



## EPI Annual Lecture

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9 November 2017



What can English education learn from other countries?

# Trends in science performance (PISA)

570

550

530

510

490

470

450

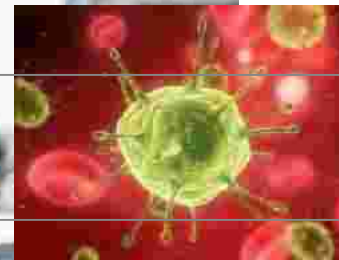
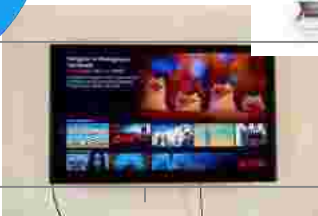
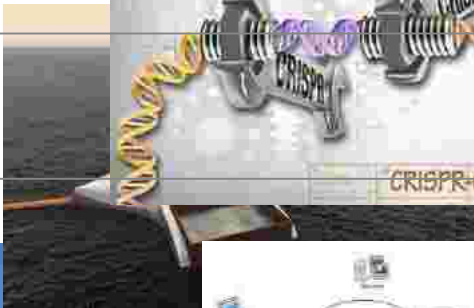
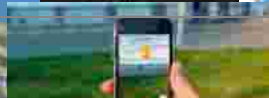
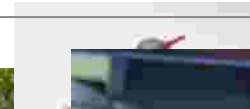
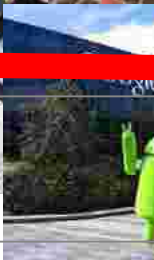
2006

