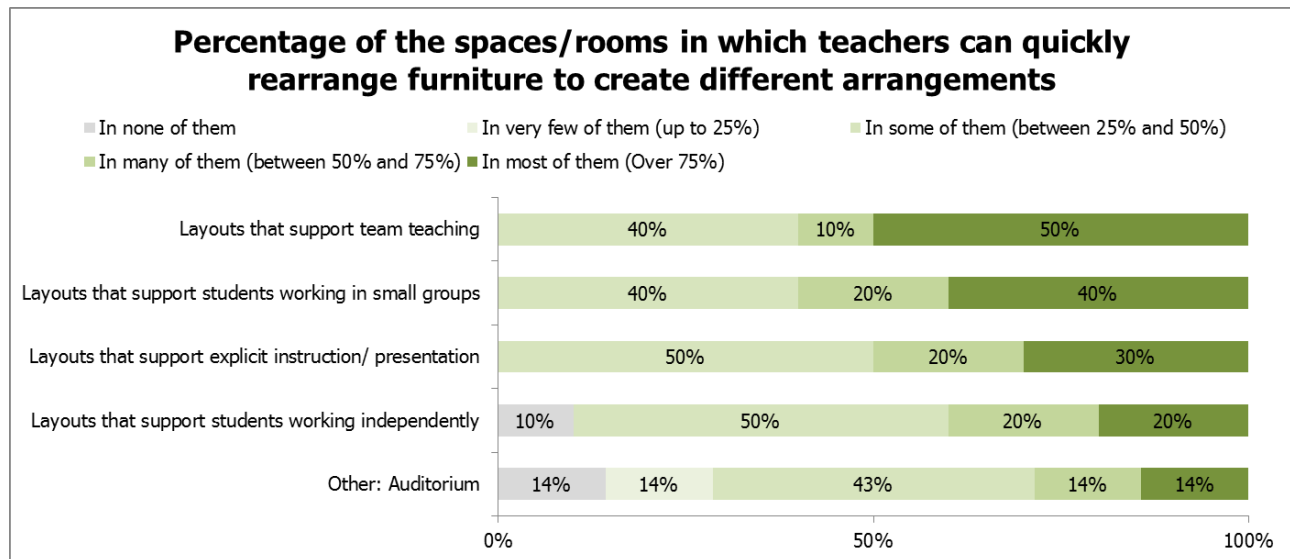


Figure A1.6: Percentage of spaces/rooms in which teachers can quickly rearrange furniture to create different arrangements

These findings from School 006.NOR.2016 reflect some of the research that indicates that new built environments or relatively modern buildings can provide a catalyst and opportunities for teachers to work more collaboratively in teams and across disciplines (Blackmore et al., 2011; McGregor, 2003, 1990; Morton, 2005; Nespor, 2004; OECD, 2003). Such collaborative methods and team teaching is likely to lead to improved student outcomes (e.g. Darling-Hammond, 2008, 2002, 2001; Elmore, 2007; Gijlers et al., 2009), but only with significant teacher professional development and supportive school cultures (Given et al., 2010).

Impact of school leadership and culture

The findings clearly show that both the physical learning environment and a supportive school culture are key drivers (see Figure A1.7):

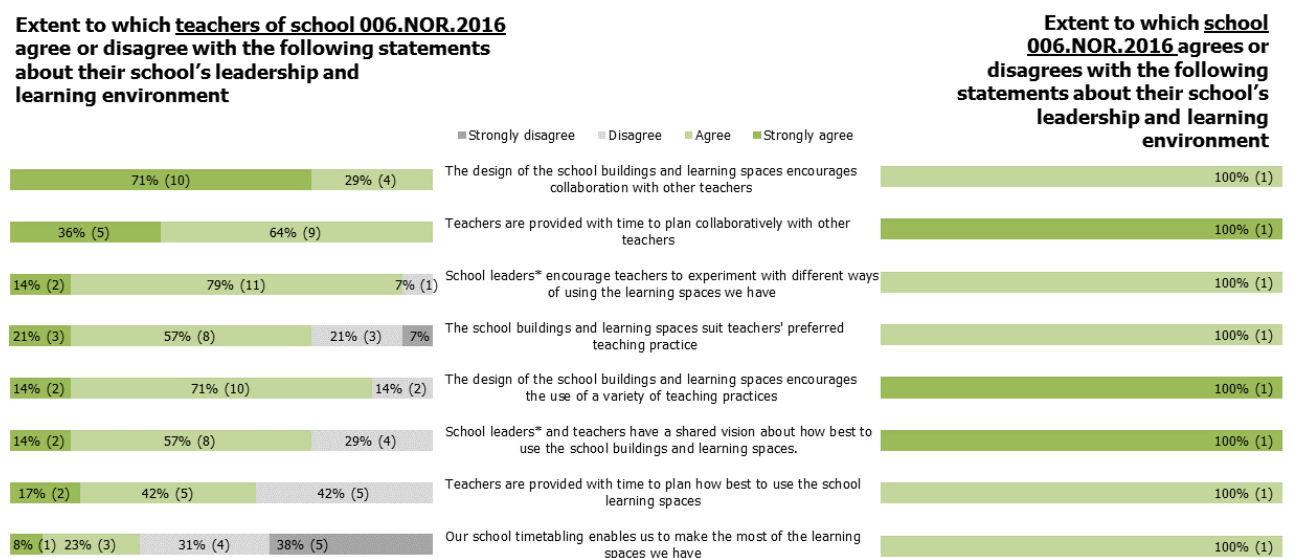


Figure A1.7: School leadership and culture

- Both school leadership and teachers agree that **the design of the school buildings and learning spaces encourages collaboration between teachers**. 71% of teachers strongly agree with this statement.
- Both school leadership and teachers agree that **teachers are provided with time to plan collaboratively with other teachers**. School leadership and 36% of teachers strongly agree with this statement.
- School leadership and 93% of teachers agree that **school leaders encourage teachers to experiment with different ways of using the learning spaces**. 7% of teachers disagree with this statement.
- School leadership and 78% of teachers agree that the **school buildings and learning spaces suit teachers' preferred teaching practice**. 21.5% of teachers strongly agree and 21.5% of teachers disagree with this statement.
- School leadership and 85% of teachers both agree that **the design of the school buildings and learning spaces encourages the use of a variety of teaching practices**. School leadership and 14% of teachers strongly agree with this statement. 14% of teachers disagree with this statement.

Extent to which schools agree or disagree with the following statements about their school's leadership and learning environment

Extent to which school 006.NOR.2016 agrees or disagrees with the following statements about their school's leadership and learning environment

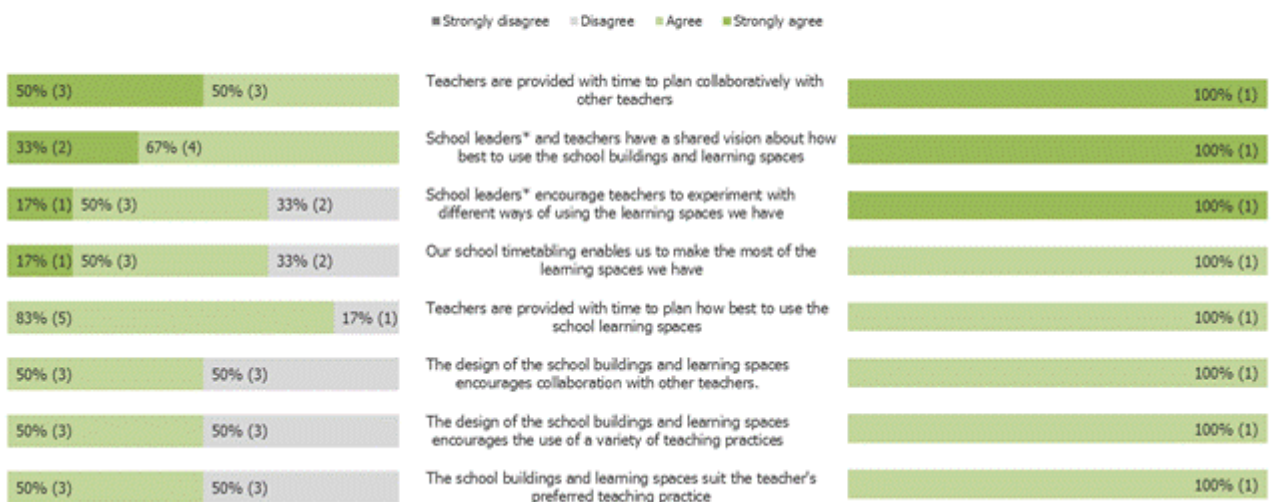


Figure A1.8: School leadership and culture amongst LEEP Field Trial participating schools

- School leadership and 81% of teachers agree that **school leaders and teachers have a shared vision about how best to use the school buildings and learning spaces**. School leadership and 14% of teachers strongly agree with this statement. However, 29% of teachers disagree with this statement.
- School leadership and 59% of teachers agree that **teachers are provided with time to plan how best to use the school learning spaces**. 17% of teachers strongly agree with this statement. However, 42% of teachers disagree with this statement.

- School leadership and 31% of teachers agree that **the school timetabling enables teachers to make the most of the learning spaces**. 8% of teachers strongly agree with this statement. However, 31% of teachers disagree and 38% strongly disagree with this statement.

When comparing the overall school responses from the six schools to the response by School 006.NOR.2016, it becomes clear that school leadership at School 006.NOR.2016 is more confident about the effective use of the school spaces and the relationship between school leadership and teachers in using the spaces (see Figure A1.8).

Key findings: Rearranging the spaces inside the school buildings to meet instructional methods

Recent research by the University of Salford, Manchester (Barrett et al, 2015), found that teachers can readily alter many of the factors that influence students' learning already through small changes that may cost little or nothing -such as changing the layout of the room, or the choice of display or colours on the wall- but that can make a big difference. Such individualisation offers opportunities for different modes of learning, which in turn positively impacts student outcomes. Analysis conducted based on the OECD's Teaching and Learning International Survey (TALIS) and the Programme for International Student Assessment (PISA) shows that using a variety of teaching methods, each of which is targeted to developing specific student outcomes, is most effective (Le Donné et al, 2016). The same studies also found that the more a teacher collaborates with other teachers in the school, the more he or she tends to regularly use learning strategies that have a positive effect on student outcomes (Le Donné et al, 2016).

These findings reflect the importance of -confirmed widely by research (DfES, 2006; Higgins et al, 2005)- and the teachers' willingness and pro-activeness to change the spaces according to their needs and those of the learners and in congruence with the pedagogical goals, educational programmes and instructional strategies.

School 006.NOR.2016 shows that not only has the physical learning environment been designed in a way that promotes flexible learning spaces, but also that teachers (except for older and longer serving teachers) are making use of this flexibility by adapting the spaces to their needs. For example, teachers and school leadership both reported that the design of the school buildings and learning spaces encourages them to use a variety of teaching practices. These include student group work, team teaching, explicit instruction and student independent work. Teachers reported that they make slightly more use of student group work and team teaching methods than other approaches. The reconfiguration of the learning spaces is often undertaken collaboratively with the students, because teachers perceive the time before lessons as too limited to set them up on their own.

A1.4.1.3 Types of spaces inside the school buildings and their use outside lesson time

At School 006.NOR.2016, outside lesson time, **76% of students reported that they can find a space in the school when they need to work quietly on their own**. 22% reported that they could never (3%) or rarely (19%) find such a space. **86.5% reported that they can find a space to work together with other students**, for example on a group project, while 13.5% indicated they could never (4.5%) or rarely (8.9%) find such a space.

Outside lesson time, most students use the **school canteen** (67%), followed by the **library** (59%), **a classroom with direct access to other rooms** (a cluster of rooms) (58%), **a classroom** (50%), **a space in a corridor outside the classroom** (47%), **the hall auditorium** (39%) and **spaces with furniture or technology specifically for subjects like art, music or design** (22%). A **workshop space for woodwork, metalwork, catering or similar** (9%) and **the science laboratory** (9%) are least used. 6% of students indicated to use **other spaces** outside lesson time (this was asked as an open ended question, hence, responses appear as originally described by respondents), such as the **quiet room, PC room or smaller rooms** (see Figure A1.9).

Teachers were asked how satisfied they were with the provision of different spaces they use outside lesson time. Teachers reported that they were most satisfied with the **spaces that staff can use for socialising and conversation with other staff** (85% satisfaction on average) and a **quiet space for teachers to work in the school before or after lessons** (82% satisfaction on average). Teachers are a little less satisfied -but nevertheless satisfied- with the provision of **meeting rooms** (64% satisfaction on average). On average, female teachers are more satisfied by approximately 20% with all of these spaces than male teachers. Older and more experienced teachers were the least satisfied with all of the spaces.

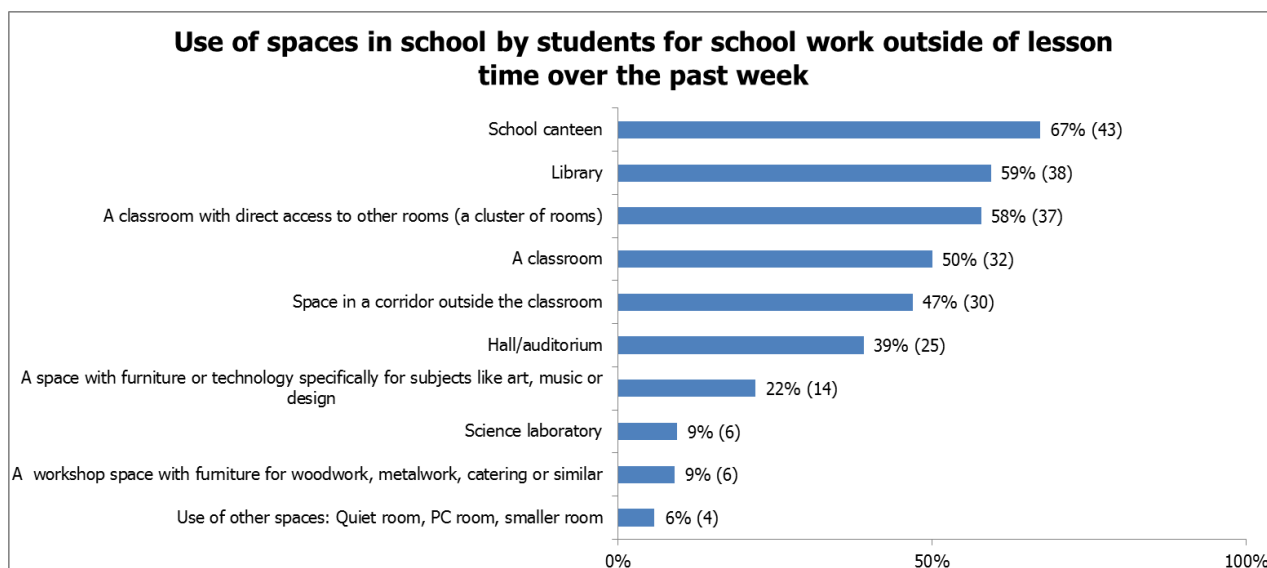


Figure A1.9: Use of spaces by students for school work outside lesson time

At School 006.NOR.2016, **94% of students also reported the existence of a safe place in the school where they can leave their belongings**, such as a locker, which is similar to the findings from the other schools that participated in the LEEP field trial (see Figure A1.10).

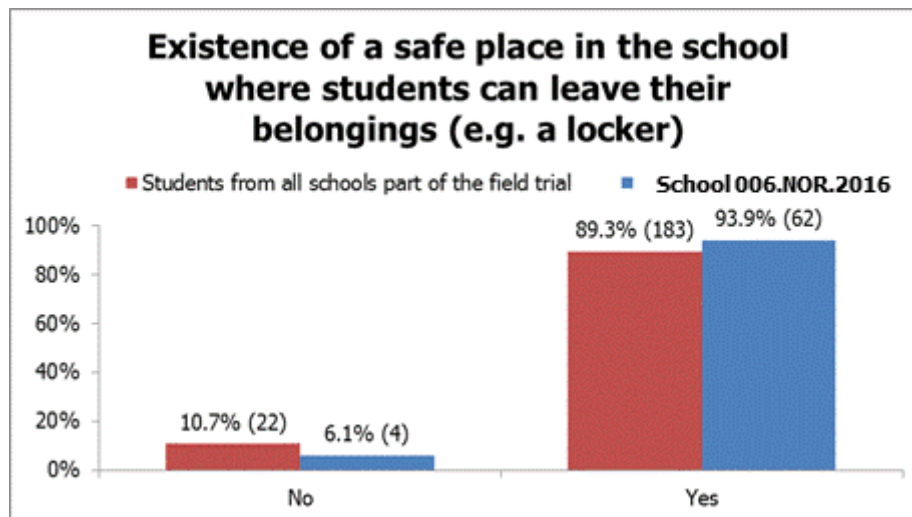


Figure A1.10: Existence of a safe place in the school where students can leave their belongings

Key findings: Types of spaces inside the school buildings and their use outside lesson time

School 006.NOR.2016 provides spaces for both students and teachers to work quietly on their own as well as spaces they can use for collaboration or socialisation. The availability of such spaces structures students and teachers' use of their time before and after lessons. For students, such spaces provide valuable opportunities for learning on their own or with peers outside of the lesson plan, which can contribute to creating a sense of privacy as well as an enhanced sense of control and personal autonomy, which contributes to their social and emotional well-being and learning (Temple, 2007).

For teachers, spaces for socialising provide an environment where they can exchange ideas and practices before or after lessons, as well as give each other feedback or plan their joint lessons. Teachers also reported that they are provided with time to plan collaboratively with other teachers. Data from the OECD's Teaching and Learning International Survey (TALIS) indicate that teacher self-efficacy and job satisfaction are associated with the opportunities they have for collaboration with other teachers and the time they are provided for this (TALIS, 2014). The spaces provided for use outside of lesson time at School 006.NOR.2016 could be one of the many factors contributing to the overall satisfaction of students and teachers with the learning spaces.

A1.4.1.4 Types of external/outside spaces and their use

Access to external spaces can expand the range of active learning opportunities available to stimulate students and teachers' imagination and learning (DEECD, 2009). Research has shown that schools that have spaces for outdoor learning allow students to better absorb and retain math, science, language, arts, and other skills because outdoor learning incorporates their immediate environment and supports students to make use of all of their five senses (Lieberman and Hoody, 1998). Outdoor play has been linked to stronger social skills and increased creative development (Miller, Tichota, and White, 2009).

At School 006.NOR.2016 (see Figure A1.11):

- Both teachers and students indicated that they make most use of a **grassed area (not a sports field) not accessible from a classroom** with 60% of students indicating to have used such an outside space over the past week and 66% of teachers reporting to use such a space between once a month to once a week.
- 47% of students reported that they used **an external (outside) classroom or space, usually with seating and directly accessible from a classroom**, over the past week. 50% of teacher reported to use such an outside space 1 to 3 times a month.
- 32% of students indicated to also have used a **sports field** and 33% of teachers reported that they used a sports field between once a month to once a week
- Whilst only 26% of students reported that they had used **an external (outside) hard ball court / sports court / hard paved area not accessible from a classroom** over the past week, 40% of teachers reported that they use such a space between once a months to every day. Students also reported that they had gone to the **park** over the past week.

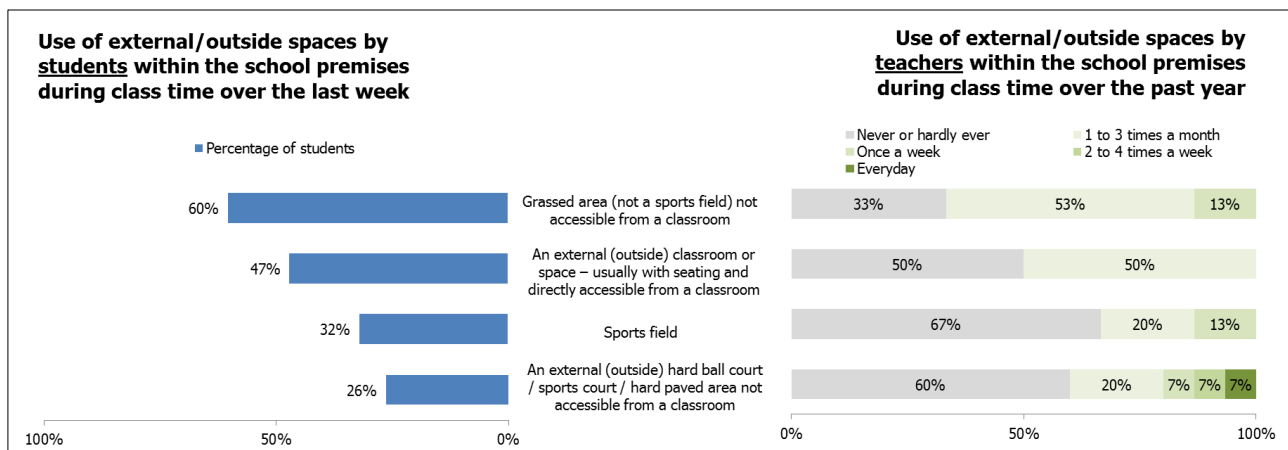


Figure A1.11: Use of external (outside) spaces by students and teachers

Key findings: Types of outside spaces and their use

At School 006.NOR.2016, external/outside spaces for teaching and learning are used by approximately half of students and teachers once a week to several times a month. Both students and teachers make slightly more often use of grassed areas or external classrooms during lesson time than external spaces for sports. Research shows that the quality of life in a school is much enhanced when there is a great amount of outdoor spaces; particularly classrooms with doors directly towards an outside area showed to have a positive impact on students (Barret et al, 2015). This holds true especially for schools in urban environments, where nature is already scarce. To

enhance the connection between the school and nature, when outside spaces are scarce, it can be advisable to add natural elements to the classroom, such as plants, wooden chairs or desks so that students can connect to nature. Ensuring that the view outside is not blocked by furniture, for example, is another way of connecting inside with outside, in addition to allowing more natural light into the space.

A1.4.2 Use of technology at School 006.NOR.2016

Learning spaces and the different types of technology together mediate the relationship and social practices of teaching and learning, and are two factors among many in the complex relationships of teaching that inform learning in schools (Oblinger, 2006). Teachers and students decide on how technology is mobilised in different spaces (Bissell, 2002). Ready access to resources including ICT enables teachers and students to experiment with new learning tools, engage in joint learning experiences and diversify the demonstration of learning (DEECD, 2009).

The school leadership of School 006.NOR.2016 reported that:

- 100% of classrooms/learning spaces are equipped with **wireless internet** as well as **charge points**,
- 80% of the classrooms/ learning spaces
 - provide the **possibility to project sound and vision for a class for students**, such as through a projector or large TV (with audio),
 - are equipped with **cabled internet access**, and
 - **interactive white boards**
- 50% of classrooms/learning spaces are equipped with **in-school laptops** that are stored in that room
- 9% of classrooms/learning spaces are equipped with **desktop computers**.

When comparing the findings from School 006.NOR.2016 to those from the other schools in Norway, it becomes clear that all of the schools are generally well equipped (see Figure A1.12). However, at School 006.NOR.2016 24% more of the spaces are equipped with **interactive white boards**, 20% more with **cabled internet access** (in addition to wireless internet access throughout the school buildings) and 17% more of the spaces are equipped with **charge points**.

On the other hand, in terms of **internet download, upload and line speed** (in Mb/seconds), the speed of School 006.NOR.2016's internet is lower than that of other schools that participated in the field trial (see Figure A1.13). Moreover, the spaces at School 006.NOR.2016 have 9% less of a **possibility to project sound and vision for a class of students** compared to the other schools, and they have 5% less **in-school laptops/notebooks** and 13% less **desktop computers**. When looking at the more specific school data for School 006.NOR.2016 it becomes clear, however, that even though they have fewer laptops or desktop computers than the other schools, sufficient in-school laptops are provided in the spaces that can be used by teachers and students:

- 71% of teachers reported that **in-school laptops** existed, or could easily be accessed in all or most of the spaces, and 29% reported that they existed in few or none of the spaces. 57% of teachers make use of school laptops between one and four times a week, 29% use them one to three times a month, and 14% of teachers never make use of them. On average, female teachers use such devices 17% more frequently than male teachers.
- 36% of teachers reported that **desktop computers** are provided in some of the spaces and 64% reported they existed in few or none of the spaces. 21% of teachers make use of desktop computers between one and four times a week and 79% never make use of them. On average, female teachers use such devices 5% more frequently than male teachers.
- 7% of teachers reported that **tablets** were provided in all of the spaces, 14% indicated they were provided in most of the spaces and 79% indicated they are provided in none of the spaces. 21% of teachers make use of tablets between one and four times a week and 79%

never make use of them. On average, male teachers use such devices 8% more frequently than female teachers.

School 006.NOR.2016 did not respond to the question whether students are requested to **bring their own devices**, such as laptops or tablets.

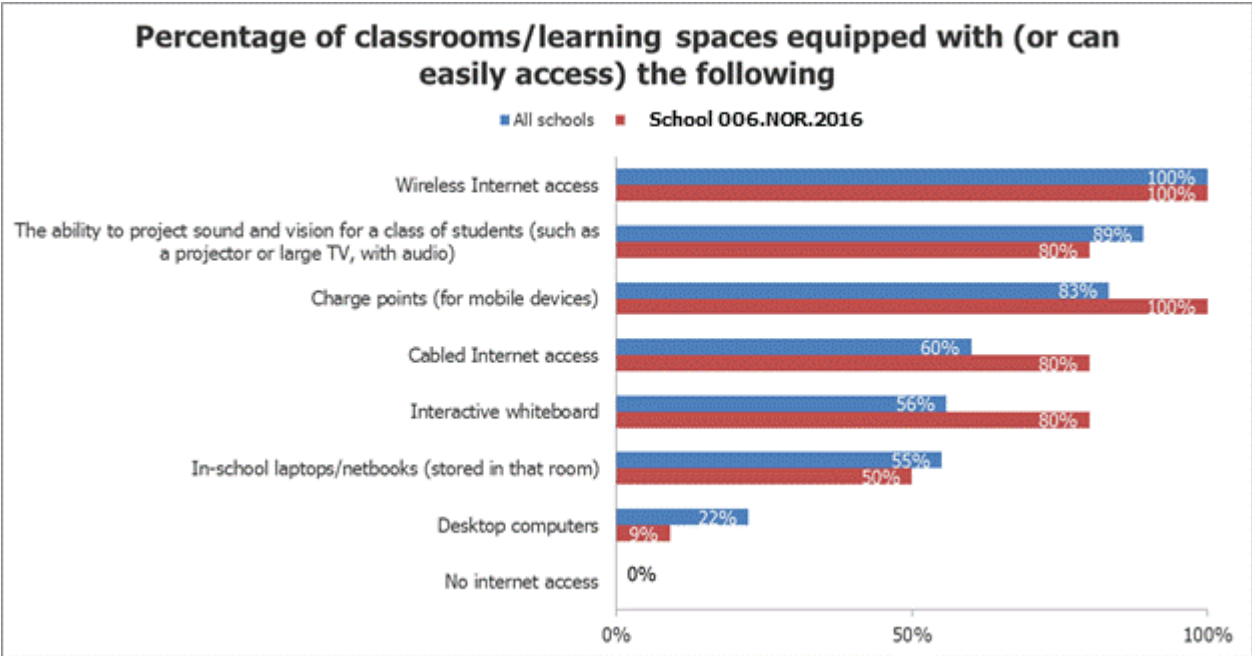


Figure A1.12: Technology equipment in the classrooms/learning spaces

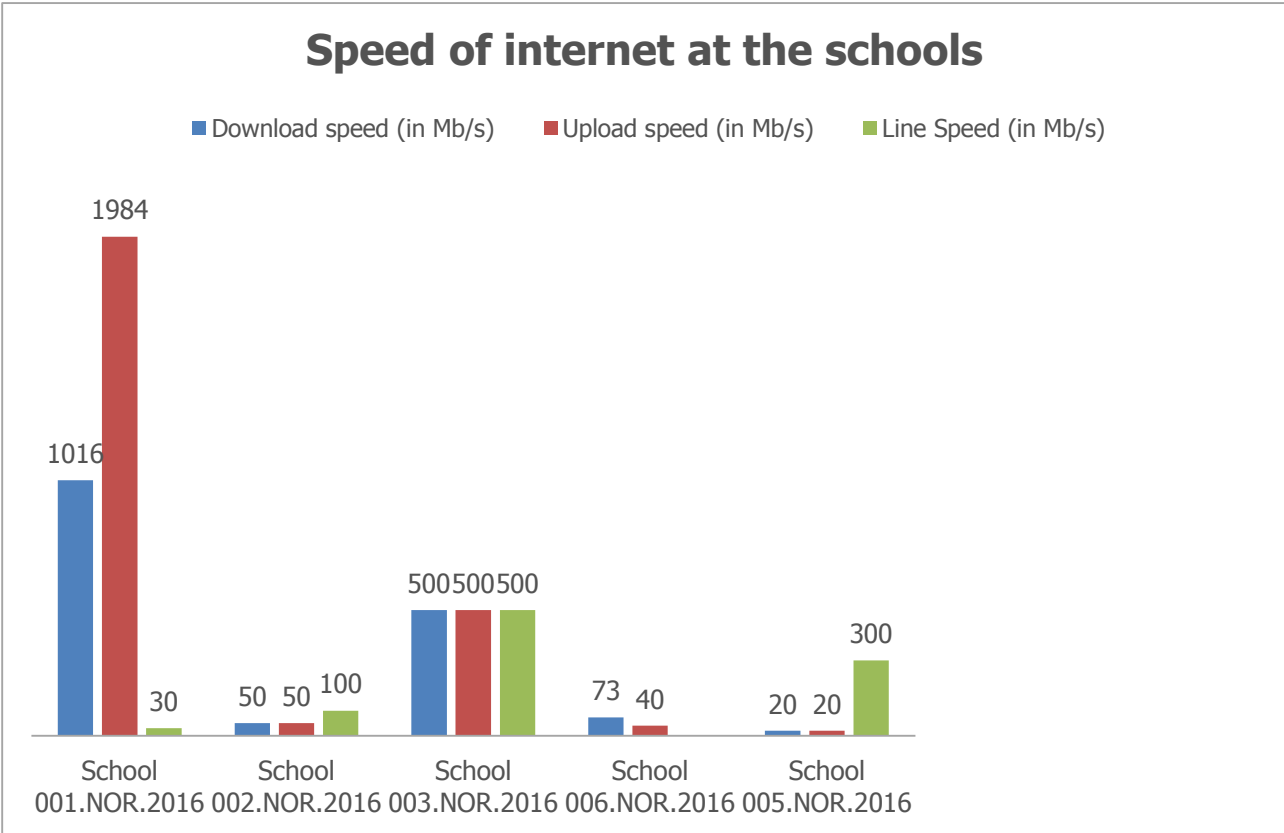


Figure A1.13: Speed of internet at the LEEP Field Trial participating schools

In regard to the other technology in the school, teachers reported its availability and usage in the spaces/rooms in which they teach, as noted below (see Figure A1.14). What can be seen is that availability of equipment and the frequency of its use go hand-in-hand.

