



# Human capital and infrastructure: Evaluating the learning environments

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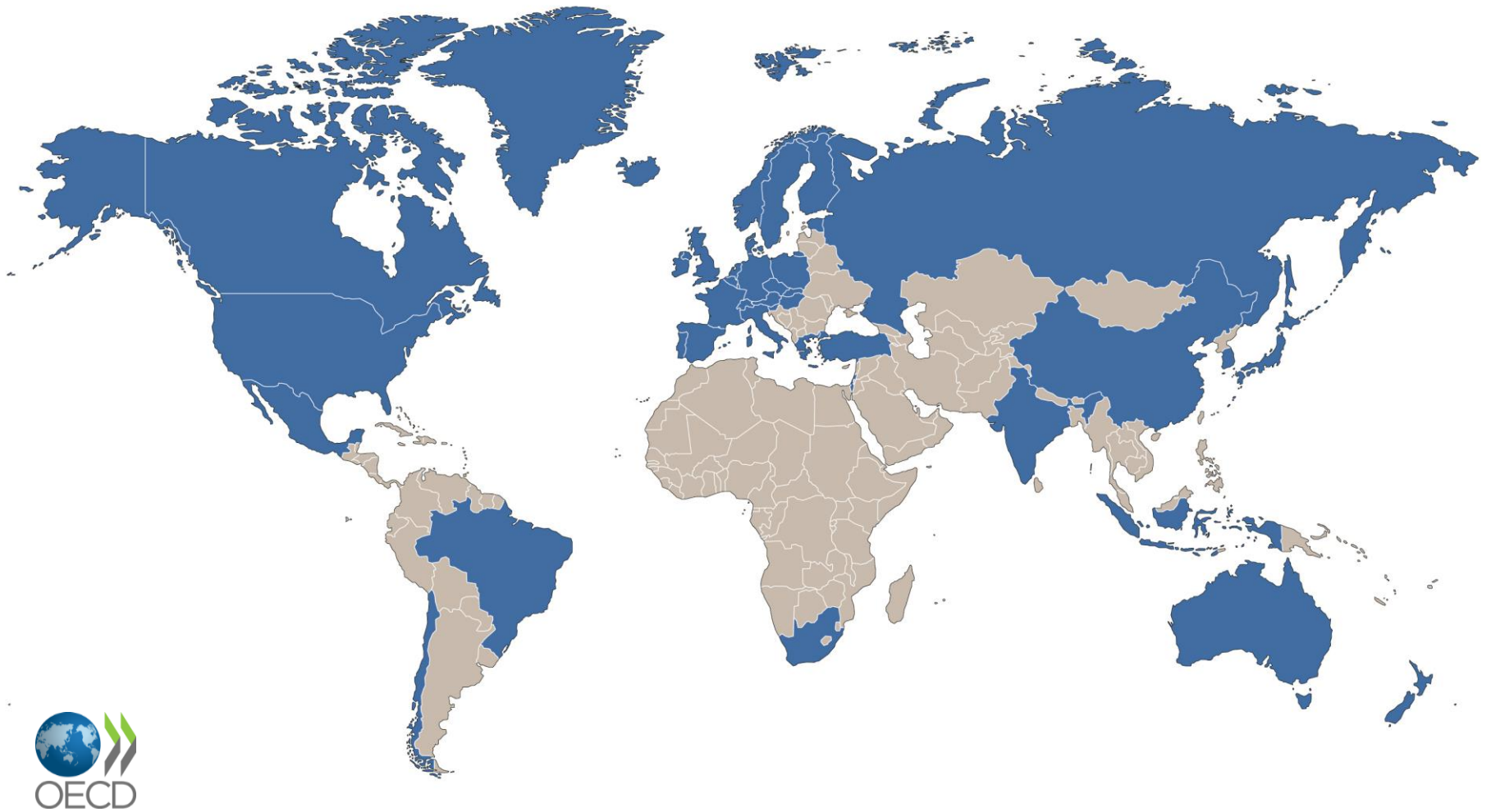
**Infrastructure for the human touch**  
**Successful investments in health and education**  
**European Investment Bank**  
Zagreb, 23 March 2017



## Agenda: Topics covered in this presentation

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- OECD and PISA
- The Funding of School Education (OECD Review of School Resources)
- Learning Environments Evaluation Programme
- LEEP Questionnaire development – LEEP Module field trial
- Earthquake Safety for Schools
- UN Sustainable Development Goals [SDGs]



**35 Member countries**

**Accession countries:** Colombia, Costa Rica, Lithuania

**Ongoing membership talks with** Russia

**Key Partners:** Brazil, China, India, Indonesia, and South Africa



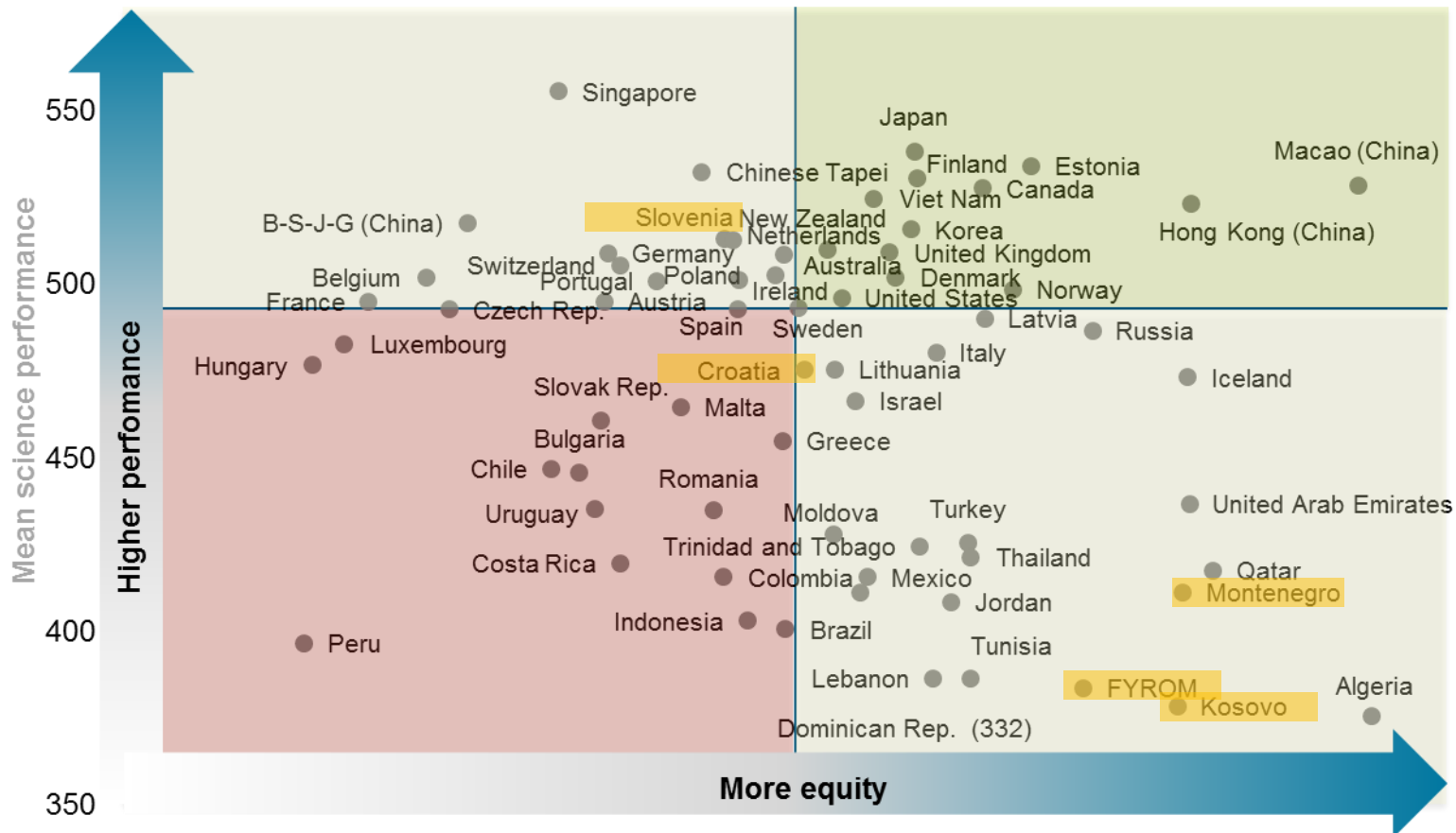
# OECD Directorate of Education and Skills