2009

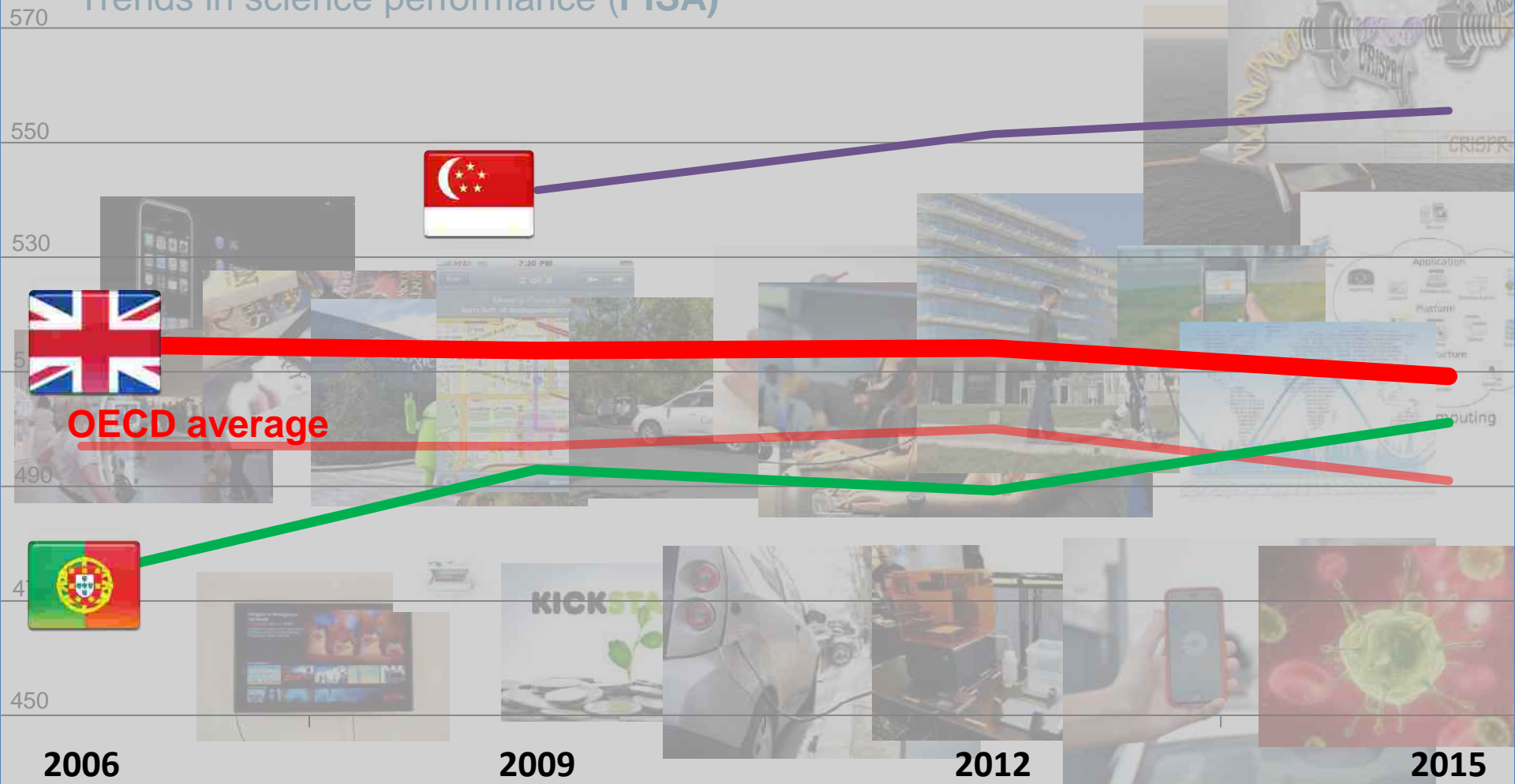
2012

2015

Student performance



# Trends in science performance (PISA)





# Digitalisation



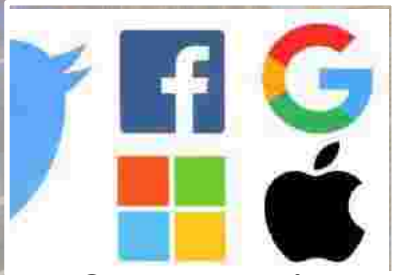
Democratizing



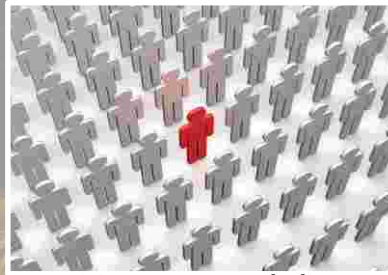
Particularizing



Empowering



Concentrating

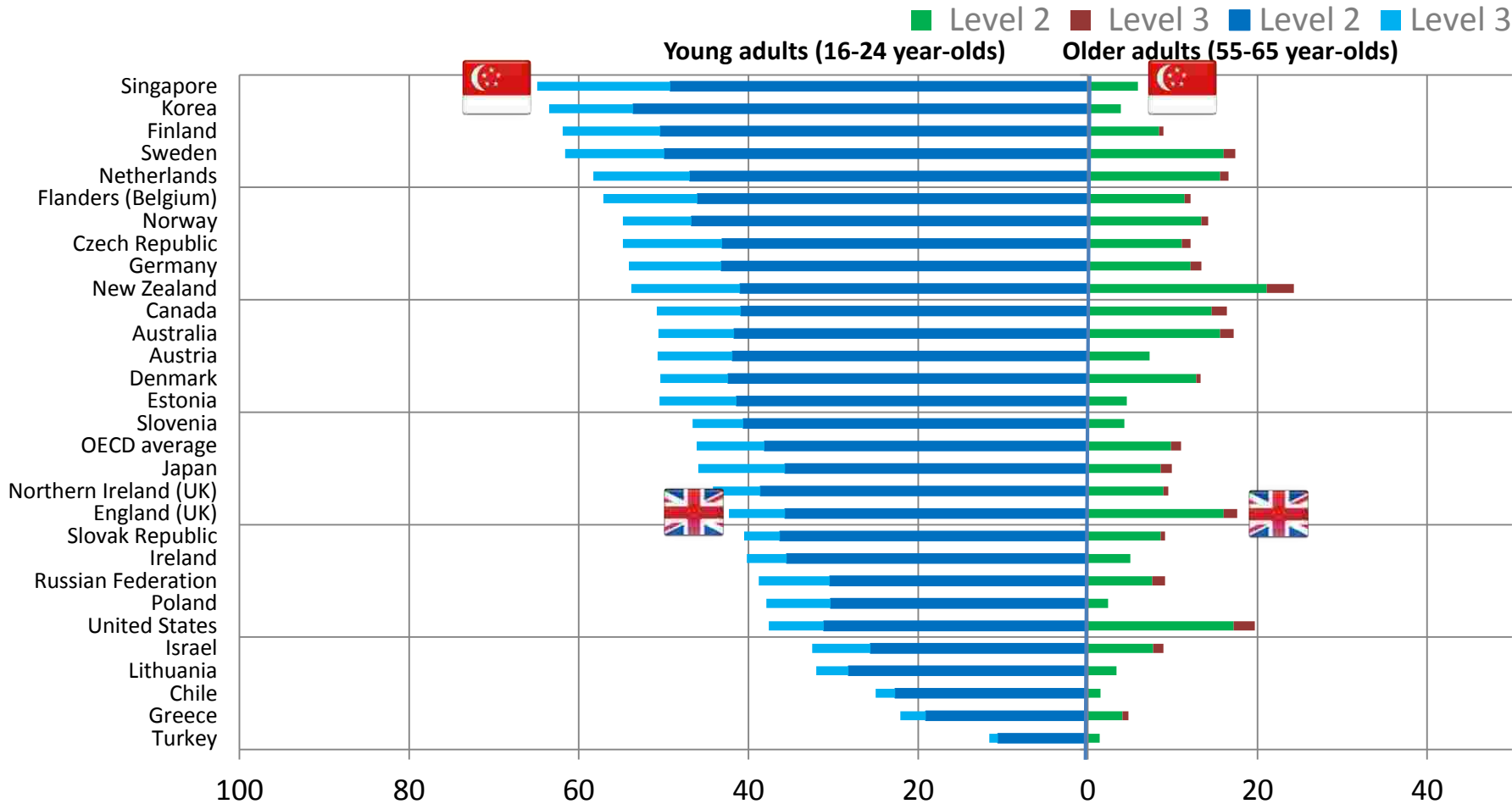


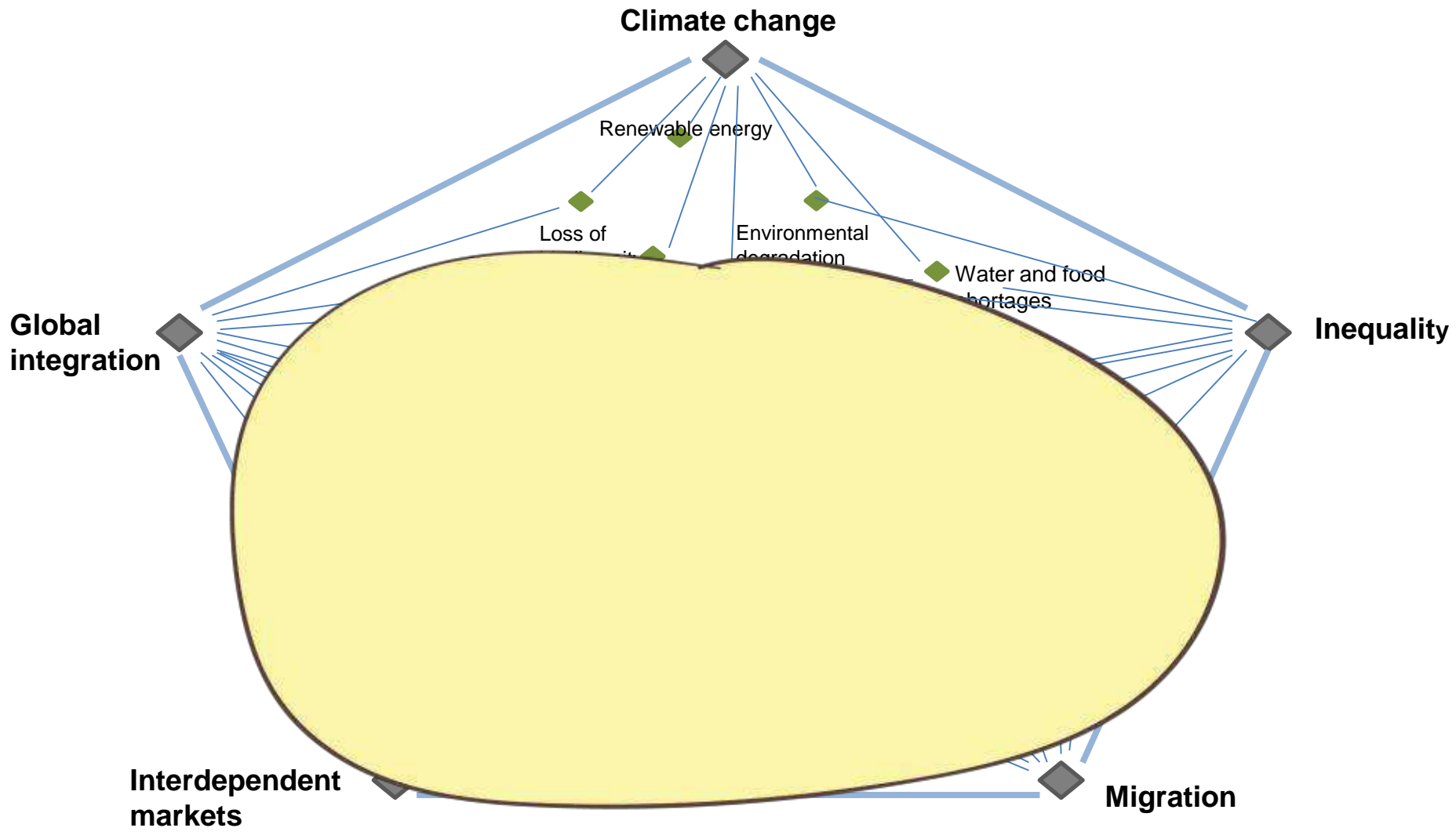
Homogenizing



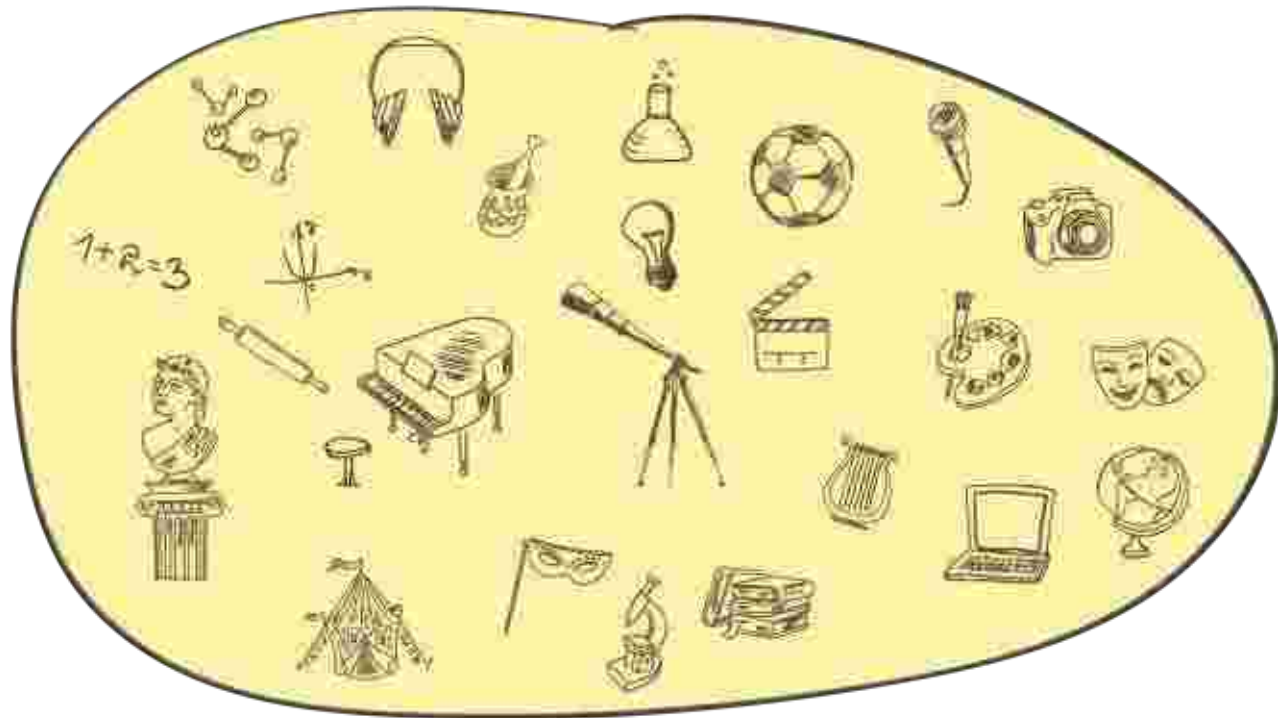
Disempowering

# Skills to manage complex digital information

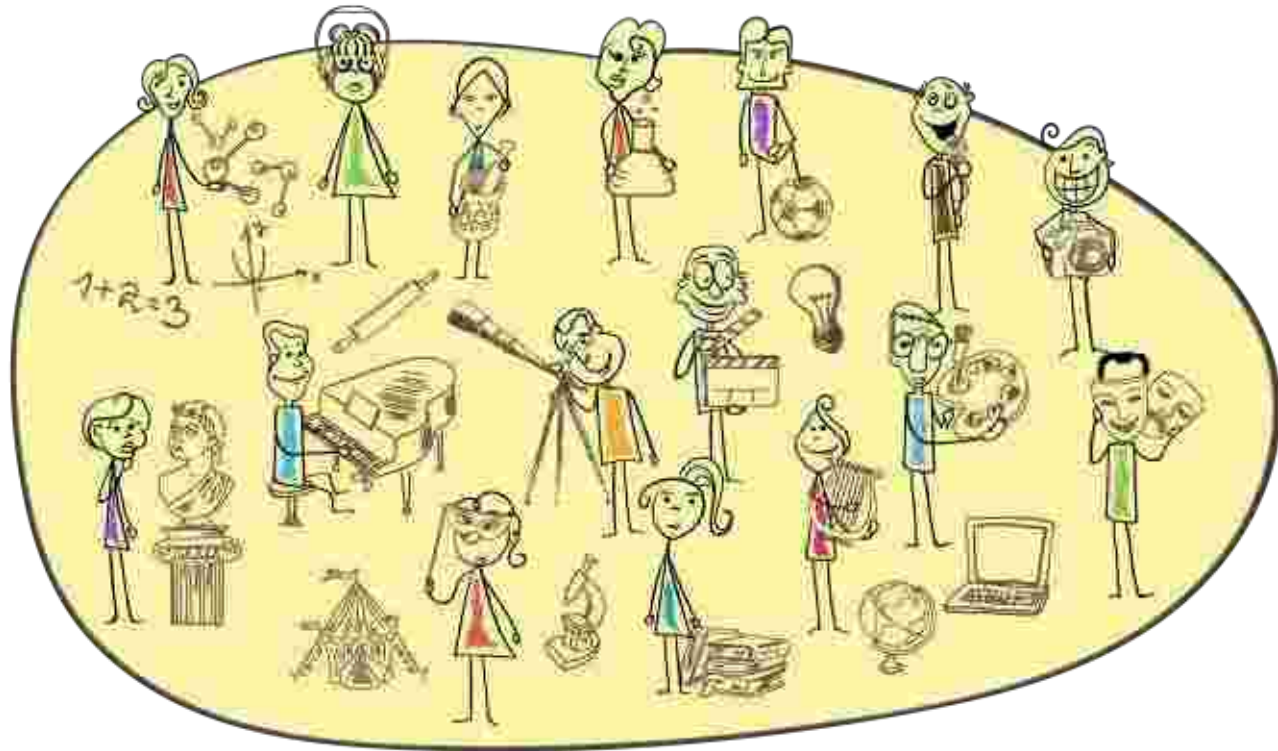




# The multi-faceted world of knowledge

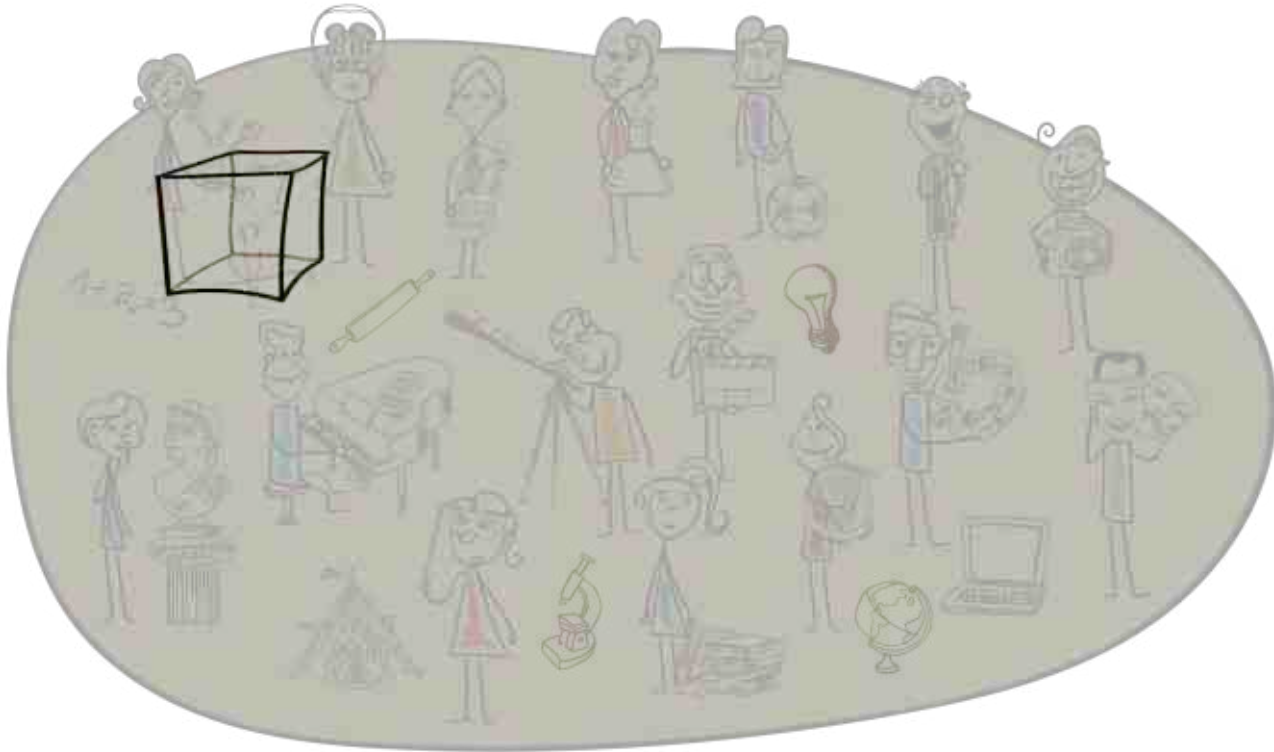


# The human world of knowledge

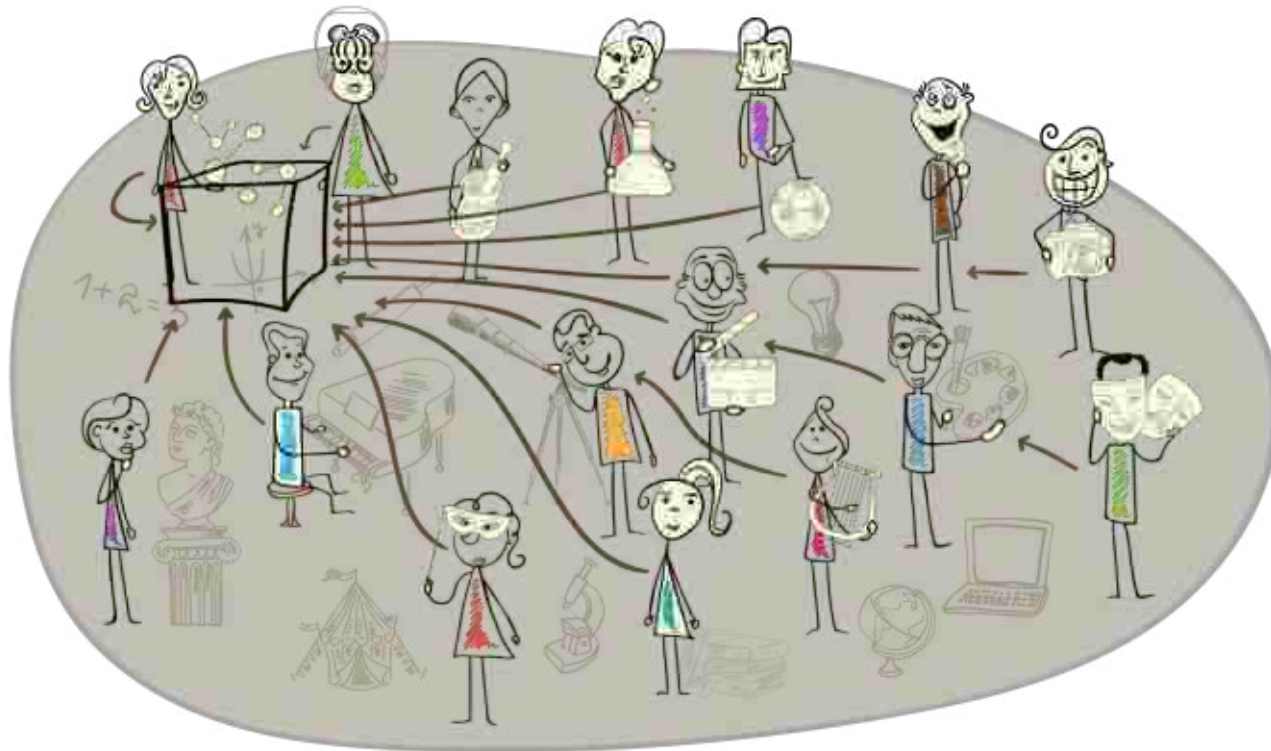




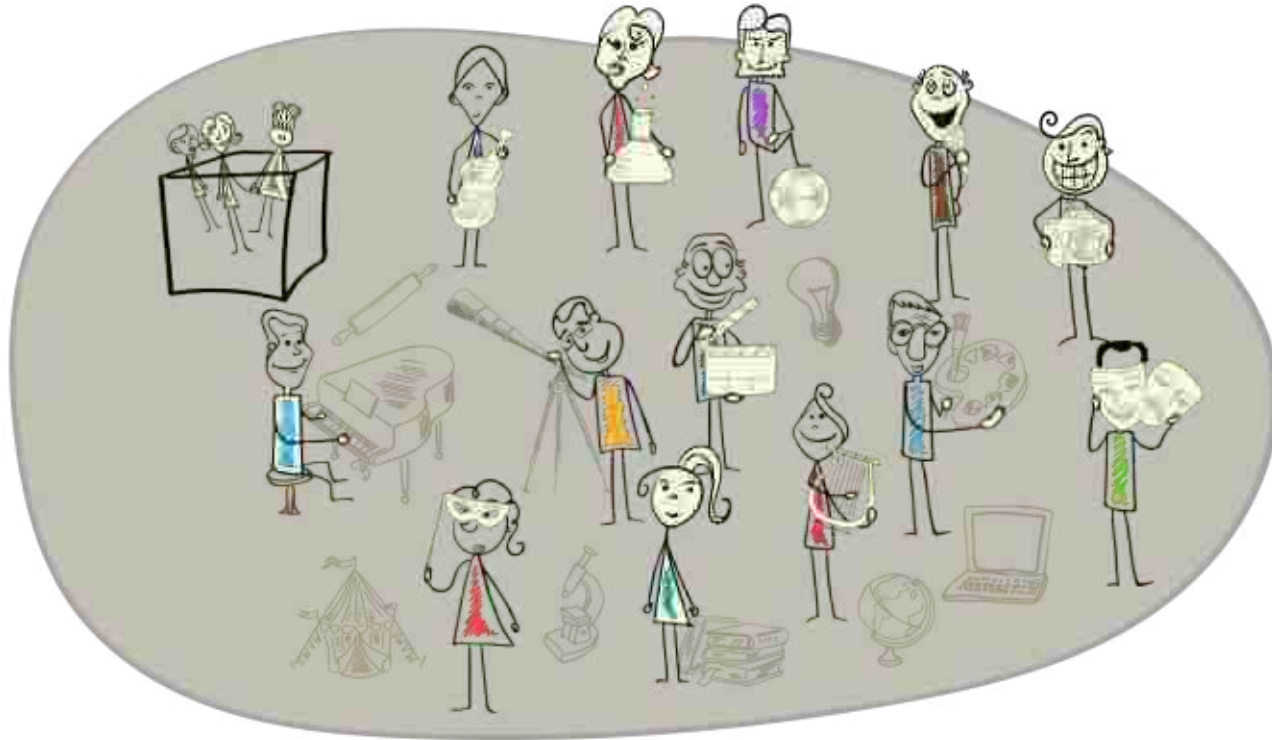
## The small world of the curriculum



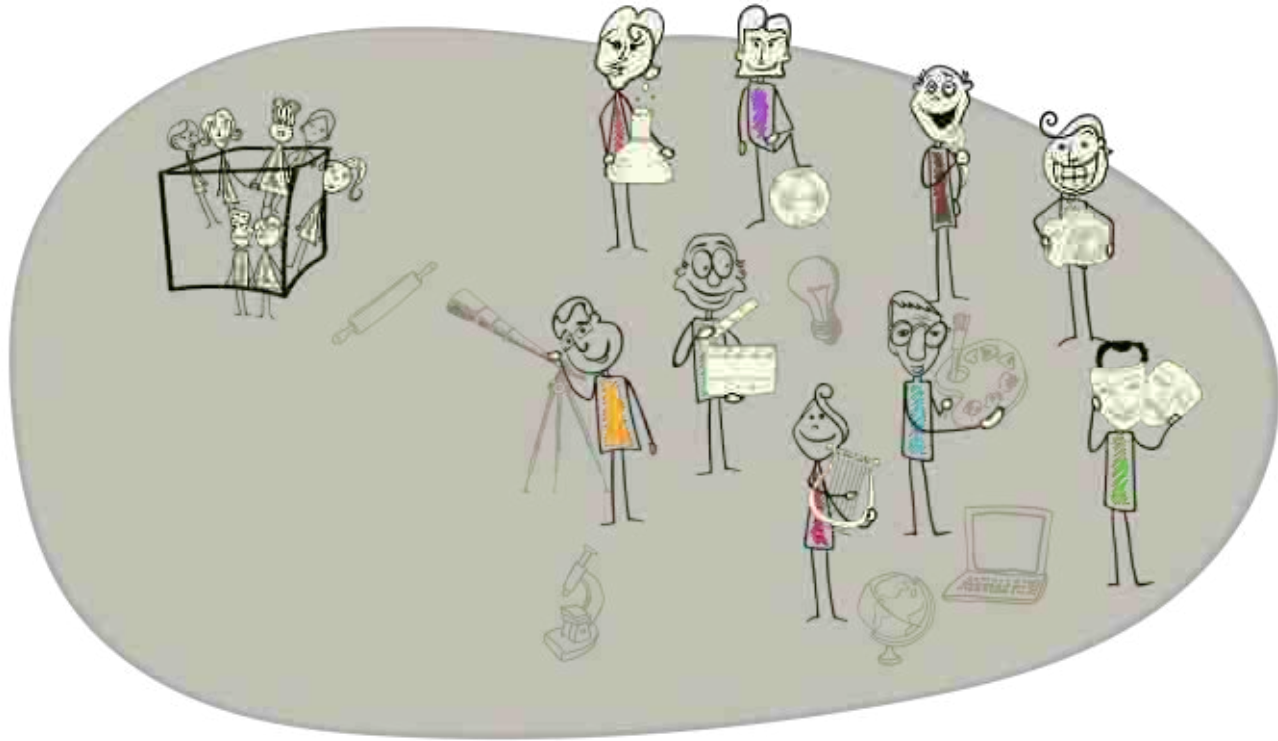
## The small world of the curriculum



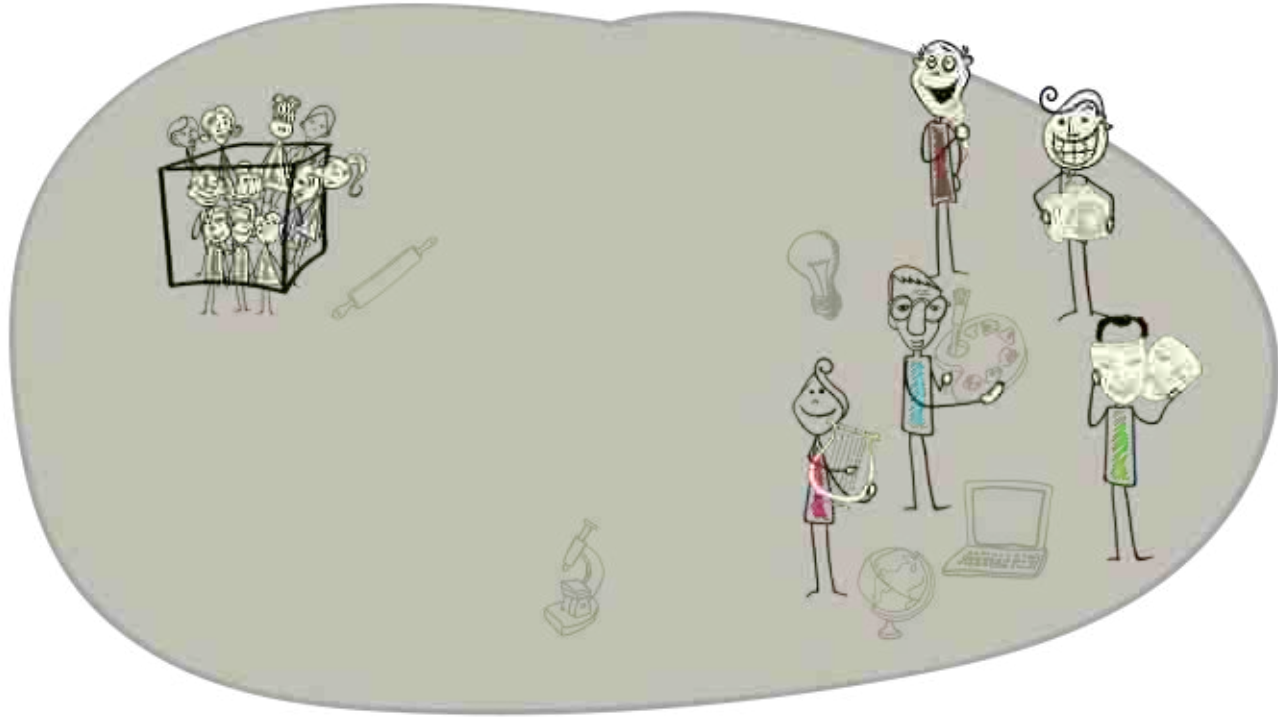
## The small world of the curriculum



# The small world of the curriculum



# The small world of the curriculum

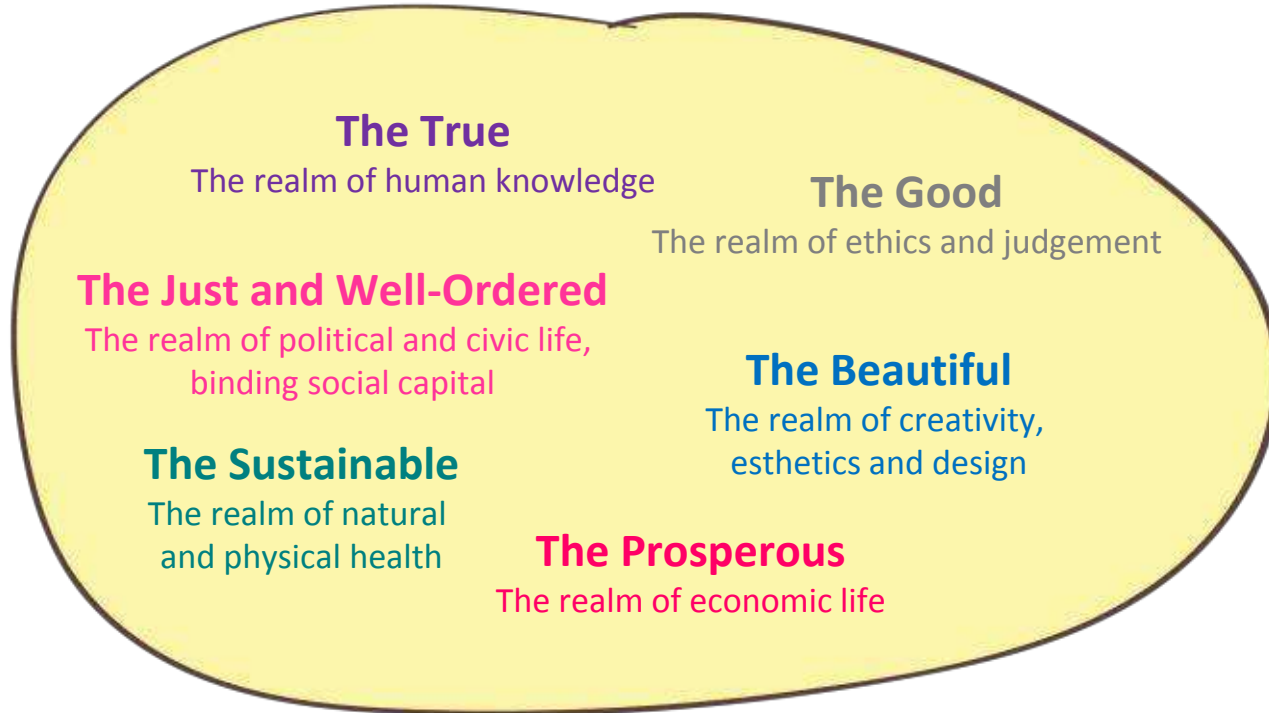




# The small world of the curriculum



# The big world of learning



# Some lessons from high performers

- **Rigor, focus and coherence**
- **Remain true to the disciplines**
  - but aim at interdisciplinary learning and the capacity of students to see problems through multiple lenses
  - Balance knowledge of disciplines and knowledge about disciplines
- **Focus on areas with the highest transfer value**
  - Requiring a theory of action for how this transfer value occurs
- **Authenticity**
  - Thematic, problem-based, project-based, co-creation in conversation
- **Some things are caught not taught**
  - Immersive learning propositions
- **Equity**
  - Not just a proposition for the few but for the many



**What teachers say  
and what teachers do**



96% of teachers: My role as a teacher  
is to facilitate students own inquiry

Age, skills  
abilities do  
require?