- 86% of teachers reported that they have **wireless internet access** in all of the spaces, 14% reported that this is the case for most of the spaces. 79% of teachers make use of wireless internet access every day and 21% between 1-4 times a week.
- 21% of teachers reported that they can **project sound and vision for a group of students** (with a projector or a large TV with audio) in all of the spaces, 71% indicate that this is possible in most of the spaces and 8% indicate this is possible in a few of the spaces. 31% of teachers use projectors, or TVs, or other devices every day to project sound and vision to students, 62% use them between 1-4 times a week, while 7% never use them. On average, female teachers use such devices 18% more frequently than male teachers.
- 29% of teachers reported that there are **interactive whiteboards** in all spaces, 64% reported they exist in most spaces, 7% reported that there didn't exist any. 43% of teachers use interactive whiteboards every day, 43% use them between 1-4 times a week, 7% use them one to three times a month and another 7% of teachers never use them. On average, female teachers use such devices 20% more frequently than male teachers.

Based on the responses, it appears that most teachers make use of technology in the learning spaces in which they teach on a daily basis, especially with regard to internet use and to project sound and vision for a group of students. The responses also reveal that female teachers make more frequent use of technology than male teachers, especially regarding interactive whiteboards, projectors/TVs and in-school laptops. The only exception is the use of tablets, which are slightly more often used by male teachers. Older teachers make less use of technologies in their classrooms, with the exception of one older male teacher who uses most technologies on a daily basis in his teaching.

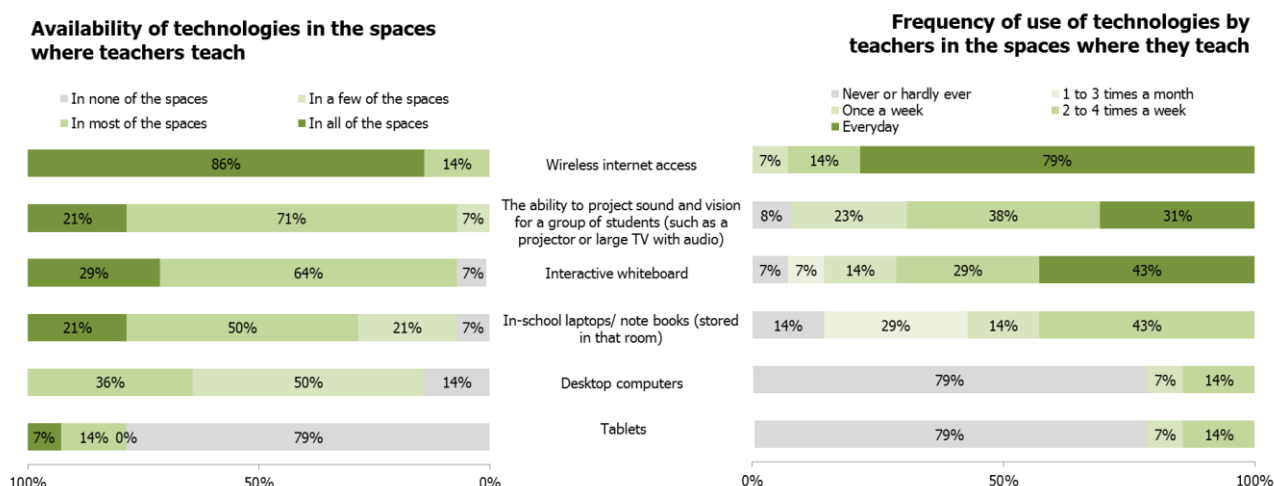


Figure A1.14: Availability of technologies and frequency of use

Key findings: Use of technology at School 006.NOR.2016

School 006.NOR.2016 is very well equipped in terms of technology and teachers use it frequently for their teaching. All of the spaces are equipped with wireless internet and all teachers make use of it at least once a week (79% make use of the internet on a daily basis) and almost all or most of the spaces are equipped with sound and vision technologies and 93% of teachers make use of

them at least once a week. These findings show that technology is well integrated in teaching and learning at School 006.NOR.2016. It could be useful for the school to further understand how different types of technology are used to enrich teaching and learning, i.e. how long they are used during a typical class period and for what purpose they are most often used.

A1.4.3 Comfort and Safety

Students and teachers spend a significant proportion of their day at school. Students often spend hours sitting. It is therefore critical that the physical learning environments are healthy and comfortable, as they can contribute to both students' and teachers' sense of well-being and to their ability to "concentrate on the task at hand" (Bateman, in press).

A recent research project -the HEAD Project (Holistic Evidence and Design) (Barret et al, 2015)- suggests that well-designed primary schools boost children's academic performance in reading, writing and maths. According to that study differences in the physical characteristics of classrooms were found to increase the students' learning progress by as much as 16% in a year. The naturalness of the learning environment, i.e. light, sound, temperature and air quality was found to account for half of the impact.

The following section looks at a number of factors that contribute to comfort and safety in the spaces, including temperature, air quality, light quality, visual quality, auditory quality, comfort of desks and chairs, finding shade on the school grounds in the summer and students' perceived feeling of safety in different parts of the school grounds. All of these factors contribute to creating a learning environment that is sufficiently comfortable and meets the conditions most likely to impact on student learning. For example, **thermal comfort** is important both for student learning, retention and task performance and teachers' job satisfaction (Schneider, 2002; 21st Century School Fund, 2009). A good quality of **fresh air** in the learning spaces prevents mould and airborne bacteria that can have adverse effects on students' and teacher's health (Schneider, 2002; 21st Century School Fund, 2009). Both **natural (day) and artificial lighting** have been found to have considerable effects on learner performance, with natural light optimising student achievement (Schneider, 2002; 21st Century School Fund, 2009) and **a good acoustic environment** –in terms of sound quality rather than noise level- has been found to be fundamental to academic performance (Schneider, 2002; 21st Century School Fund, 2009).

A1.4.3.1 Perceived temperature in the spaces when it is cold or hot outside

When it is cold outside, at School 006.NOR.2016, half of the students (49%) usually feel about right (neither too hot nor too cold) in all or most of the spaces (see Figure A1.15). 43% feel right only in a few of the spaces and 9% do not feel right in any of the spaces. 39% feel too cold in all or most of the spaces and 43% feel too cold in a few of the spaces. On the other end of the spectrum, 13% of students feel too hot in all or most of the spaces and 33% feel too hot in a few of the spaces.

Teacher responses indicate a more positive feeling about the temperature in the spaces. 83% of teachers feel that the temperature is about right (neither too hot nor too cold) in all or most of the spaces where they teach. 17% do not feel right in all of the spaces. 21% feel too cold in all or most of the spaces and 43% feel too cold in a few of the spaces. On average, female teachers feel colder in the spaces than male teachers. On the other end of the spectrum, 7% of teachers feel too hot in all or most of the spaces and 31% in a few of the spaces.

In terms of adjusting the temperature in the learning spaces, 14% of teachers indicated that they could control heating in all of the spaces where they teach. 7% indicated that they could control heating in a few of the spaces and 79% indicated that they couldn't control heating in the spaces where they teach (see Figure A1.16).

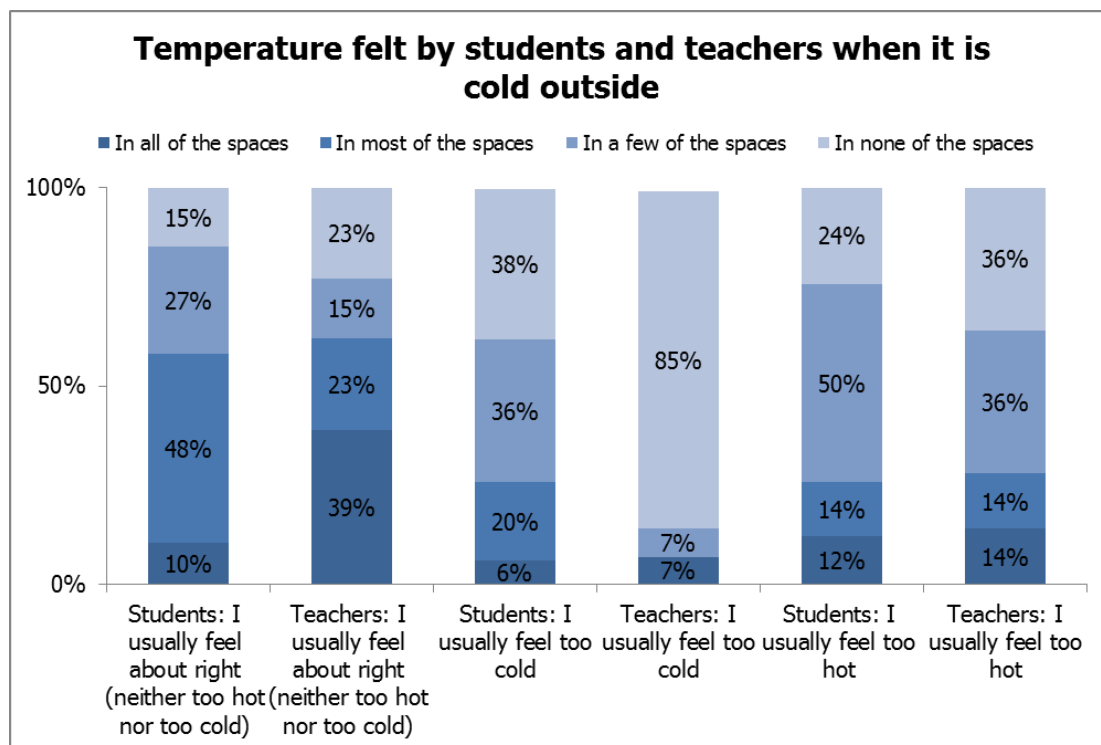


Figure A1.15: Temperature felt by students and teachers when it is cold outside

When it is hot outside, at School 006.NOR.2016, more than half of the students (58%) usually feel about right (neither too hot nor too cold) in all or most of the spaces (see Figure A1.17). 27% feel right only in a few of the spaces and 15% do not feel right in any of the spaces. 26% of students reported feeling too hot in all or most of the spaces and 50% reported feeling too hot in a few of the spaces. On the other hand, 26% feel too cold in all or most of the spaces and 36% feel too cold in a few of the spaces.

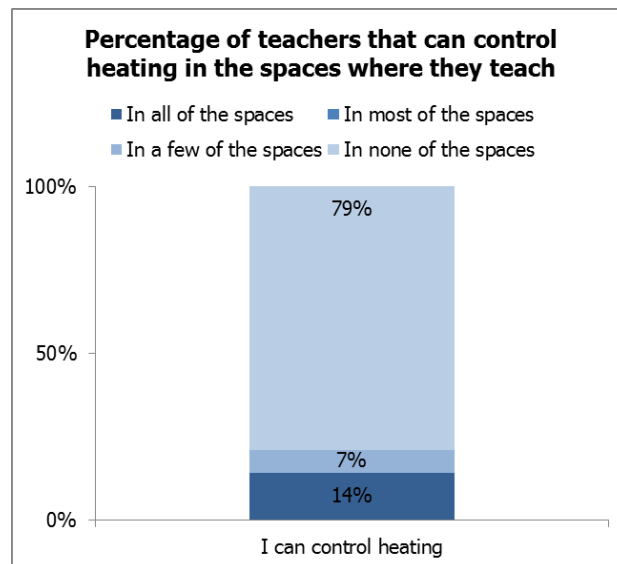


Figure A1.16: Control of heating by the teachers

The findings from the teacher responses show similar results. 62% of teachers feel neither too hot nor too cold in all or most of the spaces where they teach. 15% feel right in only a few of the spaces and 23% do not feel right in all of the spaces. 28% of teachers feel too hot in all or most of the spaces and 36% in a few of the spaces. On the other hand, 7% feel too cold in all of the spaces and another 7% feel too cold in a few of the spaces.

In terms of adjusting the temperature in the learning spaces, only 14% of teachers indicated that they could control air conditioning in all or most spaces and 86% reported that they could not control air conditioning in the spaces (see Figure A1.18). An indirect way of adjusting the temperature in the summer months can be by adjusting glare. 22% of teachers reported that they can control glare, such as through blinds or windows in all or most of the spaces. 38% indicated this was possible in a few of the spaces and another 38% of teachers indicated this was not possible in any of the spaces.

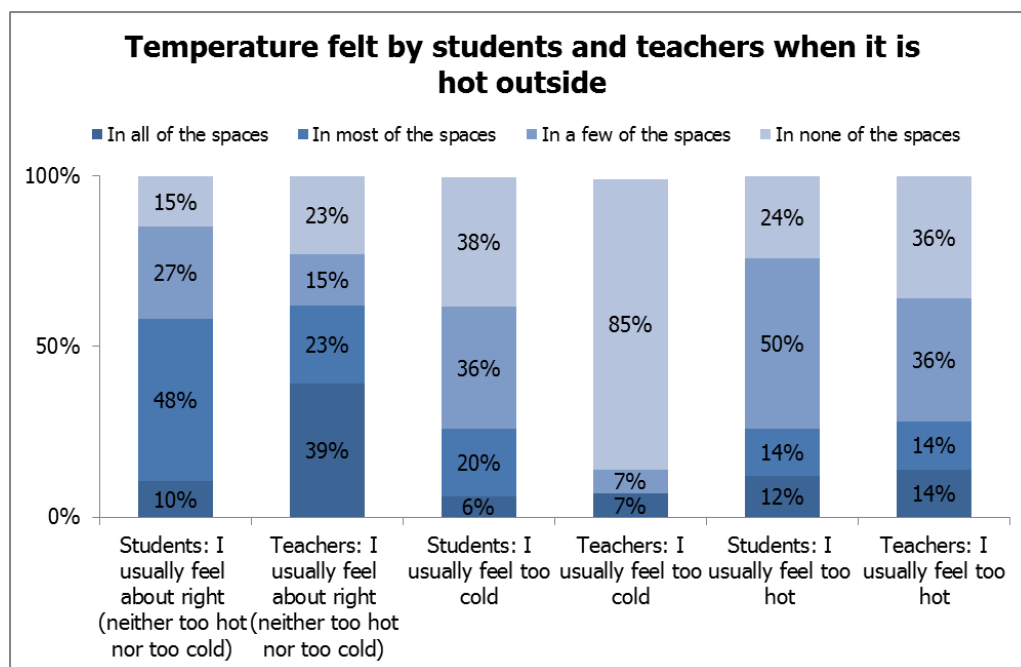


Figure A1.17: Temperature felt by students and teachers when it is hot outside

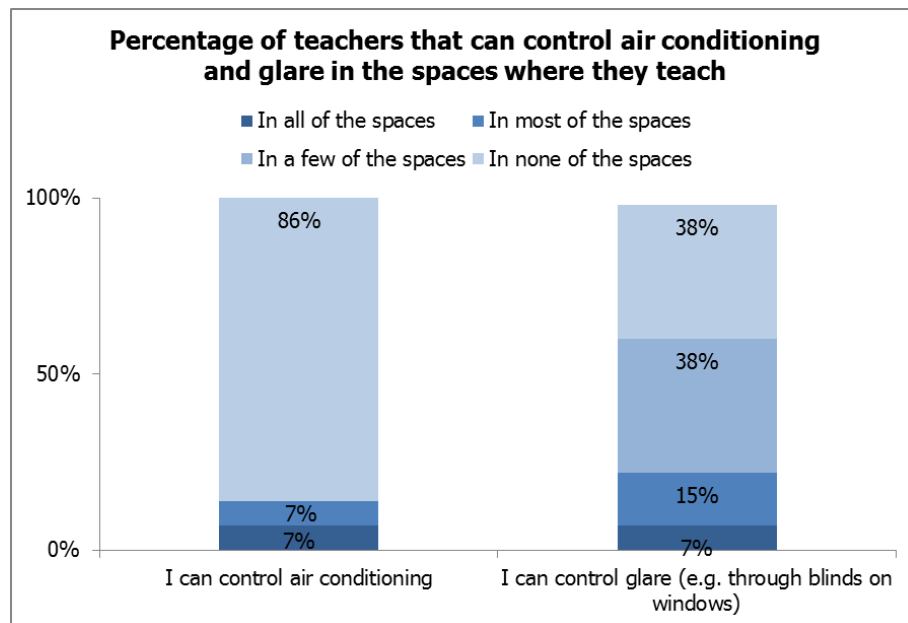


Figure A1.18: Control of air conditioning and glare by the teachers

Key findings: Perceived temperature in the spaces when it is cold or hot outside

Based on the responses, it was found that students feel colder in the spaces than teachers, when it is cold outside. About half (49%) of the students and 83% of teachers feel about right (neither too hot nor too cold) in all or most of the learning spaces. 38% of students and 21% of teachers feel too cold in all or most of the learning spaces. On the other hand, 13% of students and 7% of teachers feel too hot in all or most of the spaces. Most of the teachers reported that they could not control heating in the spaces.

An idea for the school could be to identify those classrooms that are particularly cold and inform teachers, students and their parents during the winter season so that students bring along some additional warm clothing. Researchers have been studying the effects of temperature on student learning for many years and found that generally higher, rather than lower or cooler temperatures, create greater discomfort amongst students and led to lower achievement and task performance (Barrett et al, 2015).

When it is hot outside, both students (58%) and teachers (62%) tend to feel about right in all or most of the spaces. However, approximately a quarter of students (26%) and teachers (28%) reported feeling too hot in all or most spaces. 86% of teachers reported that they could not control air conditioning in the spaces where they teach, but 60% of teachers reported they could control glare through blinds, for example, in most or at least a few of the spaces.

One way to prevent thermal discomfort would be for the school to check which of their learning spaces gets too hot in the summer months and identify potential alternative or additional solutions to decrease the temperature in these spaces. Such solutions depend on the particular spaces and could entail the use of ventilators. Another solution could be to place shrubs or planters outside south-facing windows to provide shading and reduce sun heat.

A1.4.3.2 Perceived air quality in the spaces

Evidence suggests that poor air quality is a rather common problem in schools but can be prevented (Crawford, 1998). The LEEP survey, therefore, asked teachers and students whether they find the air fresh or humid in the learning spaces. Humid air can be an indicator of the air containing too much moisture, which in turn can help microorganisms develop and, at excessive levels, create moulds, which can negatively affect students and teachers' health.

Students of School 006.NOR.2016 report that the air is usually fresh in 79% of all or most of the spaces where there is lessons or where they study (see Figure A1.19). 19% find that the air is fresh in a few of the spaces and only 1% finds that the air is not fresh in any of the spaces. 20% of students find that the air is humid in all or most of the spaces and 42% of students feel that the air is humid in a few of the spaces. 100% of teachers reported that the air was usually fresh in all or in most of the spaces. 20% reported the air is usually humid in all or most of the spaces and 42% in a few of the spaces.

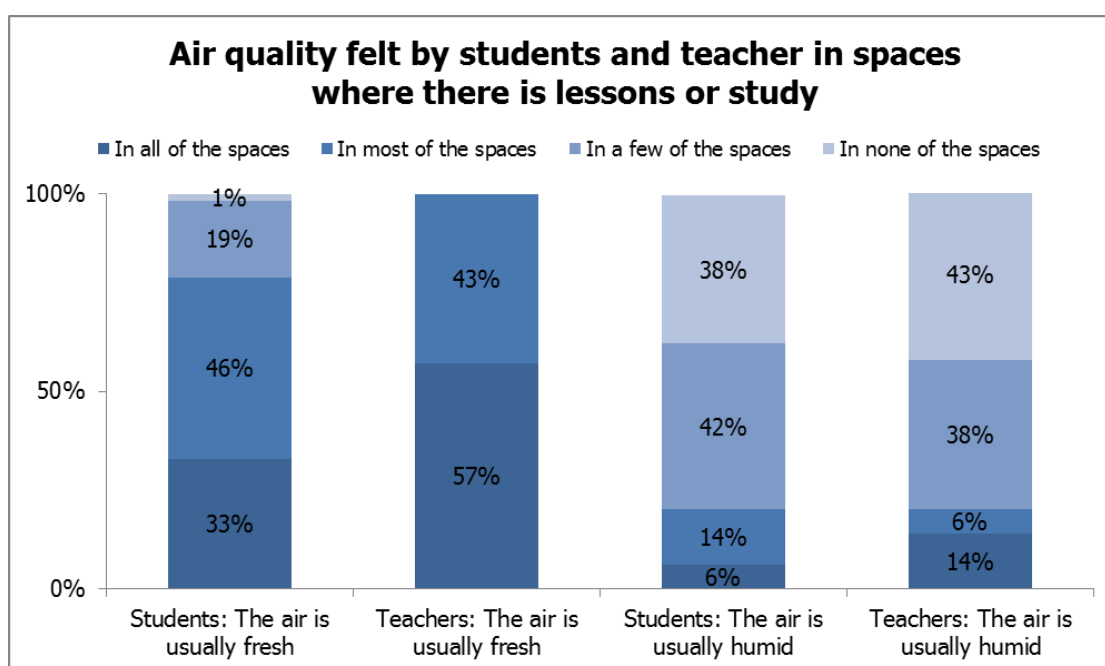


Figure A1.19: Air quality felt by students and teachers

Key findings: Perceived air quality in the spaces

Overall, it seems that the air quality in the learning spaces at School 006.NOR.2016 is good, since 79% of students and 100% of teachers indicated that the air is usually fresh in all or most of the spaces. However, 20% of students also reported that the air is usually humid in all or most of the spaces. The school could identify those learning spaces that are more humid and implement some zero-cost adjustments to improve the air quality, such as by opening the window at least once during a lesson or, at least, in between classes.

A1.4.3.3 Perceived quality of natural light in the spaces

When it is daylight outside, the majority of the students (79%) at School 006.NOR.2016 usually feel that the natural light is about right (neither too bright nor too dark) in all or most of the spaces (see Figure A1.20). Only 13% of students feel that the natural light is about right only in a few of the spaces and 7% do not feel that the natural light is right in any of the spaces. 30% reported that they usually feel that the natural light is too bright in all or most of the spaces and 37% that the natural light is too bright in a few of the spaces. On the other hand, 11% of students reported that it is usually too dark in all of most of the spaces and 23% feel that it is too dark in a few of the spaces.

Teacher responses indicate an even more positive feeling about the natural light in the spaces. 93% of teachers feel that the natural light is about right (neither too bright nor too dark) in all or most of the spaces where they teach. 30% of teachers feel that it is usually too bright in all or most of the spaces and 37% feel that this is the case for a few of the spaces. On the other hand, 11% of teachers feel that it is usually too dark in all or most of the spaces and 23% feel that the spaces are usually too dark in a few of the spaces.

In terms of adjusting the light in a learning space, 22% of teachers reported that they can control glare, such as through blinds or windows in all or most of the spaces (see Figure A1.21). 38% indicated this was possible in a few or the spaces and another 38% of teachers indicated this was not possible in any of the spaces. Being able to control glare is becoming an even more important issue in combination with the use of technology, such as interactive whiteboards or projectors. Although natural light is likely to be the first choice for lighting in a learning space, artificial light can supplement natural light, especially in the winter months when it is still dark in the morning and afternoon/evening. At School 006.NOR.2016, most (69%) teachers reported that they can control lighting in all or most of the different spaces where they teach and 31% reported they could control lighting in a few of the spaces, which allows teachers adjust the light accordingly when needed.

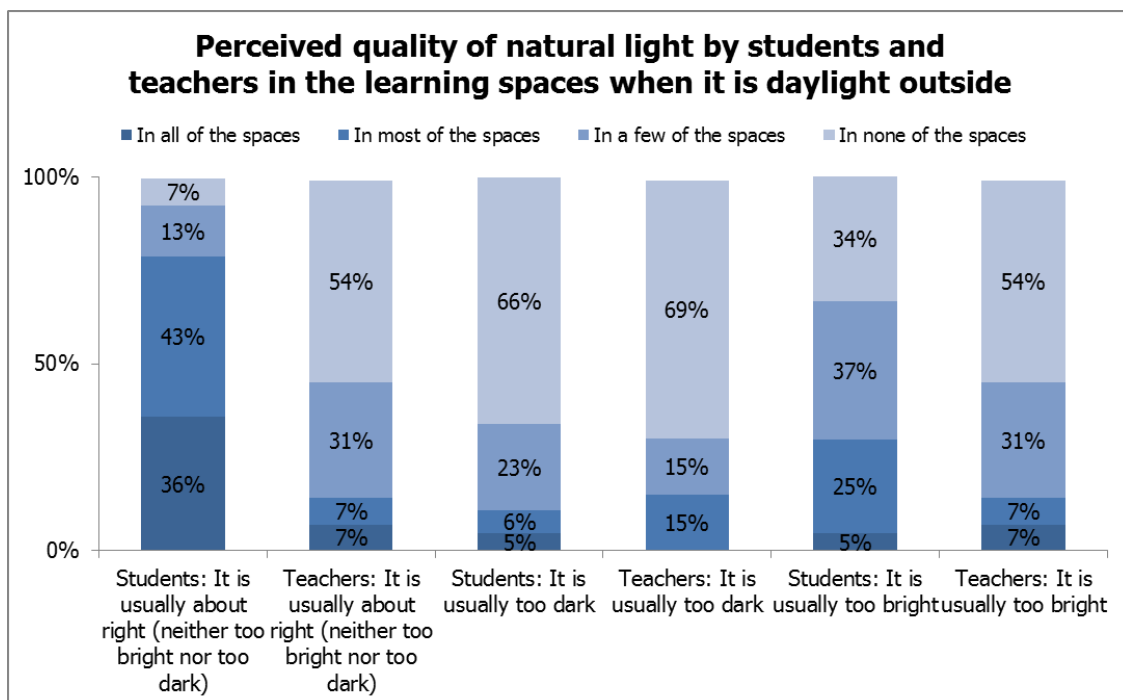


Figure A1.20: Perceived quality of natural light by students and teachers

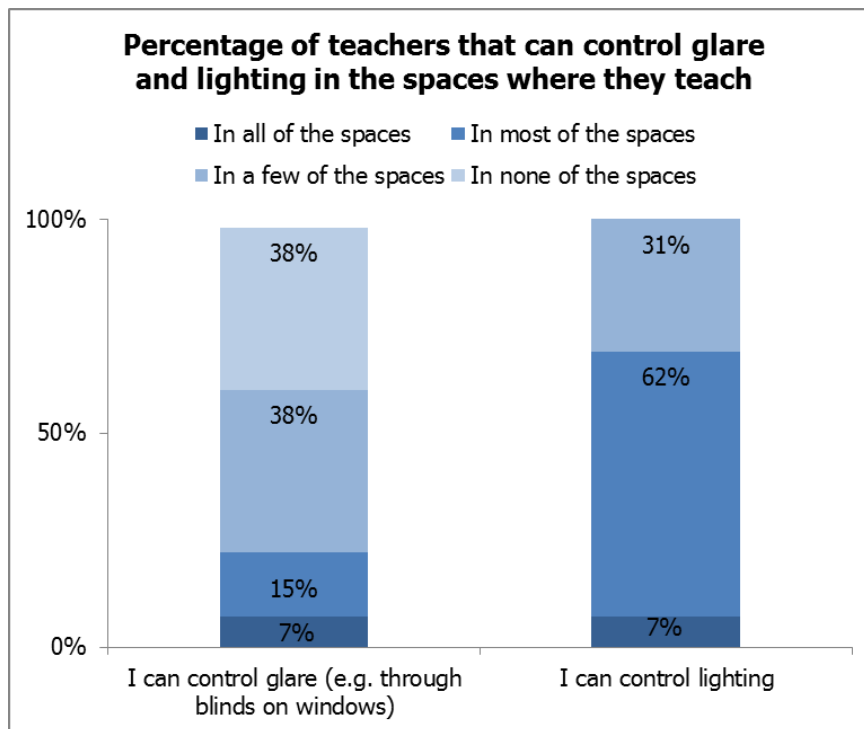


Figure A1.21: Control of glare and lighting by teachers

Key findings: Perceived quality of natural light in the spaces

Both students (79%) and teachers (93%) feel that the quality of natural light in all or most of the learning spaces is about right (neither too bright nor too dark), which is a general indicator of the quality of natural light in the learning spaces and physical and mental comfort associated with it.

A1.4.3.4 Perceived visual quality in the spaces

Students at School 006.NOR.2016 also reported whether they can see what is displayed in different school spaces without difficulty (see Figure A1.22). The results are positive:

- 85% can see what is displayed on the display screen (e.g. LCD screen; TV screen; projection screen) without difficulty in all or most of the spaces.
- 81% of students can see what is drawn or written on the whiteboard/chalkboard without difficulty in all or most of the spaces.
- 69% can see a demonstration without difficulty when a teacher is using apparatus for a demonstration in all or most of the spaces.