# Science performance and **equity** in PISA (2015)

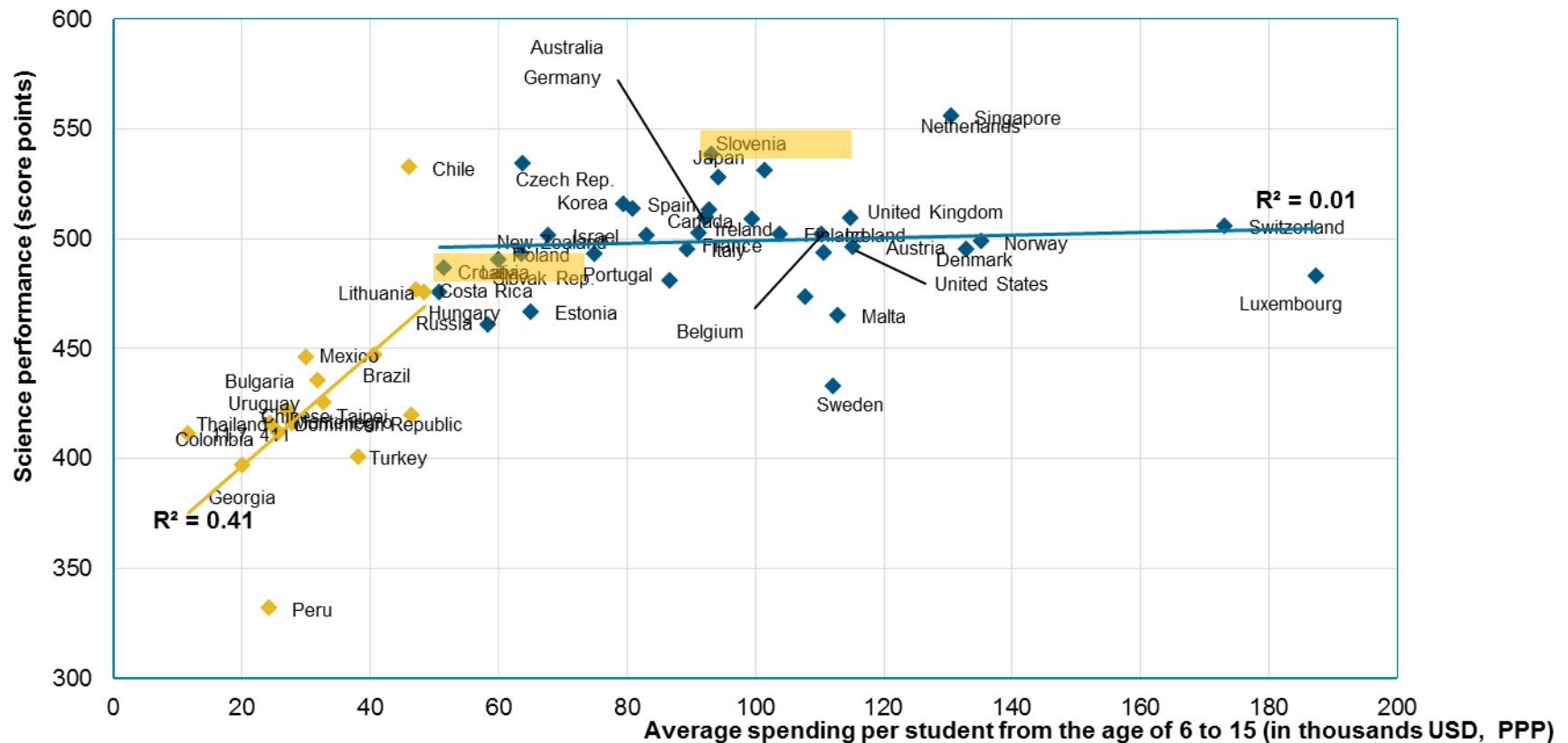
Some countries combine excellence with equity





# Spending per student from the age of 6 to 15 and science performance

Figure II.6.2



# The OECD Review of School Resources



# The OECD School Resources Review

## Purpose and scope

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- **Purposes:**

- Explore what policies best ensure that school resources are effectively used to improve student outcomes
- Develop a comparative perspective on how school systems allocate resources so that they contribute to achieving quality, equity and efficiency objectives
- Provide analysis and policy advice on effective governance, distribution and management of resources

- **Levels of education covered:**

- Pre-primary education (ISCED 0)
- School education (ISCED 1-3), including vocational and pre-vocational education at secondary level

- **Comprehensive approach:**

- The Review looks at a **range of different resource types** including funding, infrastructure and personnel.





# The OECD School Resources Review

## Main thematic areas

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### Three main themes / resource types are covered by the Review

1. **Financial resources** (e.g. funding flows across school systems)
2. **Physical resources** (e.g. school network, infrastructure)
3. **Human resources** (e.g. teachers and school leaders, including use of time)

→ These themes are closely interlinked

→ Individual country reviews can cover all or a selection of these themes

→ Each of the three themes will be addressed in a dedicated thematic comparative report:

*The Funding of School Education* (2017);

*The Organisation of the School Offer* (2018);

*The Management of Human Resources in School Education* (2019).