**86%: Students learn best  
by finding solutions on their own**

Age, skills  
abilities do  
require?

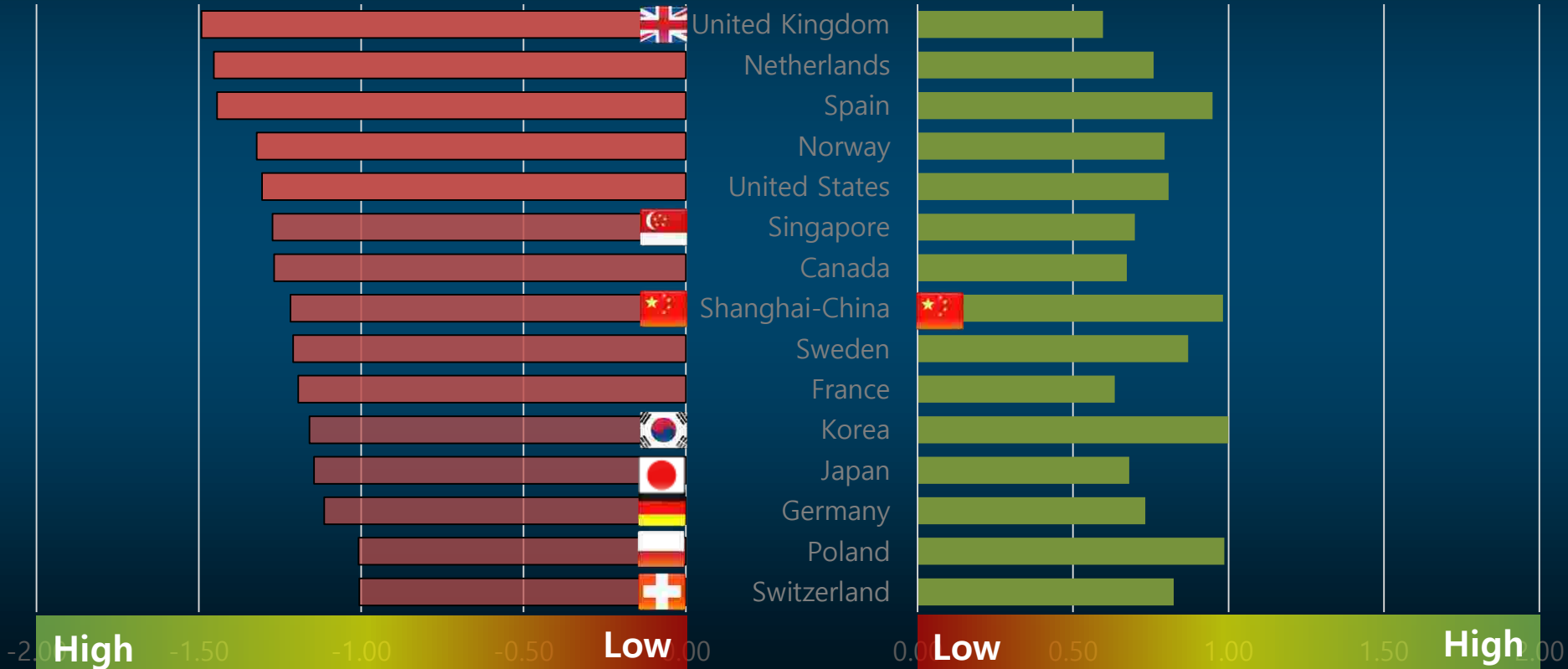


**74%: Thinking and reasoning is more important than curriculum content**

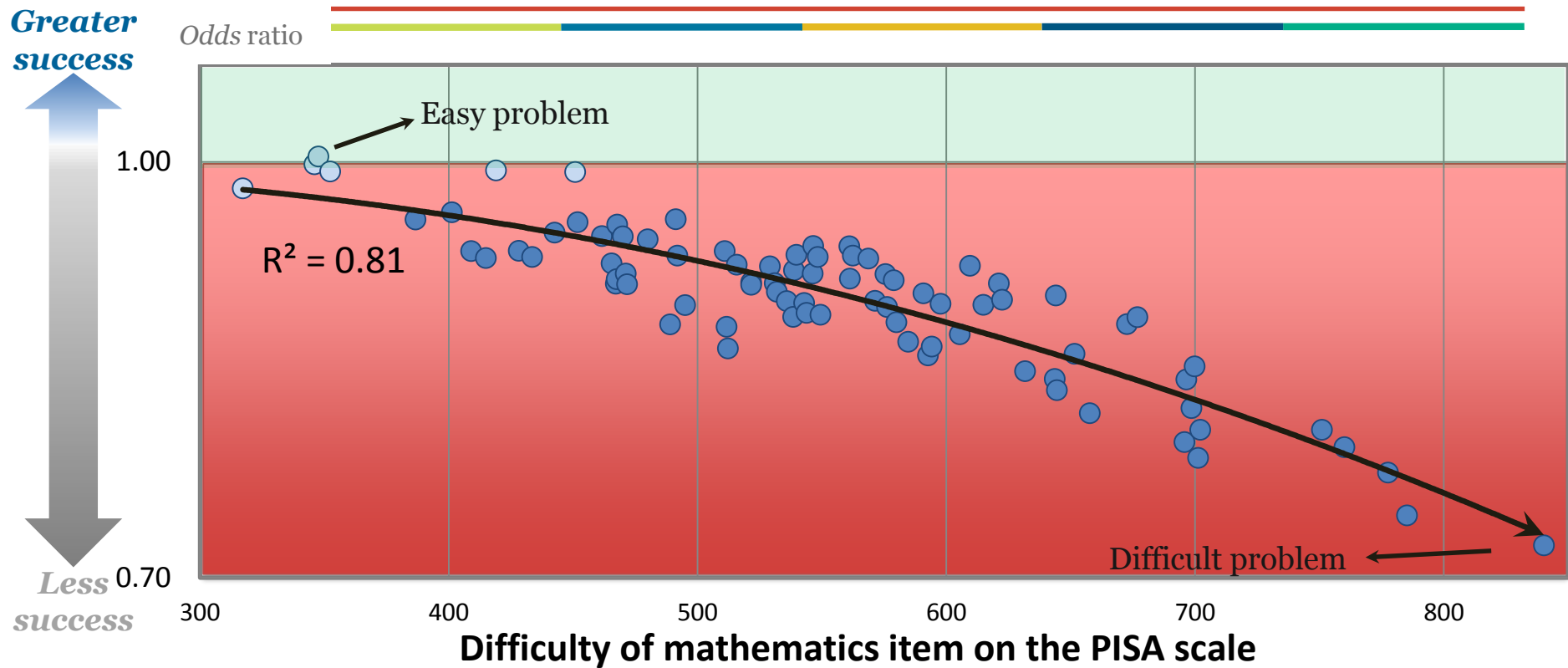
**Knowledge, skills and attitudes do we require?**

Prevalence of **memorisation**  
rehearsal, routine exercises, drill and  
practice and/or repetition

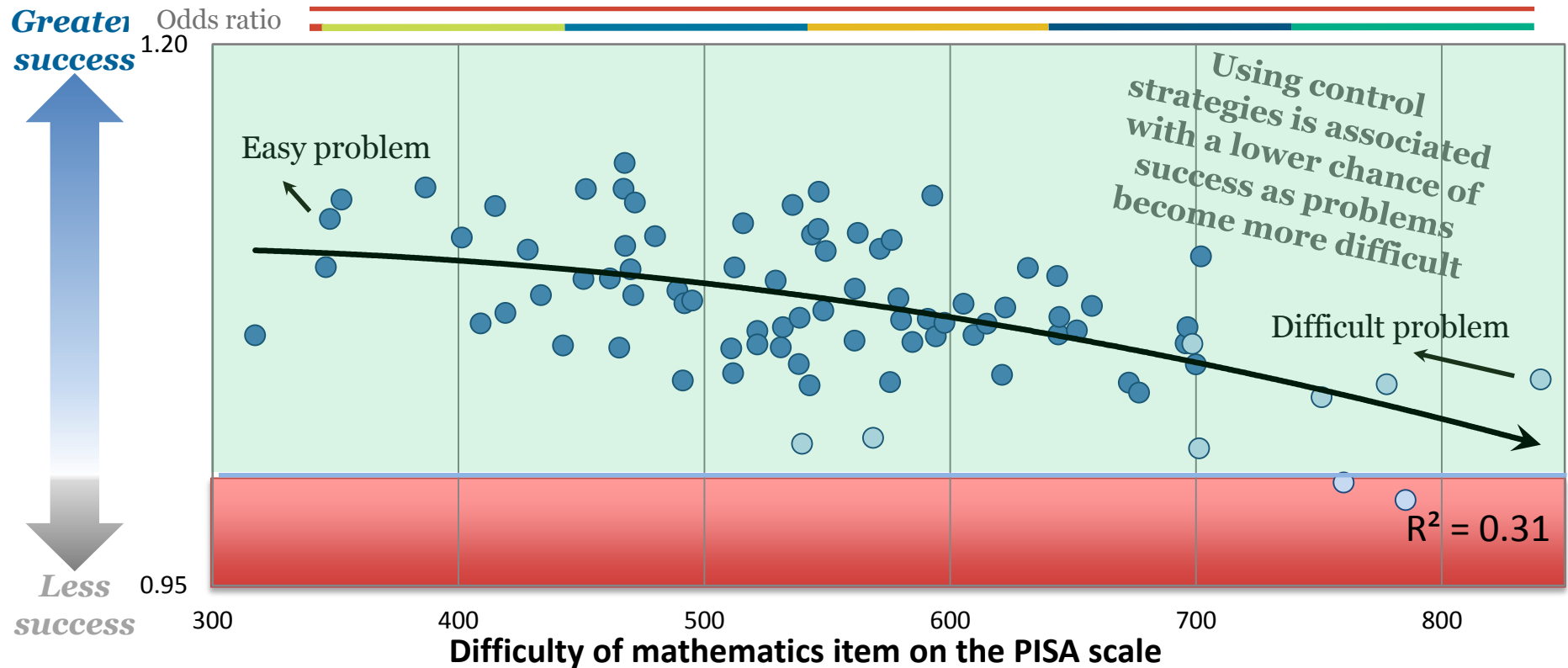
Prevalence of **elaboration**  
reasoning, deep learning, intrinsic  
motivation, critical thinking,  
creativity, non-routine problems



**Memorisation** is less useful as problems become more difficult (*OECD average*)

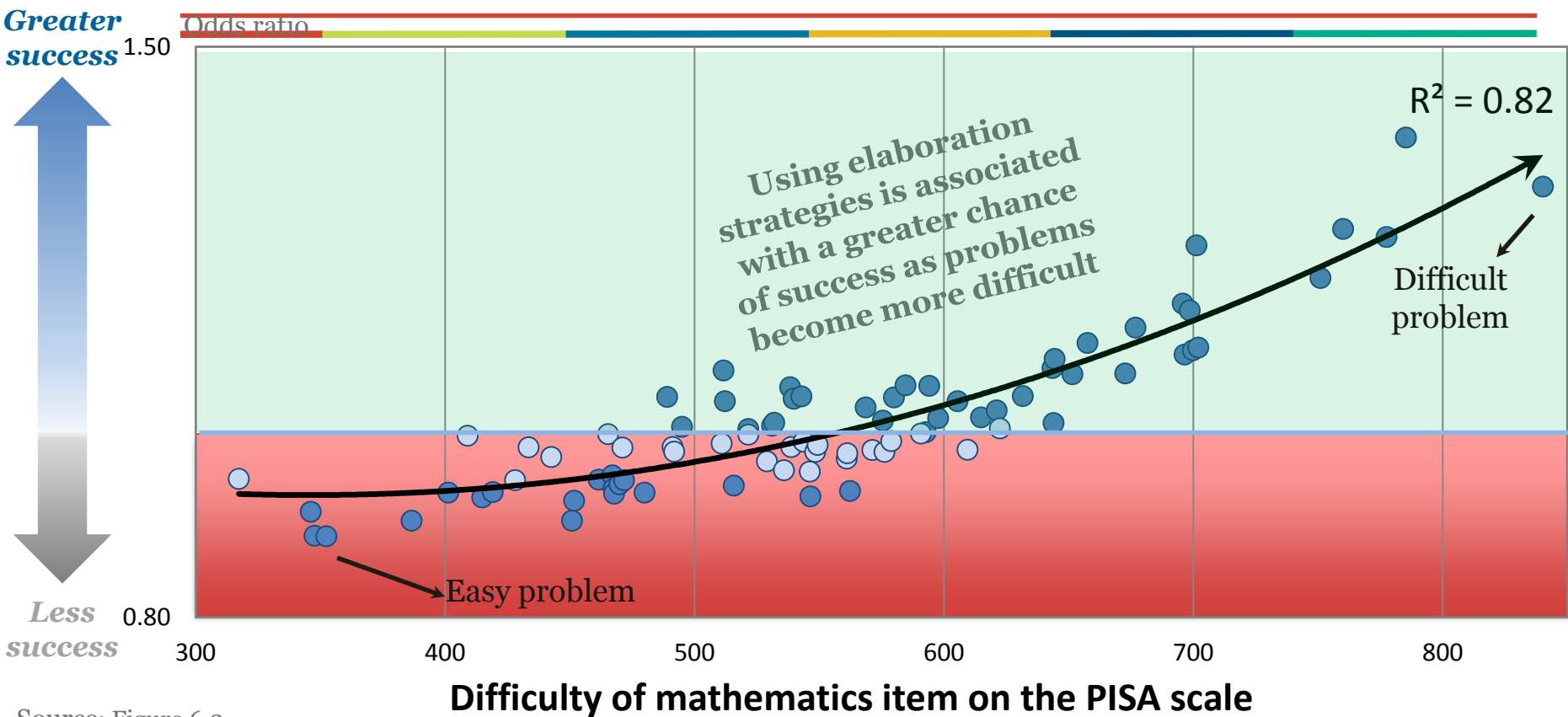


**Control strategies** are always helpful but less so as problems become more difficult (*OECD average*)



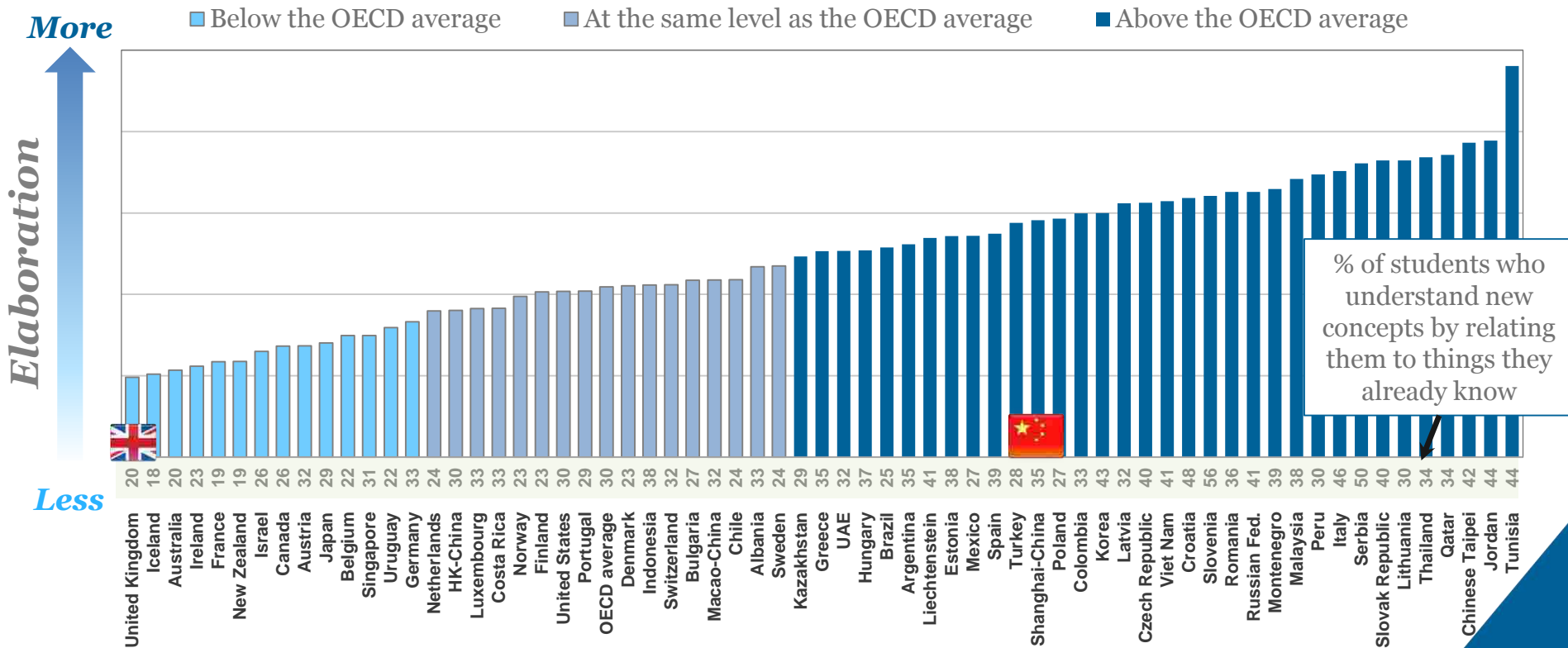


**Elaboration strategies** are more useful as problems become more difficult (*OECD average*)





# Students' use of elaboration strategies



# System transformations

## The old bureaucratic system

## The modern enabling system

Student inclusion

**Some** students learn at high levels (sorting)

**All** students need to learn at high levels

Curriculum, instruction and assessment

Routine cognitive skills

Complex ways of thinking, complex ways of doing, collective capacity

Teacher quality

Standardisation and compliance

High-level professional knowledge workers

Work organisation


‘Tayloristic’, hierarchical

Flat, collegial

Accountability

Primarily to authorities

Primarily to peers and stakeholders

A young man in a graduation cap and gown is smiling and holding a rolled-up diploma high in his right hand. He is wearing a light-colored button-down shirt. In the background, three other graduates are visible, also smiling and holding their diplomas. The scene is set outdoors in front of a large, multi-story building with many windows. The overall image has a warm, reddish-orange tint.