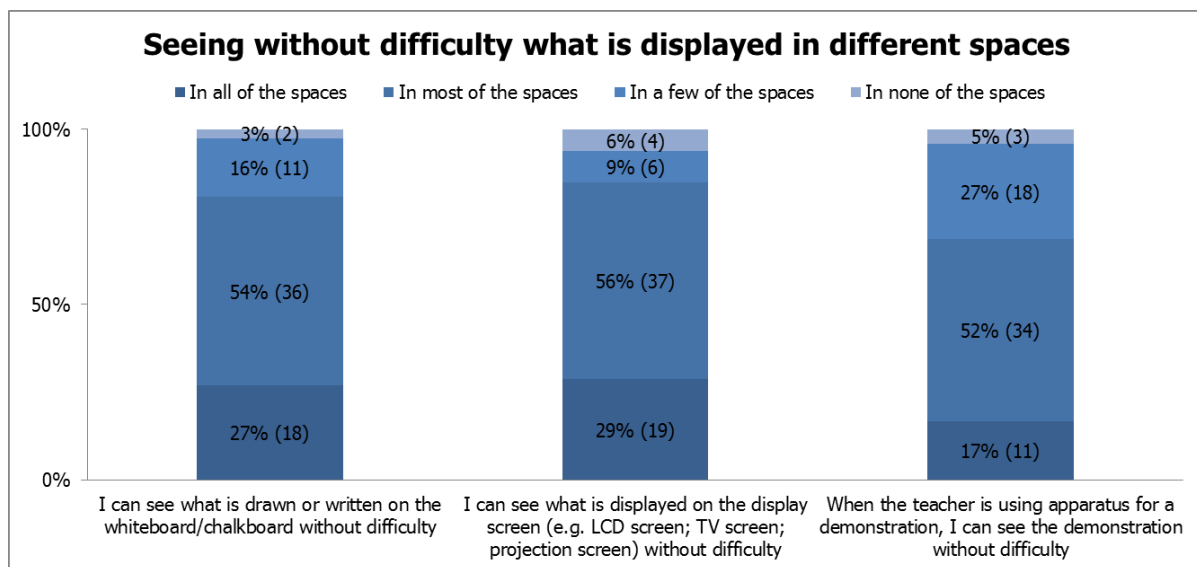


Figure A1.22: Perceived visual quality by students

Key findings: Perceived visual quality in the spaces

Generally, the visual quality is high in all or in most of the learning spaces, but decreases slightly when a teacher uses an apparatus for a demonstration. This could be linked to some of the brightness in the learning spaces indicated by teachers and students, which can cause issues with particular forms of technology, such as projectors or whiteboards that teachers reported to use several times per week or on a daily basis. The school could identify the spaces where the visual quality is impacted by such factors and think of ways, for example, to reduce glare through blinds or more powerful projectors to further increase visual quality.

A1.4.3.5 Perceived auditory quality in the spaces

The majority of the students (86%) at School 006.NOR.2016 can hear the teacher's voice clearly in all or most of the spaces where they have lessons or study (see Figure A1.23). Only 3% of the students reported that they cannot hear the teacher's voices clearly. 74% of the students also reported that they can hear other students clearly when they participate in class in all or most of the spaces. 16% of students indicated that they are disturbed by noise from outside in all or most of the spaces. 53% reported that this was also the case for a few of the spaces.

85% of teachers reported that they can hear the students clearly when they speak in all or most of the spaces and 15% reported that this was the case in a few of the spaces. 31% of teachers feel disturbed by noise inside the space, such as the air-conditioning, in all or most of the spaces. 23% indicated that this was an issue in few of the spaces. 14% of teachers also reported that in most of the spaces they are disturbed by noise from outside. 29% indicated that this was only an issue in a few of the spaces. The most prominent issue seems to be the sound echo, as 39% of teachers reported that sound echoes too much in all or most of the spaces.

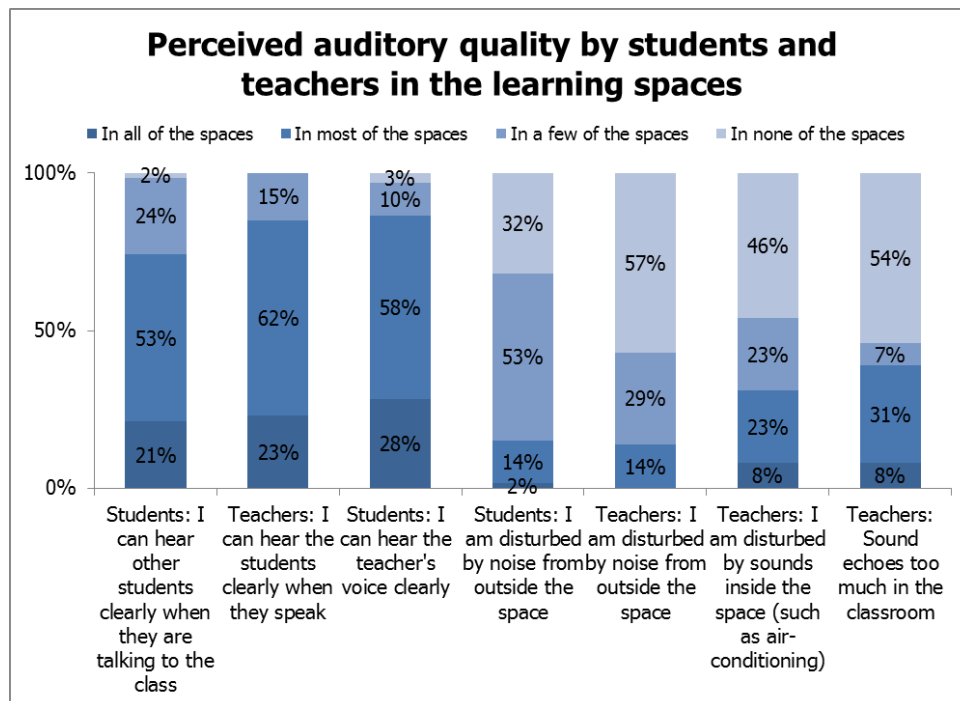


Figure A1.23: Perceived auditory quality by students and teachers

Key findings: Perceived auditory quality in the spaces

Auditory quality of the spaces seems good at School 006.NOR.2016. The majority of students indicated that they are able to hear the teacher and other students well in all or most of the spaces and this also holds true for most of the teachers. However, 16% of students and 14% of teachers also indicated that they get disturbed by noise from outside the space and, more importantly, 38% of teachers indicated that there is too much echo in all or most of the spaces.

The school could identify those spaces where there is too much echo, and reduce it by adding sound absorbing materials to the spaces (e.g. shelves with books, small carpeted/rug areas).

A1.4.3.6 Students perceived comfort of chairs and desks

Students also reported on the comfort of the desks/tables and chairs in the learning spaces (see Figure A1.24). 43% of the students reported that they find the chairs comfortable to sit at in all or most of the spaces. 37% find that the chairs are comfortable in a few of the spaces and 19% of students find that the chairs are not comfortable in any of the spaces.

It is important for students to sit at chair-desk combinations that are suitable for their body height. At School 006.NOR.2016 81% of the students indicated that they can adjust the height of the chairs in all or most of the spaces and 80% of students find that the tables/desks are the right height for them to sit at.

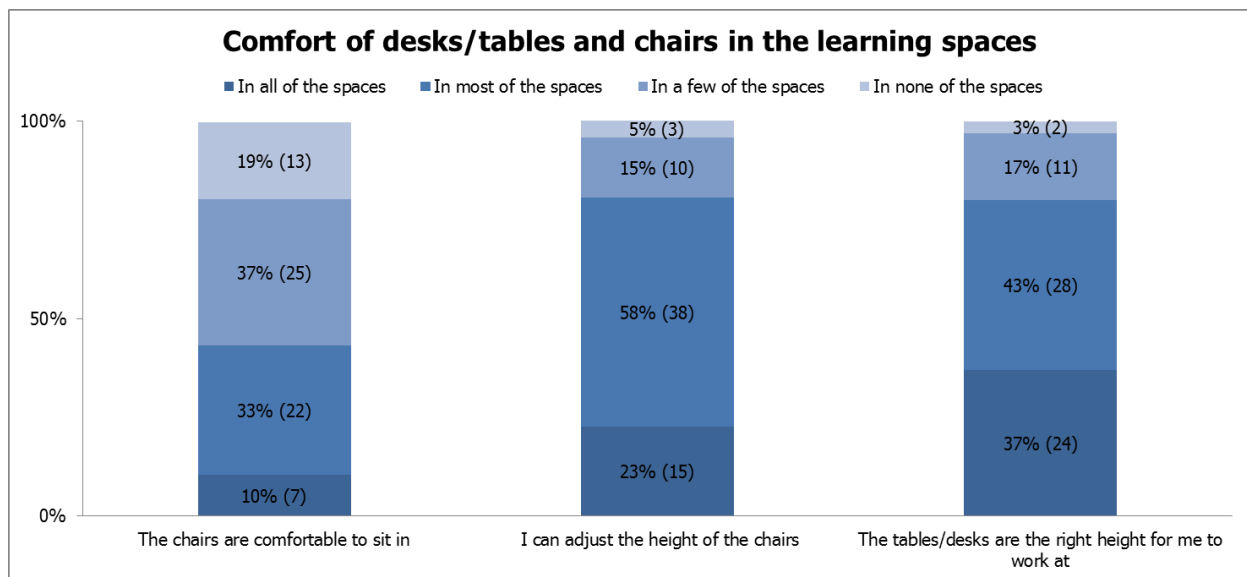


Figure A1.24: Comfort of desks and chairs in the learning spaces

Key findings: Students perceived comfort of chairs and desks

A little less than half of the students find that the chairs are comfortable in all or most of the spaces and 19% find the chairs uncomfortable in all of the spaces. However, the majority of students also reported that they can adjust the chairs and, consequently, the majority of students also find the tables and desks to be at the right height for them.

A1.4.3.7 Possibilities of finding shade in school grounds during sunny weather

53% of students indicated that they can always find a shady area in the school grounds during sunny weather (see Figure A1.25). 36% indicated they can often find a shady area, 9% indicated they can rarely find a shady area and 2% indicated they can never find a shady area.

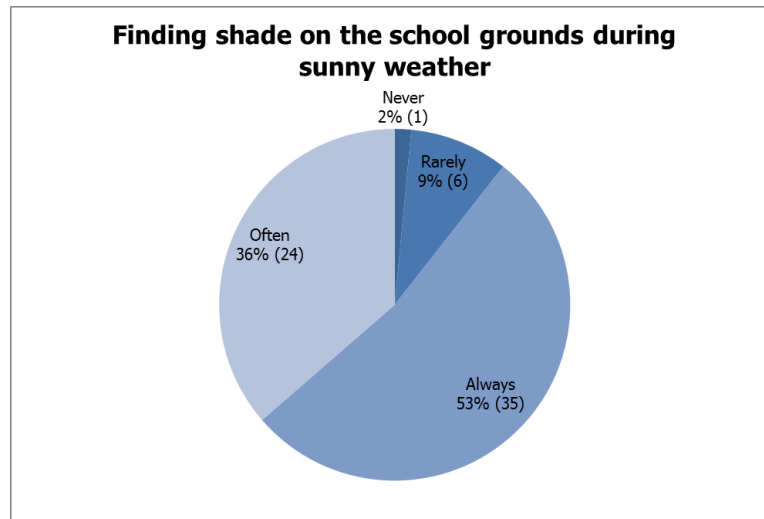


Figure A1.25: Finding shade on the school grounds during sunny weather

Key findings: Possibilities of finding shade in school grounds during sunny weather

The school grounds at School 006.NOR.2016 provide sufficient shady areas for students during sunny weather.

A1.4.3.8 Students' feeling of safety at school

Safety has been defined as a basic condition for learning (Barrett et al., 2013; Earthman, 2004; Keep, 2002; Higgins et al., 2005; Lackney and Jacobs, 2004; McNamara and Waugh, 1993; Picus et al., 2005; Sundstrom, 1987; Weinstein, 1979). If students do not feel physically, socially and emotionally safe, this can undermine their learning, health, and development.

86% of students at School 006.NOR.2016 feel very safe or safe at their school. On average, this feeling of safety is equally shared by boys (86%) and girls (85%). 11% of students feel neither safe nor unsafe and 2% of students feel very unsafe. While the general perception is that students feel safe, it is important for the school to also understand safety issues and how they affect a few of the students. At School 006.NOR.2016, the 2% who indicated that they feel very unsafe are two female students. One of the two female students indicated that she never feels safe when using the toilet facilities outside the school buildings (but in the school grounds) and that she rarely feels safe in other parts of the school buildings. However, she feels safe in the toilet facilities inside the school buildings and almost always feels safe in the learning spaces and other parts of the school grounds. The second girl indicated that she feels very unsafe, but when asked about her feeling of safety in specific places in the school, she indicated that she always or often feels safe in all of them.

When compared with the other students from the schools in Norway that participated in the field trial, the students of School 006.NOR.2016 feel just as safe as the students at the other schools (see Figure A1.26).

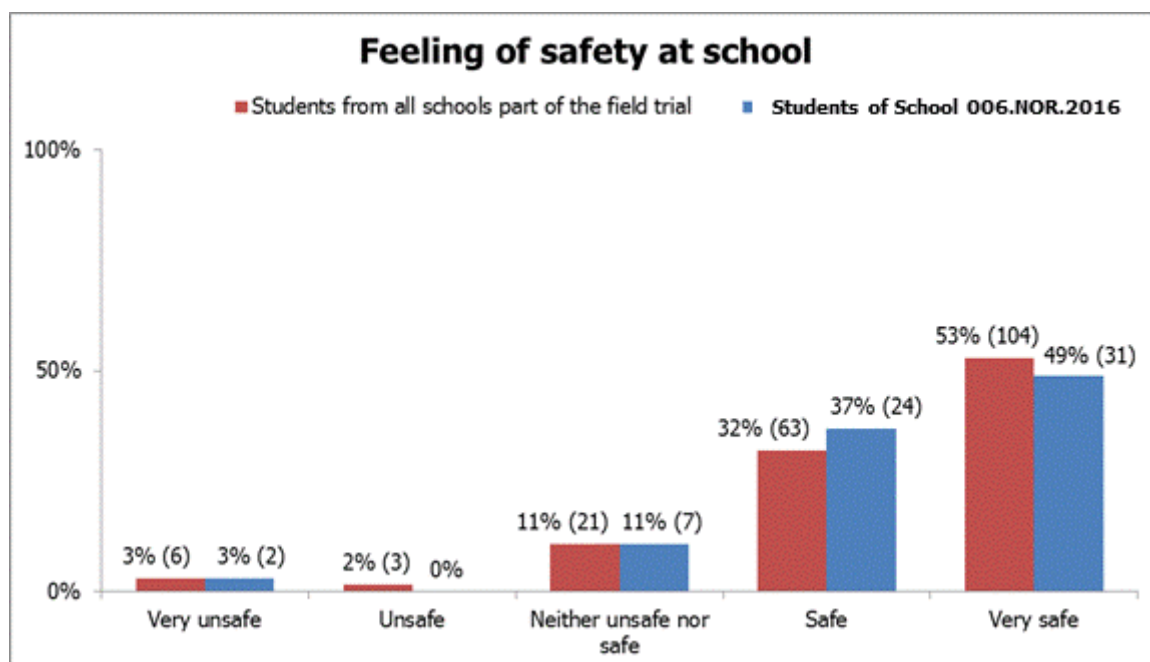


Figure A1.26: Students' feeling of safety at school

When looking more closely at the different parts of the school and students' feeling of safety, we see that (see Figure A1.27):

- **88% of students always or often feel safe when using the toilet facilities inside the school buildings.** 8% of boys and girls rarely feel safe and 3% never feel safe when using the toilet facilities. Students that never feel safe when using the toilet facilities are exclusively female. Similarly, but with a slightly decreasing tendency, **80% of students feel safe when using the toilet facilities outside the school buildings but still within the school**

grounds, 14% of boys and girls rarely feel safe and 6% never feel safe there. The 6% that never feels safe there are exclusively female students.

- **96% of students always or often feel safe in the learning spaces in the school.** 4% of students (exclusively female students) rarely or never feel safe there.
- **96% of students always or often feel safe in other parts of the school buildings.** 5% of students (exclusively female students) rarely feel safe. Similarly, **91% of students always or often feel safe in other parts of the school grounds**, 8% of the boys and girls rarely feel safe and 2% (exclusively female students) never feel safe.

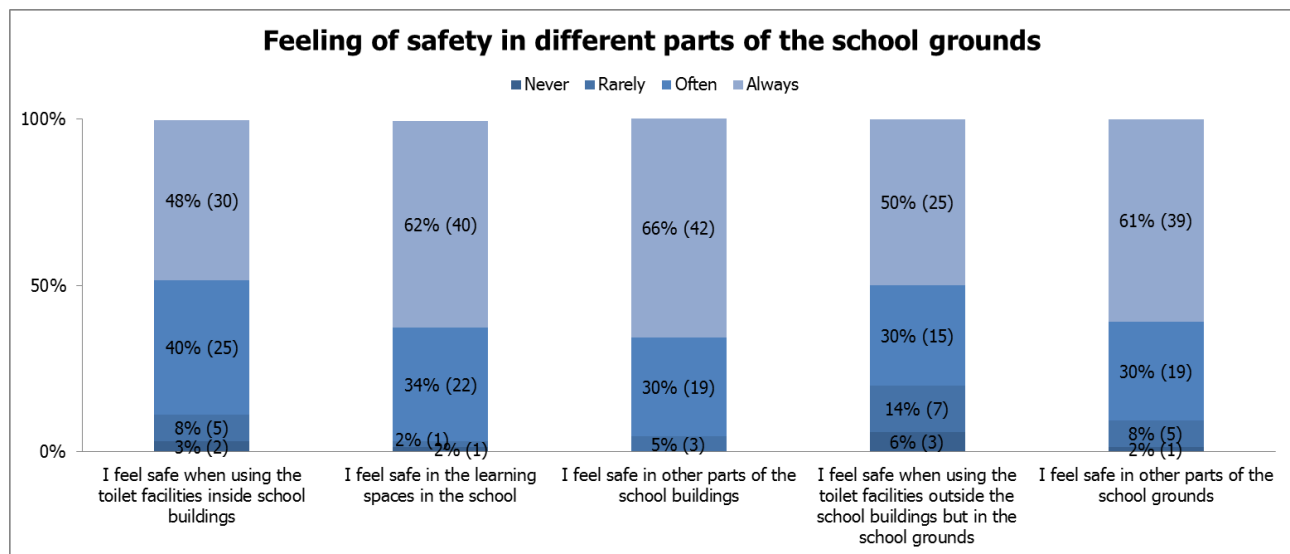


Figure A1.27: Feeling of safety in different parts of the school grounds

Key findings: Students' feeling of safety at school

Students at School 006.NOR.2016 generally feel safe at their school, a feeling equally shared by boys and girls. When looking at specific areas of the school and students' feeling of safety, students feel least safe in the toilet facilities outside the school building, but overall, there is a strong sense of safety with 80% of students feeling safe there.

A1.4.4 Perception of learning environments

Studies carried out in the UK (PricewaterhouseCoopers, 2003) and in New Zealand (ACNeilsen, 2004) indicate strong links between the physical learning environment and student, teacher and parent perceptions. For example, lack of maintenance and care for appearance has a downward effect in terms of how students, teachers and communities perceive their school in the long run (Plank, Bradshaw and Young, 2009). Poorly designed and maintained schools, often found in areas of lowest educational achievement, can have a detrimental impact on teacher and student morale and engagement, and impact negatively on aggregate student outcomes (Filardo, 2008). On the other hand, quality-built environments are more likely to attract teachers and retain them (PricewaterhouseCoopers, 2003).

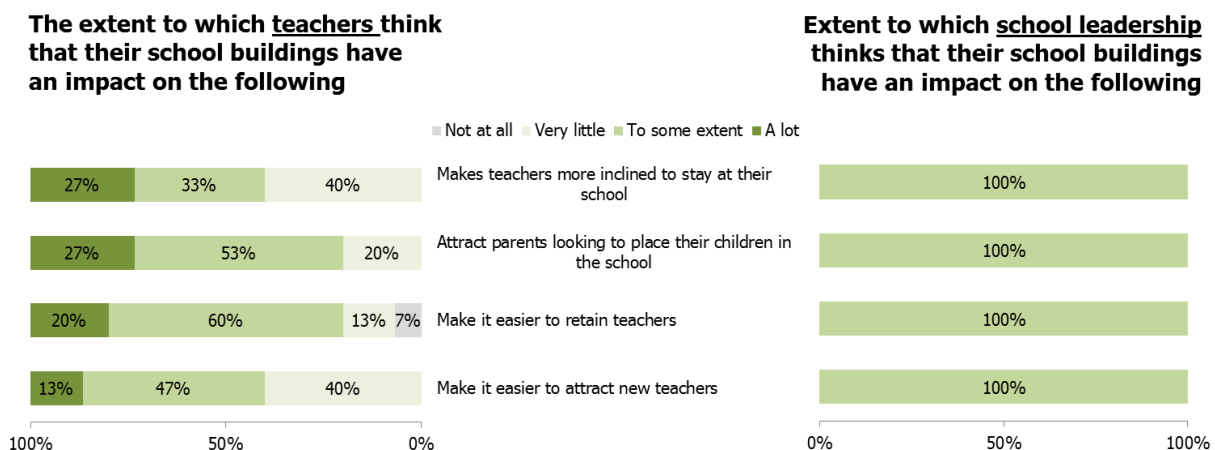


Figure A1.28: Agreement between teachers and school leadership about the impact of the school building

On average, both the school leadership and teachers of School 006.NOR.2016 think that the buildings and facilities at their school have a positive impact on teacher retention and on attracting parents (see Figure A1.28). There is a positive impact on:

- **Attracting parents looking to place their children in the school:** 27% of teachers believe that the buildings and facilities have a strong impact on attracting parents to place their children in the school. 53% of teachers, as well as the school leadership, believe the buildings and facilities have to some extent an impact on parents. 20% of teachers believe they only have minimal impact.
- **Making teachers more inclined to stay at their school:** 27% of teachers find that the buildings and facilities have a strong impact on making teachers inclined to stay at the school. 33% of teachers as well as the school leadership believe that the buildings and facilities have an impact to some extent and 40% of teachers believe they have minimal impact.
- **Making it easier to attract new teachers:** 20% of teachers believe that the buildings and facilities have a strong impact on attracting new teachers to the school. 60% of teachers as well as the school leadership believe that the buildings and facilities have an impact on teachers in this regard to some extent. 27% of teachers believe they have minimal impact.
- **Making it easier to retain teachers:** 20% of teachers believe that the buildings and facilities have a strong impact on retaining teachers at the school. 60% of teachers, as well as the school leadership, believe that the buildings and facilities have an impact on retaining teachers to some extent. 60% of teachers believe this impact is minimal and 7% believe it does not have an impact at all.

When comparing the overall school responses to the response by School 006.NOR.2016 (see Figure A1.29), it becomes clear that school leadership at School 006.NOR.2016 believes that the school buildings and facilities have a stronger impact on attracting and retaining teachers, as well as attracting parents to place their children in the school.

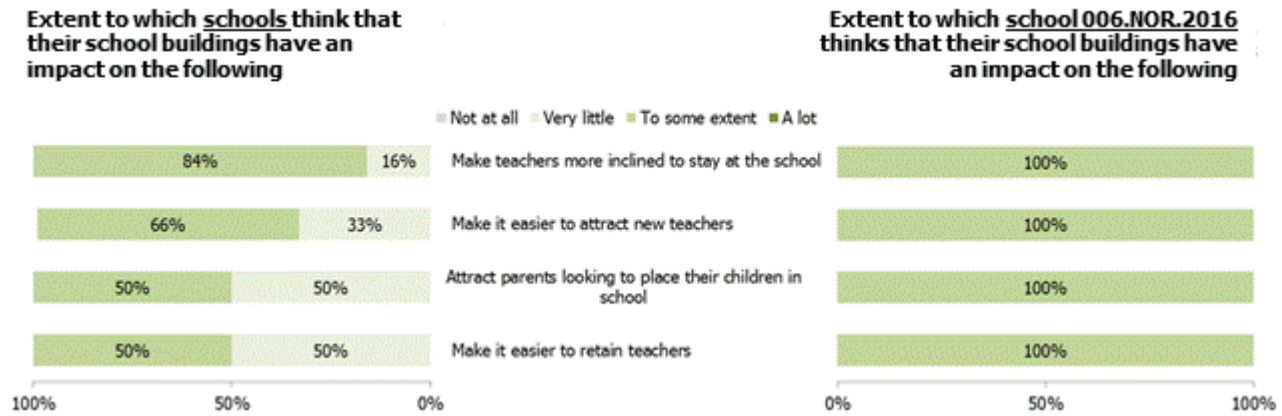


Figure A1.29: School leadership views about the impact of the school building

Key findings: Perception of learning environments

School leadership and teachers find that the school buildings have a positive impact -at least to some extent- on attracting and retaining teachers or on attracting parents to place their children in the school. This perception is more positive compared to the other schools in Norway that participated in the LEEP survey.

The school leadership and teacher responses from School 006.NOR.2016 are indicators of the positive perception that both school leaders and teachers have of their school's physical infrastructure. These positive results could be related to the fact that School 006.NOR.2016 provides comfortable and flexible spaces for teaching and learning, which encourage teacher collaboration and team teaching; moreover, the school is well equipped in terms of technology and provides teachers with quiet spaces to work before or after lessons, as well as spaces to socialise and have conversations with other teachers.

A1.4.5 Overall satisfaction with the school facilities

The 69 students and 15 teachers and the school principal of School 006.NOR.2016 were requested to answer one final question about their overall satisfaction with the school facilities.

Students were asked how satisfied they generally were with the spaces they use for learning. Teachers were asked how satisfied they generally were with the spaces/rooms in which they teach, and school principals were asked how satisfied they generally were with the spaces of their school. All respondents were requested to rate their satisfaction on a scale from 1 (unsatisfied) to 7 (satisfied).

On average, School 006.NOR.2016 students were satisfied by 75% with the spaces for learning, teachers were satisfied by 65% and school leadership by 85% (see Figure A1.30). When comparing these average satisfaction ratings to the overall responses by all schools in Norway, it shows that satisfaction with the spaces is higher at School 006.NOR.2016 for all three respondent groups. Particularly School 006.NOR.2016 school leadership is 25% more satisfied than the other schools.

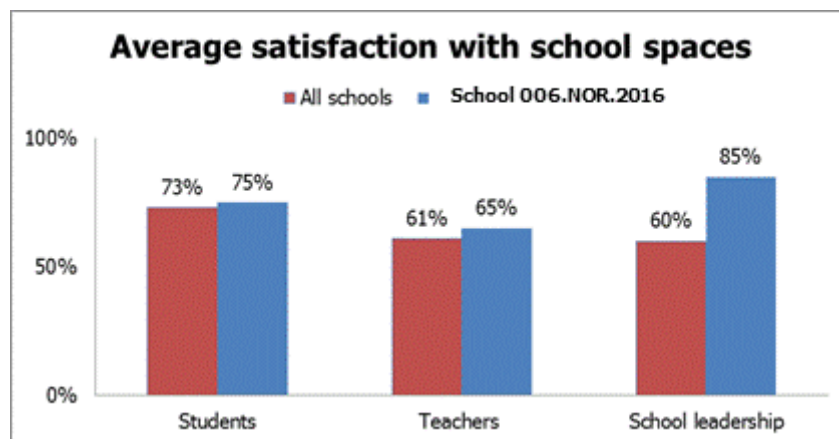


Figure A1.30: Average satisfaction with school spaces

When looking more closely at student overall satisfaction by gender, the data reveal that on average male and female students are equally satisfied with the school buildings (male 75%, female 75%). However, whereas overall male students' rating of their satisfaction starts at 4 (on a scale from 1 (unsatisfied) to 7 (satisfied)), one female student gave a rating of 1 (unsatisfied) and two female students gave a rating of 3 (see Figure A1.31).

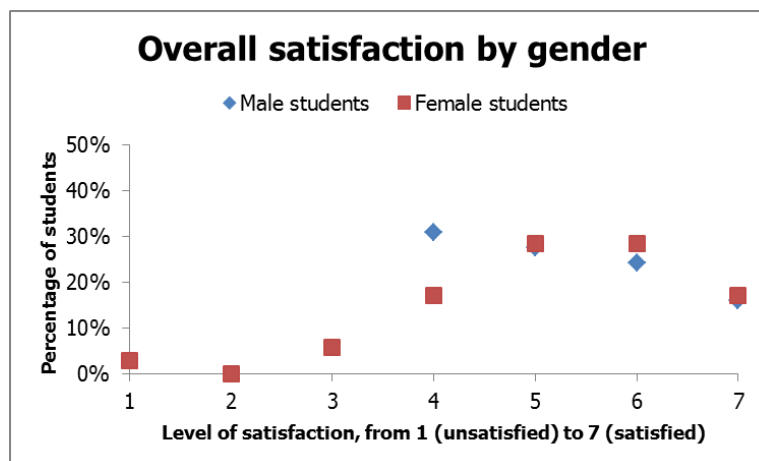


Figure A1.31: Student overall satisfaction by gender

When looking more closely at teacher overall satisfaction by gender and age, the data reveals that female teachers are slightly more satisfied (69%) than male teachers (62%); and the older and more experienced teachers are slightly more satisfied with the spaces than the younger teachers.

Key findings: Overall satisfaction with the school facilities

Overall, all respondents to the survey -school leadership, teachers and students- are satisfied with their school's facilities. Overall satisfaction with the school facilities can be influenced by many different factors, but a few can be highlighted based on the data and analysis in this report.

It appears that student overall satisfaction is linked to the existence of a wide variety of learning spaces within the school grounds that students can use for different purposes, including for learning or leisure activities. Students are offered not just classrooms/clusters of rooms but also specialised rooms, such as for science or design related work, a library, spaces for quiet work or group work, a school canteen, a gym, outside spaces for learning and play and spaces where they can leave their belongings (e.g. lockers). The design of the buildings is modern and functional and well equipped with technology , which allow students, for example, to access the internet from anywhere in the school. Furthermore, student's responses in terms of their comfort and safety in the spaces are positive. Students generally feel that the temperature, quality of natural light, acoustics, visual and air quality and comfort of chair's and desks are good.