# The OECD School Resources Review

## Methodology

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1. **Comparative analysis:** develop analytical framework, bring together existing data and research, collect specific qualitative data to fill gaps
  - Country Background Reports
  - Review of research / literature reviews
  - Qualitative data collection
2. **Individual country reviews:** provide tailored policy advice to individual countries based on in-depth country review visits
  - National data and research
  - Review visits
  - External experts
3. **Synthesis:** generate overall policy conclusions based on evidence from the analytic and review phases
  - Meetings of the GNE on school resources
  - Three dedicated synthesis reports
  - Contribution to national and international dissemination events

What is **LEEP**



## What is LEEP

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- **LEARNING ENVIRONMENTS EVALUATION PROGRAMME (LEEP)** was launched in 2013 and it seeks to broaden and re-focus the work of the OECD Centre for Effective Learning Environments (CELE) by examining the relationship between a range of policy levers that shape the learning environment and educational and other outcomes.
- **MISSION:** “To produce **instruments** and **analyses** that inform school leaders, researchers, designers, policymakers and others about how investments in learning environments, including educational spaces and different technologies, translate into **improved learning, health, social and well-being outcomes**, leading to more efficient use of education resources.”



# Definitions & objective

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## Objective:

- To develop the **evidence base** for how the physical learning environment\* impacts on learning by continuing the implementation of the Learning Environments Evaluation Programme (LEEP) evaluation methodology and carry out analysis of existing research, data and literature.
- To create **best practice guidelines supported by toolkits** to assist OECD countries in developing physical learning environments that meet the needs of 21st century learning and guide investment decisions.

\*A physical learning environment is a term used to describe the interplay between the physical resources and complex learning, social, online, and other environments.



## The 3 dimensions defined by LEEP

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The **factors** that lead to successful education outcomes include **3 dimensions** defined by LEEP:

- i) achieving effective learning environments (**effectiveness**),
- ii) enabling more efficient use of space with regard to resource and space planning, use and management (**efficiency**), and
- iii) providing sufficient to meet the minimum requirements to ensure users' comfort, access, health, safety and security (**sufficiency**).



# Effectiveness, Efficiency, Sufficiency

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**Educational effectiveness:** the ability of a school or school system to adequately **accomplish its stated education objectives**. Studies of educational effectiveness analyse whether specific resource inputs have positive effects on outputs, broadly defined (OECD, 2013c).

**Educational efficiency:** the achievement of stated education objectives **at the lowest possible cost**. In other words, efficiency is effectiveness plus the additional requirement that this is achieved in the least expensive manner (OECD, 2013c).

**Educational sufficiency:** the baseline components of the built environment which are considered **necessary conditions** for providing the affordances most likely to impact on student learning (e.g. access to safety, water, natural light, power, heat and technology) in changing demographic, social and political contexts.



## LEEP: explore desired outcomes

Increased  
community  
participation

Improved student  
performance

Less student  
absenteeism

More effective  
and innovative  
teaching



Healthier and happier  
students and teachers

Improved access  
to education

Fewer incidences of  
bullying and negative  
behaviours





# To meet the demands of 21st century skills

**Education systems** are expected to help students **develop:**

## Way of thinking:

- Creativity
- Critical thinking
- Problem-solving

## Way of working:

- Collaboration
- Teamwork
- Adaptability
- Leadership

## Way of living together:

- Curiosity
- Empathy
- Self-esteem
- Resilience

Pedagogy from teaching to learning

## Teaching and teacher centric

- Teacher as knower/expert
- 'Covers' the curriculum
- Knowledge as certain
- Learner **passive**
- Sort learners

## Learner and learning centric

- Teacher facilitates learning
- Engages learner in 'discovering'
- Knowledge as evolving
- Learner **active**
- Developing capabilities to learn for life

**The LEEP module:**

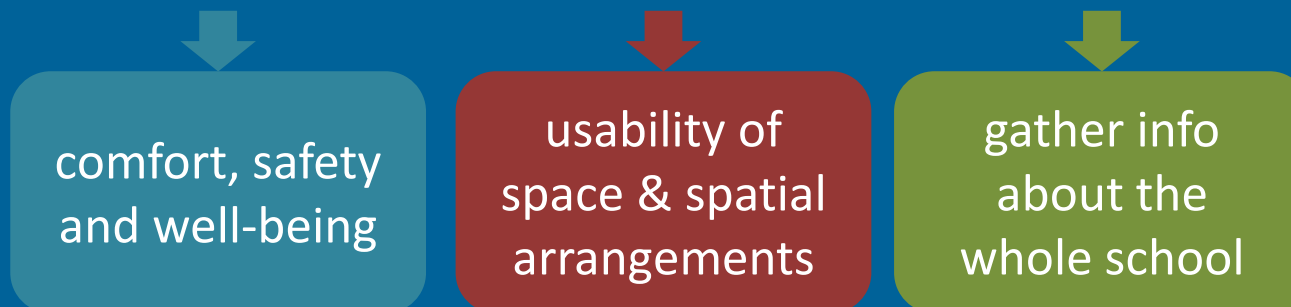
**Developing the questionnaires & the  
field trial**



# Development of LEEP module

LEEP Questionnaires on efficiency, effectiveness and sufficiency		
Student questionnaire	Teacher questionnaire	School questionnaire
21 questions	30 questions	14 questions
5 sections	8 sections	4 sections
Common question about overall satisfaction		

The questionnaires were re-engineered to **focus** on only a few issues.