**Some** students learn at high levels

A group of seven diverse graduates in blue gowns and caps are celebrating outdoors. They are holding up their rolled-up diplomas, some with red ribbons, and cheering. The background is a lush green field with trees. The text "All students learn at high levels" is overlaid in the center, with "All" in green and the rest in white.

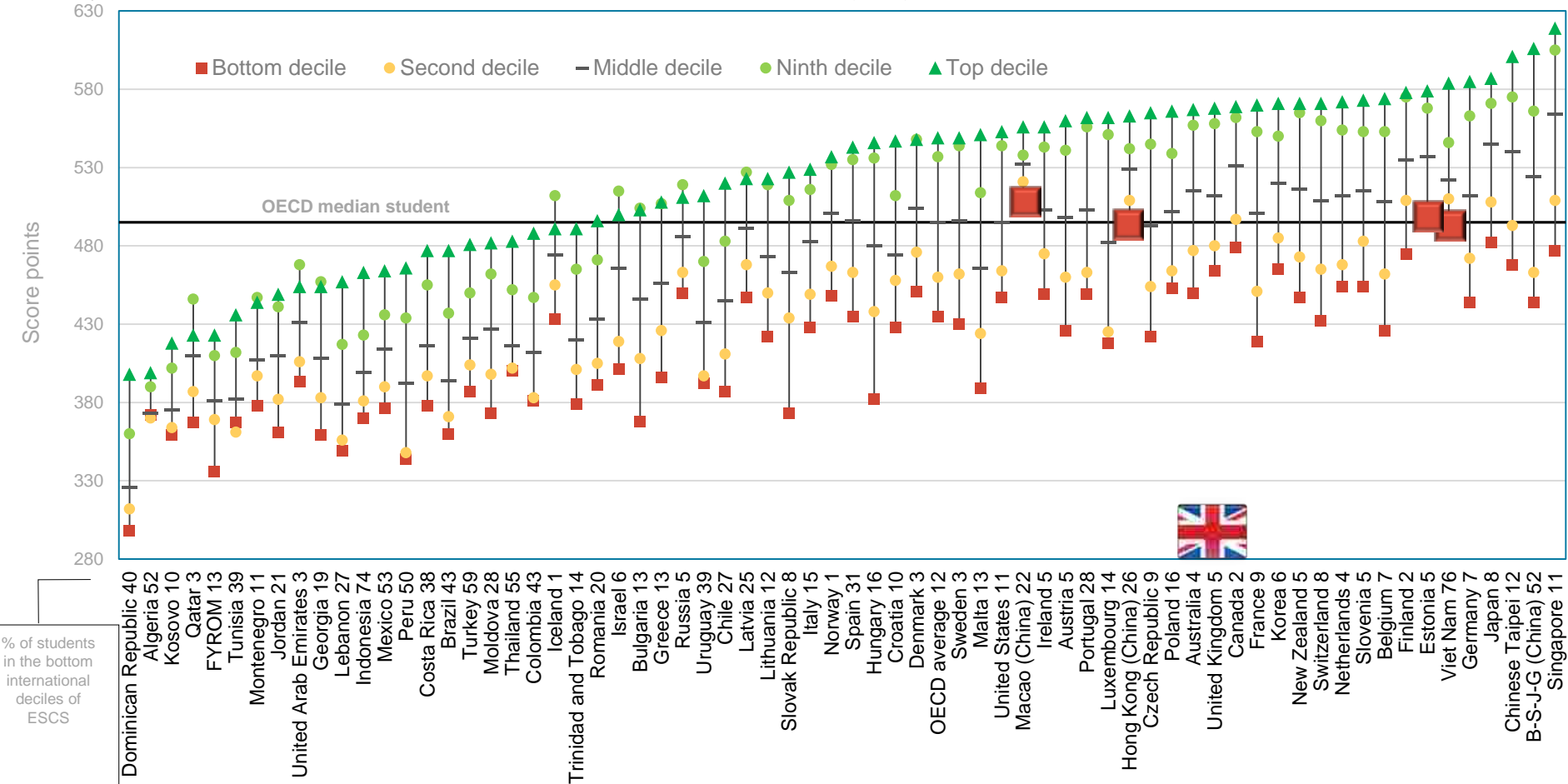
**All** students learn at high levels



# Poverty is not destiny - Science performance

Figure I.6.7

by international deciles of the PISA index of economic, social and cultural status (ESCS)



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

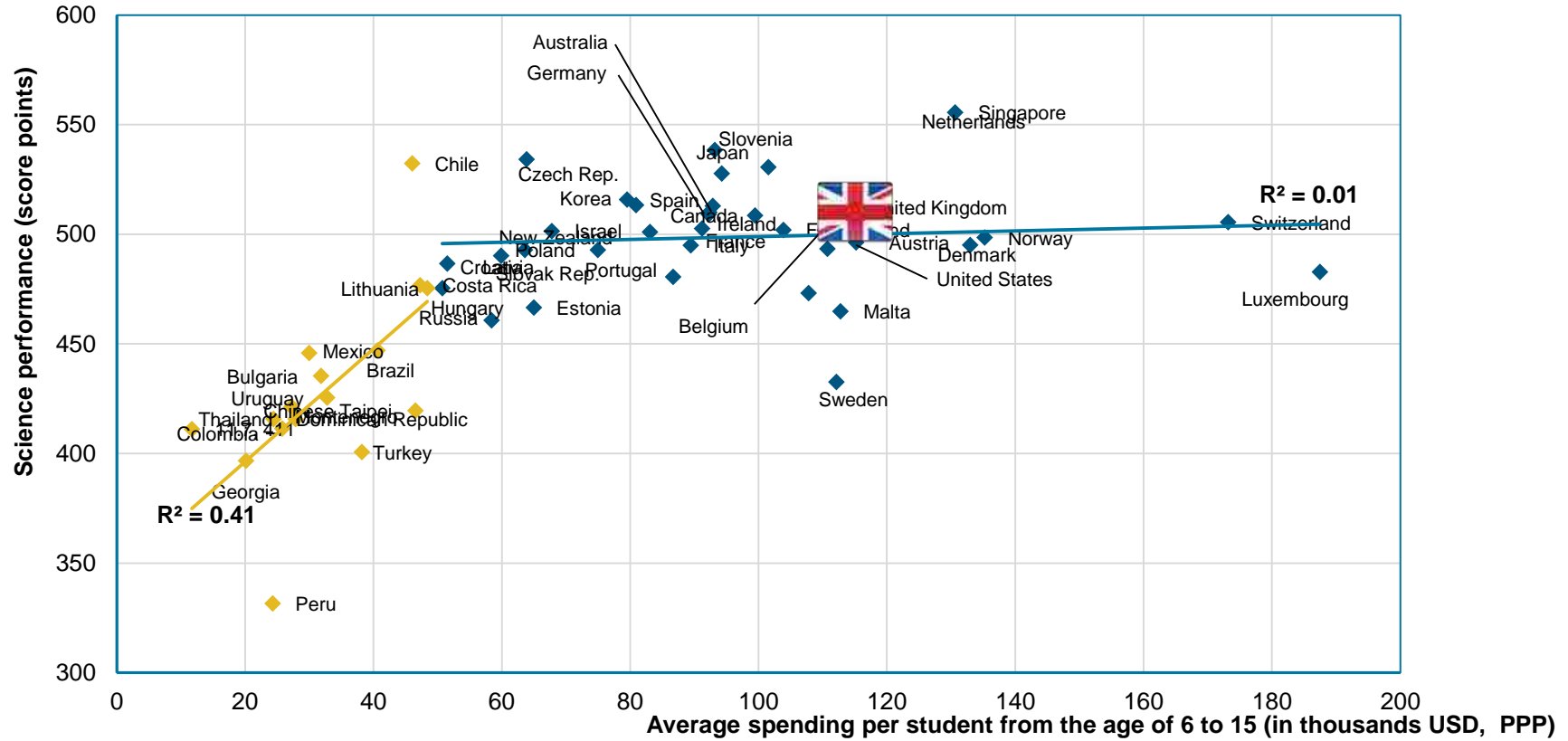


Figure I.6.14

# Differences in educational resources

## between advantaged and disadvantaged schools

Mean index difference between advantaged and disadvantaged schools

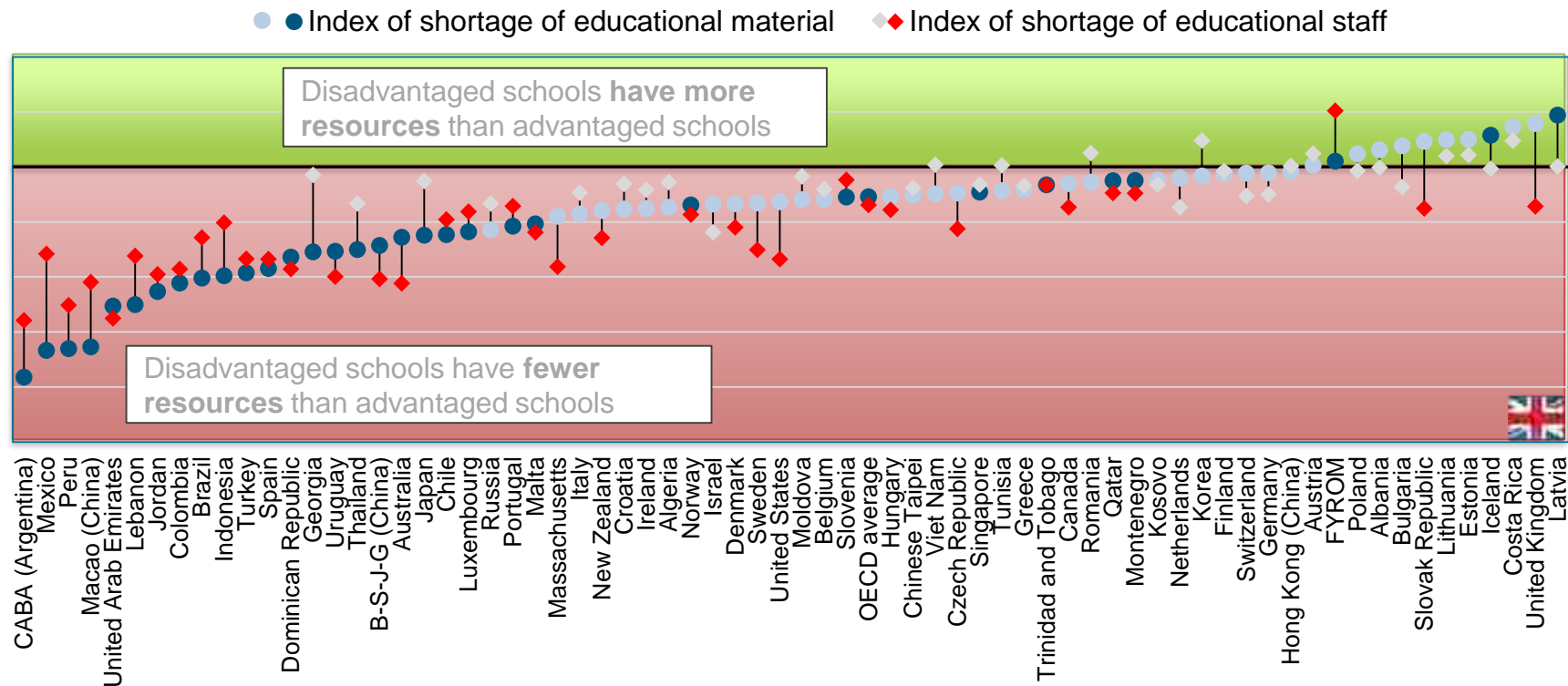
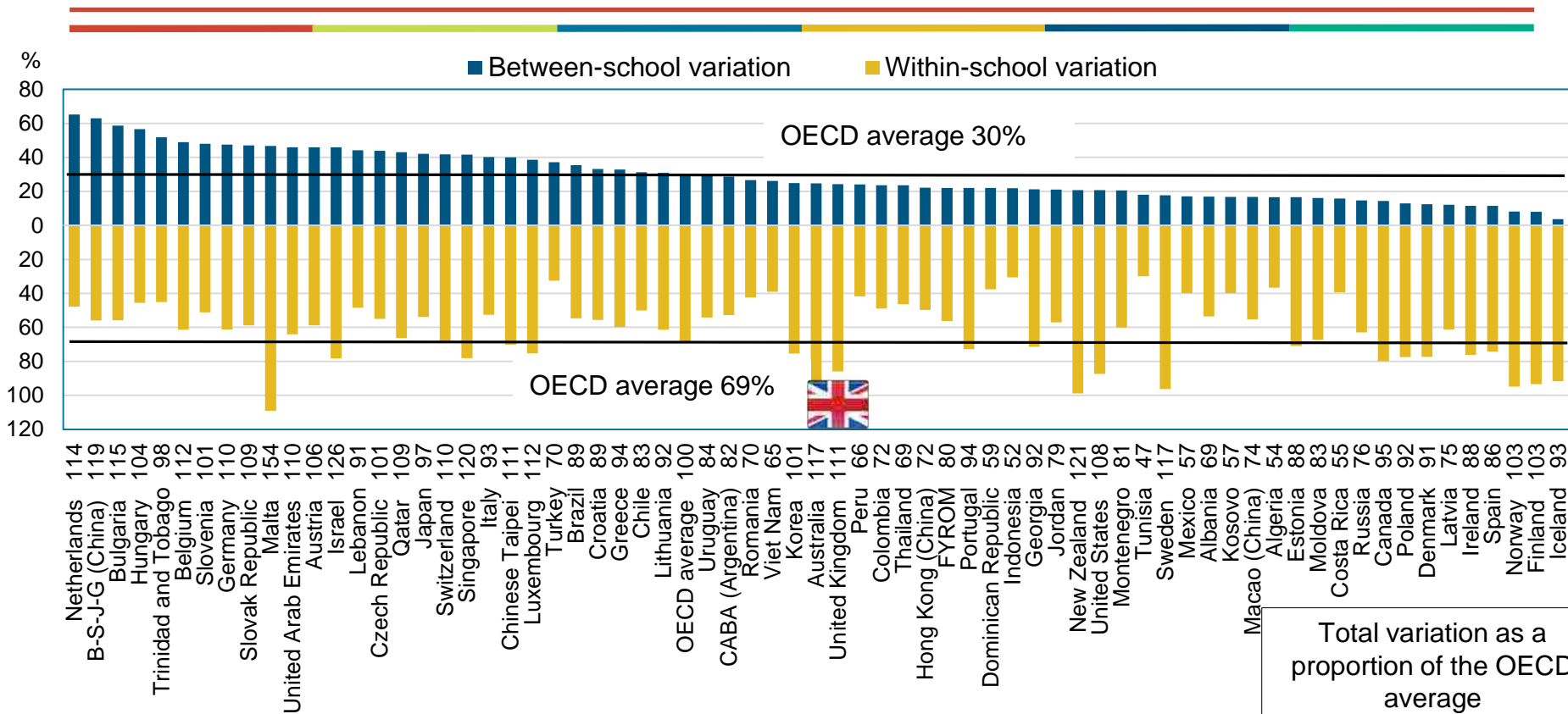


Figure I.6.11

# Variation in science performance between and within schools



A man in a light-colored suit and tie is leaning over a desk, pointing at a tablet with his right hand. A woman with long dark hair, wearing a light-colored blouse with a bow at the neck, is sitting at the desk and looking at the tablet. The background is a blurred office setting with a window. The entire image has a warm, reddish-orange tint. The word "Prescription" is written in white, bold, sans-serif font across the center of the image.