Similarly to student, teacher overall satisfaction seems to be connected to the availability of a wide variety of spaces with different functionalities, connectivity in the school and their comfort in the spaces. In addition, teacher satisfaction seems to be also strongly related to the flexibility of the learning spaces, the associated teaching practices and the school culture it establishes. The majority of teachers at School 006.NOR.2016 reported that they mostly teach in teams and use a variety of teaching methods to which they can adapt the spaces accordingly. Furthermore, all teachers agree that the design of the school buildings and learning spaces encourages collaboration between teachers and that they are provided with time to plan collaboratively with other teachers. Almost all teachers also agree that school leaders encourage teachers to experiment with different ways of using the learning spaces.

Data from the OECD's Teaching and Learning International Survey (TALIS) indicate that teacher self-efficacy and job satisfaction are associated with the opportunities they have for collaboration with other teachers and the time they are provided for this (TALIS, 2014). Teachers that responded to TALIS indicated that they value collaboration because they believe it enhances their knowledge, skills and efficacy, which in turn makes teaching more satisfying. TALIS data also show that self-efficacy is linked to increased instructional quality, innovative practices and improved student achievement. The physical environment of School 006.NOR.2016 allows for and even encourages teacher collaboration, such as team teaching and engaging in joint activities across different classes and ages, as shown from the collected data; this in turn may lead to high satisfaction rates with regard to the physical learning environment and to more effective teaching and learning.

A1.5 Practical suggestions for next steps

This section of the report intends to provide practical suggestions on what steps the school can take based on the report's findings. While it is not the purpose of this report to make suggestions on specific measures that schools could take to change particular aspects of their learning environment, there are some practical ways forward that schools may wish to explore.

In-school workshop to discuss the report's findings

The school could **set up a workshop or meeting amongst school leadership, teachers and students, and potentially, also parents**. This should provide an opportunity to discuss the findings, but also explore whether and what changes the school may want to make as a result of the survey. It could support collective reflection amongst the school's stakeholders on some of the findings and/or topics, on how they feel about or perceive the learning environment and specific spaces, how they use them and what they could do to ameliorate or further maximise the benefits of the spaces. This could also be an opportunity to review the school's priorities and objectives and test these against the findings in this report.

Meeting / workshop with other schools that took part in the survey

A benefit of including several schools in such a survey is that the schools can compare their findings and look at what works well and what doesn't, thereby comparing successful practices developed elsewhere. In order to do this one should understand each school's particular context. It may therefore be useful to organise a workshop with a group of similar schools that took part in the survey to identify what works well.

Depending on the school's results and priorities, a school could **identify another school for comparison**, for example, through the LEEP comparative report or another school's report. Exchanging ideas with another school on similar challenges and/or solutions can provide valuable insights and contribute to positive change in terms of perception and/or use of the spaces. School leaders may also wish to **"audit" or "shadow"** another school's operations to get a better understanding of the link between spaces and pedagogy.

Carry out an in-depth evaluation

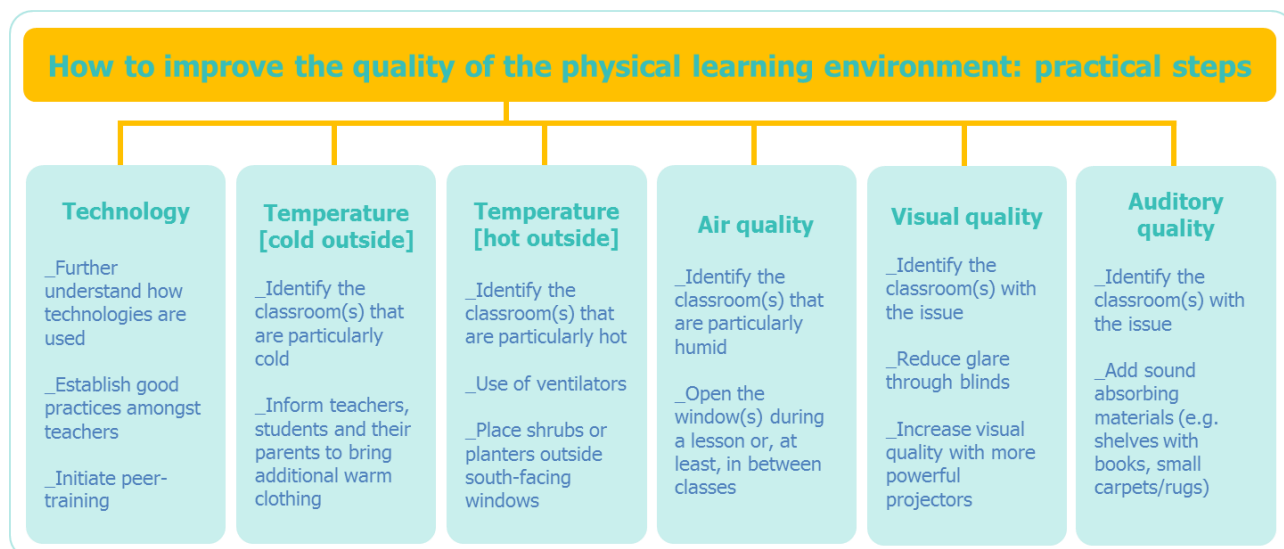
If the school would like to get a deeper understanding of their physical learning environment and of how this impacts teaching and learning and obtain concrete recommendations on how for example they could address specific issues and challenges to school improvement, the school could **request the OECD LEEP team to undertake a more comprehensive evaluation**. Such an evaluation would build upon the questionnaire and the responses, and include other methods as well, such as school visits with experts, interviews, focus groups and observation. Depending on the school's needs, a tailored approach could be used, which would define the cost component of such an evaluation.

Conduct a pre- and post-evaluation if a renovation is planned

If the school is about to be renovated (or partially renovated), it could be useful to conduct the LEEP survey before and after the school renovation takes place and after the newly renovated buildings have been in use for a certain time. Such a pre- and post-evaluation could show how the renovations impact areas such as flexibility of the learning environments, instructional methods, comfort and security, perceived impact of the school facilities on attracting and retaining teachers, change of school culture in terms of school leadership's support to use the spaces, etc.

Ideas for concrete steps the school can take

In addition to the more general steps a school can take, which are outlined above, the following are some ideas and thoughts for the school to further improve the quality of the physical learning spaces:



- **Technology:** It may be useful for the school to further understand how technology is used to enrich teaching and learning, i.e. how long it is used during a typical class period and for what purpose it is most often used. Some good practices amongst teachers could be established and peer-training could be also initiated, if time allows.
- **Temperature:** When it is cold outside, the school could identify those classrooms that are particularly cold and inform teachers, students and their parents during the winter season to bring some additional warm clothing with them.

Similarly, when it is hot outside, the school could identify the learning spaces that get too hot in the summer months and find potential alternative or additional solutions to decrease the temperature in these spaces. Such solutions depend on the particular spaces, but they could entail the use of ventilators. Another solution could be to place shrubs or planters outside south-facing windows to provide shading and reduce sun heat.

- **Air quality:** The school could identify those learning spaces that are more humid and implement some zero-cost adjustments to improve air quality, such as by opening the window at least once during a lesson or, at least, in between classes.
- **Visual quality:** The school could try to identify the spaces in which the visual quality is impacted by such factors and see how they could, for example, reduce glare through blinds or more powerful projectors to further increase visual quality.
- **Auditory quality:** The school could identify those spaces where the sound seems to echo too much, and possibly make some changes to those spaces, such as by adding sound absorbing materials to the spaces (e.g. shelves with books, small carpeted/rug areas). This may involve employing a consultant to measure the sound level and reverberation.

Annex A2

LEEP COMPARATIVE REPORT

A2.1 Introduction

This report is part of a study conducted by the Learning Environments Evaluation Programme (LEEP) of the Organisation for Economic Co-operation and Development (OECD) to gather insights into whether the spaces in schools support twenty-first century teaching and learning practices.

The report is based on answers to questionnaires addressed to three different groups - students, teachers and school principals - to gain information about the lived experience of the space. This report includes information on the school, its population and its physical learning environment (including integration of technology), how teachers and students make use of the spaces and spatial arrangements, their comfort, safety and well-being², and their perceptions of the impact of the school's spaces on teaching and learning.

² PISA (2015) indicates that "students' well-being refers to the psychological, cognitive, social and physical qualities that students need to live a happy and fulfilling life".

A2.2 The LEEP Survey

This section sets out the LEEP survey rationale and how the survey was implemented in six schools in Norway.

A2.2.1 Why a survey on learning environments?

The physical learning environment is an influential element in the complex and highly contextualised nature of learning, characterised by dynamics and interactions between the learner, teacher, content, equipment and technology (OECD, 2013a). It is assumed that good architectural and educational design leads to good teaching practice and improved learning because the quality of the building design affects both teacher and student behaviour, morale and practices and therefore learning outcomes (OECD, 2013c), however, there still exists a lack of overall empirical evidence (Woolner et al., 2007).

The OECD's Learning Environments Evaluation Programme (LEEP) aims to show how learning environments can most effectively support teaching and learning and, more concretely, to look at the pedagogies, curriculum, assessment and organisational forms necessary to develop students' capacities for the 21st century. For that purpose, LEEP produces instruments, such as survey questionnaires, to gain insights about how investments in learning environments, including educational spaces and different types of technology, translate into improved learning, health, social and well-being outcomes. The findings are intended to be used to provide information and advice to individual schools, local authorities and the wider community to support school improvement.

As defined by the LEEP, to achieve successful education outcomes, the physical learning environment needs to be:

- **adequate:** meet the minimum requirements to ensure users' comfort, access, health, safety and security. These represent the baseline components of the built environment which are considered necessary conditions most likely to impact on student learning;
- **effective:** so that it supports the varied demands of teaching and learning to enable a school to achieve its education objectives; and
- **efficient:** so that it maximises the use and management of space and resources to achieve maximum output in terms of students and teacher outcomes.

The characteristics of the physical learning environment influence processes that can lead to different outcomes and wider benefits for the teachers and the learners.

Space (and place as natural and built environments) "shapes" social relations and practices in schools and communities (Leemans and von Ahlefeld, 2013; Lefebvre, 1991; McGregor, 2003, 2004; Massey, 1994, 2005) and, in turn, social practices, formal instruction and informal social interactions change the nature, use and experience of space and this can vary for individuals and groups according to gender, ethnicity, race, religion and disability.

To better understand how space shapes practices in schools, the LEEP survey includes a range of questions related to the use of space. School leaders, teachers and students are asked about **the allocation of different learning spaces (including inside/indoor and outside/outdoor spaces) and their use** as this can provide indications on how these spaces might be conducive to health and well-being, learning and social outcomes. For example, the provision and frequency of use of a sports field can provide an indication of physical exercise of the students, which in turn is a significant factor in regard to health and well-being (Dagkas and Stathi, 2007; Davidson, 2007). The provision of community spaces, such as a canteen or outside spaces for play can have

ramifications for social outcomes; and whether students have access to spaces for collaboration or for quiet work can impact their learning.

The survey also asks the three focus groups about their **comfort in the spaces**, including temperature, air quality, lighting (natural and artificial) and acoustics (i.e. noise levels). Teachers also report on the extent to which they can control these elements and students also report on the comfort of chairs and desks. Research has shown that the quality of air, sound, sight, temperature etc. have a significant impact on health and well-being (Higgins et al., 2005) and thus on learning.

Teachers are asked questions about the **flexibility of the spaces, their furniture and ICT, for different teaching methods**. Research has shown that the built environment can act as a catalyst (or hindrance) and opportunity for innovation and more modern teaching methods and learning processes (Blackmore et al., 2011; Lingard et al., 2003; Hattie, 2011; Oblinger, 2006; OECD, 2013a; Thomson, Jones and Hall, 2009). For example, group work for students or teachers is not contingent on, but can be encouraged and facilitated by spatial configuration. Although Blackmore et al. (2011) note that teachers can change their pedagogy towards group work at any time, flexibility of space and adaptability of furniture and technology can enable or constrain such activities. Woodman (2011) found that teachers see flexibility as about how to make a better and a more pedagogical use of the space both for them and the students, i.e. by engaging students, by meeting their diverse needs and by using multiple teaching repertoires, resources and activities.

The survey also collects answers from school leaders and teachers regarding their **perception of the impact of the learning environment**, for example, on attracting parents to place their students in the school or on attracting and retaining teachers. Studies carried out in the UK (PricewaterhouseCoopers, 2003) and in New Zealand (ACNeilsen, 2004) indicate strong links between the physical learning environment and student, teacher and parent perceptions. Blackmore et al. (2010) suggest that it is these perceptual and affective dimensions which play a key role in how teachers and students use different spaces (Abdul-Samad and Macmillan, 2005; Cotterell, 1984). Both students and teachers identify with their school's image and reputation, preferring a reasonable standard of physical maintenance, a "good working environment", resources and buildings that are "inspiring" and "exciting", with little noise or distraction (Flutter, 2006; Kumar, O'Malley and Johnston 2008; Rudd, Reed and Smith, 2008). Lack of maintenance and care for appearance has a downward effect on how students, teachers and communities perceive their school in the long run (Plank, Bradshaw and Young, 2009).

Learning spaces and technology mediate the relationship and social practices of teaching and learning, and are two factors among many in the complex relationships of teaching that inform learning in schools (Oblinger, 2006). Teachers and students decide on how technology is mobilised in different spaces (Bissell, 2002) and, therefore, the survey asks both school leaders and teachers to report on technology and connectivity in the spaces, including their ease of access, frequency of use, speed of network and bandwidth, etc.

There is a time dimension to the development, use and impact of learning spaces. Changes in the nature and use of different physical spaces (open/closed; indoor/outdoor; physical/virtual; core/non-core hours) are related pedagogically and organisationally to changes in time organisation. Personalised learning, individual pathway planning, team teaching, inquiry approaches, student teamwork, problem solving, rich tasks and community-based service learning have different time demands (Anderson-Butcher et al., 2010). Large spaces require more planning and synchronicity of activities due to sound (Bruckner, 1997). To better understand the impact of time, the survey asks school principals and teachers about some of the behaviours and perceived hindrances to reconfiguring learning spaces, such as lack of time to (re)organise the space.

A2.2.2 The LEEP survey in Norway

The survey was sent to six Norwegian schools through the LEEP National Co-ordinator and was conducted online. The questionnaires were answered by 218 students, 24 teachers and 9 school principals between 26 October and 3 November 2016.

Response rates to the questionnaires vary, with an overall response rate of 93% for students and 89% for teachers. The table below summarises the responses collected from each school:

6 Schools of field trial in Norway	Student responses	Teacher responses	School responses
School 001.NOR.2016	71	0	1
School 002.NOR.2016	0	4	1
School 003.NOR.2016	58	5	1
School 004.NOR.2016	0	0	1
School 005.NOR.2016	20	0	1
School 006.NOR.2016	69	15	4
TOTAL	218	24	9

Teacher responses only come from 3 schools (School 002.NOR.2016, School 003.NOR.2016 and School 006.NOR.2016), and 12 out of the 24 teacher responses are from one school (School 006.NOR.2016); this skews the data and, therefore, needs to be taken into consideration whilst reading the current report. To the extent possible, the data have been dissected for each school to better reflect each school's results and to avoid bias of responses. To that end, also only one school questionnaire was selected per school to ensure coherence across the schools.

On average, it took students nine minutes and ten seconds to respond to the questionnaire, which is below the estimated 15 minutes that were anticipated as the average time for a student to fill out the questionnaire. It took teachers nineteen minutes and thirty seconds to respond to the questionnaire, which lies within the estimated time to fill out the questionnaire; and it took the school leader or administration eighteen minutes and fifty seconds to respond to the questionnaire, which is almost double than what was anticipated in terms of the average time needed to fill out the questionnaire.

	Number of questions	Anticipated time	Average actual time
Student questionnaire	21	15 min	9 min 10"
Teacher questionnaire	30	15 – 20 min	19 min 30"
School questionnaire	14	10 min	18 min 50"

A2.2.3 Main facts and figures about the six schools and the respondents to the survey

All of the six schools in Norway that participated in the field trial are public, which means that the schools are managed directly or indirectly by a public education authority, government agency, or governing board appointed by government or elected by public franchise and all of the funding of the six schools comes from government (includes departments, local, regional, state and national).

Three of the schools are located in a city (population of 100 000 to about 1 000 000 people), two in a town (15 000 to about 100 000 people) and one in a small town (3 000 to about 15 000 people). On average, most of the school buildings are six to ten years old or older and some of them have been renovated. 20% of the classrooms/ learning areas of one school are located in temporary buildings. Three of the schools have between 300-500 students, two between 500-1000 and one school has 1400 students. The detailed characteristics of each school are as follows:

School Name	Public/ Private	Funding	Location	School Buildings	Student Numbers
School 001.NOR.2016	Public	100% government funded	City	6-10 years old	Year 11 to 13: <u>676 students</u> (60% M, 40% F)
School 002.NOR.2016	Public	100% government funded	Town	54% of buildings are 10 years or older but not renovated; 20% are up to 5 years old, 13% are 6-10 years old and 13% are older than 10 years but were renovated in the last 10 years	Year 11 to 13: <u>1400 students</u>
School 003.NOR.2016	Public	100% government funded	Small town	Older than 10 years but not renovated	Year 11 to 13: <u>485 students</u> (50% M, 50% F)
School 004.NOR.2016	Public	100% government funded	Town	80% of buildings are 10 years or older but not renovated; 20% are temporary and used for 3 years or less	Year 11 to 13: <u>940 students</u> (50% M, 50% F)
School 005.NOR.2016	Public	100% government funded	City	Older than 10 years but renovated in the last 10 years	Year 8 to 10: <u>347 students</u>
School 006.NOR.2016	Public	100% government funded	City	6-10 years old	Year 8 to 10: <u>441 students</u> (45% M, 55% F)

In total, 218 students between grades eight and thirteen responded to the LEEP questionnaire, that is **5% of the total student population** from the six schools.

The teacher questionnaire was completed by twenty-four teachers (46% female and 54% male). The average age of the respondent teacher is thirty-eight years old, ranging from twenty-six to fifty-five years. On average, teachers at the six schools have thirteen years of work experience as a teacher in total and out of these eleven years at the current school. 83.3% of teachers are working full time and 16.6% part-time (half work part time equivalent to three days or more and the other half works part time equivalent to less than three days).

Teachers are teaching a variety of subjects as a first, second, third or fourth subject between Grades 8-13, including the Norwegian language, a second language (English, German, French), science, mathematics, social sciences, sports, health and nutrition, music, religion, programming and industrial production. The majority of the respondent teachers are teaching language subjects (Norwegian, English, and German), followed by math, science and sports.

The main characteristics of the twenty-four respondent teachers to the LEEP survey are as follows:

	Characteristics of teachers/LEEP respondents, field trial, Norway			
Number of respondents	24	Gender	54% male	46% female
Age* (in years) *only 18 out of the 24 teachers responded	25-35: 57%	35 to 45: 19%	45 to 55: 24%	Average age: 38
Employment	Full-time: 83.3%	Part-time (3 days or more): 8.3%	Part time (equivalent to less than three days): 8.3%	
Average years of work experience	Years working as a teacher in total: 13 years			
	Years working as a teacher at the current school: 11 years			
	Years working in other jobs: 5 years			
	Years working in other education roles: 5 years			

A2.3 Summary of main findings

Students, teachers and school leadership at the six schools in Norway are all rather satisfied with the school buildings, whilst the average satisfaction rate for the students is highest (73%) followed by teachers (61%) and school leadership (60%).

All of the schools have a variety of functional and well-equipped spaces, which offer students multiple opportunities to engage in different indoor and outdoor learning and leisure activities conducive to their overall well-being and academic achievement.

Both teachers and students reported that in a typical week during lesson time they mostly use a classroom (including classrooms with direct access to other rooms) and the hall/auditorium, followed by a space in the corridor outside the classroom, the library and science laboratories. Outside lesson time, students mostly use the school canteen, a classroom, the library and a space in a corridor outside the classroom. Both students and teachers have access to quiet and collaborative work spaces inside the school buildings as well as grassed areas or outside classrooms and sports fields within the school premises.

Classrooms are allocated differently across the schools.

Four schools (School 005.NOR.2016, School 003.NOR.2016, School 004.NOR.2016 and School 001.NOR.2016) indicated that most teachers use many different classrooms for different subjects and/or year levels. School 002.NOR.2016 indicated that most teachers are allocated the same learning space/classroom for a given subject for at least a semester and School 006.NOR.2016 reported that most teachers teach collaboratively (team teach) and share spaces designed for larger, single year-level groups. The number of teachers in a classroom/space at the six schools varies, but on average there are two or three teachers in a classroom for 30 or 60 students.

The findings from the different schools reveal that the flexibility of the learning environment varies and impacts the type of teaching strategies used by teachers.

Whereas School 006.NOR.2016 is most flexible in terms of arranging and re-arranging the furniture and other aspects of the spaces, such as technology, School 002.NOR.2016 is the least flexible. Thanks to this flexibility, School 006.NOR.2016 changes the layouts more frequently and uses a variety of teaching strategies, including student group work, team teaching, explicit instruction and student independent work. School 002.NOR.2016 rarely changes the layout and primarily uses explicit instruction methods. These findings align with research, which suggests that flexible spaces can encourage more effective teaching (Anderson-Butcher et al., 2010; Oblinger, 2006) and team teaching, better planning, use of more diverse pedagogies, greater focus on personalised learning, and students to be self-reliant learners capable of working in groups (Dekker, Elshout-Mohr and Wood, 2006; Fielding, 2006). When asked about re-arranging the room layouts if it was possible more easily, all teachers reported that they would more often switch between different layouts to suit instructional methods. For all of the schools, it holds true that when teachers arrange or re-arrange the spaces, they mostly encourage students to move around a space during a class, or to move the furniture to suit group work. This is because teachers perceive the time to rearrange the spaces before class time on their own as too limited.

All schools and almost all teachers agree that teachers are provided with time to plan collaboratively with other teachers, and half of the schools and the majority of teachers agree that the design of the school buildings and learning spaces encourages collaboration between teachers. However, when looking at each individual school data, the latter finding again differs across schools. Whereas teachers from School 006.NOR.2016 strongly agree that the design of the school buildings and learning spaces encourages collaboration between teachers, teachers from School 002.NOR.2016 and School 003.NOR.2016 disagree. Both of these school's leaders also disagree. This is a clear indicator of the difference between the learning environments and the perceived

impact that the physical learning environment can have on teacher collaborative practice, which is found to have a positive effect on teacher self-efficacy and job satisfaction (TALIS, 2014), and consequently on student outcomes.

There is a good level of comfort and safety in all six schools, though some further improvements could be made to render the learning spaces even more comfortable.

Both students and teachers were rather satisfied with temperature, air quality, light quality, visual quality, auditory quality/ acoustics, comfort of desks and chairs, or finding shade on the school grounds in the summer. These findings show that the schools ensure that the adequacy criteria are met, however, some adjustments could be made to a few of the spaces in terms of temperature, air quality (circulation of air) or to the acoustic environment (some spaces echo).

Students feel safe at school.

In terms of safety, the large majority of students feel safe at their school and, on average, female students feel almost just as safe as male students.

All of the schools that participated in the field trial are well equipped in terms of technology.

All of the schools' spaces are equipped with wireless internet and almost all are equipped with audio-visual equipment, such as a projector or a large TV, for a class of students. The data reveal that availability of equipment and the frequency of its use go hand in hand, i.e. teachers most often use the internet, followed by projectors, whiteboards and in-school laptops. Three out of six schools reported that students are requested to bring their own devices, such as laptops or tablets. In general, many male and female teachers make use of technology in the classrooms in which they teach on a daily basis. Female teachers make more frequent use of technology than male teachers, especially regarding interactive whiteboards, wireless internet and desktop computers. The only exception is the use of tablets, which are more often used by male teachers. Older and more experienced teachers use technology as often as younger teachers.

Perceptions of the physical learning environment are rather positive.

Most schools and teachers believe that the buildings and facilities have an impact to some extent on attracting parents looking to place their children in the school, on encouraging teachers to stay at their school and on attracting and retaining new teachers.

Overall, the findings from the survey at the six schools provide an indication that their physical learning environments offer a variety of different functional spaces that provide various opportunities for learning and have a good level of comfort and security. Moreover, some are flexible and adjust their learning environments according to instructional strategies, which contribute to a quality education.

A2.4 Detailed findings

The detailed findings of the LEEP field trial report are presented in the following section, according to the following areas of focus: the physical environment and its use; the use of technology; comfort and safety; perception of learning environments; and, overall satisfaction with the school facilities.

A2.4.1 The physical environment and its use

On average, most of the schools are six to ten years old or older and some of them have been renovated. Research shows what is more important than the age of the buildings is the infrastructure quality and the overall building condition, with students generally performing better in modernised or new environments (Blincoe, 2008).

A2.4.1.1 Types of spaces inside the school buildings and their use during lesson time

The types of spaces, their spatial organisation, the allocation and frequency of use by students and teachers provide valuable information about the organisation and practices of teaching and learning. This in turn can provide indications on how the spaces might shape teaching and learning processes and impact health and well-being, as well as learning and social outcomes.

Classrooms are allocated differently across the schools. Four schools (School 005.NOR.2016, School 003.NOR.2016, School 004.NOR.2016 and School 001.NOR.2016) indicated that most teachers use many different classrooms for different subjects and/or year levels. School 002.NOR.2016 indicated that most teachers are allocated the same learning space/classroom for a given subject for at least a semester and School 006.NOR.2016 reported that most teachers teach collaboratively (team teach) and share spaces designed for larger, single year-level groups. Only 26% of teachers indicated to only use one classroom.

The number of teachers in a classroom/space at the six schools varies, but on average there are two or three teachers in a classroom of 30 or 60 students. The weighted average is 2.57 teachers in a classroom of 51.45 students and the **ratio is 1 teacher for every 20 students**.

Number of teachers in a class (teacher response rate)	1 (13%)	2 (30%)	3 (44%)	4 (13%)
Number of students in a class (teacher response rate)	15 (13%)	30 (35%)	60 (26%)	90 (26%)

Regarding the types of spaces and the frequency of use of these spaces (see Figure A2.1), teacher and student responses show some alignment. Teachers indicate that during a typical week they most often use **a classroom with direct access to other rooms (a cluster of rooms)** during lesson time, students indicate to mostly use a **classroom**. 55% of teachers use a classroom at least once a week. Second most used by both teachers and students during lesson time is the **hall/auditorium**, which more than half of the teachers use at least two to four times a week. Students also oftentimes use the school canteen during lesson time; the school canteen is used less frequently by teachers for activities related to teaching and learning.

Teachers and students show similar frequency of use for **a space in the corridor outside the classroom, the library and the science laboratories**. On average, 41% teachers use these spaces once a week and 34% of students reported to have used these spaces over the past week. **Spaces equipped with furniture or technology specifically for subjects such as art, music or design and workshop spaces for woodwork, metalwork, catering or similar** are

slightly more frequently used by teachers than students. Overall, these spaces are the least used during lesson time by both groups.

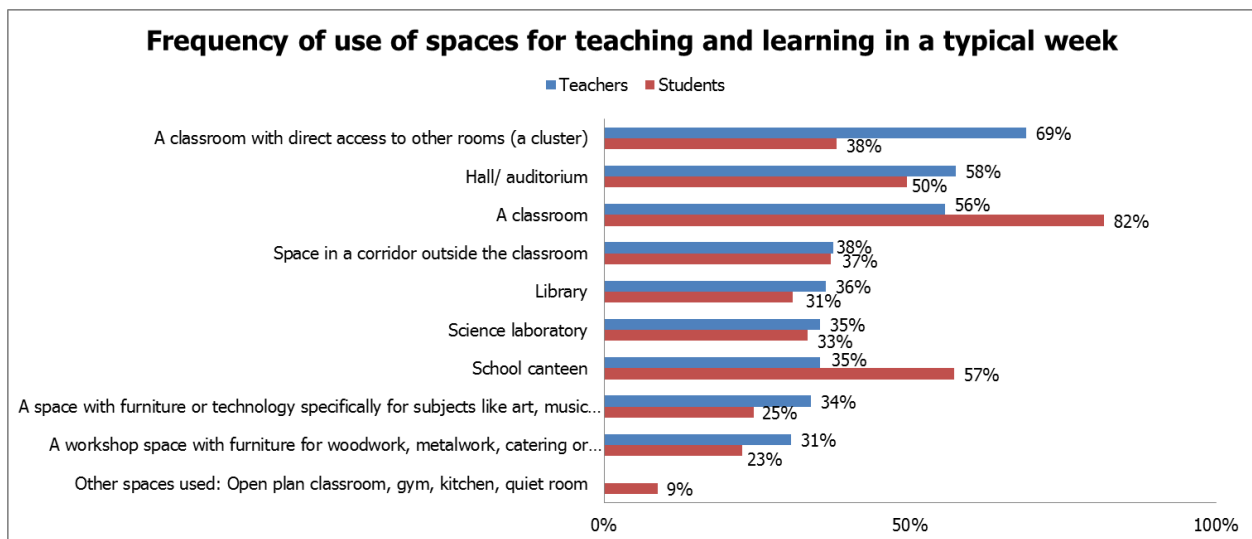


Figure A2.1: Frequency of use of spaces by students and teachers in a typical week

Both teachers and students reported using **other spaces** during lesson time in a typical week (this was asked as an open ended question, hence, response appear as originally described by respondents). Both teachers and students reported using the **gym**, as well as the **quiet room**. Teachers also reported teaching in an **open plan classroom** and in the **school kitchen**. Students also reported using the **reading room**, **wardrobe** and **bathroom/toilet** during lesson time.

Key findings: Types of spaces inside the school buildings and their use during lesson time

All of the six schools provide a variety of different learning spaces for their students, which provide opportunities to engage in various learning activities throughout the day.