	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	



# LEEP module **field trial**

## Main facts and figures:

	Planned	
Age group of students:	13-18 year olds	
Number of schools per country:	6-12	
Number of students per school:	50-60	
Total student questionnaires per country:	300-720	
Number of teachers per school:	8-12	
Total teacher questionnaires per country:	48-144	
Total school questionnaires per country:	6-12	

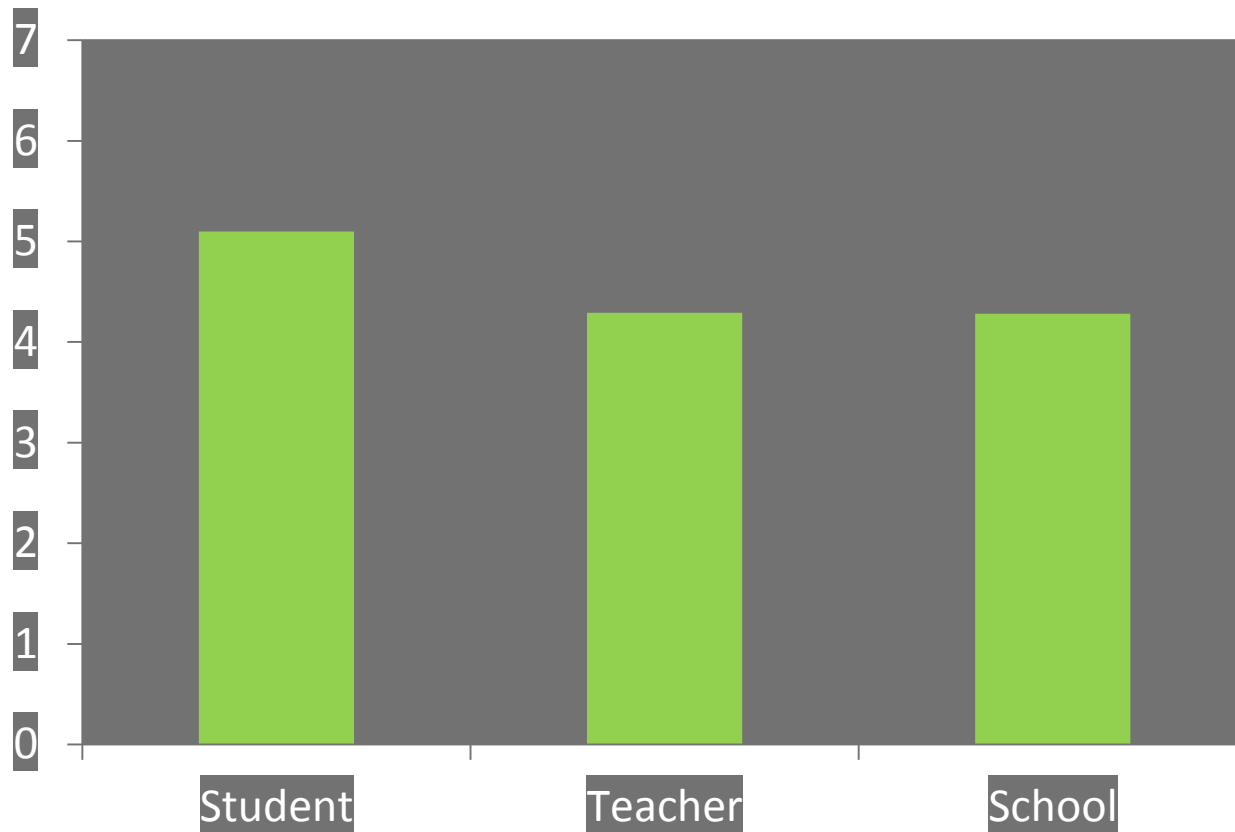
# LEEP field trial:

## Main findings



# Norway Questionnaire results

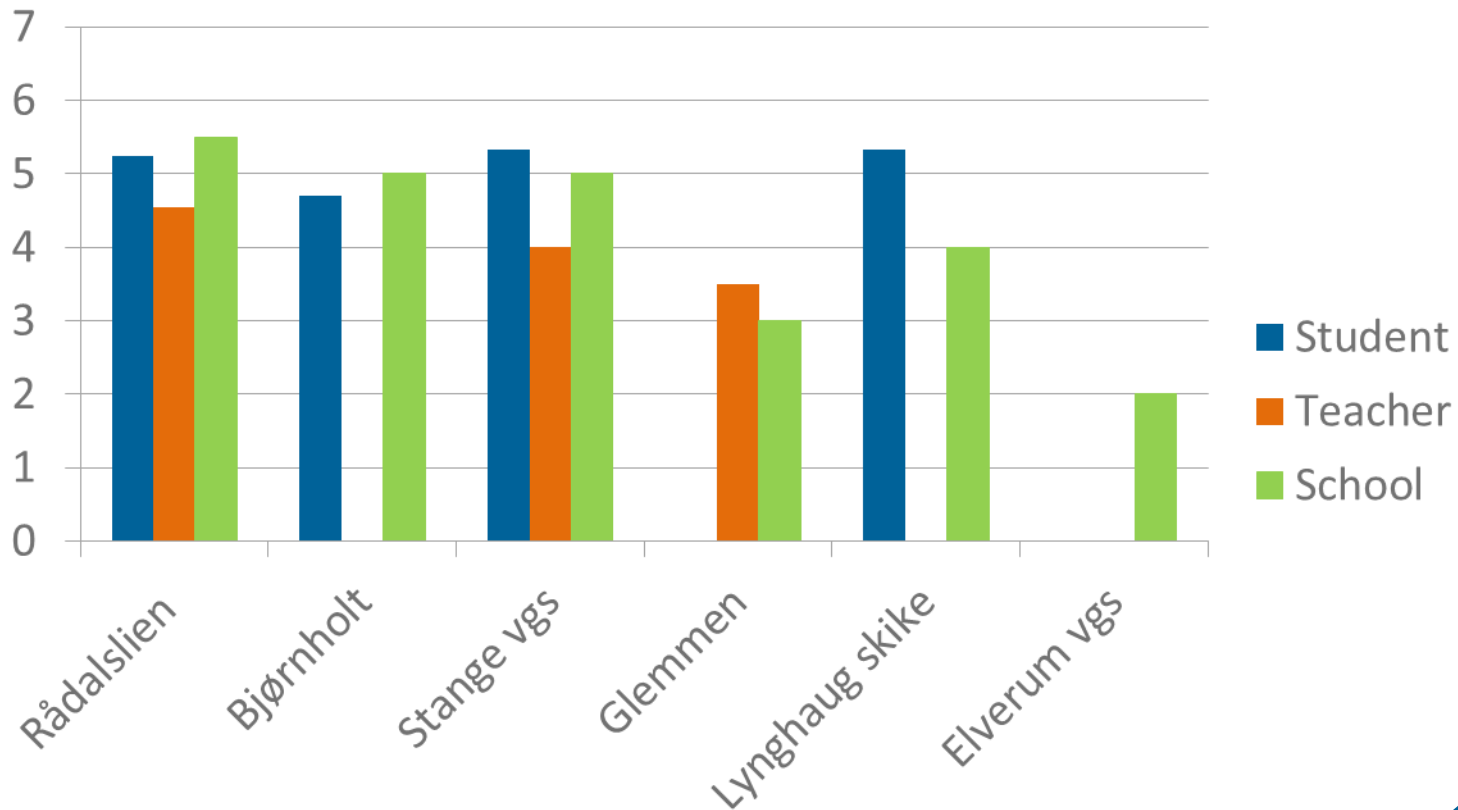
## Overall satisfaction





# Norway Questionnaire results

## Overall satisfaction per school



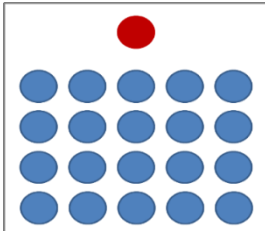




# Teacher questionnaire

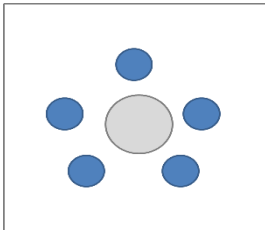
usability of  
space & spatial  
arrangements