# Prescription



# Ownership of professional practice

Powerful learning environments are constantly creating synergies and finding new ways to enhance professional, social and cultural capital with others. They do that with families and communities, with higher education, with other schools and learning environments, and with businesses.

# Effective teacher policy and practice

Improve the societal view of teaching as a profession



Recruit top candidates into the profession



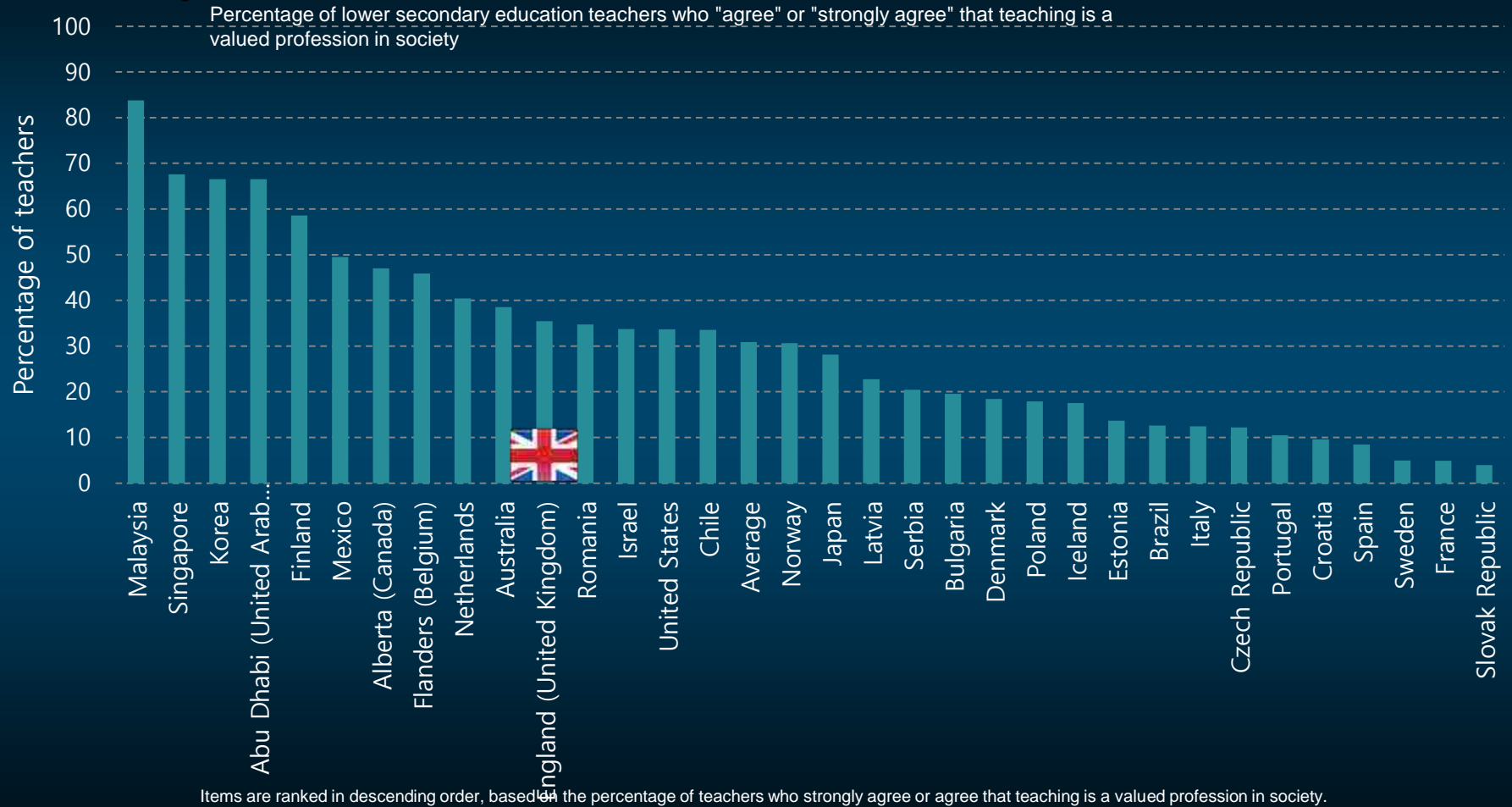
Developing Teaching as a profession

Retain and recognise effective teachers – path for growth



Support teachers in continued development of practice

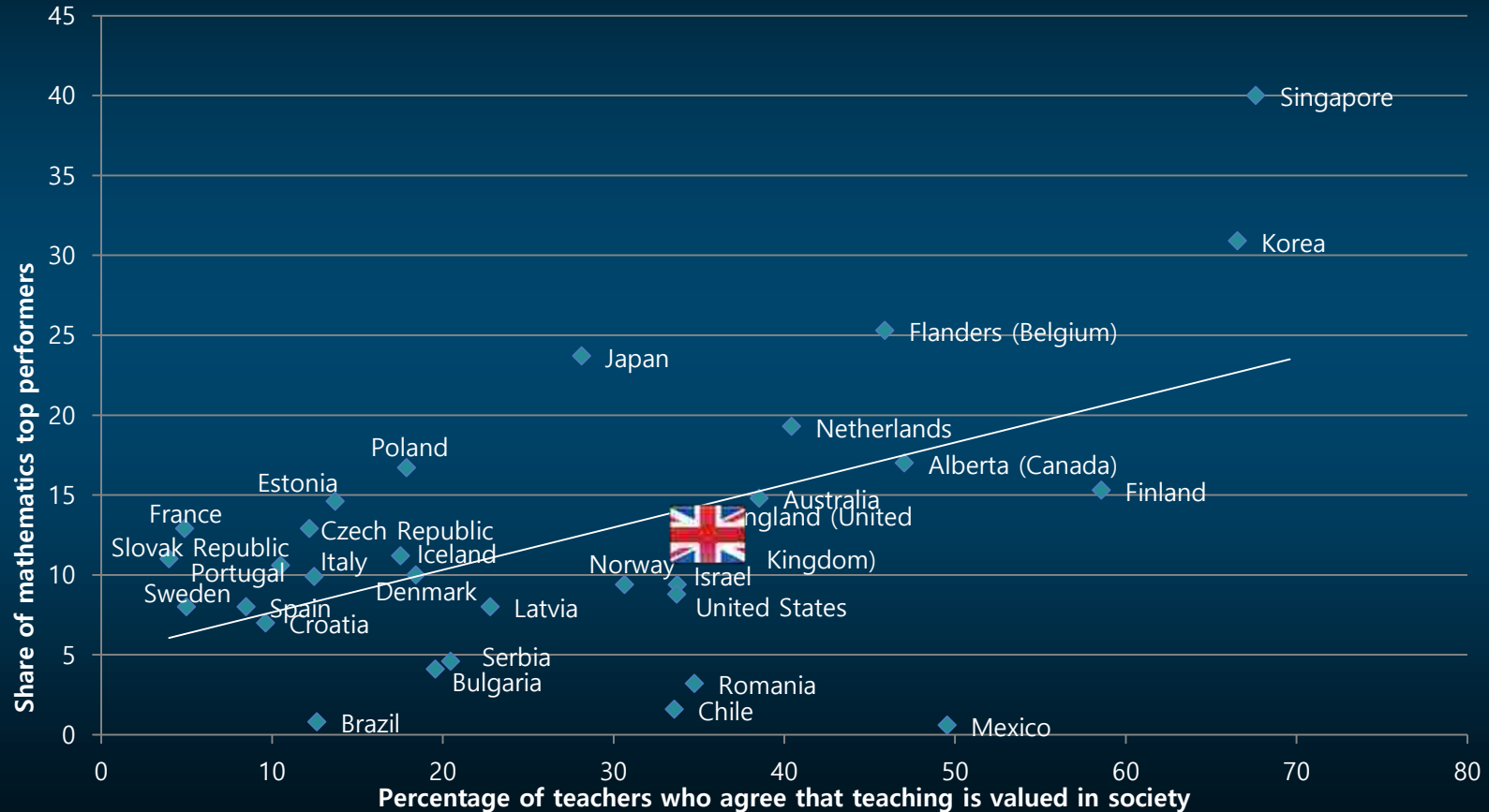
# Teachers' perceptions of the value of teaching in society





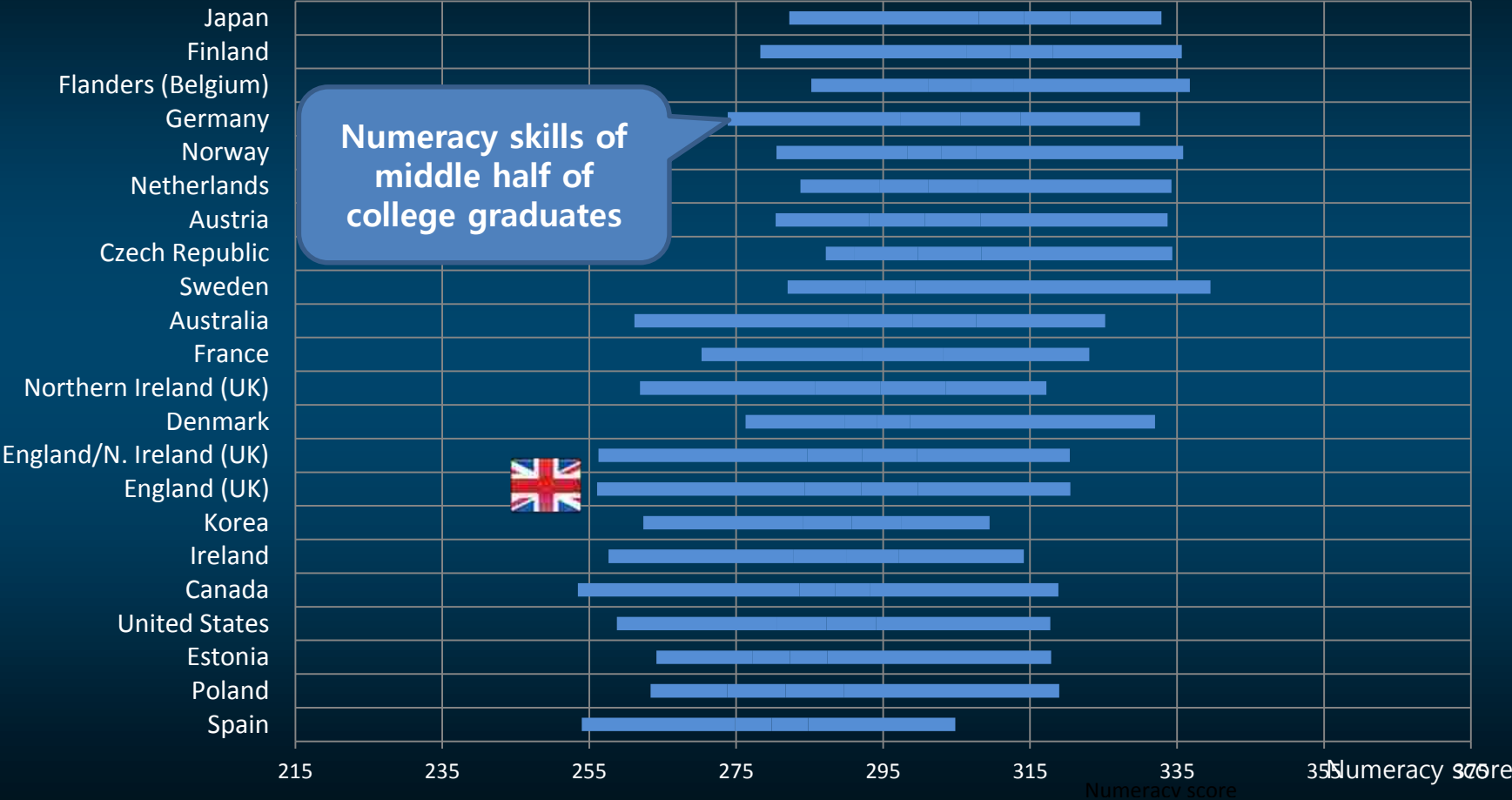
## Relationship between the perceived value of the teaching profession and the share of PISA top performers (math)

Relationship between lower secondary education teachers' views on the value of their profession in society and the share of top mathematics performers in PISA 2012



