EDUCATION & SKILLS

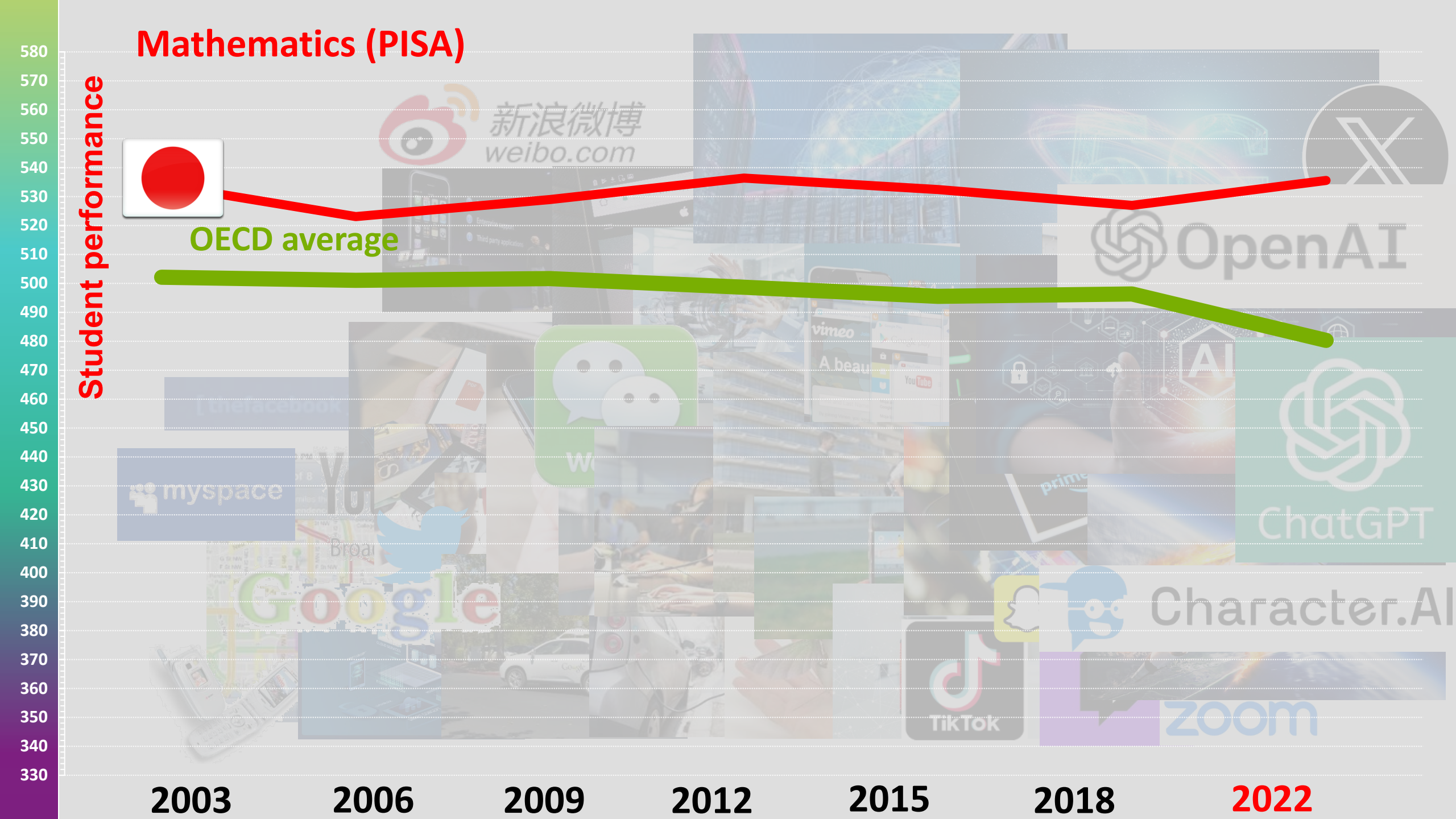
The future of education Perspectives from PISA 2022