On average, the number of teachers and students in a class is rather high, i.e. there are two to three teachers for 30 or 60 students. The weighted average is 2.57 teachers in a classroom of 51.45 students and the ratio is 1 teacher for every 20 students.

The allocation of classrooms varies across the schools. In some schools teachers are allocated different rooms and in one school teachers share spaces designed for larger, single year-level groups. Such classroom allocation impacts the number of teachers and students in a classroom as well as some teaching practices. For example, classes with a single teacher will not be able to profit from team teaching, which research has shown to positively influence teachers' job satisfaction and students' learning outcomes.

In terms of use of the different spaces available, teachers and students at the six schools mostly use a classroom (or a classroom with direct access to other rooms) in a typical week, followed by the hall/auditorium. The benefit of having a classroom that has access to other rooms -depending on the configuration- can provide greater choice for teachers and students on how to make use of such a cluster of rooms, for example, by moving between the spaces for different activities. The Government of Alberta/Canada has recognised this and finds that moving between classrooms can help students learn to moderate their behaviour, which reduces stress and maximises instructional time (Alberta Education, 2011).

A2.4.1.2 Rearranging the spaces inside the school buildings to meet instructional methods

The following spatial layout types are referred to when discussing spatial arrangements:



Presentation:

Layouts that support explicit instruction/presentation to the whole group.



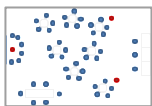
Group:

Layouts that support approaches where students are required to collaborate and work in small groups to share ideas and help each other.



Individual:

Layouts that support approaches where students work independently to write, read, research, think and reflect.



Team teaching:

Layouts that support approaches where two or more teachers work collaboratively with groups of students sharing the same space.

Research suggests that flexible spaces can encourage more effective teaching (Anderson-Butcher et al., 2010; Oblinger, 2006), team teaching, better planning, making use of more diverse pedagogies, and focusing on personalised learning. Flexible spaces can also encourage students to be self-reliant learners capable of working in groups (Dekker, Elshout-Mohr and Wood, 2006; Fielding, 2006). Research shows that student group work can lead to more active and sustained engagement, more connectedness and more higher-order inferential joint reasoning amongst students (Blatchford et al, 2006).

The survey asked teachers whether they find it easy to move furniture and re-arrange the spaces according to their needs. Teachers from three schools responded to these questions and the results vary:

To what extent do you agree with the following?	School 002.NOR.2016	School 003.NOR.2016	School 006.NOR.2016
It is easy to move the furniture	Disagree	Agree	Agree
There is enough time to rearrange the furniture before classes begin	Disagree	Disagree	Disagree
There is enough space to arrange the furniture in different ways	Disagree	Disagree	Agree
The furniture can easily be moved during lesson time	Disagree	50% Agree 50% Disagree	Agree
It is easy to move the technology	Disagree	Disagree	Disagree

In terms of spatial re-arrangements to suit different layouts:

In what proportion of the spaces/rooms in which you teach can you (in less than 5 minutes) rearrange the furniture to create any of the following arrangements?	School 002.NOR.2016	School 003.NOR.2016	School 006.NOR.2016
Layouts that support explicit instruction/presentation	75% or more	50-75%	50-75%
Layouts that support students working in small groups	25-50%	25-50%	50-75%
Layouts that support students working independently	Inconclusive	50-75%	50-75%
Layouts that support team teaching	Up to 25%	25-50%	50-75%

In terms of the frequency of spatial re-arrangements:

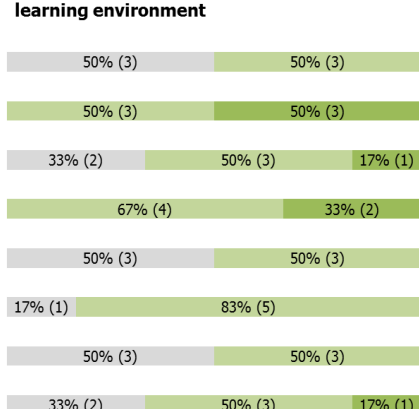
How often do you...	School 002.NOR.2016	School 003.NOR.2016	School 006.NOR.2016
...need to rearrange tables, chairs or other aspects of the space (e.g. sliding partitions) prior to the start of a lesson?	Never to 1-3 times per month	1-3 times per month	1-3 times per month
...change the layout of the space for different classes, according to activities you had planned?	Never to 1-3 times per month	1-3 times per month to 1 a week	1-3 times per month
...rearrange the layout of a space during a class?	Never to 1-3 times per month	1-3 times per month to 1 a week	1-3 times per month
...encourage students to move furniture during class to suit group formation or participation in activities?	1-3 times per month to 1 a week	1-3 times per month to 1 a week	1-3 times per month
...encourage students to move around a space during a class?	1-3 times per month to 1 a week	1-3 times per month to 1 a week	2-4 times per week

Another survey question that was directed at teachers and school leadership provides some insights into the factors that support good teaching methods from a physical learning environments' perspective (see Figure A2.2):

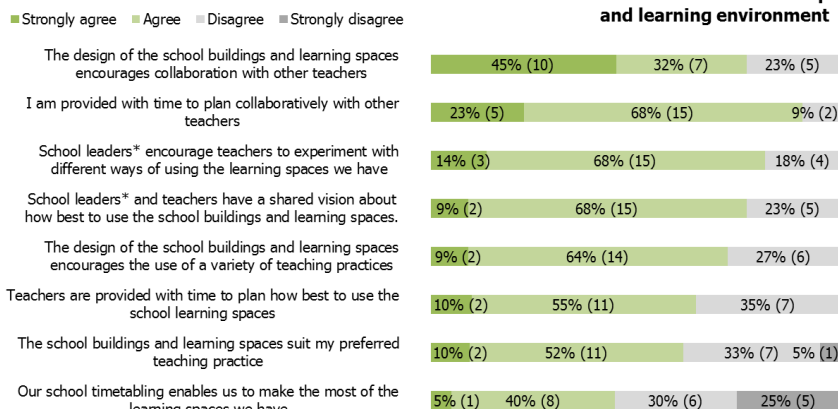
- All schools and almost all teachers agree that **teachers are provided with time to plan collaboratively with other teachers**. 50% of schools and 23% of teachers strongly agreed with this statement. Another 50% of schools and 68% of teachers agreed. Only 9% of teachers (exclusively from School 003.NOR.2016) disagreed with this statement.
- Only half (50%) of the schools but, on average, the majority (77%) of teachers agree that **the design of the school buildings and learning spaces encourages collaboration between teachers**. When looking at each individual school data, however, the findings differ. Whereas teachers from School 006.NOR.2016 strongly agree with this statement, teachers from School 002.NOR.2016 and School 003.NOR.2016 disagree. School leaders/principals in both schools also disagree.
- 67% of the schools and 82% of teachers agree that **school leaders encourage teachers to experiment with different ways of using the learning spaces**. 33% of schools and 18% of teachers disagree with this statement. Primarily teachers from School 003.NOR.2016 disagree with this statement, whilst their school leadership agrees.

- All of the schools and 77% of the teachers agree that **school leaders and teachers have a shared vision regarding the optimal use of the school buildings and learning spaces**. 33% of schools and 9% of teachers strongly agree with this statement. However, 23% of teachers disagree with this statement.
- Half (50%) of the schools and, on average, 73% of teachers agree that **the design of the school buildings and learning spaces encourages the use of a variety of teaching practices**. However, when looking at each individual school data, the findings differ. Whereas teachers from School 006.NOR.2016 agree with this statement, teachers from School 002.NOR.2016 neither agree nor disagree and teachers from School 003.NOR.2016 disagree. Both of these schools' leadership also disagree. School leaders/principals in both schools disagree.
- Almost all of the schools (83%) and 65% of teachers agree that **teachers are provided with time to plan how best to use the school learning spaces**. 35% of teachers disagree with this statement.
- Half (50%) of the schools and 62% of teachers agree that the **school buildings and learning spaces suit teachers' preferred teaching practice**. However, 33% of teachers (including all teachers from School 002.NOR.2016) disagree and 5% strongly disagree with this statement. Whereas teachers from School 003.NOR.2016 agree, this school's leadership disagrees with the statement.
- The majority of the schools (67%) but less than half (45%) of teachers agree that **the school timetabling enables teachers to make the most of the learning spaces**. Two schools (School 002.NOR.2016 and School 005.NOR.2016) and 30% of teachers disagree and 25% of teachers strongly disagree with this statement. Whereas the majority of School 002.NOR.2016 teachers agree, the school's leadership disagrees with the statement. For School 006.NOR.2016, the majority of teachers disagree, however, the school's leadership agrees.

Extent to which schools agree or disagree with the following statements about their school's leadership and learning environment



Extent to which teachers agree or disagree with the following statements about their school's leadership and learning environment



*Note: School leaders include the school principal, deputy principal and heads of department.

Figure A2.2: School leadership and culture

Key findings: Rearranging the spaces inside the school buildings to meet instructional methods

Recent research by the University of Salford, Manchester (Barrett et al, 2015), found that teachers can readily alter many of the factors that influence students' learning already through small

changes that may cost little or nothing -such as changing the layout of the room, or the choice of display or colours on the wall- but that can make a big difference. Such individualisation offers opportunities for different modes of learning, which in turn positively impact student outcomes.

Analysis conducted in the context of the OECD's Teaching and Learning International Survey (TALIS) and the Programme for International Student Assessment (PISA) shows that using a variety of teaching methods, each of which is targeted to developing specific student outcomes, is most effective (Le Donné et al, 2016). The same studies also found that the more a teacher collaborates with other teachers in the school, the more he or she tends to regularly use learning strategies that have a positive effect on student outcomes (Le Donné et al, 2016).

These findings reflect the importance of space flexibility - confirmed widely by research (DfES, 2006; Higgins et al, 2005) - and the teachers' willingness and pro-activeness to change the spaces according to their needs and those of the learners and in congruence with the pedagogical goals, educational programmes and instructional strategies.

The findings from the different schools reveal that the flexibility of the learning environment varies among them, with School 006.NOR.2016 being most flexible and School 002.NOR.2016 being least flexible in terms of re-arranging the furniture and other features of the spaces, such as technology. The findings also show that such flexibility or inflexibility impacts the different instructional methods used by teachers, i.e. whereas the teachers of School 006.NOR.2016 use a variety of teaching methods, School 002.NOR.2016 uses primarily direct and explicit instruction methods. When asked whether the design of the school buildings and learning spaces encourages collaboration between teachers, School 006.NOR.2016 leadership and teachers strongly agree, whereas School 002.NOR.2016 school leadership and teachers disagree.

The findings clearly show that the physical learning environment has an impact on teacher collaboration and the use of different instructional methods, which in turn impact student learning outcomes.

A2.4.1.3 Types of spaces inside the school buildings and their use outside lesson time

Outside lesson time, **76% of students reported that they can find a space in the school when they need to work quietly on their own.** 21% reported that they could never (5%) or rarely (16%) find such a space. **85% reported that they can find a space to work together with other students,** for example on a group project, while 13% indicated they could never (4%) or rarely (9%) find such a space. **89% of students also reported the existence of a safe place in the school where they can leave their belongings,** such as a locker (see Figure A2.3).

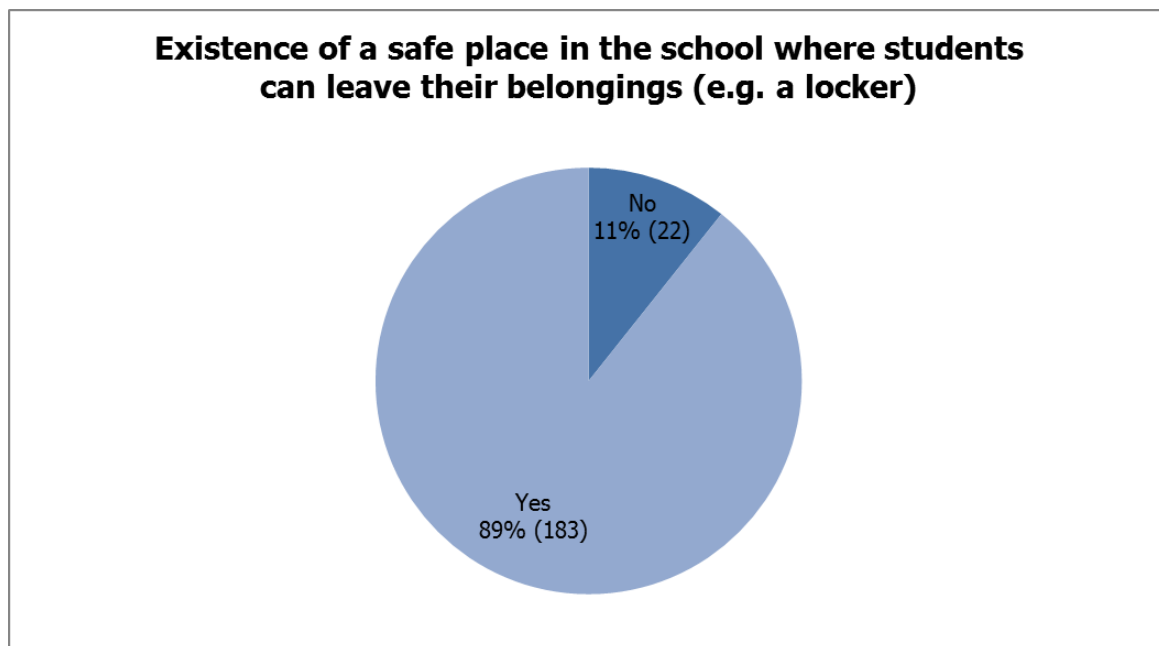


Figure A2.3: Existence of a safe place in the school where students can leave their belongings

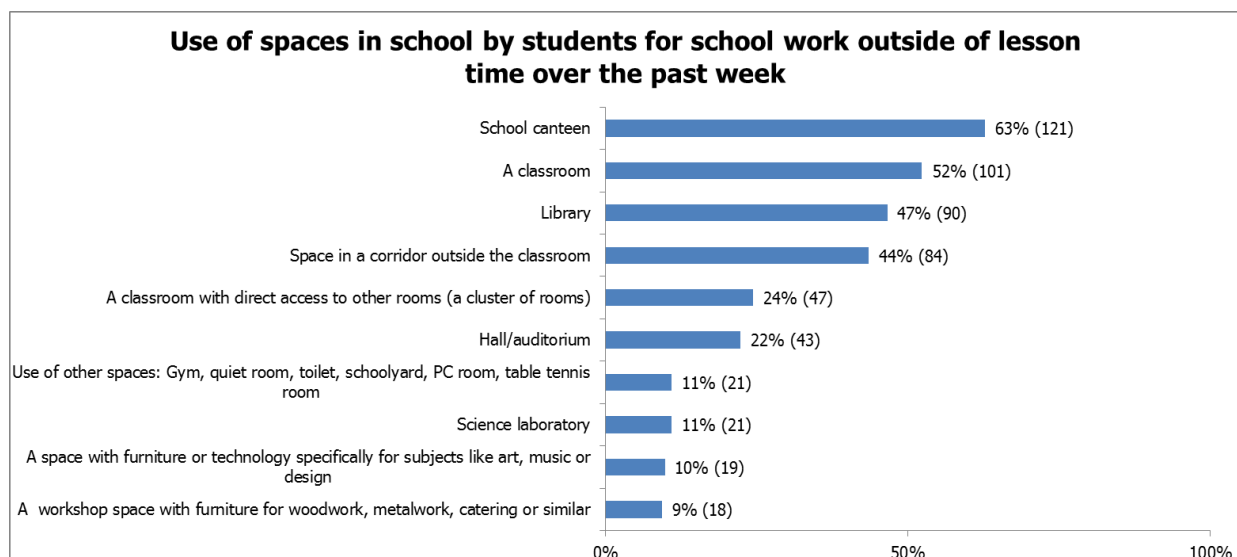


Figure A2.4: Use of spaces by students for school work outside lesson time

Outside lesson time, most students use the **school canteen** (63%), followed by **a classroom** (52%), the **library** (47%), **a space in a corridor outside the classroom** (44%), **a classroom with direct access to other rooms** (a cluster of rooms) (24%), **the hall auditorium** (22%), other spaces, such as the **gym, quiet room, toilet, schoolyard, PC room, table tennis room** (21%), **the science laboratory** (21%), **a space with furniture or technology specifically**

for subjects like art, music or design (10%). Least used is a **workshop space for woodwork, metalwork, catering or similar** (9%).

Teachers were asked about how satisfied they were with the provision of different spaces they use outside lesson time. Teachers reported that they are most satisfied with the **spaces that staff can use for socialising and for conversation with other staff** (81% satisfaction on average) and with a **quiet space for teachers to work in the school before or after lessons** (70% satisfaction on average). Teachers are a little less but nevertheless satisfied with the provision of meeting rooms (56% satisfaction on average). On average, female teachers are more satisfied by approximately 14% with all of these spaces than male teachers. Older (40 years and up) and more experienced teachers were slightly less satisfied with these spaces than younger teachers.

Key findings: Types of spaces inside the school buildings and their use outside lesson time

Most of the students and teachers from the six schools reported to be able to find spaces at their school where they could work quietly on their own, work collaboratively with peers or socialise. The availability of such spaces structures students and teachers' use of their time before and after lessons. For teachers, spaces for socialising provide an environment where they can exchange ideas and practices before or after lessons, as well as give each other feedback or plan their joint lessons. For students, such spaces provide valuable opportunities for learning on their own or with peers outside of the lesson plan; this can contribute to creating a sense of privacy, an enhanced sense of control and personal autonomy, factors that contribute to their social and emotional well-being and learning (Temple, 2007).

A2.4.1.4 Types of external/outside spaces and their use

Access to external spaces can expand the range of active learning opportunities available to stimulate students' and teachers' imagination and learning (DEECD, 2009). Research has shown that schools that have spaces for outdoor learning allow students to better absorb and retain math, science, language, arts, and other skills, because outdoor learning incorporates their immediate environment and supports students to make use of all of their five senses (Lieberman and Hoody, 1998). Outdoor play has been linked to stronger social skills and increased creative development (Miller, Tichota, and White, 2009).

Regarding the use of outside spaces for teaching and learning within the school premises (see Figure A2.5), teachers and students responses diverge. Whereas 49% of students reported that they used **an external (outside) classroom or space, usually with seating and directly accessible from a classroom** over the past week, only 5% of teachers indicated that they use such a space once a week and 44% reported that they use such a space one to three times a month. Teachers indicated that they mostly use most often make use of **a grassed area (not a sports field) not accessible from a classroom**. 17% of teachers use a grassed area several times a week and 43% of teachers use it one to three times a month. A little more than a third (35%) of the students reported having used a grassed area over the past week.

A little more than a quarter (27%) of students reported having used a **sports field** over the past week and 17% of teachers reported that they use a sports field several times a week. Another 17% of teachers use a sports field several times a month. Only 20% of students reported having used **an external (outside) hard ball court / sports court / hard paved area not accessible from a classroom** over the past week, and 17% of teachers reported making use of such a space several times a week and 22% several times a month. Students and teachers also reported the use of other outside spaces (this was asked as an open ended question, hence, response appear as originally described by respondents). Students indicated that they had gone to the **gym** and **park** over the past week. A teacher reported having spent time with students in **nature** for orientation and outdoor life.

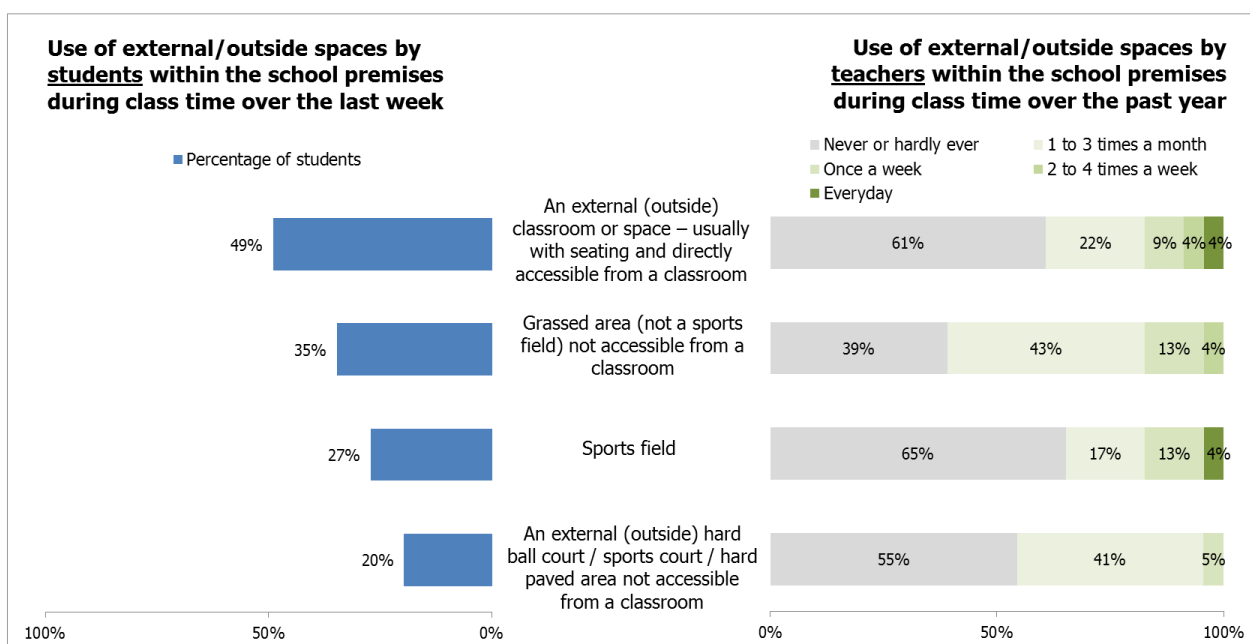


Figure A2.5: Use of external (outside) spaces by students and teachers

Key findings: Types of outside spaces and their use

On average, external/outside spaces for teaching and learning are available and used by less than half of students and teachers once a week to several times a month during lesson time. Research shows that quality of life in school is much enhanced when there is a great amount of outdoor spaces; particularly classrooms with doors directly towards a play area outside were found to have a positive impact on students (Barret et al, 2015). This holds true especially for schools in urban environments, where nature is already scarce. To enhance the connection between the school and nature, when outside spaces are scarce, it can be advisable to add natural elements to the classroom, such as plants, wooden chairs or desks, so that students can connect to nature. . Ensuring that the view to the outside space is not blocked by furniture, for example, is another way of connecting inside with outside, in addition to allowing more natural light into the space.

A2.4.2 Use of technology

Learning spaces and the different types of technology together mediate the relationship and social practices of teaching and learning, and are two factors among many in the complex relationships of teaching that inform learning in schools (Oblinger, 2006). Teachers and students decide on how technology is mobilised in different spaces (Bissell, 2002). Ready access to resources including ICT enables teachers and students to experiment with new learning tools, engage in joint learning experiences and diversify the demonstration of learning (DEECD, 2009).

The six Norwegian schools reported that:

- 100% of classrooms/learning spaces are equipped with **wireless internet access**;
- 80-90% provide the **possibility to project sound and vision for a class of students**, such as through a projector or TV (with audio) and are equipped with **charge points**;
- 50-60% of the classrooms/ learning spaces
 - are equipped with **cabled internet access**,
 - **interactive white boards**, and
 - **in-school laptops/notebooks** that are stored in a learning space;
- 22% of classrooms/learning spaces are equipped with **desktop computers**.

In terms of the availability and use of technological equipment from a teacher's perspective, the responses are coherent with the school leadership responses from the six schools. The data reveal that teachers make most use of the internet, followed by projectors, whiteboards and in-school laptops (see Figure A2.6). Less than a third of teachers use desktop computer or tablets. Other devices used are personal laptops, telephones and smartboards (this was asked as an open ended question, hence, responses appear as originally described by respondents). In three out of six schools, students are requested to bring their own device.

- 100% of teachers at the six schools reported that **wireless internet access** was available in all or most of the spaces. The speed of internet varies among the schools (see Figure A2.7). 68% of teachers use the internet every day and the remaining 38% use the internet once or several times a week. On average, female teachers use such devices 11% more frequently than male teachers.
- 95% of teachers reported that in all or most of the spaces it is possible to **project sound and vision for a group of students** (for example, with a projector or a large TV with audio) and 90% of teachers use such devices once or several times a week, out of which 19% even use them every day.
- 77% of teachers reported the availability of **interactive whiteboards** and 77% of teachers use such interactive whiteboards once to several times a week (32% use them every day). 18% of teachers never or hardly ever use them.
- 59% of teachers reported that **in-school laptops/note books** existed or could easily be accessed in all or most of the spaces where they teach. 14% of teachers indicated that they didn't exist in any. 59% of teachers are also reported that they made use of in school laptops once a week to every day.

- 38% of teachers reported that **desktop computers** are provided in most of the spaces and 62% reported they existed in few or none of the spaces. 29% of teachers make use of desktop computers at least once a week and 57% never make use of them. On average, female teachers use such devices 11% more frequently than male teachers.

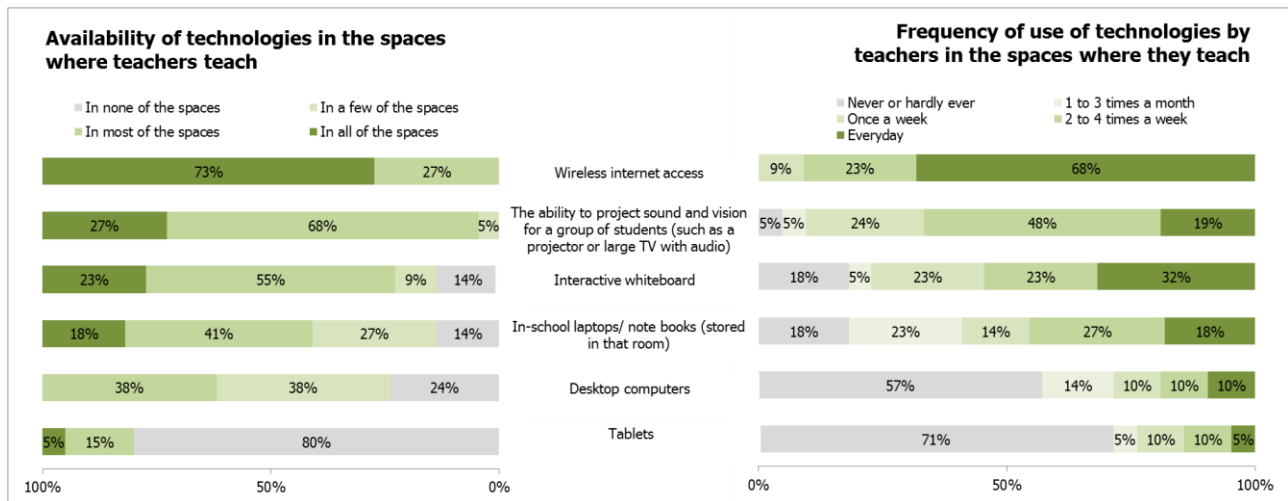


Figure A2.6: Availability of technologies and frequency of use

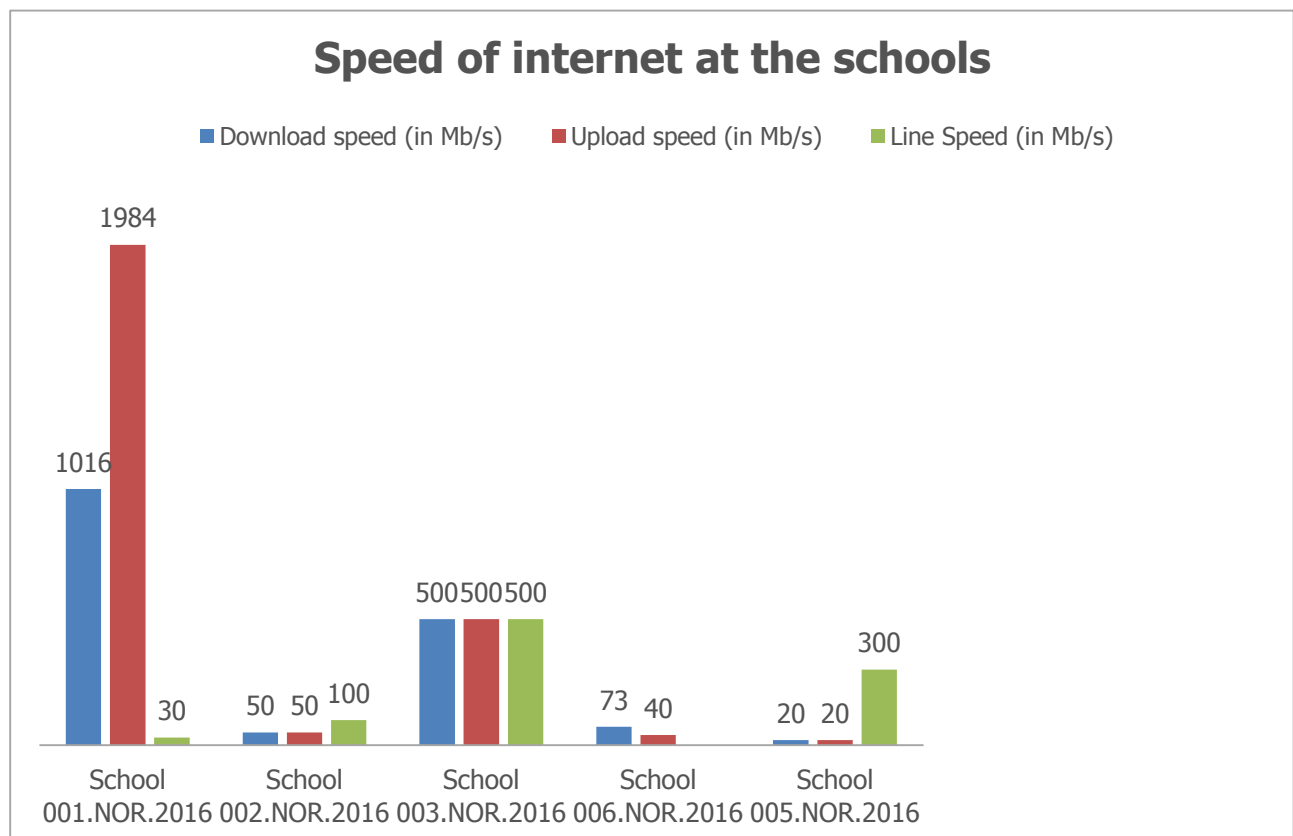


Figure A2.7: Speed of internet at the LEEP Field Trial participating schools

- 20% of teachers reported that **tablets** were provided in all or most of the spaces and 80% indicated that they weren't provided in none of the spaces. 24% of teachers make use of tablets at least once a week and 71% never make use of them. On average, male teachers use such devices 12% more frequently than female teachers.