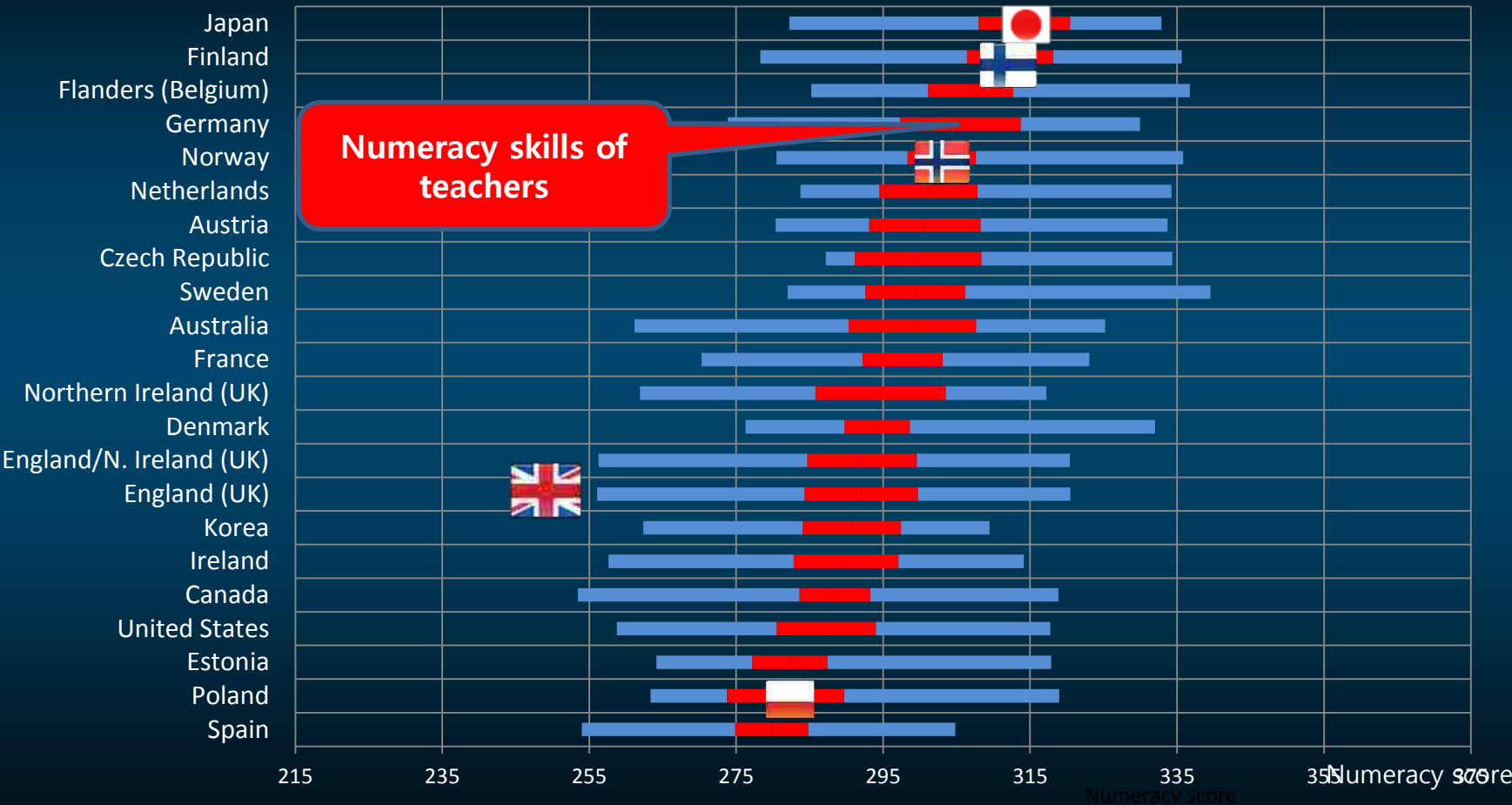
# Teachers' skills

Numeracy test scores of tertiary graduates and teachers

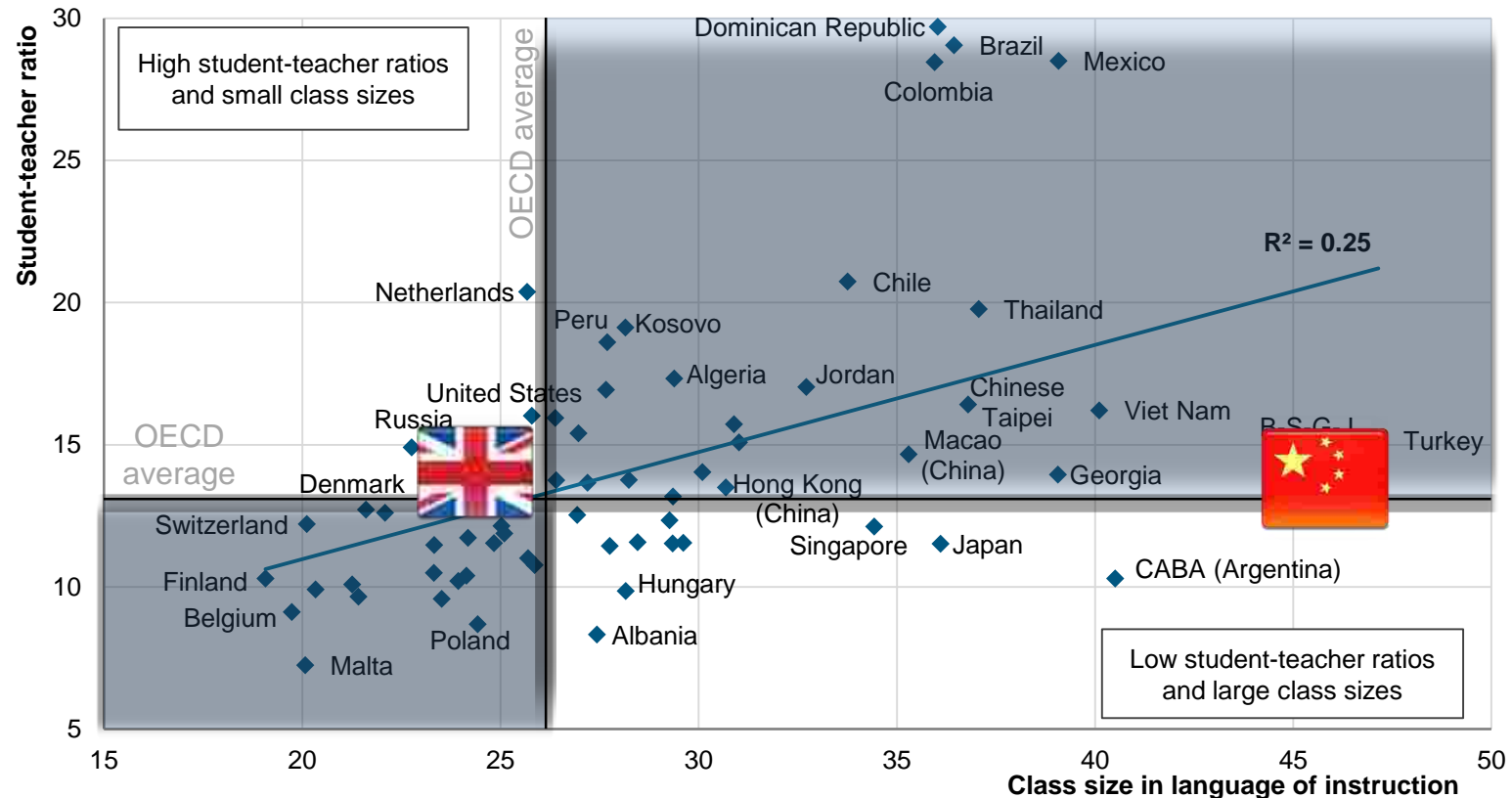


# Teachers' skills

Numeracy test scores of tertiary graduates and teachers



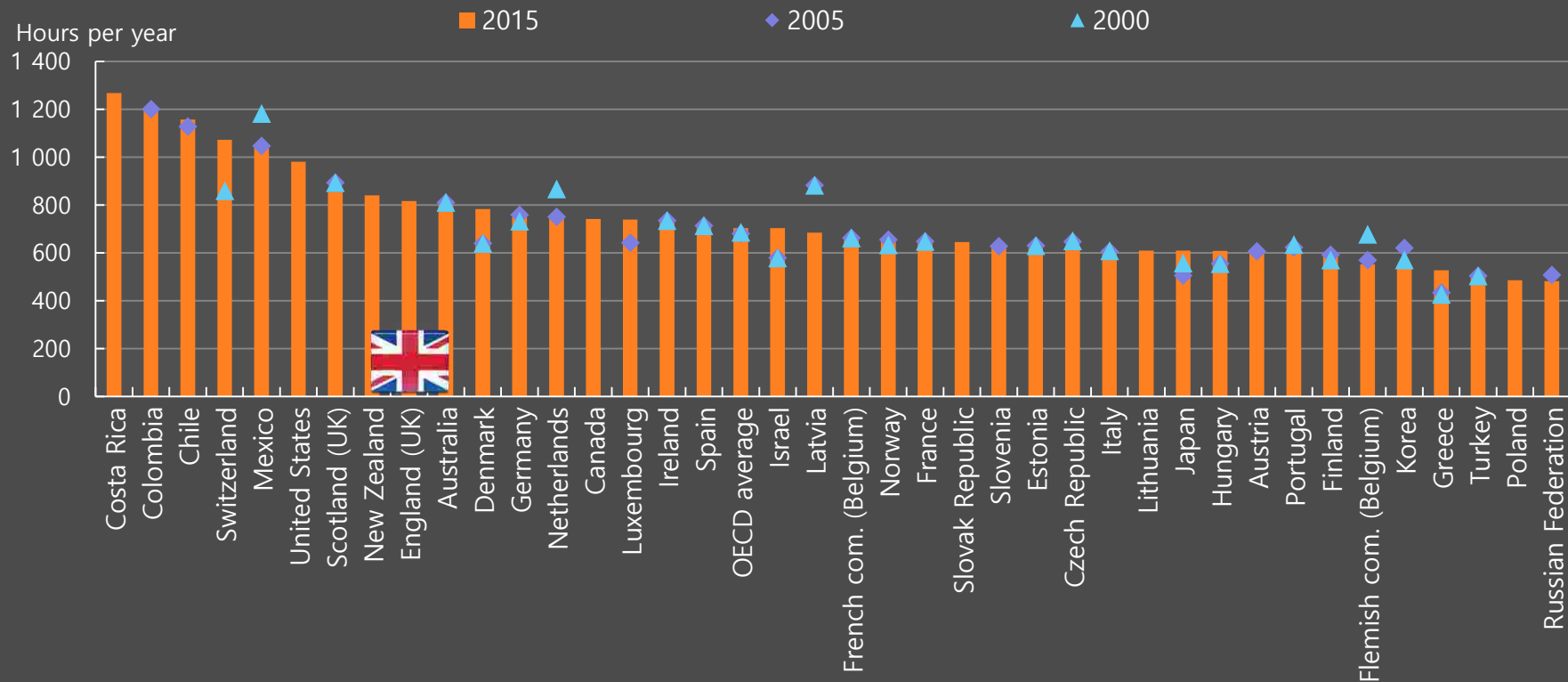
# Student-teacher ratios and class size



# Teaching hours

Figure D4.1

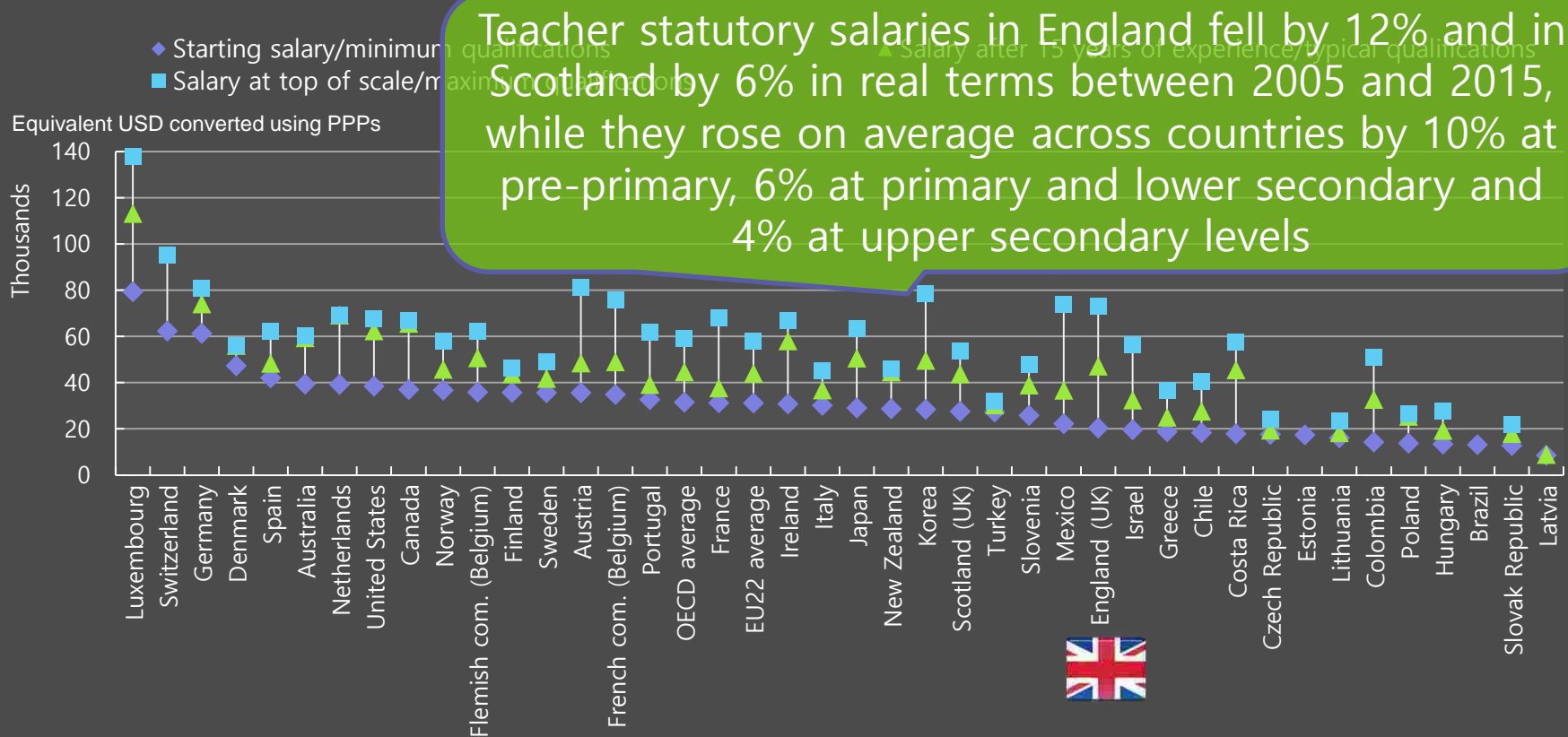
Number of teaching hours per year in general lower secondary public education (2000, 2005 and 2015)



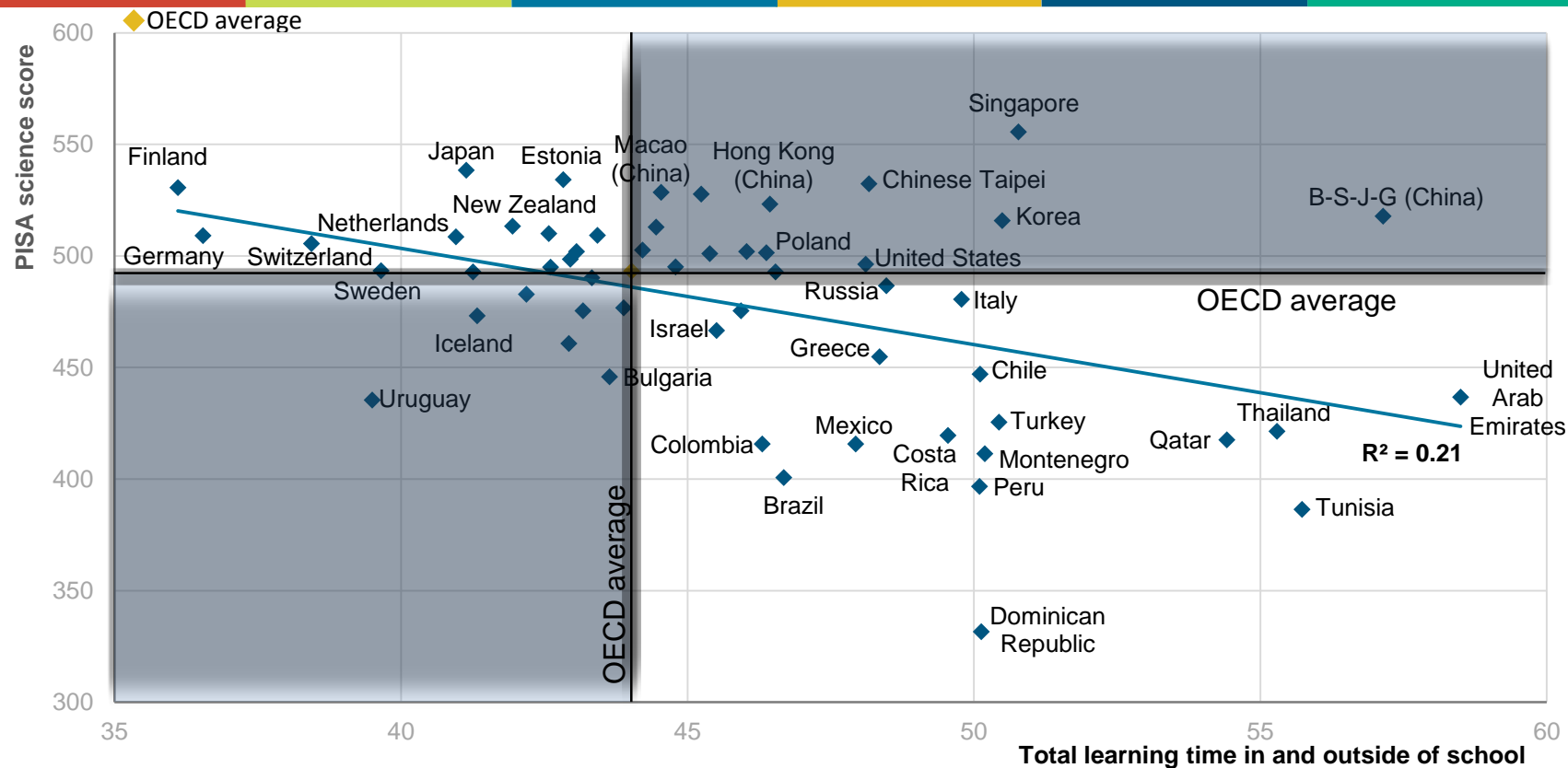
# Starting salaries and salary progressions

Figure D3.2

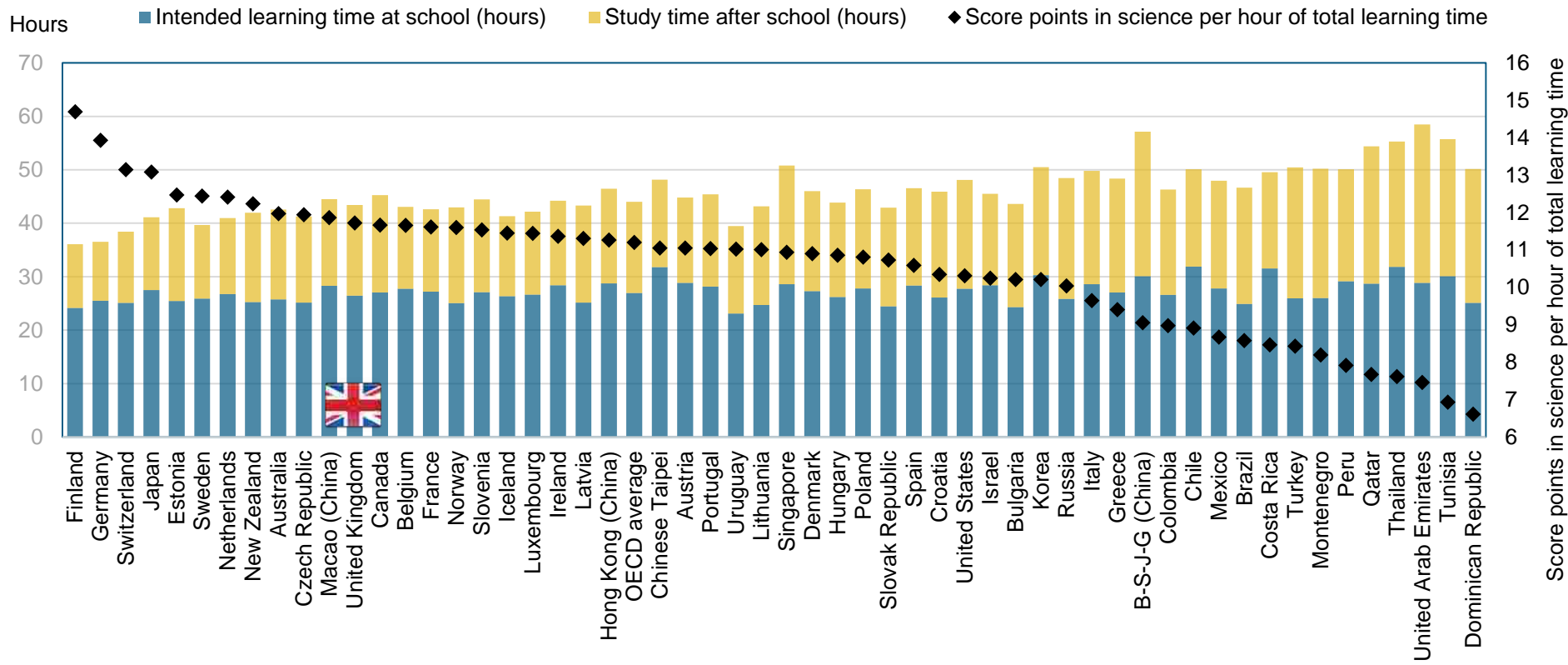
Lower secondary teachers' statutory salaries at different points in teachers' careers (2015)



# Learning time and science performance



# Learning time and science performance





A person in a dark suit and tie is holding a wooden gavel over a stack of books. The background is a blurred city skyline at sunset or sunrise. The text "Bureaucratic Look-up" is overlaid in white.