## Section 6: Arrangement of the space



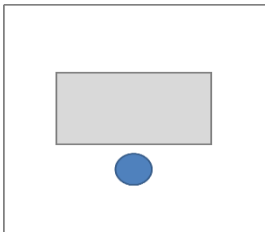
### **Presentation:**

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



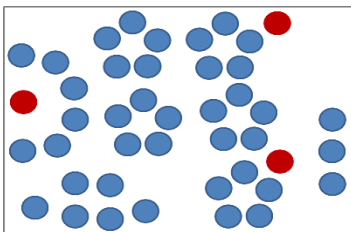
### **Group:**

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.

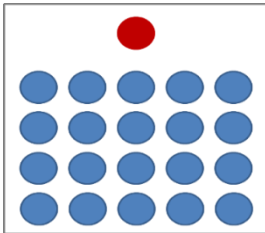


### **Team teaching:**

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

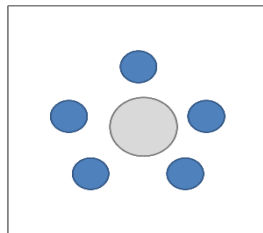


# How easy is it to use the space in different ways?



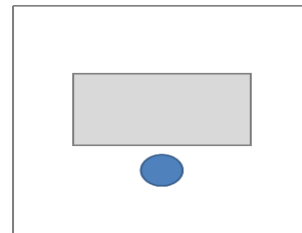
## Presentation:

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



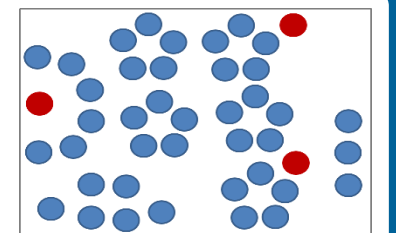
## Group:

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:

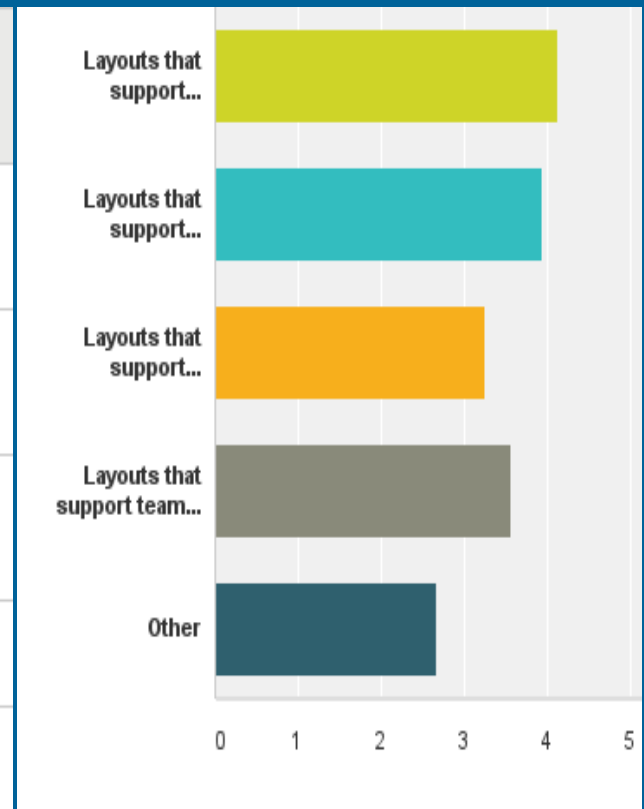
Layouts that support approaches where two or more teachers work collaboratively with groups of students sharing the same space.



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

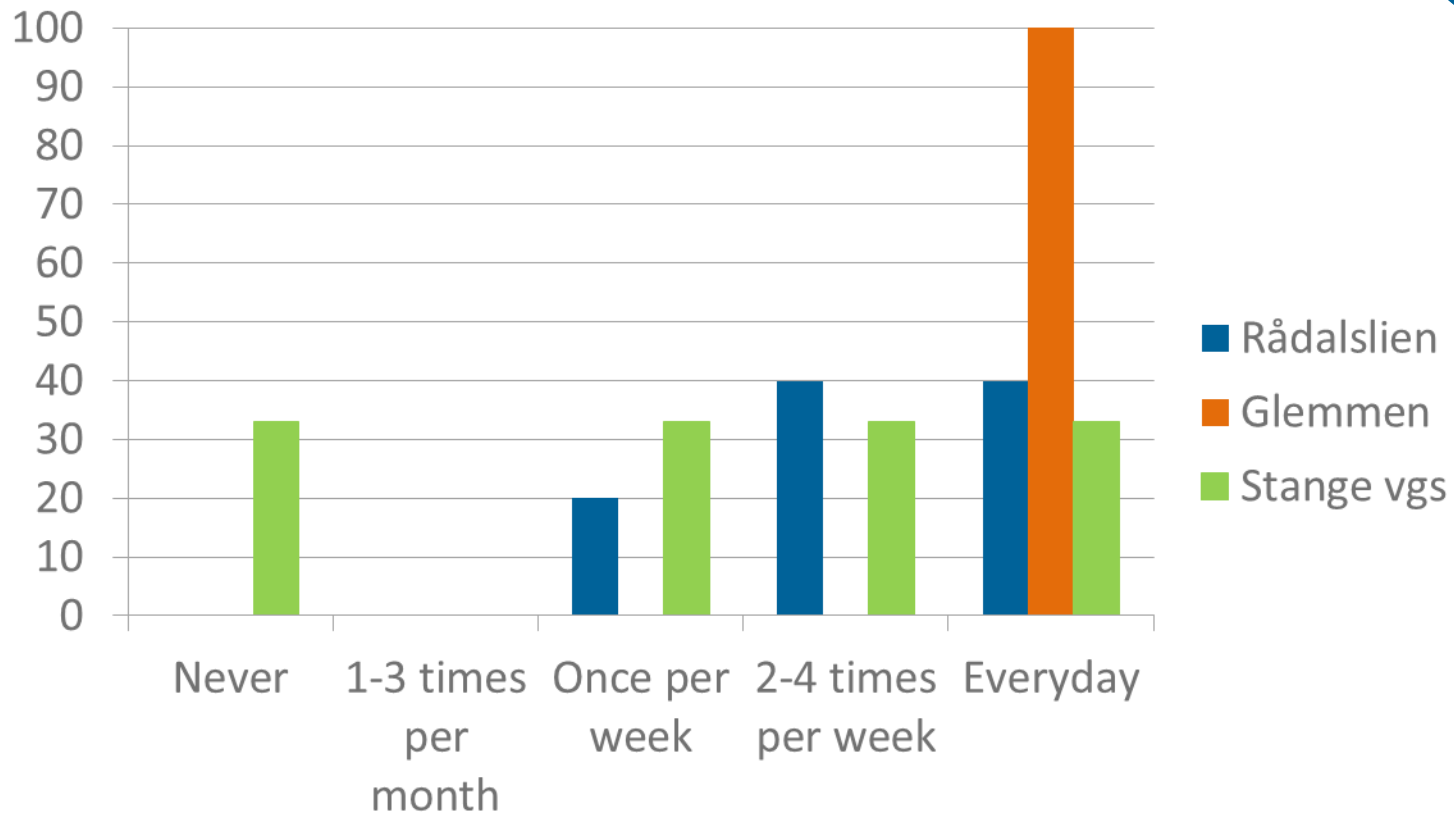
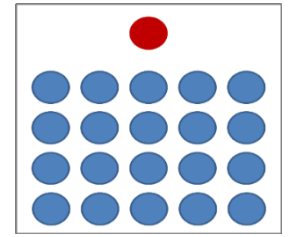
Answered: 16 Skipped: 9