- In terms of other technological equipment, teachers and students make use of personal laptops, telephones and smartboards (this was asked as an open ended question, hence, responses appear as originally described by respondents).
- Three out of six schools reported that students are requested to **bring their own devices**, such as laptops or tablets. These are School 001.NOR.2016, School 002.NOR.2016 and School 003.NOR.2016.
- The responses reveal that female teachers make more frequent use of technology than male teachers, especially regarding interactive whiteboards, wireless internet and desktop computers. The only exception is the use of tablets, which are more often used by male teachers. Older and more experienced teachers use o technology as much a younger teachers.

Key findings: Use of technology

All six schools that participated in the field trial are well equipped in terms of technology and teachers use it frequently for their teaching. For example, all of the spaces are equipped with wireless internet and all teachers make use of it at least once a week (68% make use of the internet on a daily basis) and almost all or most of the spaces are equipped with audio-visual equipment and 90% of teachers make use of them at least once a week. These findings show that technology is well integrated in teaching and learning at the six schools. It could be useful for the schools to further understand how different types of technology are used to enrich teaching and learning, i.e. how long they are used during a typical class period and for what purpose they are most often used.

A2.4.3 Comfort and Safety

Students and teachers spend a significant proportion of their day at school. Students often spend hours sitting. It is therefore critical that the physical learning environments are healthy and comfortable, as they can contribute to both students' and teachers' sense of well-being and to their ability to "concentrate on the task at hand" (Bateman, in press).

A recent research project -the HEAD Project (Holistic Evidence and Design) (Barret et al, 2015)- suggests that well-designed primary schools boost children's academic performance in reading, writing and maths. According to that study differences in the physical characteristics of classrooms were found to increase the students' learning progress by as much as 16% in a year. The naturalness of the learning environment, i.e. light, sound, temperature and air quality was found to account for half of the impact.

The following section looks at a number of factors that contribute to comfort and safety in the spaces, including temperature, air quality, light quality, visual quality, auditory quality, comfort of desks and chairs, finding shade on the school grounds in the summer and students' perceived feeling of safety in different parts of the school grounds. All of these factors contribute to creating a learning environment that is sufficiently comfortable and meets the conditions most likely to impact on student learning. For example, **thermal comfort** is important both for student learning, retention and task performance and teachers' job satisfaction (Schneider, 2002; 21st Century School Fund, 2009). A good quality of **fresh air** in the learning spaces prevents mould and airborne bacteria that can have adverse effects on students' and teacher's health (Schneider, 2002; 21st Century School Fund, 2009). Both **natural (day) and artificial lighting** have been found to have considerable effects on learner performance, with natural light optimising student achievement (Schneider, 2002; 21st Century School Fund, 2009) and **a good acoustic environment** –in terms of sound quality rather than noise level- has been found to be fundamental to academic performance (Schneider, 2002; 21st Century School Fund, 2009).

A2.4.3.1 Perceived temperature in the spaces when it is cold or hot outside

When it is cold outside, students at the six schools in Norway have a tendency to feel rather cold in the spaces (see Figure A2.8). More than half of the students (61%) usually feel about right (neither too hot nor too cold) in all or most of the spaces, however, this differs between male and female students, with 47% of female students reporting to feel cold in all or most of the spaces. For male students, a little less than a third reported feeling cold in all or most of the spaces. On the other end of the spectrum, 13% of students feel too hot in all or most of the spaces and 40% feel too hot in a few of the spaces. The data reveal that students at the six schools in Norway have a tendency to feel rather cold in the spaces during the cold weather months.

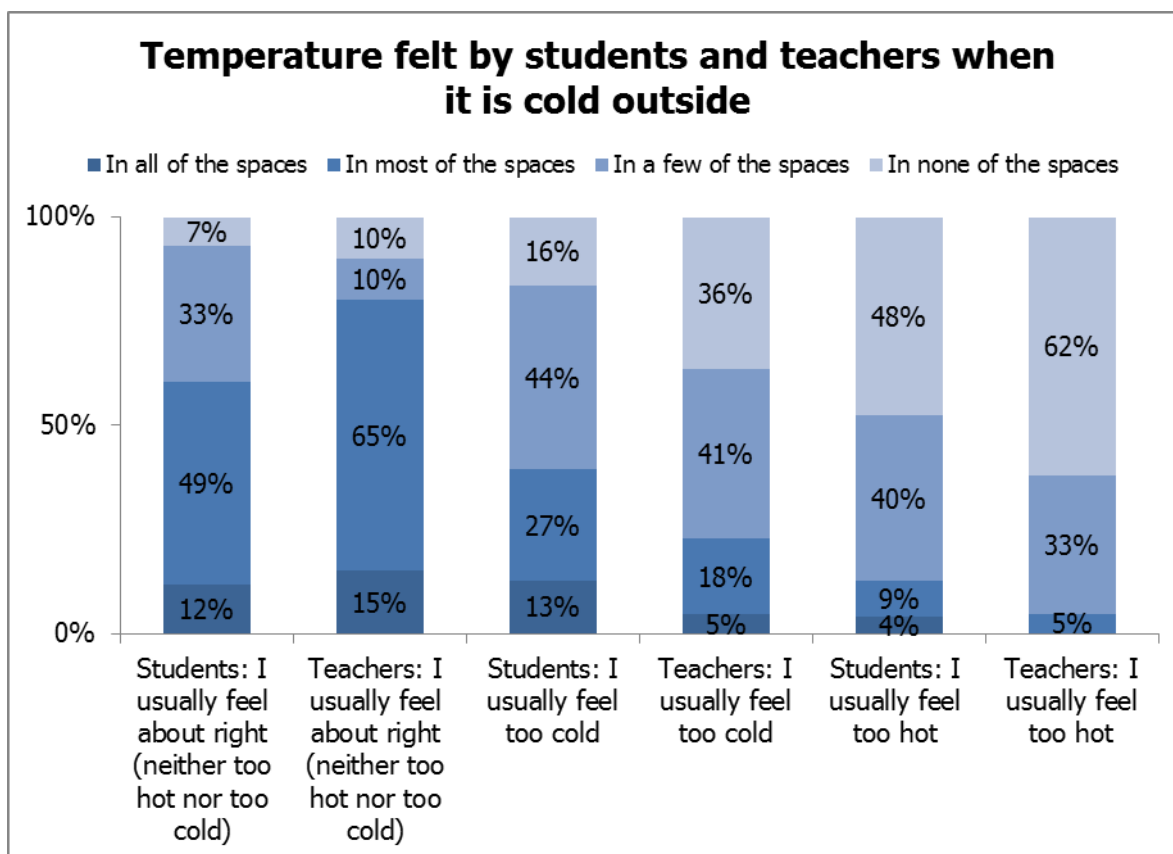


Figure A2.8: Temperature felt by students and teachers when it is cold outside

The findings from the teacher responses indicate a more positive feeling about the temperature in the spaces. 80% of teachers feel that the temperature is about right (neither too hot nor too cold) in all or most of the spaces where they teach. 10% feel about right in a few of the spaces and another 10% do not feel right in any of the spaces. 23% feel too cold in all or most of the spaces and 44% feel too cold in a few of the spaces. On average, female teachers feel slightly colder in the spaces than male teachers. On the other end of the spectrum, 13% of teachers feel too hot in all or most of the spaces and 40% in a few of the spaces.

In terms of adjusting the temperature in the learning spaces, 9% of teachers indicated that they could control heating in all of the spaces where they teach. 14% indicated that they could control heating in a few of the spaces and 77% indicated that they couldn't control heating in the spaces where they teach (see Figure A2.9).

When it is hot outside, almost three quarters of the students (69%) usually feel about right (neither too hot nor too cold) in all or most of the spaces (see Figure A2.10). This feeling is equally

shared by female and male students. 23% feel right only in a few of the spaces and 9% do not feel right in any of the spaces. 27% of students reported feeling too hot in all or most of the spaces with primarily male students (38%) feeling too hot. 50% of all students feel too hot in a few of the spaces. On the other side, 20% feel too cold in all or most of the spaces and 36% feel too cold in a few of the spaces.

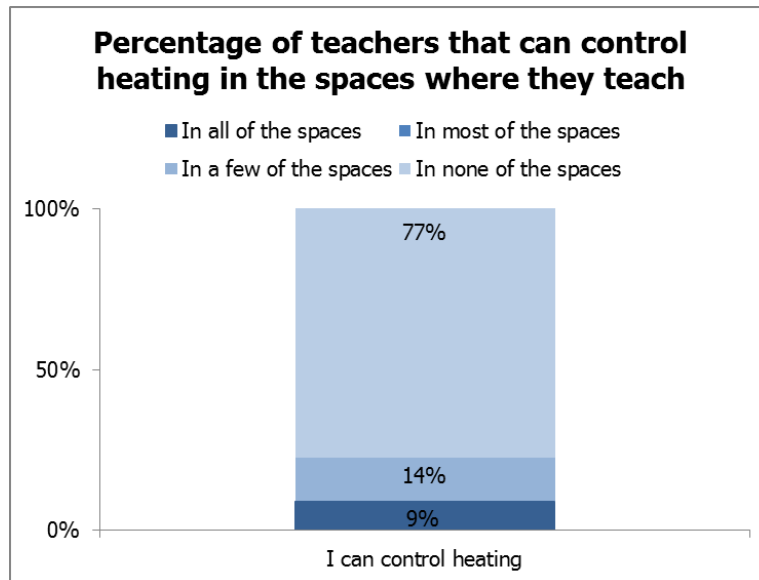


Figure A2.9: Control of heating by the teachers

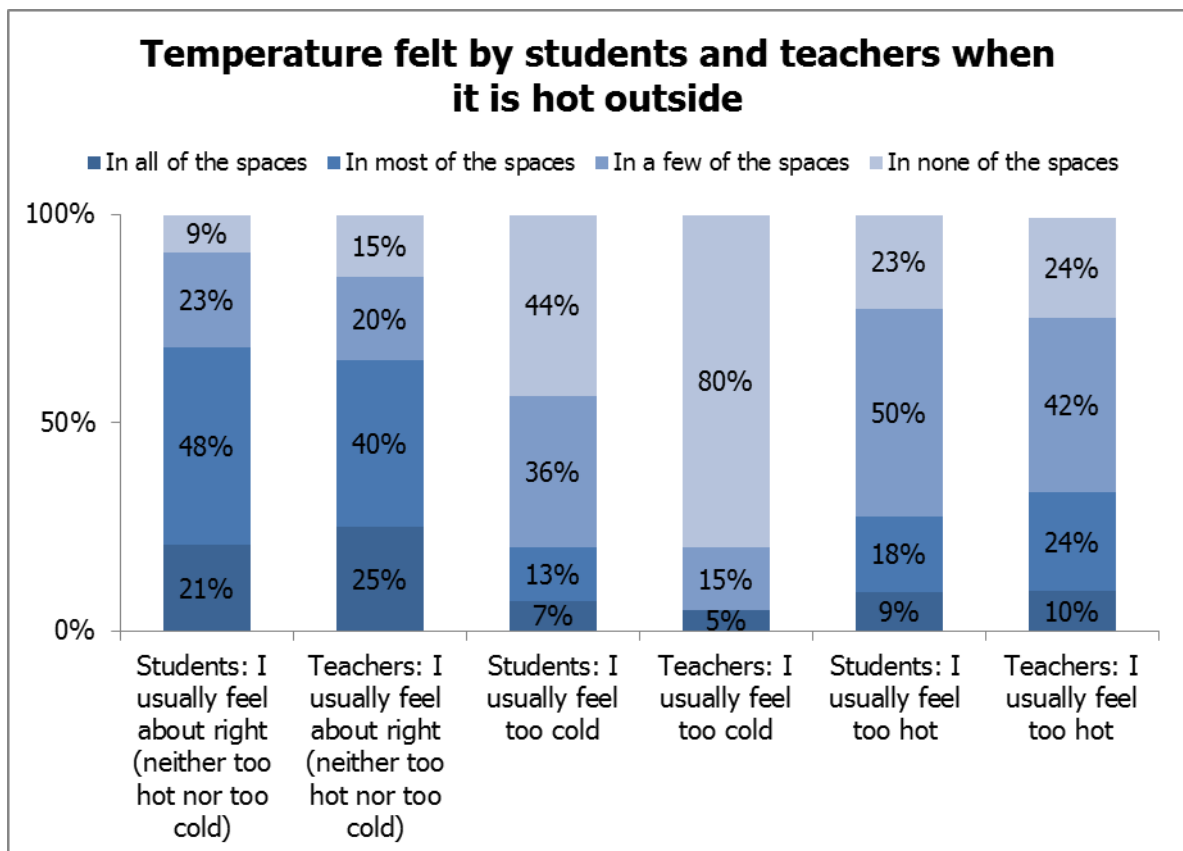


Figure A2.10: Temperature felt by students and teachers when it is hot outside

The findings from the teacher responses show similar results. 65% of teachers feel that the temperature is about right (neither too hot nor too cold) in all or most of the spaces where they

teach. 20% feel right in only a few of the spaces and 15% do not feel right in all of the spaces. 34% of teachers feel too hot in all or most of the spaces and 42% in a few of the spaces. On the other hand, 5% feel too cold in all of the spaces and another 15% feel too cold in a few of the spaces.

In terms of adjusting the temperature in the learning spaces, only 10% of teachers indicated that they could control air conditioning in all or most spaces and 5% in a few of the spaces; 80% reported that they could not control air conditioning in the spaces (see Figure A2.11). An indirect way of adjusting the temperature in the summer months can be by adjusting glare. 38% of teachers reported that they can control glare, such as through blinds or windows in all or most of the spaces. 38% indicated this was possible in a few or the spaces and another 24% of teachers indicated this wasn't possible in any of the spaces.

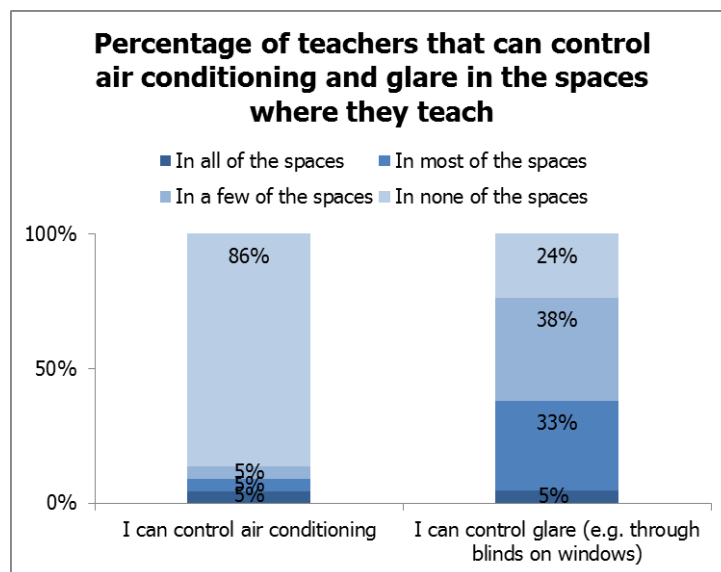


Figure A2.11: Control of air conditioning and glare by the teachers

Key findings: Perceived temperature in the spaces when it is cold or hot outside

When it is cold outside, it was found that students feel colder in the spaces than teachers, and almost half of all female students reported feeling too cold in all or most of the spaces. Most of the teachers reported that they could not control heating in the spaces. An idea worth exploring could be to identify those classrooms that are particularly cold and inform teachers, students and their parents during the winter season, so that students bring along some additional warm clothing.

When it is hot outside, both students and teachers tend to feel about right in all or most of the spaces. However, approximately a quarter of students and even more teachers reported feeling too hot in all or most spaces. The majority of teachers reported that they could not control the air conditioning in the spaces where they teach and a little more than a third of teachers reported they could control glare through blinds, for example, in most or at least in a few of the spaces.

One way to prevent thermal discomfort would be for the school to check which of their learning spaces gets too hot in the summer months and identify potential alternative or additional solutions to decrease the temperature in these spaces. Such solutions depend on the particular spaces and could entail the use of ventilators. Another solution could be to place shrubs or planters outside south-facing windows to provide shading and reduce sun heat.

A2.4.3.2 Perceived air quality in the spaces

Evidence suggests that poor air quality is a rather common problem in schools but can be prevented (Crawford, 1998). The LEEP survey, therefore, asked teachers and students whether they find the air fresh or humid in the learning spaces. Humid air can be an indicator of the air containing too much moisture, which in turn can help microorganisms develop and, at excessive levels, create moulds, which can negatively affect students and teachers' health.

Students from the six schools in Norway reported that the air is usually fresh in 66% of all or most of the spaces where there is lessons or where they study (see Figure A2.12). 27% find that the air is fresh in a few of the spaces and 6% find that the air is not fresh in any of the spaces. 30% of students feel that the air is humid in all or most of the spaces and 41% find that the air is humid in a few of the spaces. 91% of teachers reported that the air is usually fresh in all or most of the spaces and 9% finds this for a few of the spaces. 14% reported the air is usually humid in all or most of the spaces and 27% in a few of the spaces.

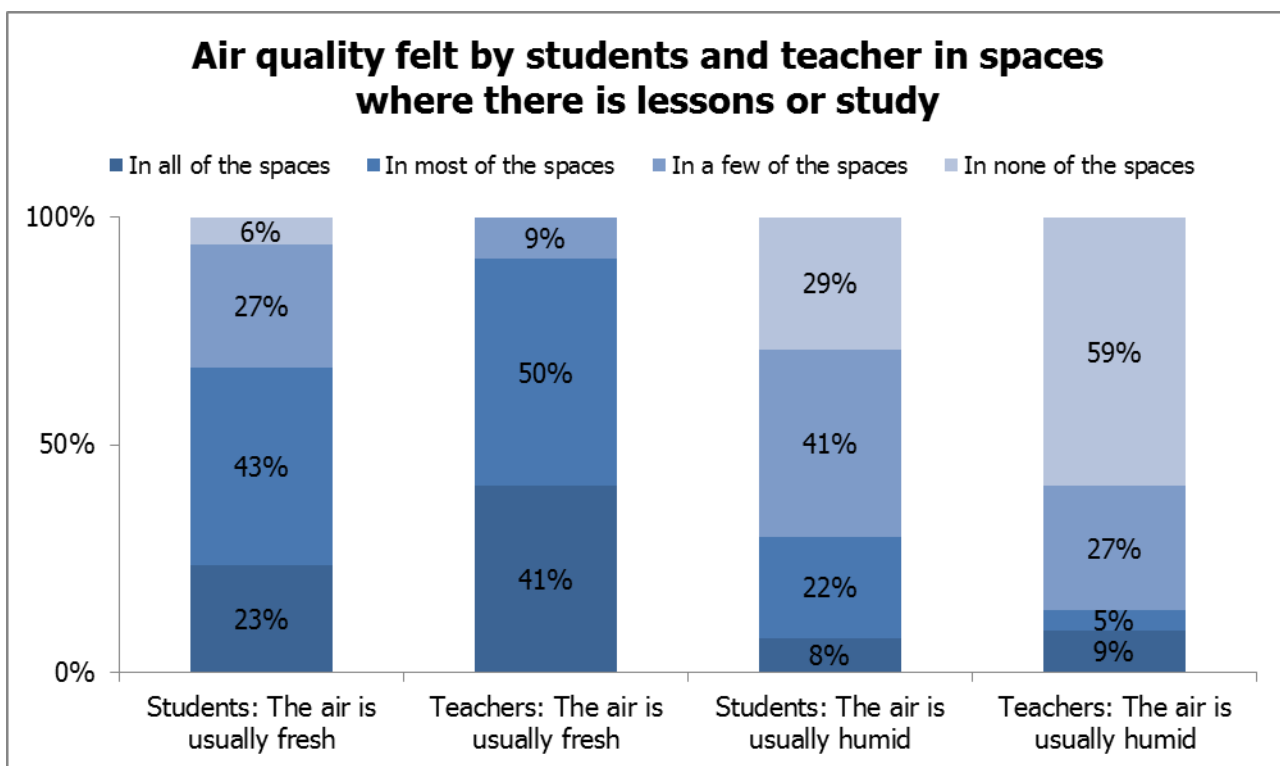


Figure A2.12: Air quality felt by students and teachers

Key findings: Perceived air quality in the spaces

Overall, it seems that air quality in the learning spaces at the different schools is slightly above average, with 66% of students and 91% of teachers indicating that the air is usually fresh in all or most of the spaces. However, almost a third of students also reported that the air is usually humid in all or most of the spaces. The school could identify those learning spaces that are more humid and implement some zero-cost adjustments to improve the air quality, such as by opening the window at least once during a lesson or, at least, in between classes.

A2.4.3.3 Perceived quality of natural light in the spaces

When it is daylight outside, the majority of the students (83%) usually feel that the natural light is about right (neither too bright nor too dark) in all or most of the spaces (see Figure A2.13). Only 13% of students feel that the natural light is about right only for a few of the spaces and 4% do not feel that the natural light is right in any of the spaces. 20% reported that they usually feel that the natural light is too bright in all or most of the spaces and 42% that the natural light is too bright in a few of the spaces. On the other hand, 13% of students reported that it is usually too dark in all or most of the spaces and 33% feel that it is too dark in a few of the spaces.

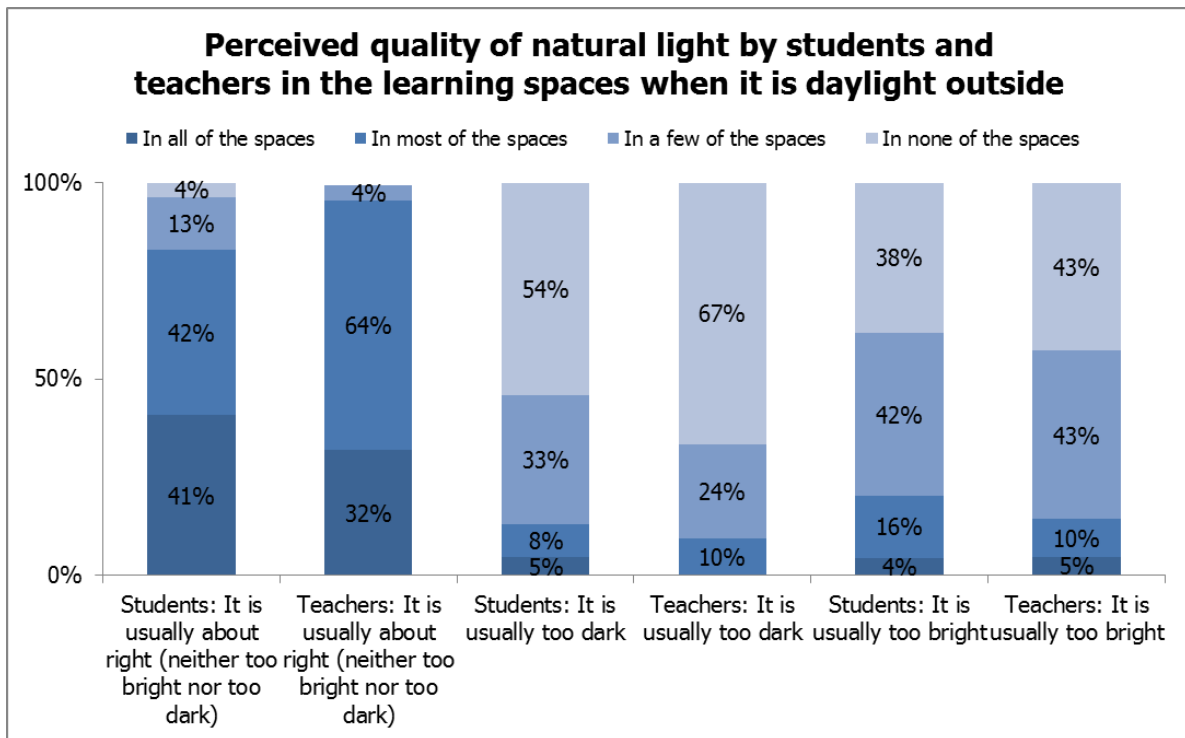


Figure A2.13: Perceived quality of natural light by students and teachers

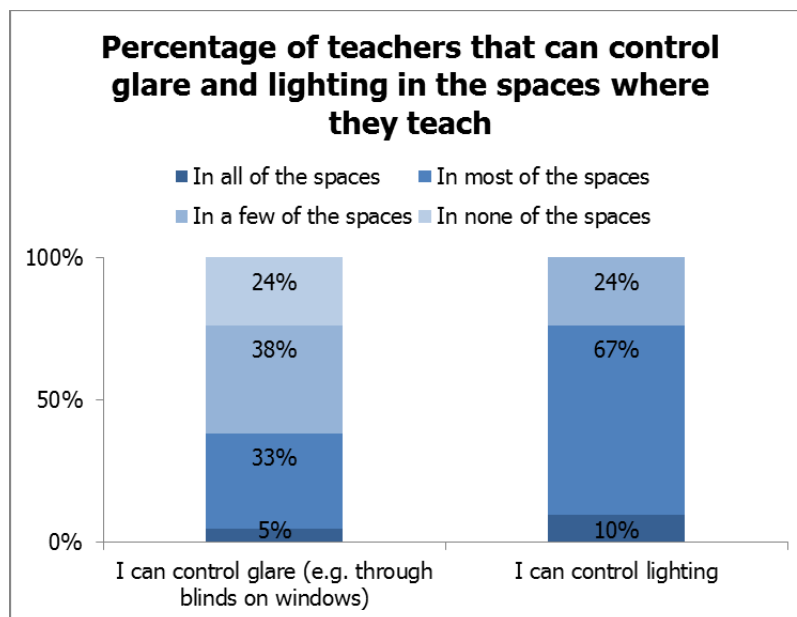


Figure A2.14: Control of glare and lighting by teachers

The teacher responses indicate an even more positive feeling about the natural light in the spaces. 96% of teachers feel that the natural light is about right (neither too bright, nor too dark) in all or most of the spaces where they teach. 20% of teachers feel that it is usually too bright in all or most of the spaces and 42% feel that this is the case for a few of the spaces. On the other hand, 13% of teachers feel that it is usually too dark in all or most of the spaces and 33% feel that it is usually too dark in a few of the spaces.

In terms of adjusting the light in a learning space, 38% of teachers reported that they can control glare, such as through blinds or windows in all or most of the spaces. 38% indicated this was possible in a few of the spaces and another 24% of teachers indicated this was not possible in any of the spaces (see Figure A2.14). Being able to control glare is becoming an even more important issue in combination with the use of technology, such as interactive whiteboards or projectors. Although natural lighting may be the first choice for lighting in a learning space, artificial light can supplement natural light, especially in the winter months when it is still dark in the mornings and afternoons/evenings. Most (77%) of the teachers from the six schools also reported that they can control lighting in all or most of the different spaces where they teach. 24% reported they could control lighting in a few of the spaces.

Key findings: Perceived quality of natural light in the spaces

The majority of both students and teachers feel that the quality of natural light in all or most of the learning spaces is about right (neither too bright nor too dark), which is a general indicator of the quality of natural light in the learning spaces and physical and mental comfort associated with it.

A1.4.3.4 Perceived visual quality in the spaces

Students from the six schools also reported whether they can see without difficulty what is displayed in different school spaces (see Figure A2.15). The results are positive:

- 83% can see what is displayed on the display screen (e.g. LCD screen; TV screen; projection screen) without difficulty in all or most of the spaces.
- 80% of students can see what is drawn or written on the whiteboard/chalkboard without difficulty in all or most of the spaces.
- 75% can see a demonstration without difficulty when a teacher is using apparatus for a demonstration in all or most of the spaces.

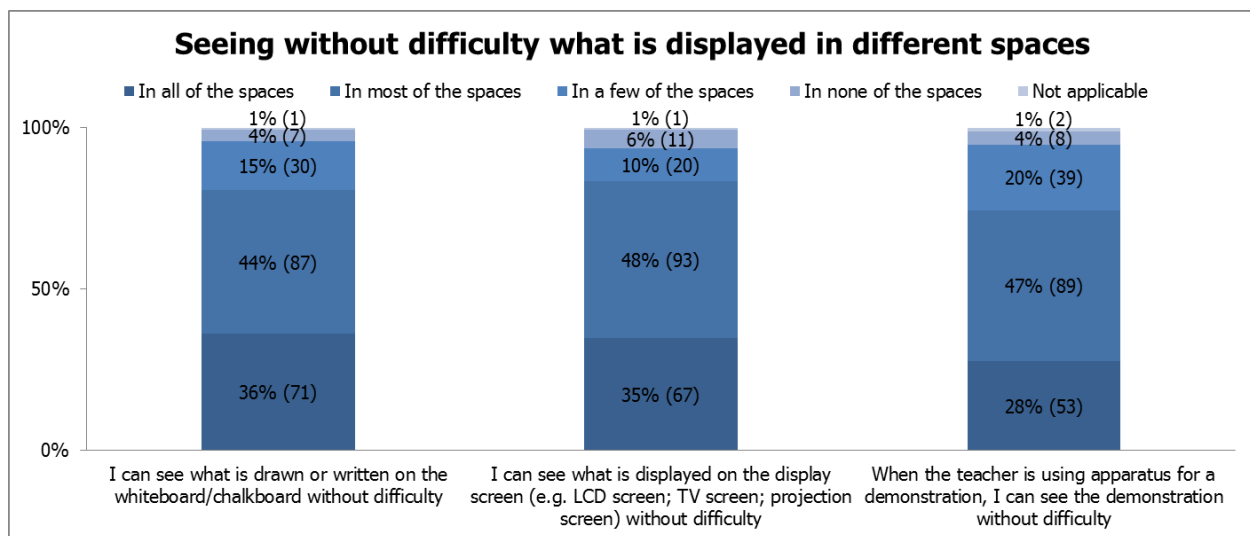


Figure A2.15: Perceived visual quality by students

Key findings: Perceived visual quality in the spaces

Generally, the visual quality is good in all or in most of the learning spaces, but decreases slightly when a teacher uses an apparatus for a demonstration. This could be linked to some of the brightness in the learning spaces indicated by teachers and students, which can cause issues with particular forms of technology, such as projectors or whiteboards, which teachers reported to use several times per week or on a daily basis. The schools could identify the spaces where the visual quality is impacted by such factors and think of ways, for example, to reduce glare through blinds or more powerful projectors to further increase visual quality.