# Bureaucratic Look-up

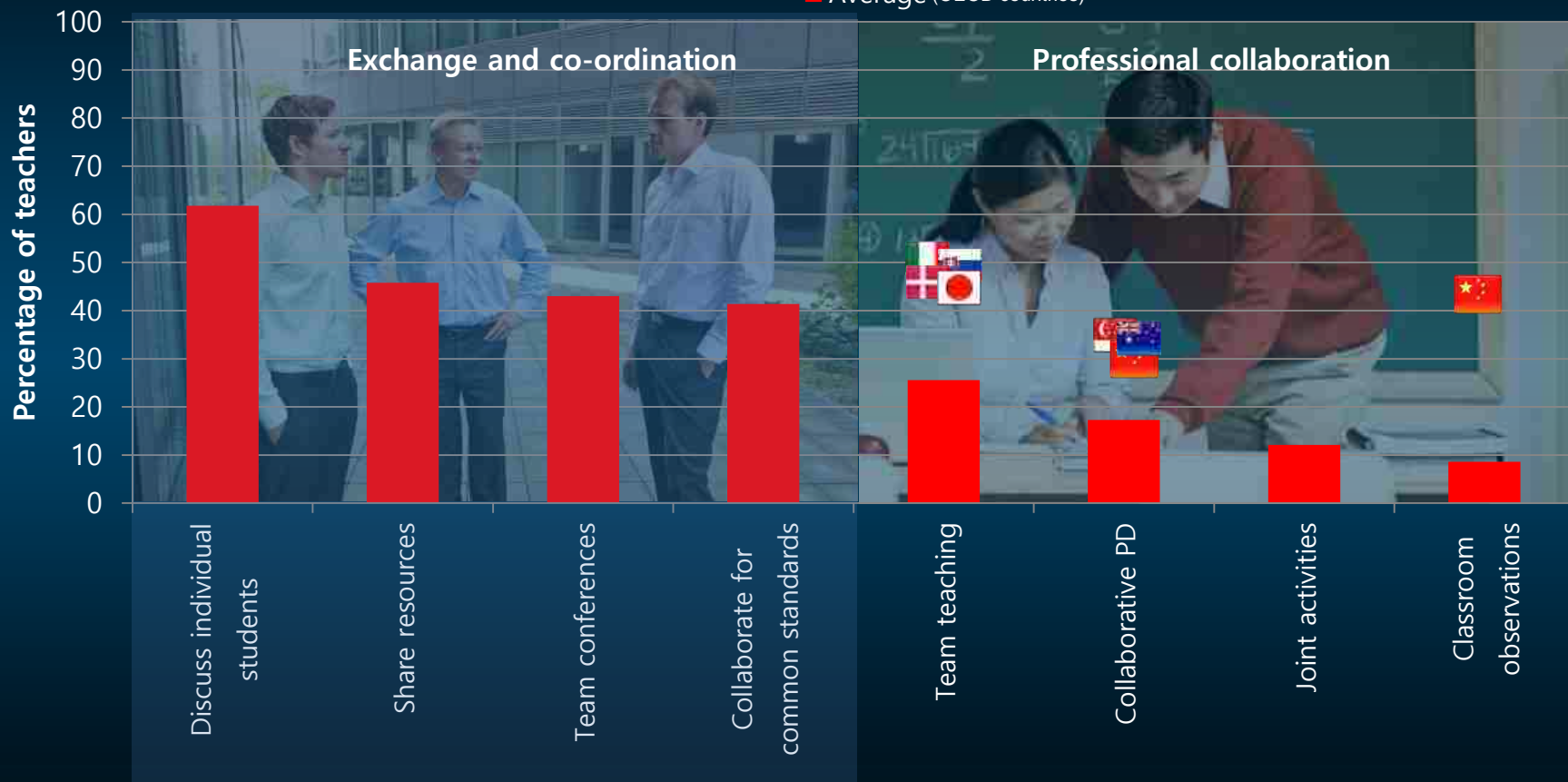
A photograph of three business professionals (two men and one woman) sitting around a white conference table in a bright office setting. The man on the left is wearing a dark suit and a patterned tie, smiling and looking towards the camera. The woman in the center is wearing a white blazer over a black top, smiling and looking towards the camera. The man on the right is wearing a dark suit and a striped tie, smiling and looking towards the camera. He is using a laptop. On the table are various items: a pen, a notepad, a small colorful circular object, and a blue folder with documents. The background is a blurred office space with large windows. The entire image has a green color overlay.

# Devolved Look-outward

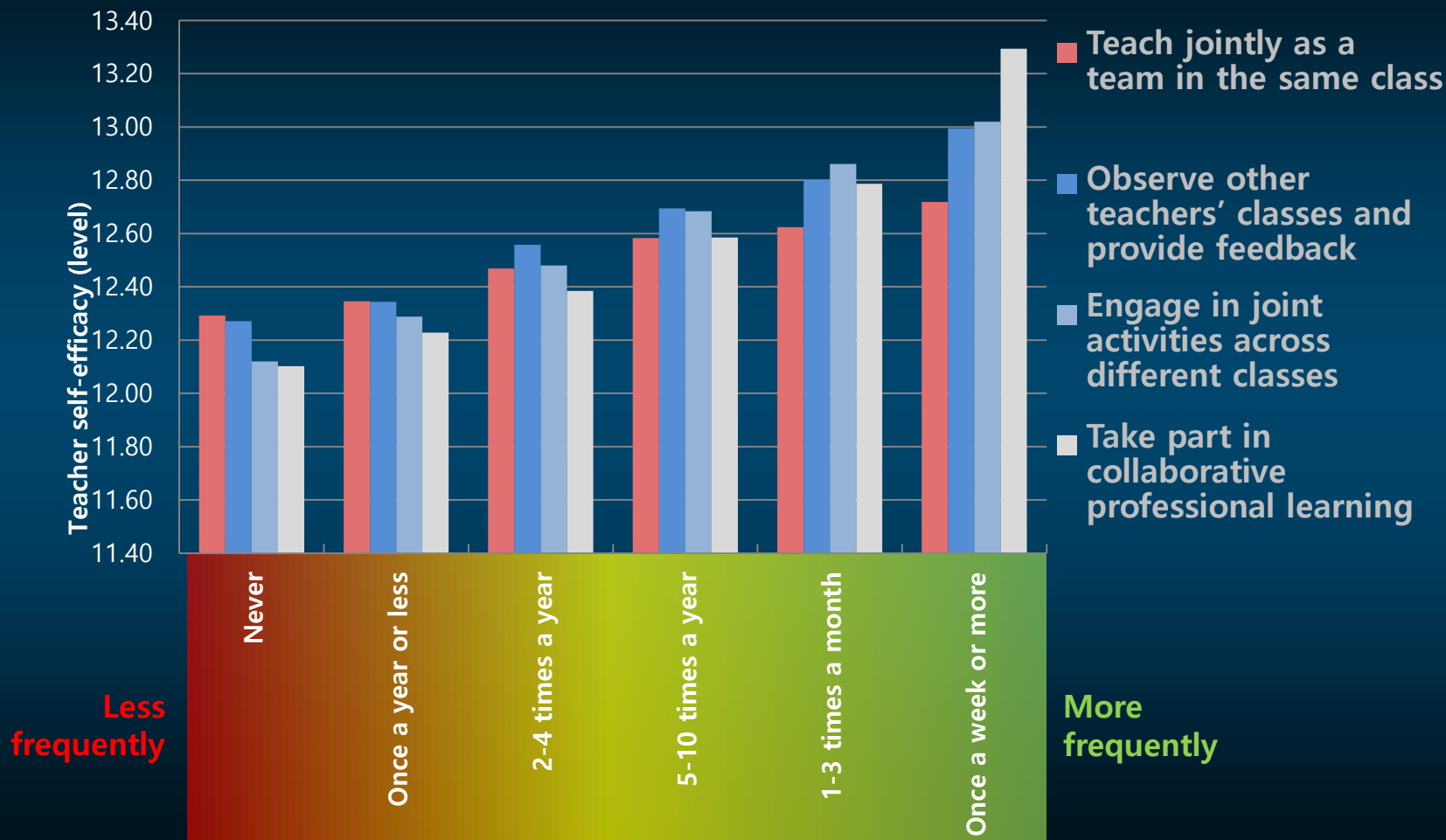
# Professional collaboration among teachers

Percentage of lower secondary teachers who report doing the following activities at least once per month

■ Average (OECD countries)



## Teachers Self-Efficacy and Professional Collaboration



A woman with blonde hair tied back is speaking at a white podium. She is wearing a dark blue top and has her hands raised in a gesturing motion. A black microphone is positioned in front of her. The background is a blurred indoor setting with a white wall and a dark horizontal line. The entire image is overlaid with a semi-transparent red filter. The text "Delivered wisdom" is written in white, bold, sans-serif font across the center of the image.

**Delivered wisdom**

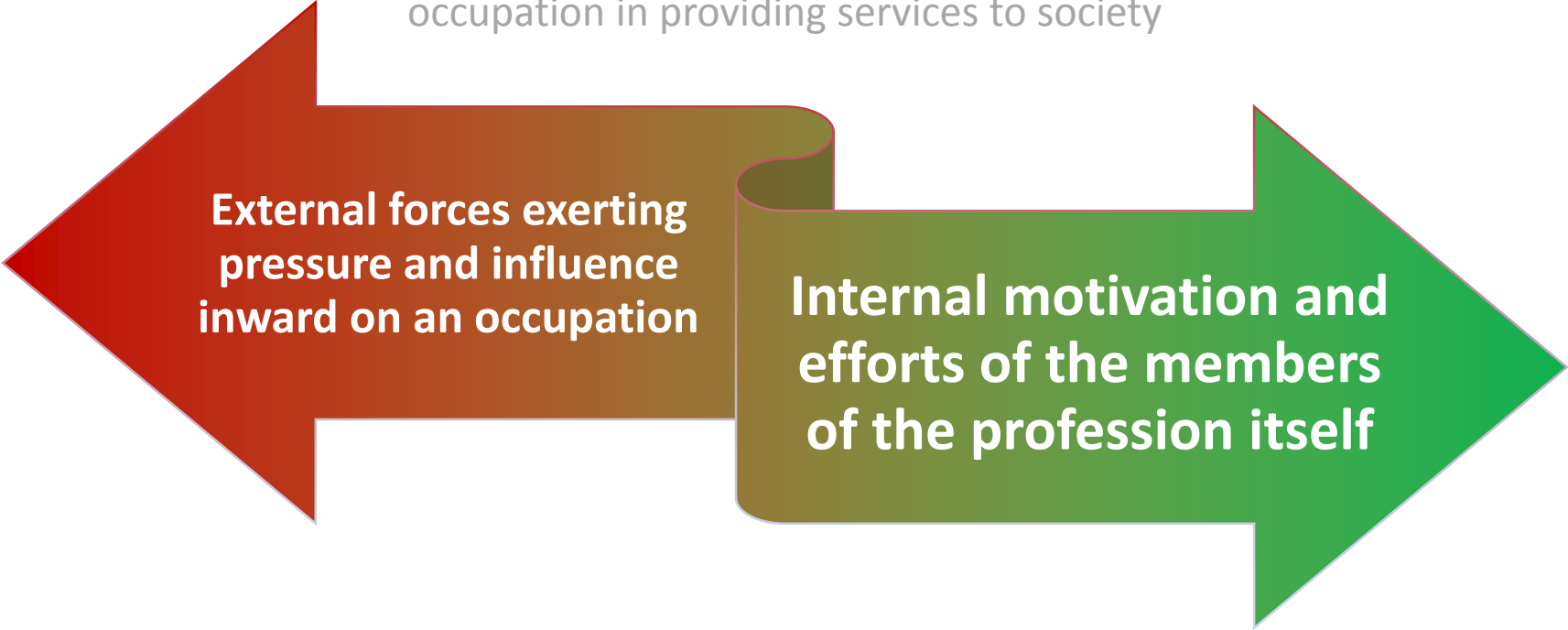
# University reform



Recognising the  
for the  
of le

resources  
design  
nts

Professionalism is the level of autonomy and internal regulation exercised by members of an occupation in providing services to society



**External forces exerting  
pressure and influence  
inward on an occupation**

The diagram consists of two large, overlapping arrows. The left arrow is red and points to the left, containing the text 'External forces exerting pressure and influence inward on an occupation'. The right arrow is green and points to the right, containing the text 'Internal motivation and efforts of the members of the profession itself'. The two arrows overlap in the center, with the green arrow appearing to be in front of the red one.

**Internal motivation and  
efforts of the members  
of the profession itself**



A woman with blonde hair in a ponytail, wearing a pink cardigan over a white top, sits at a wooden desk in a large, empty classroom. She is looking down with a thoughtful or somber expression. The room is filled with rows of identical wooden desks and blue chairs, all of which are empty except for her. The lighting is soft and even, highlighting the repetitive pattern of the classroom furniture.

# The past was divided

Teachers and content divided by subjects and student destinations

Schools designed to keep students inside, and the rest of the world outside





# The future is integrated

Integrated: Emphasising integration of subjects, integration of students and integration of learning contexts

Connected: with real-world contexts, and permeable to the rich resources in the community

Less subject-based, more project-based

A hand is shown tipping over a row of wooden blocks. The blocks are arranged in a line, and the hand is positioned to tip the last few blocks, which are already leaning. The background is a solid reddish-pink color.

# Conformity

Standardisation and compliance lead students to be educated in batches of age, following the same standard curriculum, all assessed at the same time.

A photograph of a man and a young child in an orchard. The man, on the left, is smiling and looking up at a child. The child, on the right, is also smiling and reaching up with their right hand towards a red apple hanging from a tree branch. The background is filled with green leaves and branches, creating a lush, natural setting. The overall tone is bright and positive, with a green tint overlaying the image.

# Ingenious

Building instruction from student passions and capacities,  
helping students personalise their learning and  
assessment in ways that foster engagement and talents.



A photograph of a classroom with several students sitting at desks, focused on their work. In the foreground, a young man on the left and a young woman on the right are writing in notebooks. Other students are visible in the background, also working. The image has a warm, reddish-pink color overlay.

# Learning a place

Schools as technological islands, that is technology was deployed mostly to support existing practices for efficiency gains

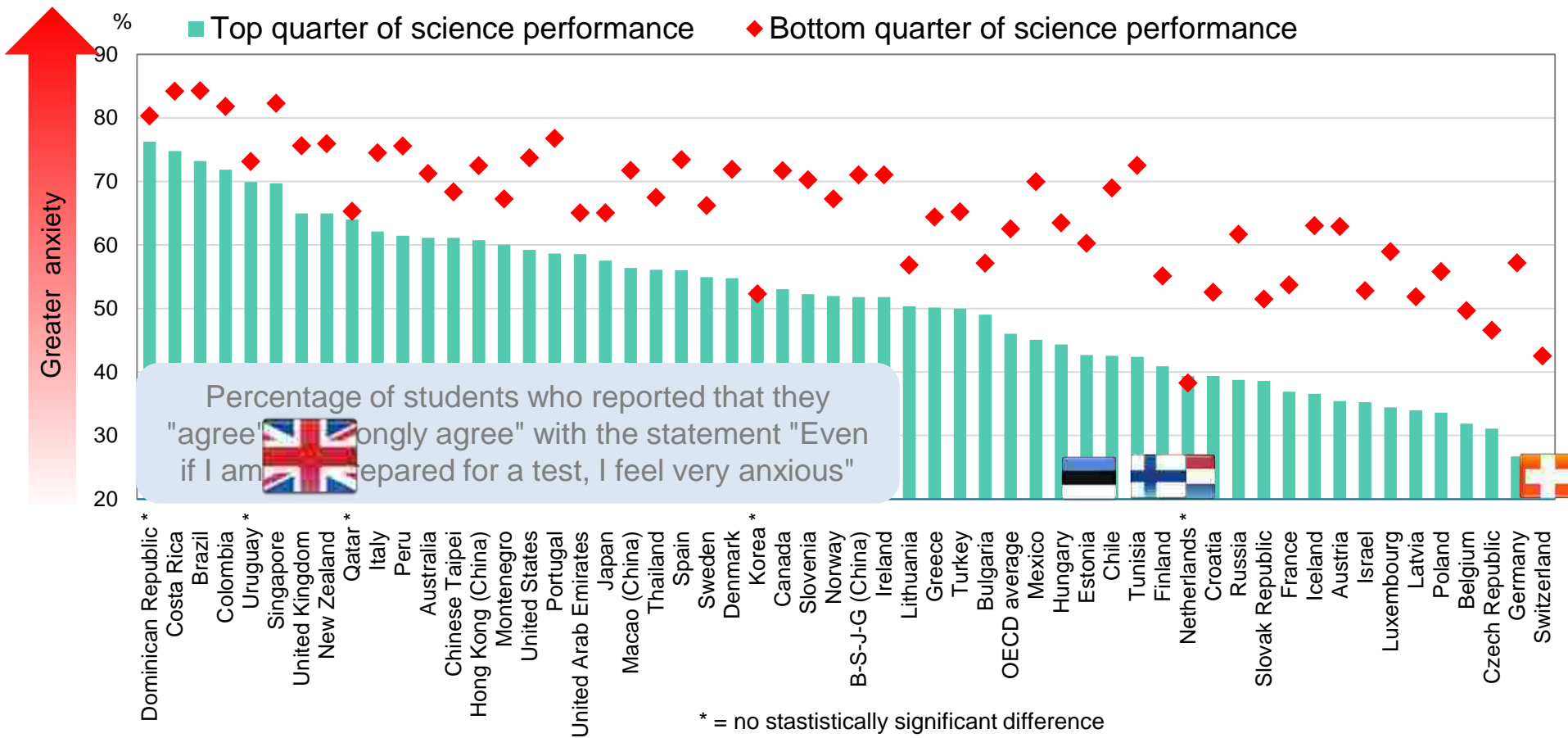
A photograph of three young adults sitting on a lush green lawn in a wooded area. They are all smiling and looking at papers or devices they are holding. The man on the left is wearing a grey jacket over a blue shirt. The woman in the middle is wearing a light blue jacket. The woman on the right is wearing a dark jacket. The background is filled with green trees and foliage.