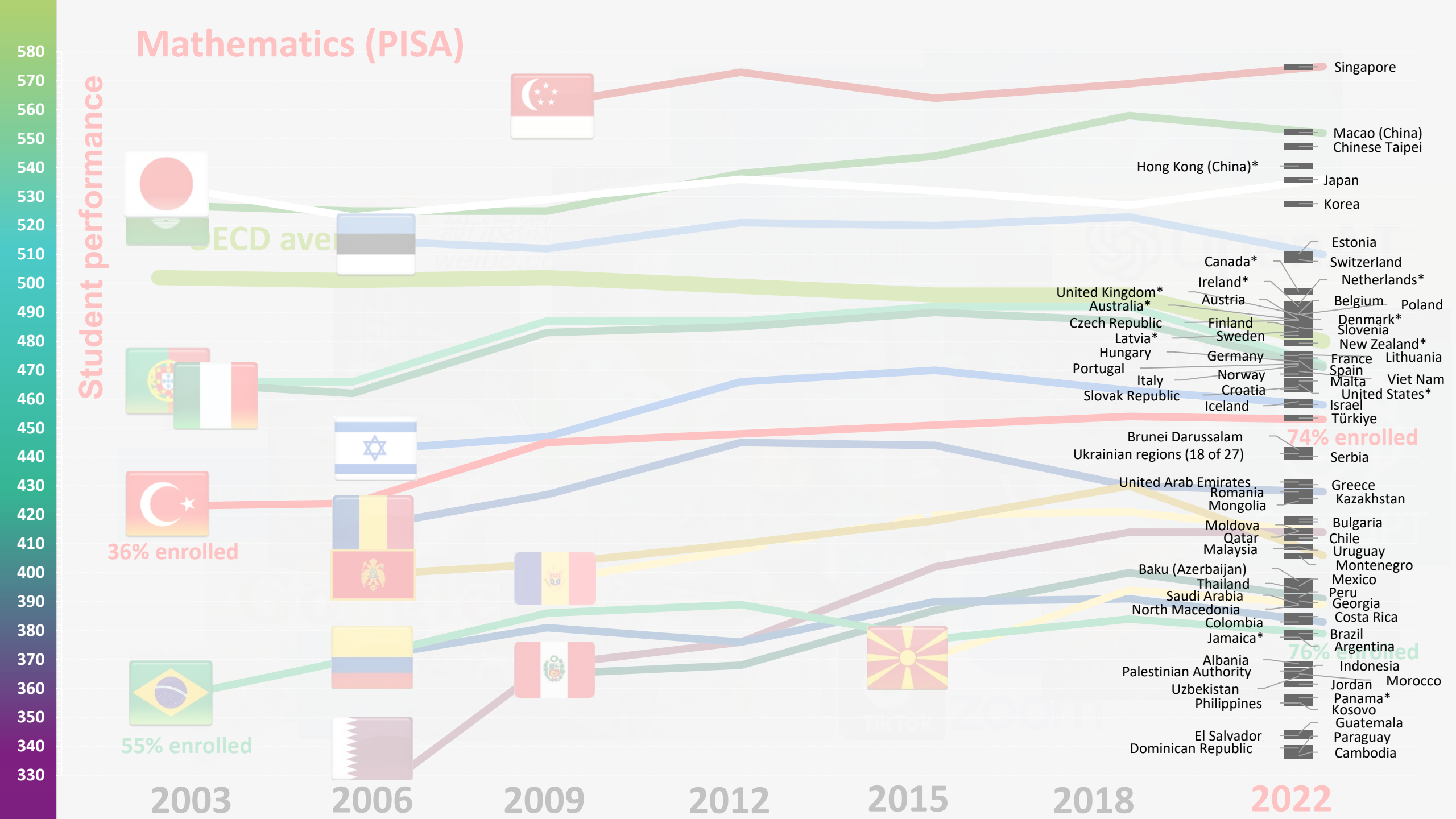
OECD Japan Seminar

PISA participants

Around 690,000 15-year-old students in 81 countries and economies took PISA 2022

PISA Newcomers: El Salvador, Jamaica, Mongolia, the Palestinian Authority and Uzbekistan