A2.4.3.5 Perceived auditory quality in the spaces

Almost all students (93%) at the six schools can hear the teacher's voice clearly in all or most of the spaces where they have lessons or study (see Figure A2.16). 84% of the students also reported that they can hear other students clearly when they participate in class in all or most of the spaces. 16% of students indicated that they are disturbed by noise from outside in all or most of the spaces. 53% reported that this was also the case for a few of the spaces.

85% of teachers reported that they can hear the students clearly when they speak in all or most of the spaces and 15% reported that this was the case in a few of the spaces. 24% of teachers feel disturbed by noise inside the space, such as the air-conditioning, in all or most of the spaces. 33% indicated that this was an issue in few of the spaces. 14% of teachers also reported that in most of the spaces they are disturbed by noise from outside. 45% indicated that this was only an issue in a few of the spaces. The most prominent issue seems to be the sound echo, as one third (29%) of teachers reported that sound echoes too much in all or most of the spaces.

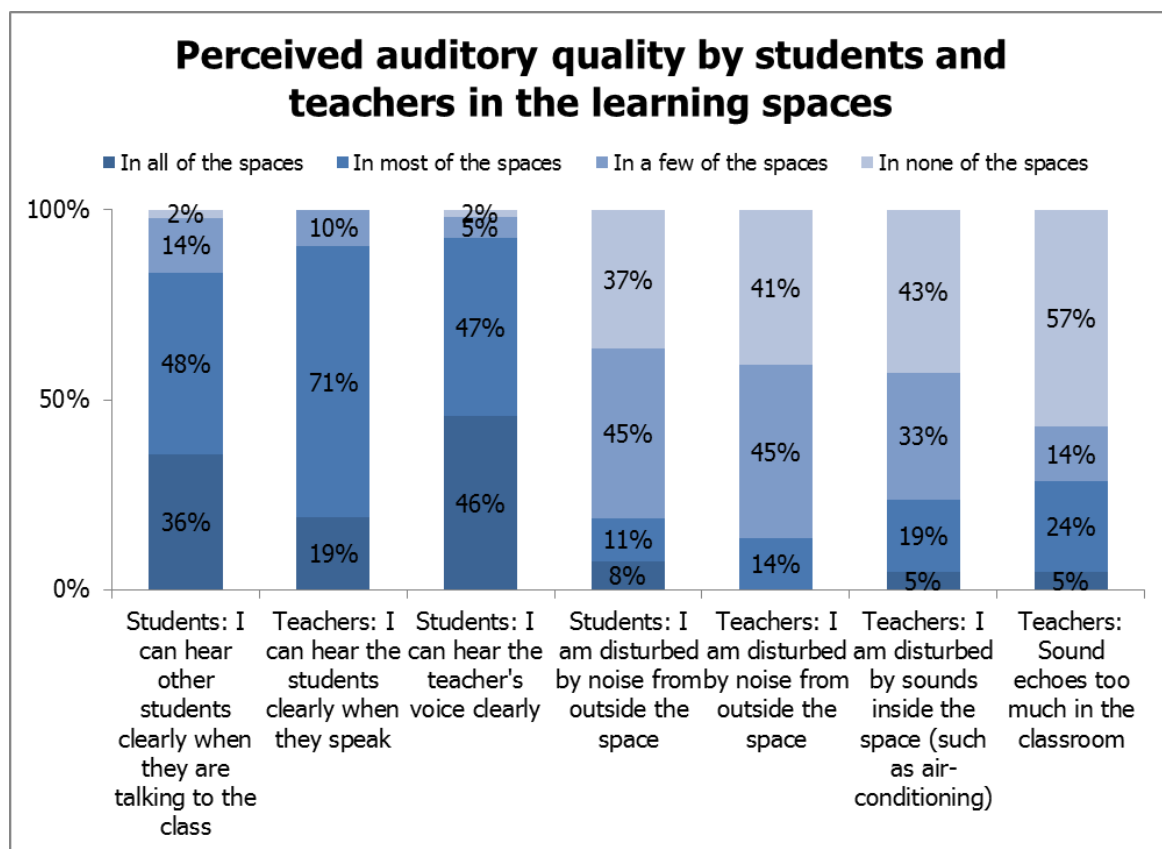


Figure A2.16: Perceived auditory quality by students and teachers

Key findings: Perceived auditory quality in the spaces

The auditory quality of the spaces seems good at the six schools. The majority of students indicated that they are able to hear the teacher and other students well in all or most of the spaces and this also holds true for most of the teachers. However, 16% of students and 14% of teachers also indicated that they get disturbed by noise from outside and, more importantly, almost a third of teachers indicated that there is too much echo in all or most of the spaces.

One way to improve a school's auditory quality could be to identify the spaces where there is too much echo, and reduce it by adding sound absorbing materials to the spaces (e.g. shelves with books, small carpeted/rug areas).

A2.4.3.6 Students' perceived comfort of chairs and desks

Students also reported on the comfort of the desks/tables and chairs in the learning spaces (see Figure A2.17). Half (52%) of the students reported that they find the chairs in all of most spaces comfortable to sit at. 32% find that the chairs are comfortable in a few of the spaces and 16% of students find the chairs are not comfortable in any of the spaces.

It is important for students to sit at chair-desk combinations that are suitable for their body height. 51% of the students indicated that they can adjust the height of the chairs in all or most spaces and 18% can do so in a few of the spaces. 30% of students reported that they cannot change the height of the chair in the spaces in which they learn. 80% of students find that the tables/desks are the right height for them to sit at in all or most of the spaces, which is a general indication of overall satisfaction with the comfort of desks and chairs in the learning spaces.

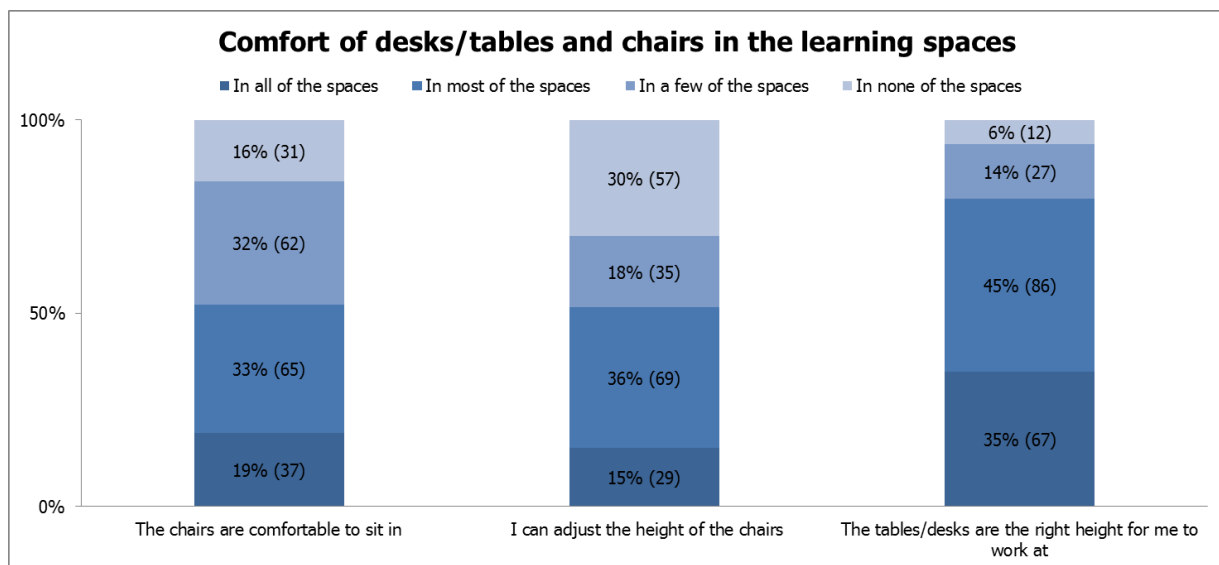


Figure A2.17: Comfort of desks and chairs in the learning spaces

Key findings: Students' perceived comfort of chairs and desks

Half of the students find that the chairs are comfortable in all or most of the spaces; on the other hand, 16% find that the chairs are uncomfortable. Half of the students also reported that they can adjust the chairs and the majority of students find the tables and desks to be at the right height for them.

A2.4.3.7 Possibilities of finding shade in school grounds during sunny weather

29% of students from the six schools indicated that they can always find a shady area in the school grounds during sunny weather (see Figure A2.18). 51% indicated they can often find a shady area, 16% indicated they can rarely find a shady area and 4% indicated they can never find a shady area. These findings vary; for example, at School 006.NOR.2016, 53% of students indicated that they can always find a shady area in the school grounds during sunny weather, which is above the average of the six schools.

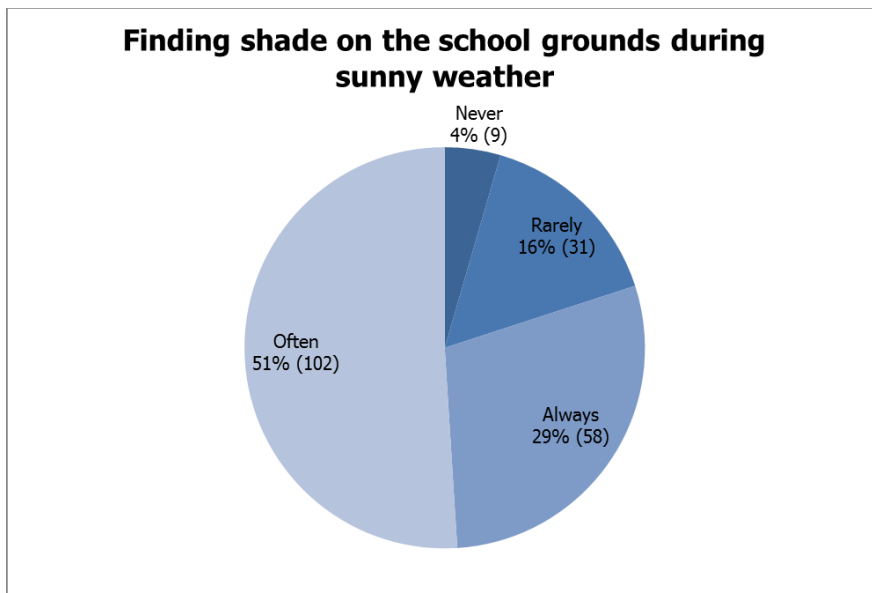


Figure A2.18: Finding shade on the school grounds during sunny weather

Key findings: Possibilities of finding shade in school grounds during sunny weather

The majority of students can always or mostly find a shady area in their school grounds during sunny weather.

A2.4.3.8 Students' feeling of safety at school

Safety has been defined as a basic condition for learning (Barrett et al., 2013; Earthman, 2004; Keep, 2002; Higgins et al., 2005; Lackney and Jacobs, 2004; McNamara and Waugh, 1993; Picus et al., 2005; Sundstrom, 1987; Weinstein, 1979). If students do not feel physically, socially and emotionally safe, this can undermine their learning, health and development.

85% of students from the six schools feel very safe or safe at their school. On average, this feeling of safety is equally shared by boys (87%) and girls (85%). 11% of students feel neither safe nor unsafe; 2% indicated that they felt unsafe and 3% indicated that they felt very unsafe (see Figure A2.19). 3% that feel very unsafe are equally boys (50%) and girls (50%).

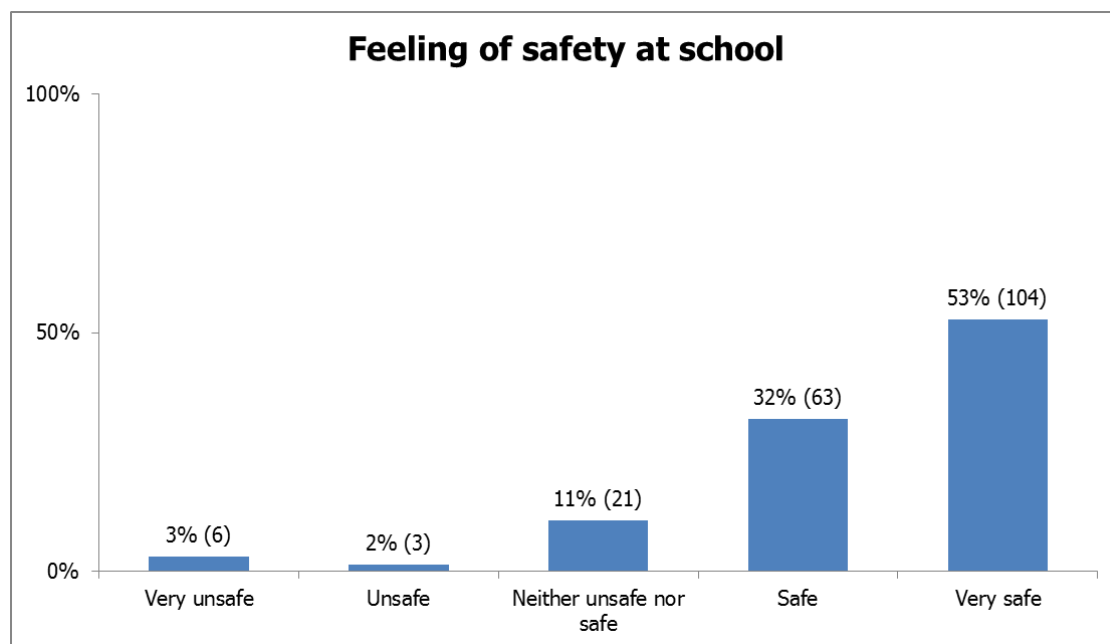


Figure A2.19: Students' feeling of safety at school

When looking more closely at the different parts of the school and students' feeling of safety (see Figure A2.20), we see that:

- **83% of students always or often feel safe when using the toilet facilities inside the school buildings.** 10% of boys and girls rarely feel safe and 4% never feel safe when using the toilet facilities. The students that never feel safe when using the toilet facilities are both male (6.5% of male students) and female (2% of female students) students. Similarly, but with a decreasing tendency, **65% of students feel safe when using the toilet facilities outside the school buildings yet I within the school grounds**, 10% of boys and girls rarely feel safe and 4% never feel safe there. The 6% that never feel safe are both male (2% of male students) and female (5% of female students).
- **93% of students always or often feel safe in the learning spaces in the school.** 7% of students (exclusively female students) rarely or never feel safe there.
- **92% of students always or often feel safe in other parts of the school buildings.** 7% of students rarely or never feel safe. Similarly, **90% of students always or often feel safe in other parts of the school grounds**, while 6% of the boys and girls rarely feel safe and 2% never feel safe.

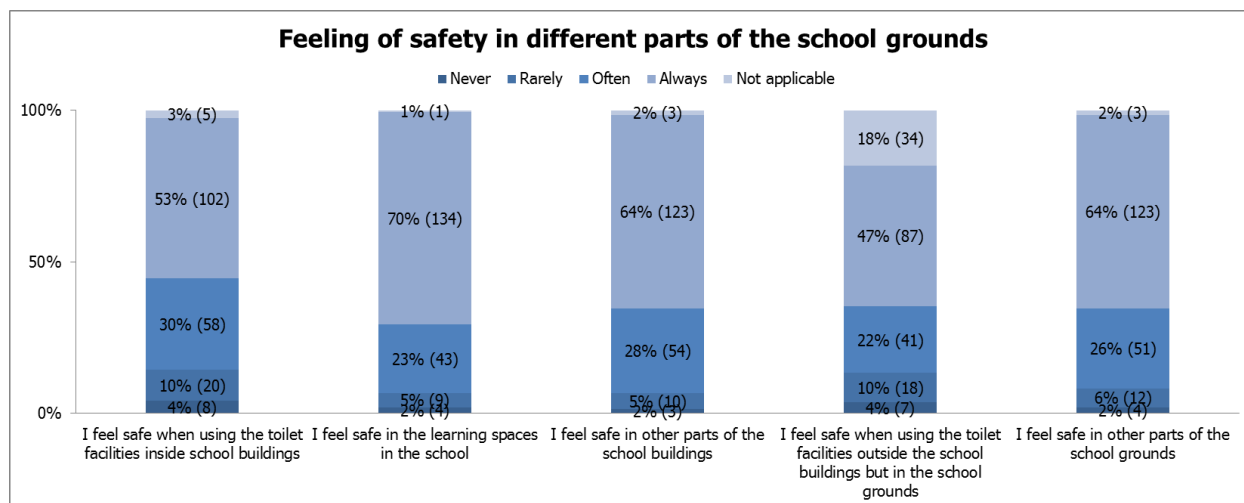


Figure A2.20: Feeling of safety in different parts of the school grounds

Key findings: Students' feeling of safety at school

Students in the six schools generally feel safe at school, a feeling equally shared by boys and girls. When looking at specific areas of the school and students' feeling of safety, students feel least safe in the toilet facilities outside the school building.

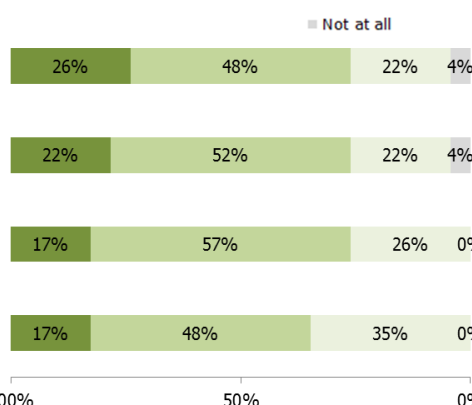
A2.4.4 Perception of learning environments

Studies carried out in the UK (PricewaterhouseCoopers, 2003) and in New Zealand (ACNielsen, 2004) indicate strong links between the physical learning environment and student, teacher and parent perceptions. For example, lack of maintenance and care for appearance has a downward effect in terms of how students, teachers and communities perceive their school in the long run (Plank, Bradshaw and Young, 2009). Poorly designed and maintained schools, often found in areas of lowest educational achievement, can have a detrimental impact on teacher and student morale and engagement, and impact negatively on aggregate student outcomes (Filardo, 2008). On the other hand, quality-built environments are more likely to attract teachers and retain them (PricewaterhouseCoopers, 2003).

On average, both the school leadership and teachers from the six schools think that the buildings and facilities at their school have an impact on teacher retention and on attracting parents (see Figure A2.21). There is a positive impact on:

- **Making teachers more inclined to stay at their school:** 26% of teachers find that the buildings and facilities have a strong impact on making teachers inclined to stay at the school. 48% of teachers as well as 86% (or five out of six) schools believe that the buildings and facilities have an impact to some extent. One school and 22% of teachers believe that they have minimal impact and 4% of teachers believe they do not impact at all.

The extent to which teachers think that their school buildings have an impact on the following



Extent to which school leadership thinks that their school buildings have an impact on the following

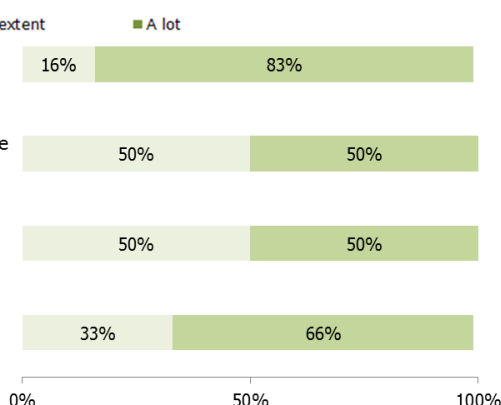


Figure A2.21: Agreement between teachers and school leadership about the impact of the school building

- **Attracting parents looking to place their children in the school:** 22% of teachers believe that the buildings and facilities have a strong impact on attracting parents to a school. 50% (three out of six) of the schools and 52% of teachers believe the buildings and facilities have an impact on parents to some extent. 50% (three out of six) of the schools and 22% of teachers believe that they have minimal impact and 4% of teachers believe they do not impact at all.
- **Making it easier to retain teachers:** 17% of teachers believe that the buildings and facilities have a strong impact on retaining teachers at the school. 50% (three out of six) of the schools and 57% of teachers believe the buildings and facilities have an impact on retaining teachers to some extent. 50% (three out of six) of the schools and 26% of teachers believe they have minimal impact.

- **Making it easier to attract new teachers:** 17% of teachers believe that the buildings and facilities have a strong impact on attracting new teachers to the school. 66% (four out of six) of the schools and 48% of teachers believe the buildings and facilities have an impact on attracting new teachers to some extent. 33% (two out of six) of the schools and 35% of teachers believe this impact is minimal.

These results could be related to the fact that all of the schools show positive results in terms of adaptability, comfort of the spaces and technological equipment.

Key findings: Perception of learning environments

School leadership and teachers find that the school buildings have a positive impact -at least to some extent- on attracting and retaining teachers or attracting parents to the school. The school leadership and teacher responses are an indicator of the rather positive perception that both school leaders and teachers have on their school's physical infrastructure.

A2.4.5 Overall satisfaction with the school facilities

The 218 students and 24 teachers and the six school principals from Norway were requested to answer one final question about their overall satisfaction with the school facilities.

Students were asked how satisfied they generally were with the spaces they use for learning. Teachers were asked how satisfied they generally were with the spaces/rooms in which they teach, and school principals were asked how satisfied they generally were with the spaces of their school. All respondents were requested to rate their satisfaction on a scale from 1 (unsatisfied) to 7 (satisfied).

On average, students were satisfied by 73% with the spaces for learning, teachers were satisfied by 61% and school leadership by 60% (see Figure A2.22). However, this varies across the schools. For example, for School 006.NOR.2016 school leadership showed a higher satisfaction rate than students and teachers (86%).

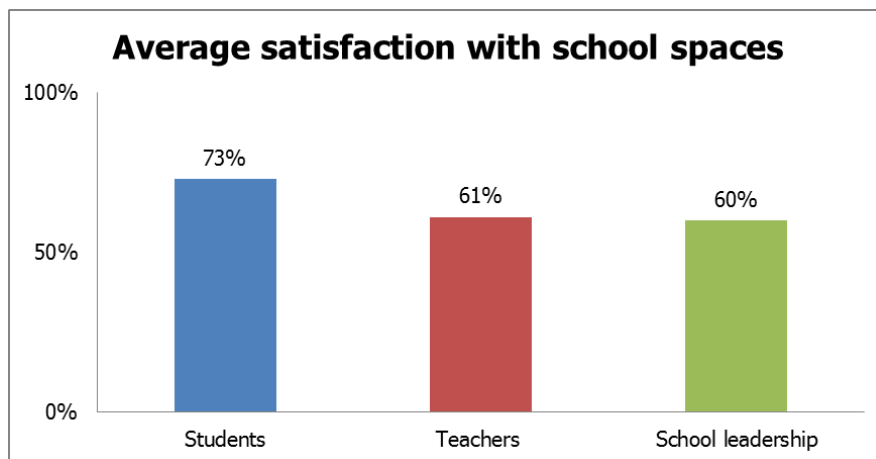


Figure A2.22: Average satisfaction with school spaces

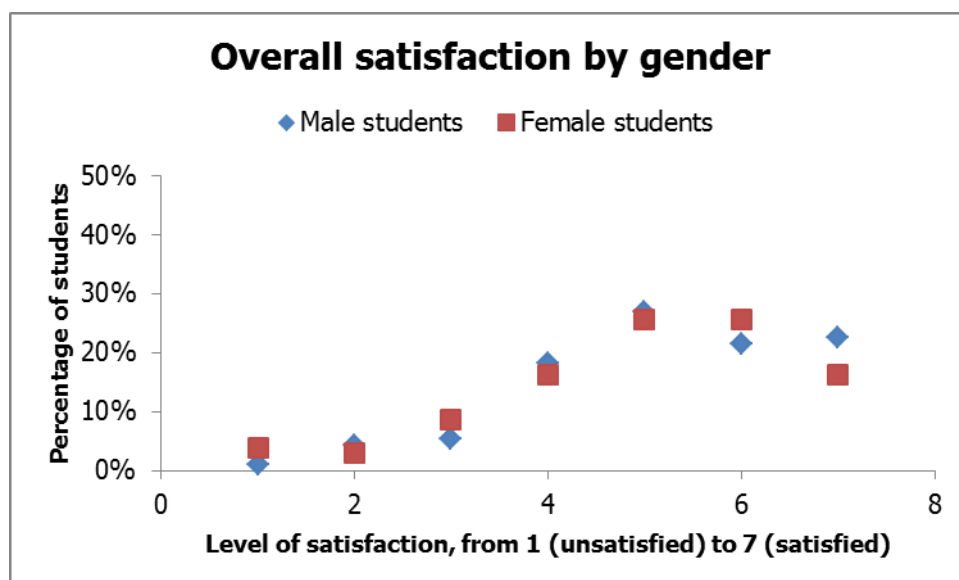


Figure A2.23: Student overall satisfaction by gender

When looking more closely at student overall satisfaction by gender, the data reveal that on average male students are slightly more satisfied with the school buildings (see Figure A2.23). 72% of male and 68% of female students are satisfied, 18% of male students and 16% of female

students are neither satisfied nor unsatisfied, and 10% of male and 16% of female students were unsatisfied.

When looking more closely at teacher overall satisfaction by gender and age, the data reveals that female and male teachers are approximately equally satisfied with the school spaces, with female teachers being slightly more satisfied (63%) than male teachers (60%).

Key findings: Overall satisfaction with the school facilities

Overall, all respondents to the survey -school leadership, teachers and students- are satisfied with their school's facilities. Overall satisfaction with the school facilities can be influenced by many different factors but a few can be highlighted based on the data and analysis in this report.

It appears that student overall satisfaction is linked to the existence of a wide variety of learning spaces within the school grounds that can be used for different purposes, including for learning or leisure activities. Students are offered not just classrooms/clusters of rooms but also specialised rooms, such as for science or design related work, a library, spaces for quiet work or group work, a school canteen, a gym, outside spaces for learning and play and spaces where they can leave their belongings (e.g. lockers). The design of most of the schools is functional and they are all well-equipped in terms of technology, which allows students, for example, to have internet access at the school. Furthermore, students' responses in terms of their comfort and safety in the spaces are positive. Students generally feel that the temperature, quality of natural light, acoustics, visual and air quality and comfort of chair's and desks are good.

Similarly to students, teacher overall satisfaction seems to be related to the availability of a wide variety of spaces with different functionalities, connectivity in the school and comfort in the spaces.

A2.5 Comparative Report Conclusions

Looking at the findings from the different schools in this report as well as research, some good examples in terms of the physical learning environment can be highlighted. These can inspire school renovation efforts as well as, to a lesser extent, future school construction efforts.

Flexible Learning Environments

School 006.NOR.2016 is a good example of space flexibility and of how to create layouts that support a diversity of instructional methods. The majority of teachers in this school reported that they found it easy to move the furniture in the school spaces and that they frequently adapted the layouts to suit their preferred instruction methods. Although they use a variety of teaching methods, they make use of some more often than others, i.e. teachers use student group work and team teaching methods slightly more often than explicit instruction or independent student work. Analysis conducted in the context of OECD's Teaching and Learning International Survey (TALIS) and the Programme for International Student Assessment (PISA) shows that using a variety of teaching methods, each of which is targeted to specific student outcomes, is most effective. Moreover, the more a teacher collaborates with other teachers in the school, the more he or she tends to regularly use learning strategies that have a positive effect on student outcomes (Le Donné et al, 2016).

Supportive school leadership and school climate

School 006.NOR.2016 also provides a good example of how school leadership and school climate have a positive influence on how teachers use space. Teachers in this school reported that:

- the design of the school buildings and learning spaces encourages collaboration between teachers,
- school leaders encourage teachers to experiment with different ways of using the learning spaces,
- the school buildings and learning spaces suit teachers' preferred teaching practices and allow for a variety of teaching practices, and that
- school leaders and teachers have a shared vision for the optimal use of the school buildings and learning spaces.

Technology

School 002.NOR.2016 is a good example of the integration of technology in the learning spaces, as well as in teaching and learning. Almost all learning spaces are equipped with interactive whiteboards, wireless internet, projectors for sound and vision and all teachers and students have a laptop, either an in-school laptop, or their own device. In terms of frequency of use, teachers in School 002.NOR.2016 reported making use of most forms/types of technology on a daily basis, and of some of them at least once a week. Teachers and students decide on how technology is mobilised in different spaces (Bissell, 2002). Ready access to resources, including to ICT, enables teachers and students to experiment with new learning tools, engage in joint learning experiences and diversify the demonstration of learning (DEECD, 2009).

Comfort

School 002.NOR.2016 is also a good example of the comfort that can be provided in a school. A healthy and comfortable physical learning environment can contribute to both students' and teachers' sense of well-being and their ability to 'concentrate on the task at hand' (Bateman, in press). Teachers and students reported positively on the temperature, air quality, light quality, visual quality, auditory quality, comfort of desks and chairs, finding shade on the school grounds in the summer and, in addition, the majority of students reported feeling safe in different parts of the school grounds.

A2.5.1 Other steps to gain insights about the learning environments

If a school is about to be renovated (or partially renovated), it could be useful, for example, to conduct the LEEP survey before and after the school renovation takes place and after the renovated buildings have been in use for a certain time. Such a pre- and post-evaluation could help show how the renovations impact, for example, the flexibility of the learning environments and instructional methods, comfort and security, the perceived impact of the school facilities on attracting and retaining teachers, change of school culture, e.g. in terms of school leadership's support to use the spaces, etc.