	Never or hardly ever	1 to 3 times a month	Once a week	2 to 4 times a week	Everyday	Total	Weighted Average
Layouts that support explicit instruction/ presentation	0.00% 0	6.25% 1	18.75% 3	31.25% 5	43.75% 7	16	4.13
Layouts that support students working in small groups	6.25% 1	6.25% 1	25.00% 4	12.50% 2	50.00% 8	16	3.94
Layouts that support students working independently	6.25% 1	18.75% 3	31.25% 5	31.25% 5	12.50% 2	16	3.25
Layouts that support team teaching	18.75% 3	0.00% 0	18.75% 3	31.25% 5	31.25% 5	16	3.56
Other	22.22% 2	11.11% 1	44.44% 4	22.22% 2	0.00% 0	9	2.67



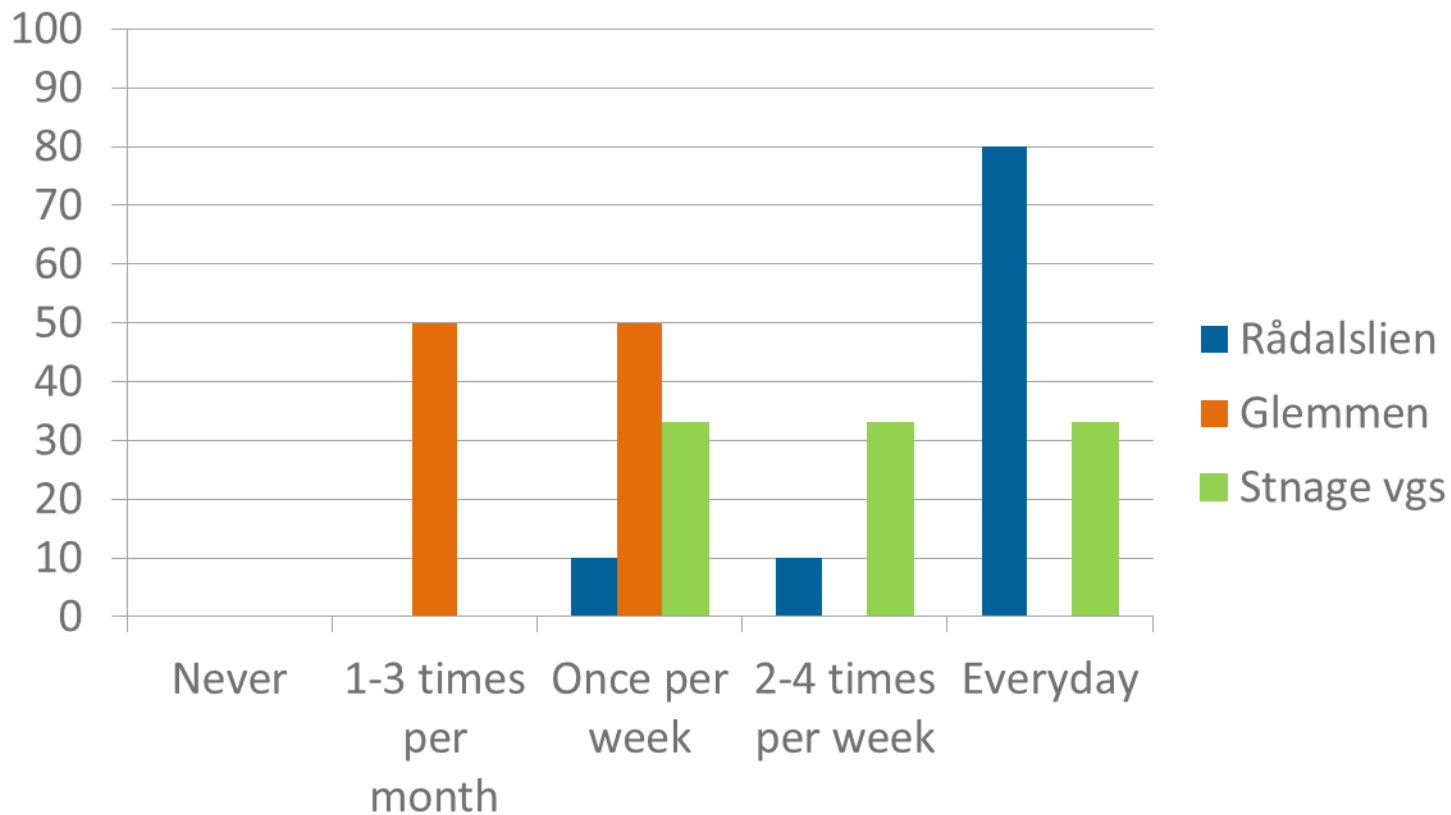
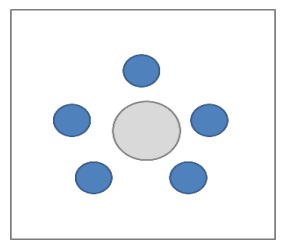