# Learning an activity

Technologies liberating learning from past conventions and connect learners in new and powerful ways. The past was interactive, the future is participative

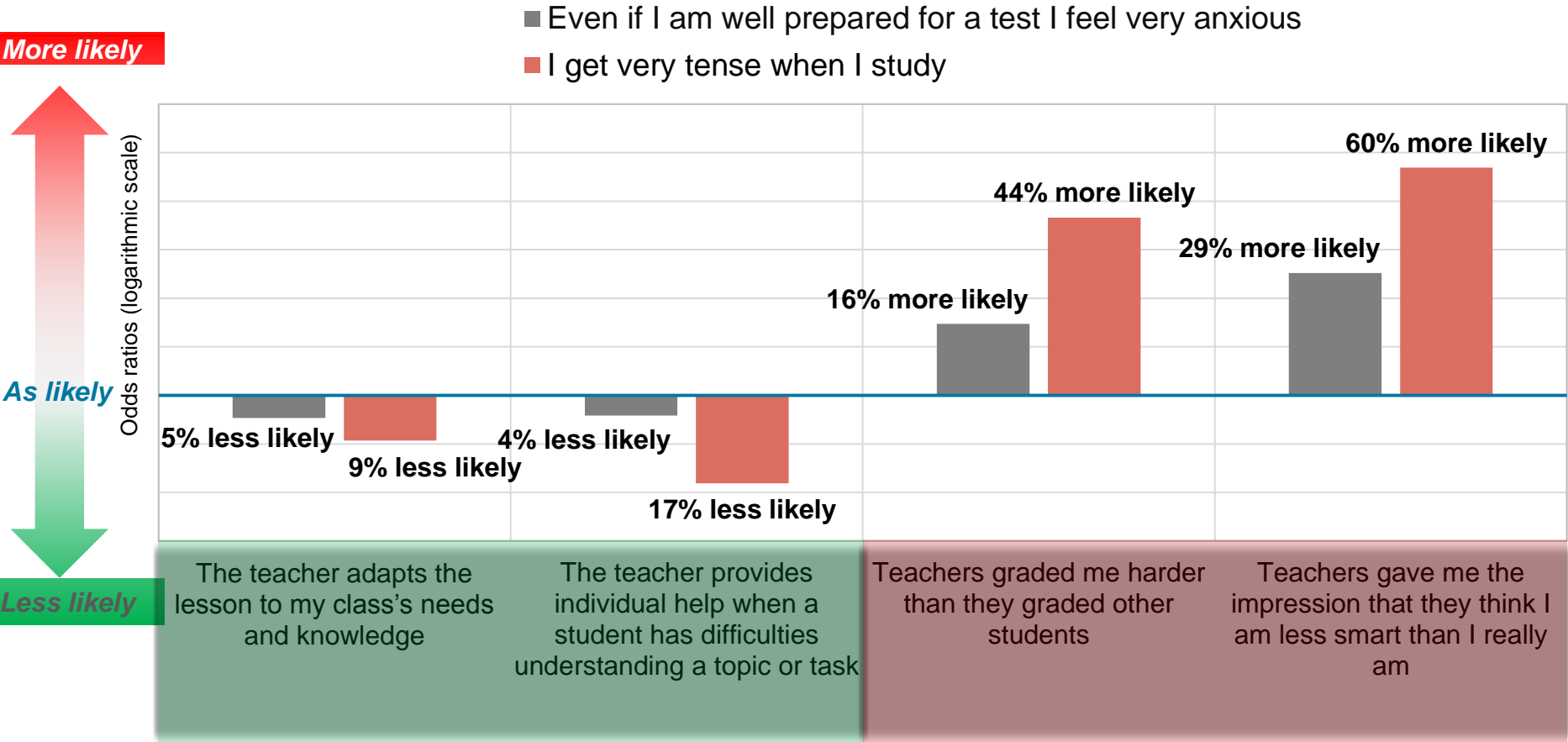
# Schoolwork-related anxiety among students in the top and bottom quarters of science performance

Figure III.4.2



# More teacher support and less anxiety

Figure III.4.5





## Parents' interest in their child's activities at school and outcomes (OECD)

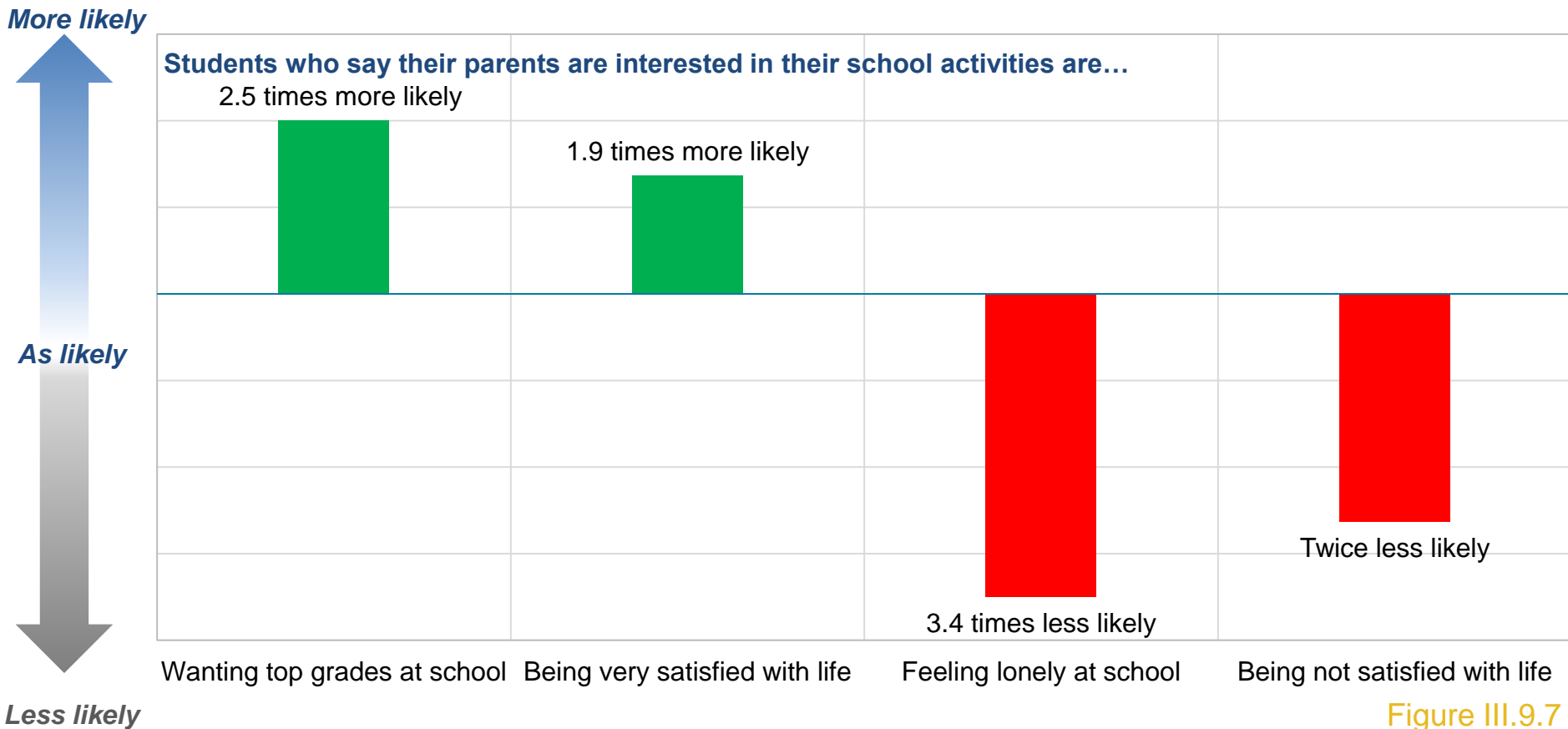


Figure III.9.7

A hand is shown placing a wooden block with a person icon on top of other similar blocks. The blocks are arranged in a grid-like pattern on a light-colored surface. The background is a soft, out-of-focus light blue. The text "Administrative control and accountability" is overlaid in the center in a bold, white font.

# Administrative control and accountability

# Professional forms of work organisation



A man in a white shirt and tie is shown from the chest up, looking down with a stressed expression. His right hand is pressed against his forehead. He is surrounded by towering stacks of papers and folders on both sides, creating a sense of being overwhelmed. The entire image has a reddish-pink color cast.

**Management**



# Leadership

The image features a central yellow rope that runs horizontally across the frame. On the left side, four red ropes are attached to the yellow rope, and on the right side, four blue ropes are attached. Each of these four ropes on both sides is knotted at its end. The background is a solid, light pink color. The text "Public vs. private" is written in a white, sans-serif font, centered over the yellow rope.

Public vs. private



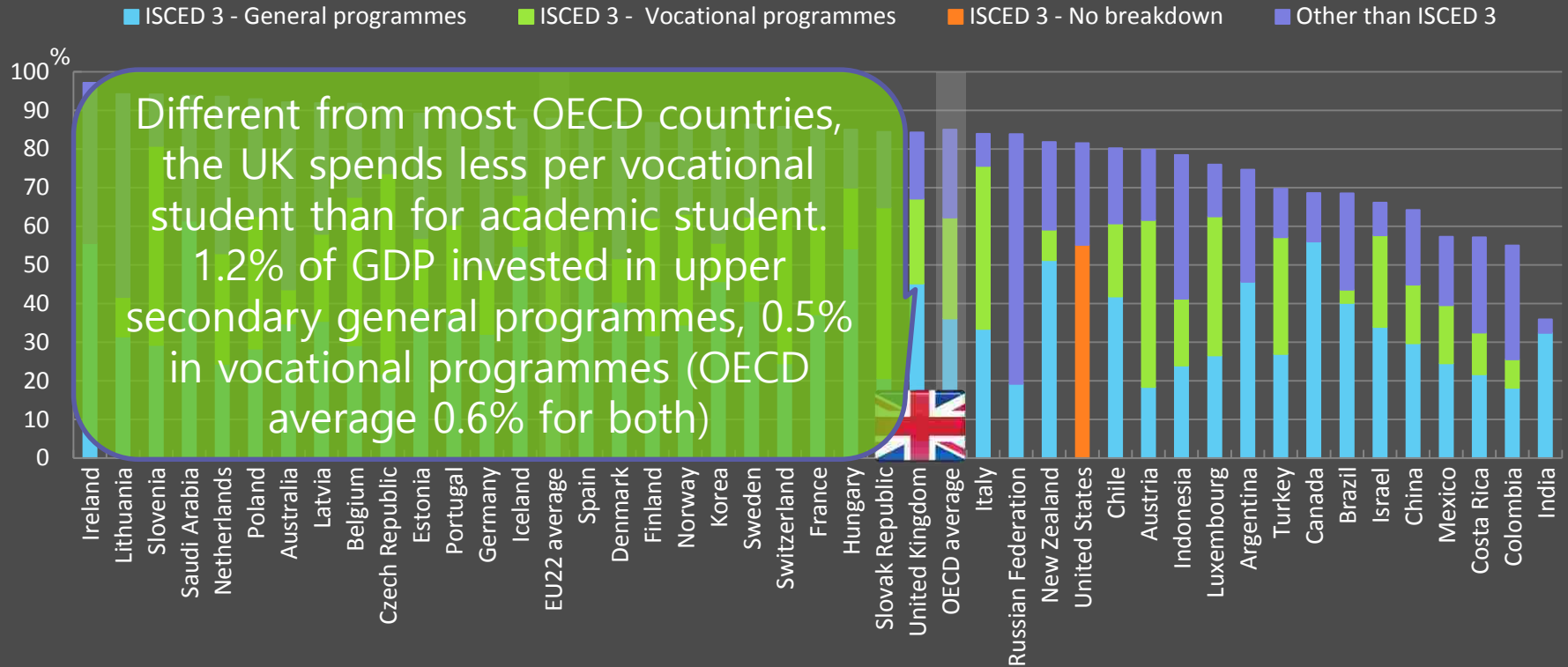
Two white paper cutouts of stylized human figures are positioned on a wooden surface, holding hands. The figures are simple, with rounded heads, outstretched arms, and legs. The background is a blurred wooden texture. The text "Public with private" is overlaid in the center in a white, sans-serif font.

Public with private

# 33% of upper secondary UK students were enrolled in vocational programmes, below the OECD average of 43%

Figure C1.1

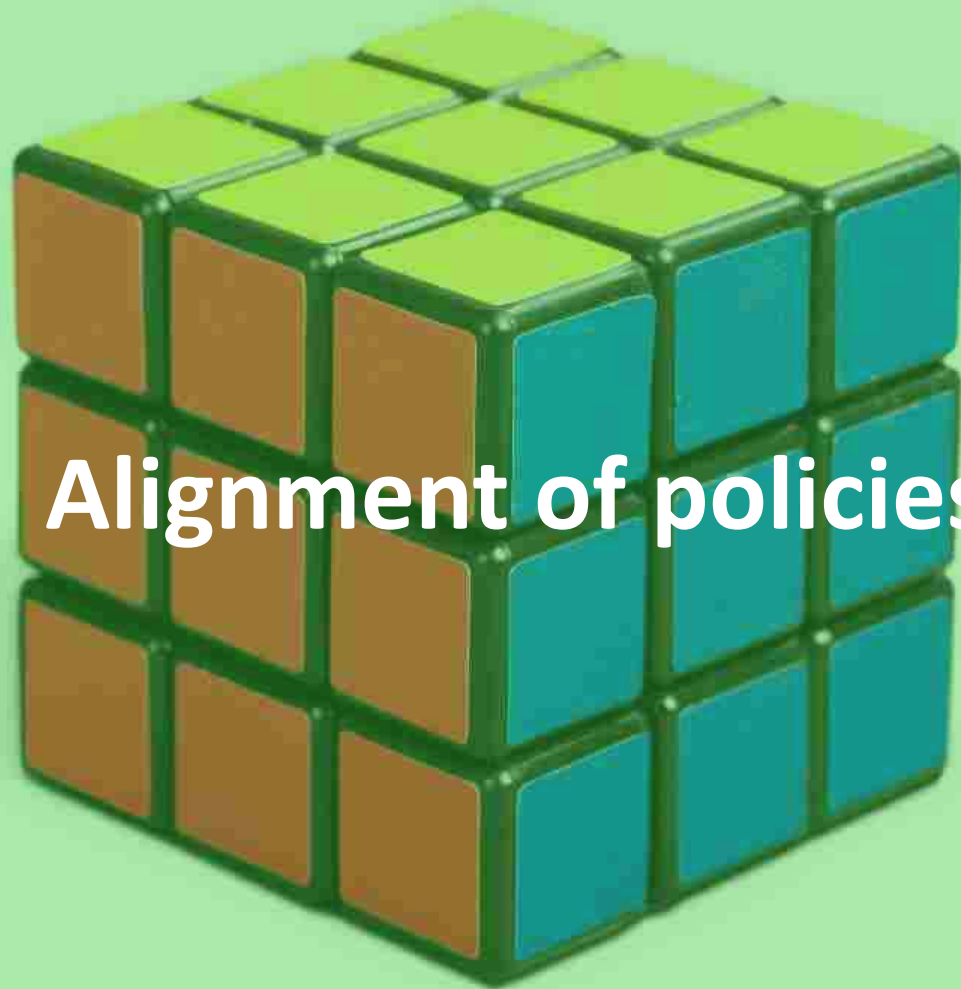
Enrolment rates of 15-19 year-olds, by programme level and orientation (2015)







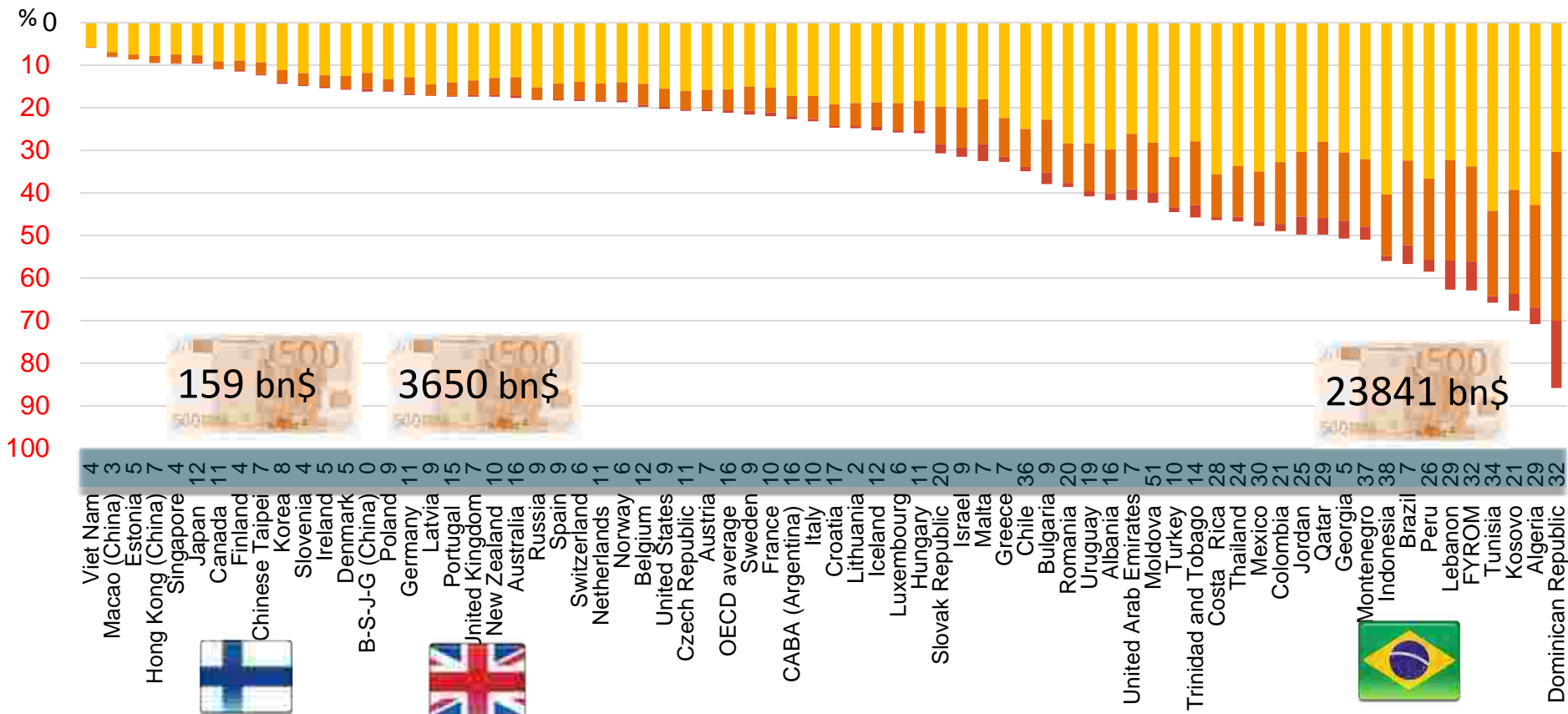
**Idiosyncratic reforms**



**Alignment of policies**

# Share of 15-year-olds without foundations

(PISA science, 15-year-olds)



# Thank you

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Find out more about our work at [www.oecd.org/pisa](http://www.oecd.org/pisa)

- All publications
- The complete micro-level database

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Wechat: **AndreasSchleicher**