If a school or a local or regional authority is interested in getting more detailed information about how the physical learning environment is linked to learning outcomes in a specific school or in several schools, the LEEP survey could be used along with the PISA based Test for Schools.

Additional actions could be taken, such as organising a meeting / workshop with the schools that took part in the survey to compare findings, look at what works well and adopt successful practices. The above can be referenced in the individual school report.

ANNEX A3

LEEP Questionnaires used for the Field Trial

The following questionnaires are the full versions of the three LEEP questionnaires used for the field trial in Norway in October 2016 [for students, teachers and school principals]. Each questionnaire begins with a short introduction of the LEEP module for the test takers and continues with the actual questions.

A3.1 LEEP Student Questionnaire

LEEP Student questionnaire

INTRODUCTION

Thank you for participating in this study of OECD [Organisation for Economic Cooperation and Development].

Purpose of survey

The questionnaire is part of an international survey by the OECD Learning Environments Evaluation Programme, to gather evidence on the effectiveness of spaces in schools and to find out whether the spaces in schools support 21st century teaching and learning practices.

The information will be used to prepare an international OECD report on how well schools meet student and teachers needs for 21st century learning.

What this questionnaire is about

This questionnaire asks for information about: the spaces in the school that you use; how comfortable you find them, and your safety and well-being.

There is a separate questionnaire for teachers in your school.

Instructions for completing the survey

Please read each question carefully and answer as accurately as you can.

In this questionnaire there are no right or wrong answers. Your answers should be the ones that are right for yourself.

You may ask for help if you do not understand something or if you are not sure how to answer a question.

Your answers will be kept **confidential**. They will be combined with answers from other students to calculate totals and averages from which no single student can be identified.

The questionnaire has 21 questions and it should take about 15 minutes to complete.

Thank you very much for taking part in this survey.

SECTION 1: ABOUT YOU

Q1 Please give the name of your school:

Q2 Please give the country of your school:

Q3 What year level / grade are you in?

Grade 7 ☐_1

Grade 8 ☐_2

Grade 9 ☐_3

Grade 10 ☐_4

Grade 11 ☐_5

Grade 12 ☐_6

Grade 13 ☐_7

Q4 Are you female or male?

Female Male

☐_1

☐_2

SECTION 2: SPACES YOU USE

Q5 During lesson time, which of the following spaces in your school have you used over the last week?
(please select all that apply)

- a) A classroom ☐ ₁
- b) A classroom with direct access to other rooms (a cluster of rooms) ☐ ₂
- c) Space in a corridor outside the classroom ☐ ₃
- d) Library ☐ ₄
- e) Hall/auditorium ☐ ₅
- f) School canteen ☐ ₆
- g) Science laboratory ☐ ₇
- h) A space with furniture or technology specifically for subjects like art, music or design ☐ ₈
- i) A workshop space with furniture for woodwork, metalwork, catering or similar ☐ ₉
- j) If you used other spaces, please tell us here:

Q6 Outside lesson time, which of the following spaces in your school have you used for school work either on your own or with other students over the last week?
(please select all that apply)

- a) A classroom ☐ ₁
- b) A classroom with direct access to other rooms (a cluster of rooms) ☐ ₂
- c) Space in a corridor outside the classroom ☐ ₃
- d) Library ☐ ₄
- e) Hall/auditorium ☐ ₅
- f) School canteen ☐ ₆
- g) Science laboratory ☐ ₇
- h) A space with furniture or technology specifically for subjects like art, music or design ☐ ₈
- i) A workshop space with furniture for woodwork, metalwork, catering or similar ☐ ₉
- j) If you used other spaces, please tell us here:

Q7 During lesson time, which of the following external (outside) spaces in your school have you used over the last week?

(please select all that apply)

- a) An external (outside) classroom or space – usually with seating and directly accessible from a classroom ☐₁
- b) Grassed area (not a sports field) not accessible from a classroom ☐₂
- c) An external (outside) hard ball court / sports court / hard paved area not accessible from a classroom ☐₃
- d) Sports field ☐₄
- e) If you used other types of outside space, please tell us here:

Q8 Outside lesson time when you need to work quietly on your own, can you find somewhere in your school to do so?

Never	Rarely	Often	Always	Not applicable
☐	☐	☐	☐	☐

Q9 Outside lesson time when you need to work with other students (e.g. on a project together) can you find somewhere in your school to do so?

Never	Rarely	Often	Always	Not applicable
☐	☐	☐	☐	☐

Q10 Is there a safe place in the school where you can leave your belongings (e.g. a locker)?

Yes	No
☐ ₁	☐ ₂

SECTION 3: COMFORT

Q11 When it is cold outside, how do you find the temperature in the spaces where you have lessons, or study?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) I usually feel too cold	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) I usually feel too hot	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) I usually feel about right (neither too hot nor too cold)	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q12 When it is hot outside, how do you find the temperature in the spaces where you have lessons, or study?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) I usually feel too cold	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) I usually feel too hot	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) I usually feel about right (neither too hot nor too cold)	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q13 How do you find the quality of the air in the spaces where you have lessons, or study?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) The air is usually fresh	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) The air is usually humid	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q14 How well can you hear in the spaces where you have lessons, or study?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) I can hear the teacher's voice clearly	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) I can hear other students clearly when they are talking to the class	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) I am disturbed by noise from outside the space	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q15 When it is daylight outside, how do you find the quality of natural light in the spaces where you have lessons, or study?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) It is usually too bright	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) It is usually too dark	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) It is usually about right (neither too bright nor too dark)	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q16 In the different spaces that you use, can you see what is displayed without difficulty?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces	N/A (Not applicable)
a) I can see what is drawn or written on the whiteboard/chalkboard without difficulty I can see what is displayed on the display	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
b) screen (e.g. LCD screen; TV screen; projection screen) without difficulty When the teacher is using apparatus for a	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
c) demonstration, I can see the demonstration without difficulty	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅

Q17 How comfortable are the desks/tables and chairs in the spaces you use?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) The chairs are comfortable to sit in	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) I can adjust the height of the chairs	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) The tables/desks are the right height for me to work at	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q18 During sunny weather, when you are outside in the school grounds, can you find somewhere in the shade?

Never
☐

Rarely
☐

Often
☐

Always
☐

SECTION 4: SAFETY AND WELL-BEING

Q19 In general, do you feel safe in your school?

Very unsafe					Very safe
1	2	3	4	5	
☐	☐	☐	☐	☐	

Q20 Do you feel safe (i.e. not embarrassed or afraid) in different parts of the school and grounds?

(Please tick one box in each row)

	Never	Rarely	Often	Always	N/A (Not applicable)
a) I feel safe when using the toilet facilities inside school buildings	☐ _1	☐ _2	☐ _3	☐ _4	☐ _5
b) I feel safe in the learning spaces in the school	☐ _1	☐ _2	☐ _3	☐ _4	☐ _5
c) I feel safe in other parts of the school buildings	☐ _1	☐ _2	☐ _3	☐ _4	☐ _5
d) I feel safe when using the toilet facilities outside the school buildings but in the school grounds	☐ _1	☐ _2	☐ _3	☐ _4	☐ _5
e) I feel safe in other parts of the school grounds	☐ _1	☐ _2	☐ _3	☐ _4	☐ _5

SECTION 5: OVERALL SATISFACTION

Q21

Unsatisfied

In general, how satisfied are you with the spaces you use for learning?

Satisfied

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

A3.2 LEEP Teacher Questionnaire

LEEP Teacher questionnaire

INTRODUCTION

Thank you for participating in this study of OECD [Organisation for Economic Cooperation and Development].

Purpose of survey

The questionnaire is part of an international survey by the OECD Learning Environments Evaluation Programme, to gather evidence on the effectiveness of spaces in schools and to find out whether the spaces in schools support 21st century teaching and learning practices.

The findings will be used to compile an international OECD report on the effectiveness of schools to meet the demands of teaching and learning, as well as providing insights for schools taking part in the survey on where they might focus improvement on their specific school buildings.

Focus of this Questionnaire

This questionnaire primarily addresses the flexibility of the teaching spaces that you use and whether they support your teaching practice. It also asks about the IT available in the classrooms you use, and generally how satisfied you are with the spaces in the school for teaching.

A separate student questionnaire focuses on how the school building supports student learning needs.

Instructions for completion

For this questionnaire you will normally answer by checking a box. In some questions you also have the option of adding a comment or stating an alternative. Please answer the current questionnaire taking into account the subject that you spend most of your time teaching.

Your answers will be kept **confidential**. They will be combined with answers from other schools to calculate totals and averages from which no single school or school principal can be identified.

The questionnaire has 30 questions and it should take about 15-20 minutes to complete.

Thank you very much for taking part in this survey.

SECTION 1: ABOUT YOU

Q1 Please give the name of your school

Q2 Please give the country of your school

Q3 Are you female or male?

Female Male
☐₁ ☐₂

Q4 When were you born?

(Please write the year you were born)
19____
Year

Q5 How many years of work experience do you have?

- | | | |
|--|-------|-------|
| a) Year(s) working as a teacher at this school. | _____ | Years |
| b) Year(s) working as a teacher in total. | _____ | Years |
| c) Year(s) working in other education roles (<i>do not include years working as a teacher</i>) | _____ | Years |
| d) Year(s) working in other jobs | _____ | Years |

Q6 Is your current employment as a teacher full-time or part-time?

- | | |
|--|---------------------------------------|
| a) Full time. | ☐ ₁ |
| b) Part time (equivalent to three days or more). | ☐ ₂ |
| c) Part time (equivalent to less than three days). | ☐ ₃ |

Q7 What subject(s) are you teaching this term/year?

(If you teach more than one subject, please list subjects in order from the one you spend most time teaching to the one you spend least time teaching)

- a)
b)
c)
d)

Q8 What grades are you teaching this term/year?

(please select all that apply)

- | | |
|------------|---------------------------------------|
| <Grade 7> | ☐ ₁ |
| <Grade 8> | ☐ ₂ |
| <Grade 9> | ☐ ₃ |
| <Grade 10> | ☐ ₄ |
| <Grade 11> | ☐ ₅ |
| <Grade 12> | ☐ ₆ |
| <Grade 13> | ☐ ₇ |

SECTION 2: ABOUT YOUR SCHOOL

Q9 To what extent do you agree with the following statements about your school's leadership and learning environment?

(Please tick one box in each row)

	Strongly agree	Agree	Disagree	Strongly disagree
a) School leaders* and teachers have a shared vision about how best to use the school buildings and learning spaces.	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) School leaders* encourage teachers to experiment with different ways of using the learning spaces we have.	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) The design of the school buildings and learning spaces encourages collaboration with other teachers.	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d) The design of the school buildings and learning spaces encourages the use of a variety of teaching practices.	☐ ₁	☐ ₂	☐ ₃	☐ ₄
e) The school buildings and learning spaces suit my preferred teaching practice.	☐ ₁	☐ ₂	☐ ₃	☐ ₄
f) Our school timetabling enables us to make the most of the learning spaces we have.	☐ ₁	☐ ₂	☐ ₃	☐ ₄
g) I am provided with time to plan collaboratively with other teachers.	☐ ₁	☐ ₂	☐ ₃	☐ ₄
h) Teachers are provided with time to plan how best to use the school learning spaces	☐ ₁	☐ ₂	☐ ₃	☐ ₄

*Note: School leaders include the school principal, deputy principal and heads of department.

Q10 To what extent do you think the buildings and facilities at your school have an impact on the following:

(Please tick one box in each row)

	Not at all	Very little	To some extent	A lot
a) Make you more inclined to stay at this school?	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) Make it easier to attract new teachers?	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) Make it easier to retain teachers?	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d) Attract parents looking to place their children in this school?	☐ ₁	☐ ₂	☐ ₃	☐ ₄

SECTION 3: THE SPACES YOU USE

Q11 Do you usually use only one classroom?

Yes ☐₁

No ☐₂

Q12 How many teachers (including you) are usually in the classroom/space during a class?

1 ☐₁

2 ☐₂

3 ☐₃

4 or more ☐₄

Q13 How many students are usually in a class?

Number of students: _____

Q14 In a typical week, approximately how often do you use the following types of spaces/rooms in which you teach?

(Please tick one box in each row)

	Never	Once a week	2 to 4 times a week	Everyday
a) A classroom	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) A classroom with direct access to other rooms (a cluster of	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) Space in a corridor outside the classroom	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d) Library	☐ ₁	☐ ₂	☐ ₃	☐ ₄
e) Hall/ auditorium	☐ ₁	☐ ₂	☐ ₃	☐ ₄
f) School canteen	☐ ₁	☐ ₂	☐ ₃	☐ ₄
g) Science laboratory	☐ ₁	☐ ₂	☐ ₃	☐ ₄
h) A space with furniture or technology specifically for subjects like art, music or design	☐ ₁	☐ ₂	☐ ₃	☐ ₄
i) A workshop space with furniture for woodwork, metalwork, catering or similar	☐ ₁	☐ ₂	☐ ₃	☐ ₄
j) If you use other types of space, please briefly describe here:	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q15 Over a year, approximately how often do you use external (outside) spaces at your school during class time?

(Please tick one box in each row)

	Never or hardly ever	1 to 3 times a month	Once a week	2 to 4 times a week	Everyday
a) An external (outside) classroom or space – usually with seating and directly accessible from a classroom	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
b) Grassed area (not a sports field) not accessible from a classroom	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
c) An external (outside) hard ball court / sports court / hard paved area not accessible from a classroom	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
d) Sports field	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
e) If you use other types of outside space in the school grounds, please briefly describe here:	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅

SECTION 4: COMFORT

Q16 When it is cold outside, how do you find the temperature in the spaces/rooms in which you teach?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) I usually feel too cold	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) I usually feel too hot	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) I usually feel about right (neither too hot nor too cold)	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q17 When it is hot outside, how do you find the temperature in the spaces/rooms in which you teach?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) I usually feel too cold	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) I usually feel too hot	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) I usually feel about right (neither too hot nor too cold)	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q18 Are you able to control any of the following in the spaces/rooms in which you teach?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) I can control heating	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) I can control air conditioning	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) I can control glare (e.g. through blinds on windows)	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d) I can control lighting	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q19 How do you find the quality of the air in the spaces/rooms in which you teach?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) The air is usually fresh	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) The air is usually humid	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q20 When it is daylight outside, how do you find the quality of natural light in the spaces/rooms in which you teach?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) It is usually too bright	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) It is usually too dark	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) It is usually about right (neither too bright nor too dark)	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q21 How well can you hear in the spaces/rooms in which you teach?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) I can hear the students clearly when they speak	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) I am disturbed by sounds inside the space (such as air-conditioning)	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) I am disturbed by noise from outside the space	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d) Sound echoes too much in the classroom	☐ ₁	☐ ₂	☐ ₃	☐ ₄

SECTION 5: TECHNOLOGY AT THE SCHOOL

Q22 Are the following technologies available in the spaces/rooms in which you teach?

(Please tick one box in each row)

	In all of the spaces	In most of the spaces	In a few of the spaces	In none of the spaces
a) Interactive whiteboard	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) Wireless internet access	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) The ability to project sound and vision for a group of students (such as a projector or large TV with audio)	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d) In-school laptops/ note books (stored in that room)	☐ ₁	☐ ₂	☐ ₃	☐ ₄
e) Desktop computers	☐ ₁	☐ ₂	☐ ₃	☐ ₄
f) Tablets	☐ ₁	☐ ₂	☐ ₃	☐ ₄

If you use other types of technologies, please briefly describe here:

Q23 How often do you use the following technologies in the spaces/rooms in which you teach?

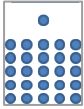
(Please tick one box in each row)

	Never or hardly ever	to 3 times a month	Once a week	to 4 times a week	Everyday
a) Interactive whiteboard	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
b) Wireless internet access	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
c) The ability to project sound and vision for a group of students (such as a projector or large TV with audio)	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
d) In-school laptops/ note books (stored in that room)	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
e) Desktop computers	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
f) Tablets	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅

If you use other types of technologies in the school grounds, please briefly describe here:

SECTION 6: ARRANGEMENT OF THE SPACE

The following spatial layout types are referred to in the questions in this section (Questions 23 - 27):



Presentation:

Layouts that support explicit instruction/presentation to the whole group.



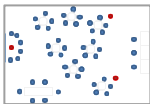
Group:

Layouts that support approaches where students are required to collaborate and work in small groups to share ideas and help each other.



Individual:

Layouts that support approaches where students work independently to write, read, research, think and reflect.



Team teaching:

Layouts that support approaches where two or more teachers work collaboratively with groups of students sharing the same space.

Q24 Thinking about your current teaching, how often do you use the following spatial arrangements?

(Please tick one box in each row)

	Never or hardly ever	1 to 3 times a month	Once a week	2 to 4 times a week	Everyday
a) Layouts that support explicit instruction/ presentation	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
b) Layouts that support students working in small groups	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
c) Layouts that support students working independently	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
d) Layouts that support team teaching	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
e) Other	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅

If you use other types of spatial arrangements, please briefly describe here:

Q25 Thinking about the spaces/rooms in which you teach, how often do you:

(Please tick one box in each row)

	Never or hardly ever	1 to 3 times a month	Once a week	2 to 4 times a week	Everyday
Need to rearrange tables, chairs or other aspects of the					
a) space (e.g. sliding partitions) prior to the start of a lesson (because a previous user had them in a different position)?	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
Change the layout of the space for different classes,					
b) according to activities you had planned? (e.g. re-configure table layout, move sliding partitions)	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
c) Rearrange the layout of a space during a class? (e.g. tables and chairs get moved into different positions)	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
d) Encourage students to move furniture during class to suit group formation or participation in activities?	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
e) Encourage students to move around a space during a class?	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅

Q26 Thinking about the spaces/rooms in which you teach and what supports or hinders the use of different spatial settings, how much do you agree with the following statements?

(Please tick one box in each row)

	Strongly disagree	Disagree	Agree	Strongly agree
a) It is easy to move the furniture	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) There is enough time to rearrange the furniture before classes begin	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) There is enough space to arrange the furniture in different ways	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d) The furniture can easily be moved during lesson time	☐ ₁	☐ ₂	☐ ₃	☐ ₄
e) It is easy to move the technology such as data projectors and white boards to support different furniture arrangements	☐ ₁	☐ ₂	☐ ₃	☐ ₄

Q27 When you need to, in what proportion of the spaces/rooms in which you teach can you quickly (in less than 5 minutes) rearrange the furniture to create any of the following arrangements?

(Please tick one box in each row)

	In none of them	In very few (up to 25%) of them	In some (between 25 and 50%) of them	In many (between 50 and 75%) of them	In most (over 75%) of them
a) Layouts that support explicit instruction/ presentation	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
b) Layouts that support students working in small groups	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
c) Layouts that support students working independently	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
d) Layouts that support team teaching	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
e) Other (layout that you have identified in Q23e)	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅

Q28 If you could, how often do you think that you would use any of the following spatial arrangements for teaching?

(Please tick one box in each row)

	Never or hardly ever	1 to 3 times a month	Once a week	2 to 4 times a week	Everyday
a) Layouts that support explicit instruction/ presentation	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
b) Layouts that support students working in small groups	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
c) Layouts that support students working independently	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
d) Layouts that support team teaching	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
e) Other (layout that you have identified in Q23e)	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅

SECTION 7: SPACE FOR ADMINISTRATIVE WORK AND CLASS PREPARATION

Q29 How satisfied are you with the provision of:

(Please tick one box in each row)

	Unsatisfied				Satisfied
	1	2	3	4	5
a) A quiet space for you to work in the school before or after lessons	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
b) Spaces that staff can use for socialising and conversation with other staff	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
c) Meeting rooms	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅

SECTION 8: OVERALL SATISFACTION

Q30 In general, how satisfied are you with the the spaces/rooms in which you teach?

Unsatisfied							Satisfied
1	2	3	4	5	6	7	
☐	☐	☐	☐	☐	☐	☐	

A3.3 LEEP School Questionnaire

LEEP School questionnaire

INTRODUCTION

Thank you for participating in this study of OECD [Organisation for Economic Cooperation and Development].

Purpose of survey

The questionnaire is part of an international survey by the OECD Learning Environments Evaluation Programme, to gather evidence on the effectiveness of spaces in schools and to find out whether the spaces in schools support 21st century teaching and learning practices.

The information will be used to prepare an international OECD report on how well schools meet student and teachers needs for 21st century learning.

What this questionnaire is about

This questionnaire asks for background information on your school, as well as information about the allocation of spaces and use of technology.

There is a separate questionnaire for students and teachers in your school.

Instructions for completing the survey

Please read each question carefully and answer as accurately as you can.

Your answers will be kept **confidential**. They will be combined with answers from other students to calculate totals and averages from which no single student can be identified.

The questionnaire has 14 questions and it should take about 10 minutes to complete.

Thank you very much for taking part in this survey.

SECTION 1: THE STRUCTURE & ORGANISATION OF THE SCHOOL

Q1 Please give the name of your school

Q2 Please give the country of your school

Q3 Is your school a public or a private school?

(Please tick only one box)

A public school

☐₁

(This is a school managed directly or indirectly by a public education authority, government agency, or governing board appointed by government or elected by public franchise.)

A private school

☐₂

(This is a school managed directly or indirectly by a non-government organisation; e.g. a church, trade union, business, or other private institution.)

Q4 About what percentage of your total funding for a typical school year comes from the following sources?

(Please write a number in each row. Write 0 (zero) if no funding comes from that source.)

%

a) Government (includes departments, local, regional, state and national)

b) Student fees or school charges paid by parents

c) Benefactors, donations, bequests, sponsorships, parent fund raising

d) Other

Total 100%

Q5 Student numbers: What is the current total number of students enrolled in each year level

Total

Year 7

Boys _____

Girls _____

Year 8

Boys _____

Girls _____

Year 9

Boys _____

Girls _____

Year 10

Boys _____

Girls _____

Year 11

Boys _____

Girls _____

Year 12

Boys _____

Girls _____

Year 13

Boys _____

Girls _____

Q6 Which of the following definitions best describes the community in which your school is located?

(Please tick only one box)

a) A village, hamlet or rural area (fewer than 3 000 people)

☐₁

b) A small town (3 000 to about 15 000 people)

☐₂

c) A town (15 000 to about 100 000 people)

☐₃

d) A city (100 000 to about 1 000 000 people)

☐₄

e) A large city (with over 1 000 000 people)

☐₅

SECTION 2: THE PHYSICAL ENVIRONMENT OF THE SCHOOL

Q7 What proportion of the school's classrooms/ learning spaces are in:

- | | |
|---|---------|
| a) Temporary buildings used for 3 years or less | _____ % |
| b) Temporary buildings used for 4 years or more | _____ % |
| c) Buildings (not temporary) up to 5 years old | _____ % |
| d) Buildings 6-10 years old | _____ % |
| e) Buildings older than 10 years but renovated in the last 10 years | _____ % |
| f) Buildings older than 10 years but not renovated | _____ % |
| Total | 100 % |

Q8 How are classrooms/learning spaces usually allocated?

(Please tick as many as appropriate for your school)

- | | |
|---|---------------------------------------|
| a) Most teachers are allocated the same classroom for all subjects. | ☐ ₁ |
| b) Most teachers are allocated the same learning space/classroom for a given subject for at least a semester (e.g. Room A for English, Room C for history). | ☐ ₂ |
| c) Most teachers use many different classrooms as allocated, for different subjects and/or year levels. | ☐ ₃ |
| d) Most teachers teach collaboratively (team teach) and share spaces designed for larger, single year-level groups. | ☐ ₄ |
| e) Most teachers teach collaboratively (team teach) and share spaces designed for larger, multi-year-level groups. | ☐ ₅ |

Q9 To what extent do you agree with the following statements about your school's leadership and learning environment?

(Please tick one box in each row)

- | | Strongly agree | Agree | Disagree | Strongly disagree |
|--|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| a) School leaders* and teachers have a shared vision about how best to use the school buildings and learning spaces. | ☐ ₁ | ☐ ₂ | ☐ ₃ | ☐ ₄ |
| b) School leaders* encourage teachers to experiment with different ways of using the learning spaces we have. | ☐ ₁ | ☐ ₂ | ☐ ₃ | ☐ ₄ |
| c) The design of the school buildings and learning spaces encourages collaboration with other teachers. | ☐ ₁ | ☐ ₂ | ☐ ₃ | ☐ ₄ |
| d) The design of the school buildings and learning spaces encourages the use of a variety of teaching practices. | ☐ ₁ | ☐ ₂ | ☐ ₃ | ☐ ₄ |
| e) The school buildings and learning spaces suit my preferred teaching practice. | ☐ ₁ | ☐ ₂ | ☐ ₃ | ☐ ₄ |
| f) Our school timetabling enables us to make the most of the learning spaces we have. | ☐ ₁ | ☐ ₂ | ☐ ₃ | ☐ ₄ |
| g) I am provided with time to plan collaboratively with other teachers. | ☐ ₁ | ☐ ₂ | ☐ ₃ | ☐ ₄ |
| h) Teachers are provided with time to plan how best to use the school learning spaces | ☐ ₁ | ☐ ₂ | ☐ ₃ | ☐ ₄ |

*Note: School leaders include the school principal, deputy principal and heads of department.

Q10 To what extent do you think the buildings and facilities at your school have an impact on the following:

(Please tick one box in each row)

	Not at all	Very little	To some extent	A lot
a) Make teachers more inclined to stay at the school?	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b) Make it easier to attract new teachers?	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c) Make it easier to retain teachers?	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d) Attract parents looking to place their children in school?	☐ ₁	☐ ₂	☐ ₃	☐ ₄

SECTION 3: TECHNOLOGY AT THE SCHOOL

Q11 What proportion of classrooms/learning spaces are equipped with (or can easily access) the following?

- | | |
|--|---------|
| a) Interactive whiteboard | _____ % |
| b) Wireless Internet access | _____ % |
| c) The ability to project sound and vision for a class of students (such as a projector or large TV, with audio) | _____ % |
| d) In-school laptops/netbooks (stored in that room) | _____ % |
| e) Desktop computers | _____ % |
| f) Charge points (for mobile devices) | _____ % |
| g) Cabled Internet access | _____ % |
| h) No internet access | _____ % |

Q12 Are students required to bring their own device (leased, bought, or regularly take home a school-owned device)?

(Tick each year level with this requirement)

- | | | | | | |
|----|--------------------------|----|--------------------------|----|--------------------------|
| 7 | ☐ | 8 | ☐ | 9 | ☐ |
| 10 | ☐ | 11 | ☐ | 12 | ☐ |

Q13 What is the speed of the school's internet access?

- | | |
|-------------------|-----------|
| a) Download speed | ____ Mb/s |
| b) Upload speed | ____ Mb/s |
| c) Line Speed | ____ Mb/s |

SECTION 4: OVERALL SATISFACTION

Q14

In general, how satisfied are you with the spaces of your school?

Unsatisfied

1

2

3

4

5

6

7

Satisfied

☐

☐

☐

☐

☐

☐

☐

ANNEX A4

ONLINE SURVEY SCREENSHOTS

The LEEP survey was completed online by all respondents. The user experience of the online survey was partially determined by the OECD LEEP team and primarily by the options and constraints of the online tool itself. Two indicative screenshots follow:

Preview & Test

LEEP Student Questionnaire (01EN)

Introduction

Thank you for participating in this study of OECD [Organisation for Economic Cooperation and Development].

Purpose of survey
The questionnaire is part of an international survey by the OECD Learning Environments Evaluation Programme, to gather evidence on the effectiveness of spaces in schools and to find out whether the spaces in schools support 21st century teaching and learning practices.

The information will be used to prepare an international OECD report on how well schools meet student and teachers needs for 21st century learning.

What this questionnaire is about
This questionnaire asks for information about the spaces in the school that you use, how comfortable you find them, and your safety and well-being.

There is a separate questionnaire for teachers in your school.

Instructions for completing the survey
Please read each question carefully and answer as accurately as you can.

In this questionnaire there are no right or wrong answers. Your answers should be the ones that are right for yourself.

You may ask for help if you do not understand something or if you are not sure how to answer a question.

Your answers will be kept **confidential**. They will be combined with answers from other students to calculate totals and averages from which no single student can be identified.

The questionnaire has 21 questions and it should take about 15 minutes to complete.

Thank you very much for taking part in this survey.

Next

Preview & Test

LEEP Teacher Questionnaire (02EN)

SECTION 2: ABOUT YOUR SCHOOL

9. To what extent do you agree with the following statements about your school's leadership* and learning environment?
(Please tick one box in each row)
*Note: School leaders include the school principal, deputy principal and heads of department. ⓘ

	Strongly agree	Agree	Disagree	Strongly disagree
School leaders* and teachers have a shared vision about how best to use the school buildings and learning spaces.	☐	☐	☐	☐
School leaders* encourage teachers to experiment with different ways of using the learning spaces we have.	☐	☐	☐	☐
The design of the school buildings and learning spaces encourages collaboration with other teachers.	☐	☐	☐	☐
The design of the school buildings and learning spaces encourages the use of a variety of teaching practices.	☐	☐	☐	☐
The school buildings and learning spaces suit my preferred teaching practice.	☐	☐	☐	☐
Our school timetable enables us to make the most of the learning spaces we have.	☐	☐	☐	☐
I am provided with time to plan collaboratively with other teachers.	☐	☐	☐	☐
Teachers are provided with time to plan how best to use the school learning spaces.	☐	☐	☐	☐

10. To what extent do you think the buildings and facilities at your school have an impact on the following:
(Please tick one box in each row) ⓘ

	Not at all	Very little	To some extent	A lot
Make you more inclined to stay at this school?	☐	☐	☐	☐
Make it easier to attract new teachers?	☐	☐	☐	☐
Make it easier to retain teachers?	☐	☐	☐	☐
Attract parents looking to place their children in this school?	☐	☐	☐	☐

Previous Next