# Use of classroom layouts for **explicit instruction/presentation**



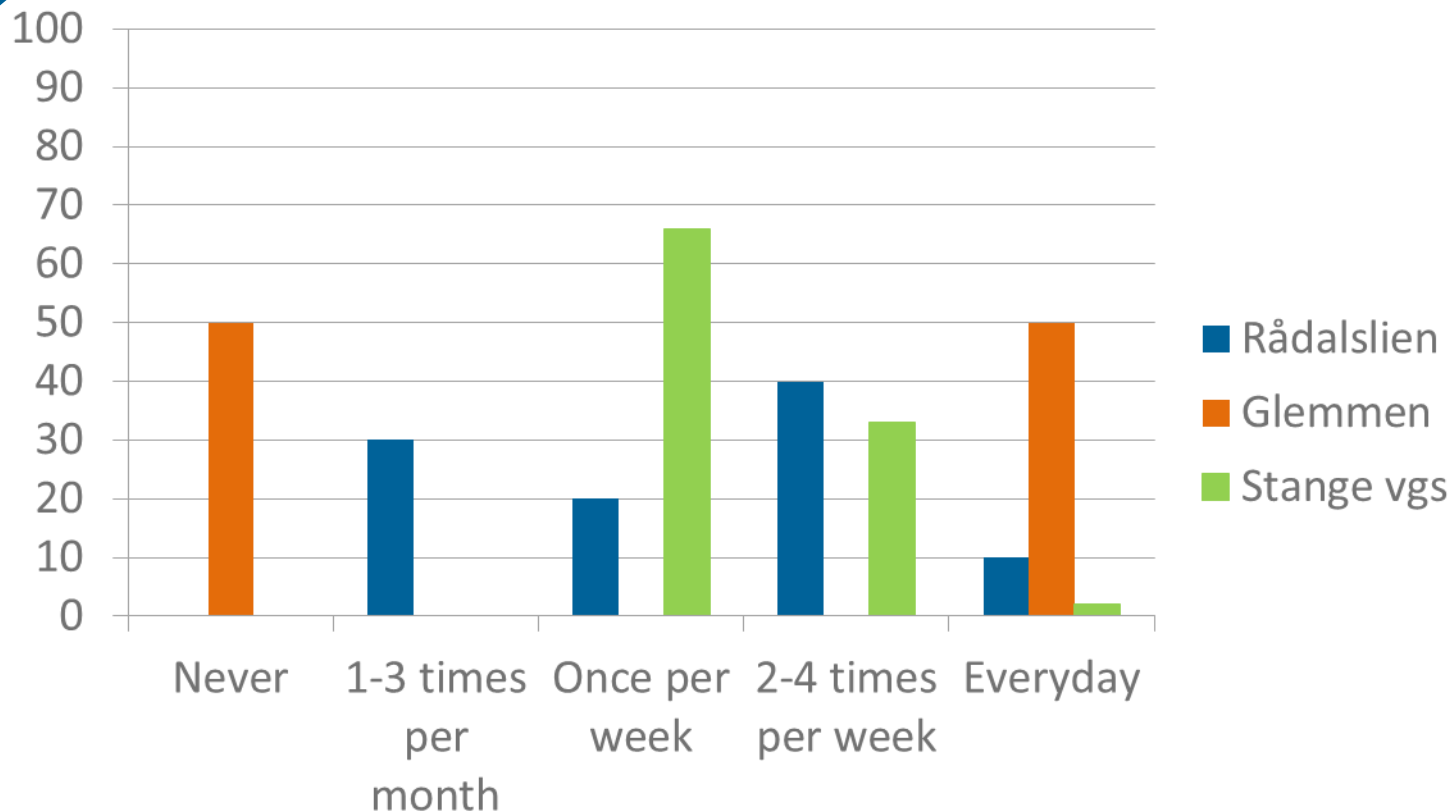
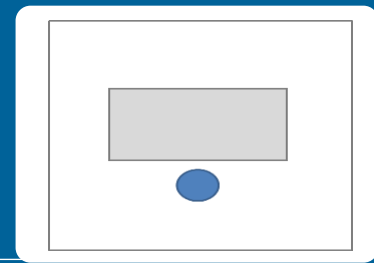


# Use of classroom layouts for **group instruction** (students working in small groups)



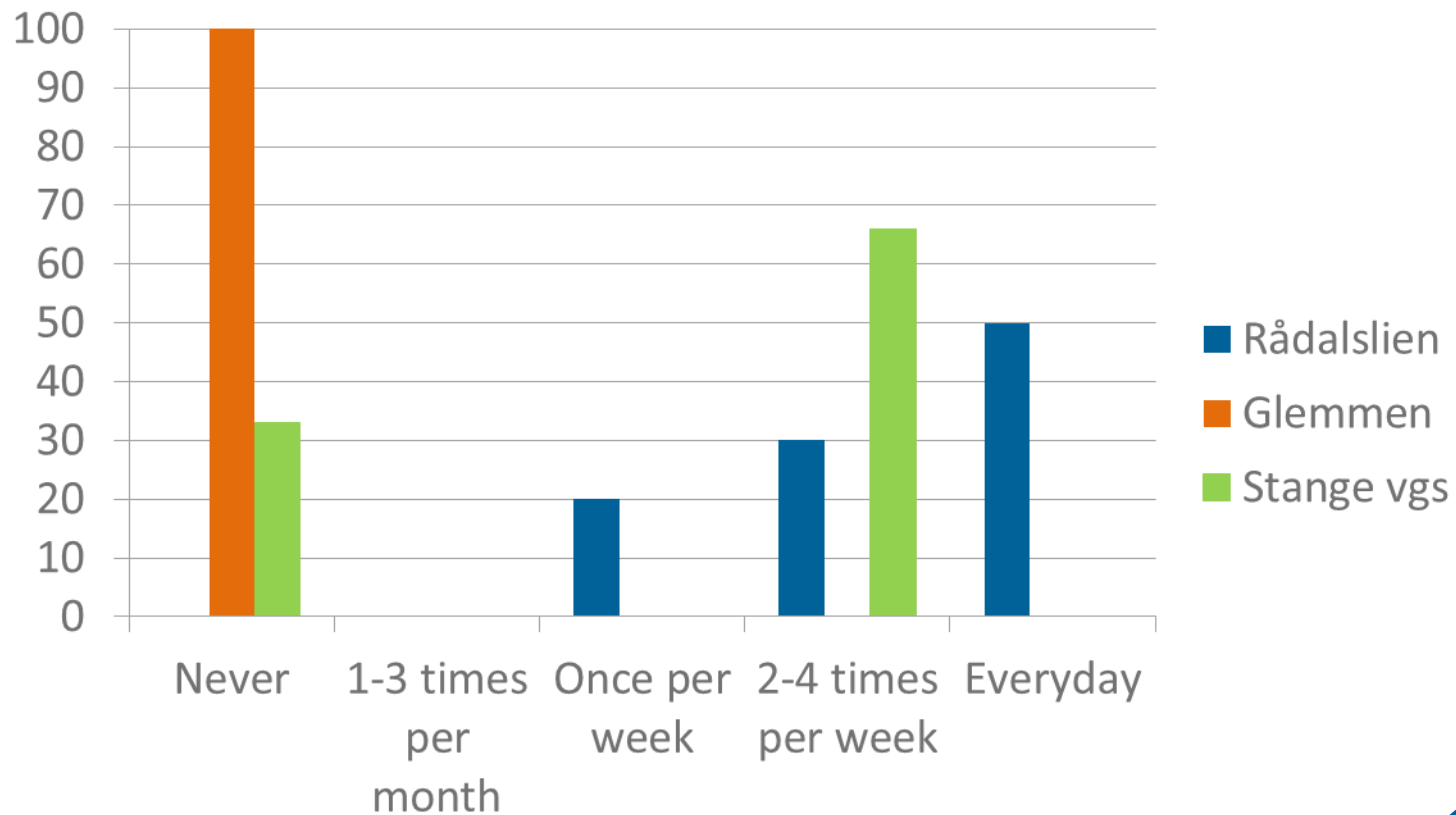
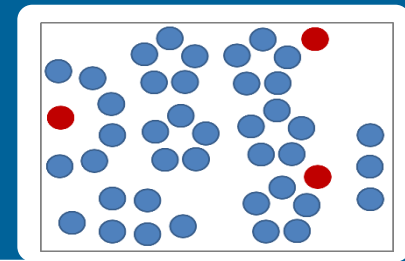


# Use of classroom layouts for **individual instruction** (students working independently)





# Use of classroom layouts for **team teaching**





## Main findings : LEEP module field trial

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The questionnaires were answered by 217 students, 24 teachers and 9 school principals or relevant. The main findings are:

- The girls feel less safe than the boys by almost 15%.
- The teachers mostly use more than one classroom, but very rarely do they change the layout.
- The teachers believe there is not enough time to change the layout of a classroom (even if they wanted to).
- A variety of classroom layouts were used.
- The students are more satisfied by the school facilities than their teachers.
- Both students and teachers were rather satisfied by temperature, quality of air, light and acoustics in the classrooms.





## Main findings : LEEP module field trial, p.2

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- The classrooms and the school canteens were the spaces mostly used by students, while the classrooms and the hall/auditoriums were the spaces mostly used by teachers.
- The teachers believe that the buildings and facilities of the school have an effect to some extent on making teachers inclined to stay at school, making it easier to attract new teachers, to retain teachers and to attract parents.
- The school principals believe that the buildings and facilities of the school have an effect to some extent on making teachers inclined to stay at school, making it easier to attract new teachers and to attract parents.
- The majority of the classrooms have wireless internet access.
- Teachers prefer layouts that support explicit instruction/presentation and students working in small groups.

# Earthquake Safety for Schools: Protecting Students from Risk



# Earthquake Safety for Schools: **Protecting Students from Risk**

**14 October 2014**

The 2014 Monitoring Report is published; it describes the progress made since the 2010 Monitoring Report.

**January 2014**

Secretary General invited Ministers of Education and OECD Delegations to complete/ update the 2008 questionnaire.

**2015**

**2010**

**29 March 2010**

CELE presents 2010 Monitoring Report to Council, even though only 5 Member countries had completed the questionnaire.

**18 December 2008**

Council reviews interim report in the efforts undertaken by the OECD Members. Only 4 countries filled out questionnaire.

**2008**

OECD countries were asked to complete a self-evaluation questionnaire concerning seismic safety programs in schools.

**21 July 2005**

Council approves Recommendation Concerning Guidelines on Earthquake Safety in Schools.

**2005**



# OECD Recommendation: The 7 principles of a school seismic safety programme

## The 7 Principles of the Recommendation

1	Seismic safety policy
2	Accountability
3	Building codes and enforcement
4	Training and qualification
5	Preparedness and planning
6	Community awareness and participation
7	Risk reduction in new and existing schools



# Earthquake Safety For Schools: **Protecting Students from Risk**

## Earthquake Safety for Schools: Protecting Students from Risk

EDU/EDPC/GNEELE/RD(2016)1

This document is presented to the Group of National Experts on Effective Learning Environments at the 4th meeting on 6-7 November 2016 under agenda item #6, and to the EDPC for information at the 20th session on 15-16 November 2016 under agenda item #3. The document is available only in pdf format.



This publication is prepared by Learning Environments Evaluation Programme of OECD. Our team at the OECD Centre for Effective Learning Environments 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.  
(CELE, [www.oecd.org/edu/facilities](http://www.oecd.org/edu/facilities))





# 2014 Monitoring Report

## Earthquake safety in schools

### 5 countries reporting in 2010 resubmitted self-evaluation questionnaires



Greece



Japan



Mexico



New Zealand



United States  
(California)

### 10 additional countries submitted self-evaluation questionnaires for the first time



Australia



Belgium  
(French Community)



Chile



France



Hungary



Portugal



Slovak Republic



Slovenia



Spain



Turkey

Austria, Denmark and Sweden also responded and did not fill out the self-evaluation questionnaire (their country was located in an area with low seismic risk).

# United Nations Sustainable Development Goals



# United Nations SDGs: **Who, what, how?**



A look at the Sustainable Development Goals

<https://www.youtube.com/watch?v=5G0ndS3uRdo>





## SDG 4: **about Education**

“Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”

# GOAL 4

ENSURE INCLUSIVE AND EQUITABLE QUALITY  
EDUCATION AND PROMOTE LIFELONG LEARNING  
OPPORTUNITIES FOR ALL

**SUSTAINABLE DEVELOPMENT GOALS**

More at [sustainabledevelopment.un.org/sdgsproposal](https://sustainabledevelopment.un.org/sdgsproposal)



## Target 4a

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Build and upgrade education facilities that are  
child,  
disability and gender sensitive  
and provide safe,  
non-violent,  
inclusive  
and effective learning environments  
for all



## Target 4a: Key Performance Indicators

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Global number: 4.a.1 | Thematic numbers: 31, 32, 30

Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the WASH indicator definitions)

Global number: 4.a.2 | Thematic numbers: 33

Percentage of students experiencing bullying, corporal punishment, harassment, violence, sexual discrimination and abuse

Global number: 4.a.3 | Thematic numbers: 34

Number of attacks on students, personnel and institutions



## Stay in touch!

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Best Practices in  
Educational Facilities Investments



Education GPS

Our team at the OECD Centre for Effective Learning Environments (CELE, [www.oecd.org/edu/facilities](http://www.oecd.org/edu/facilities)) 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.