Mathematics (PISA)
Student performance
580
570
560
550
540
530
520
510
500
490
480
470
460
450
440
430
420
410
400
390
380
370
360
350
340
330
OECD average
2003
2006
2009
2012
2015
2018
2022
新浪微博
weibo.com
OpenAI
ChatGPT
Character.AI
Google
myspace
TikTok
zoom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410
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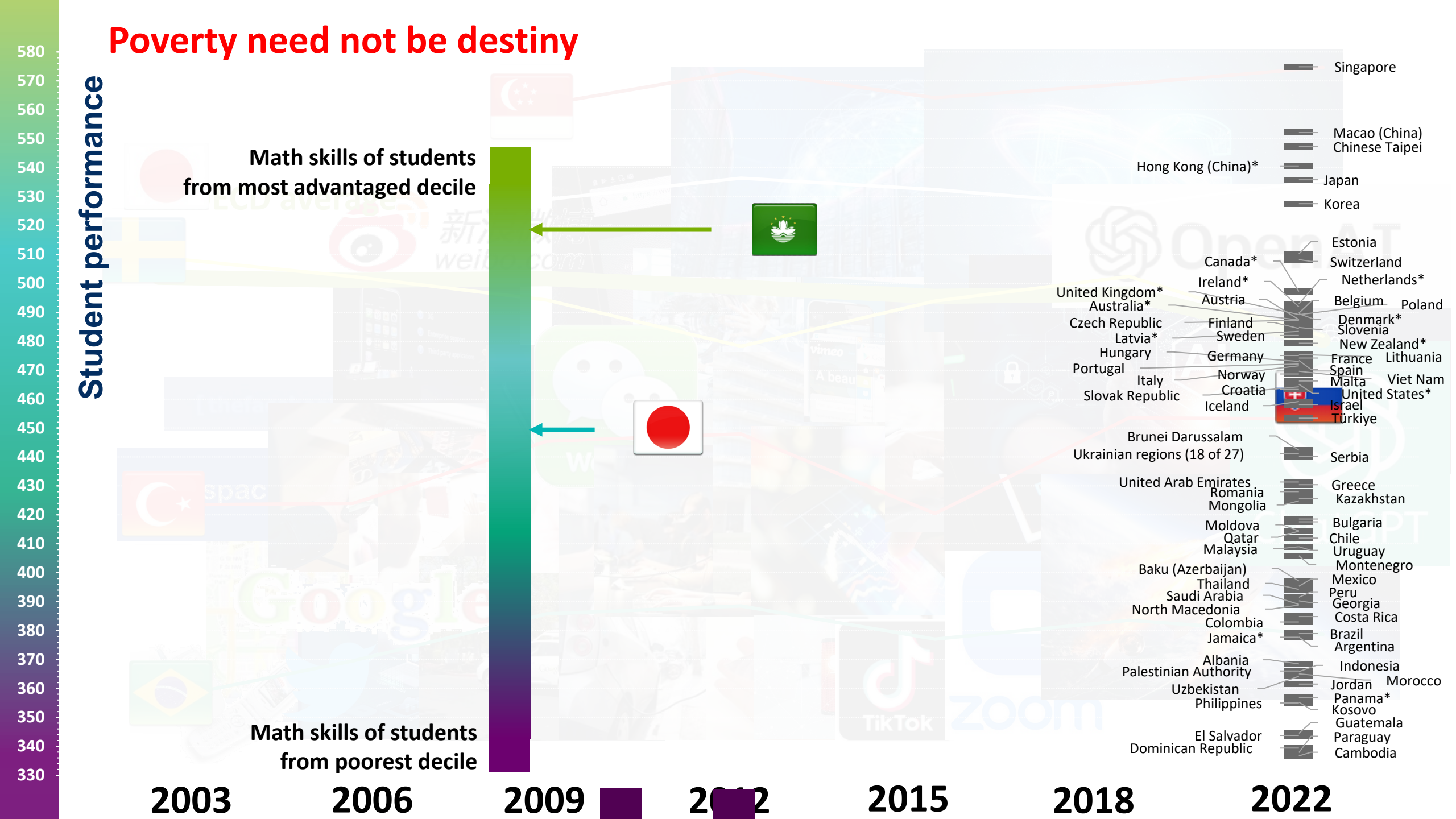
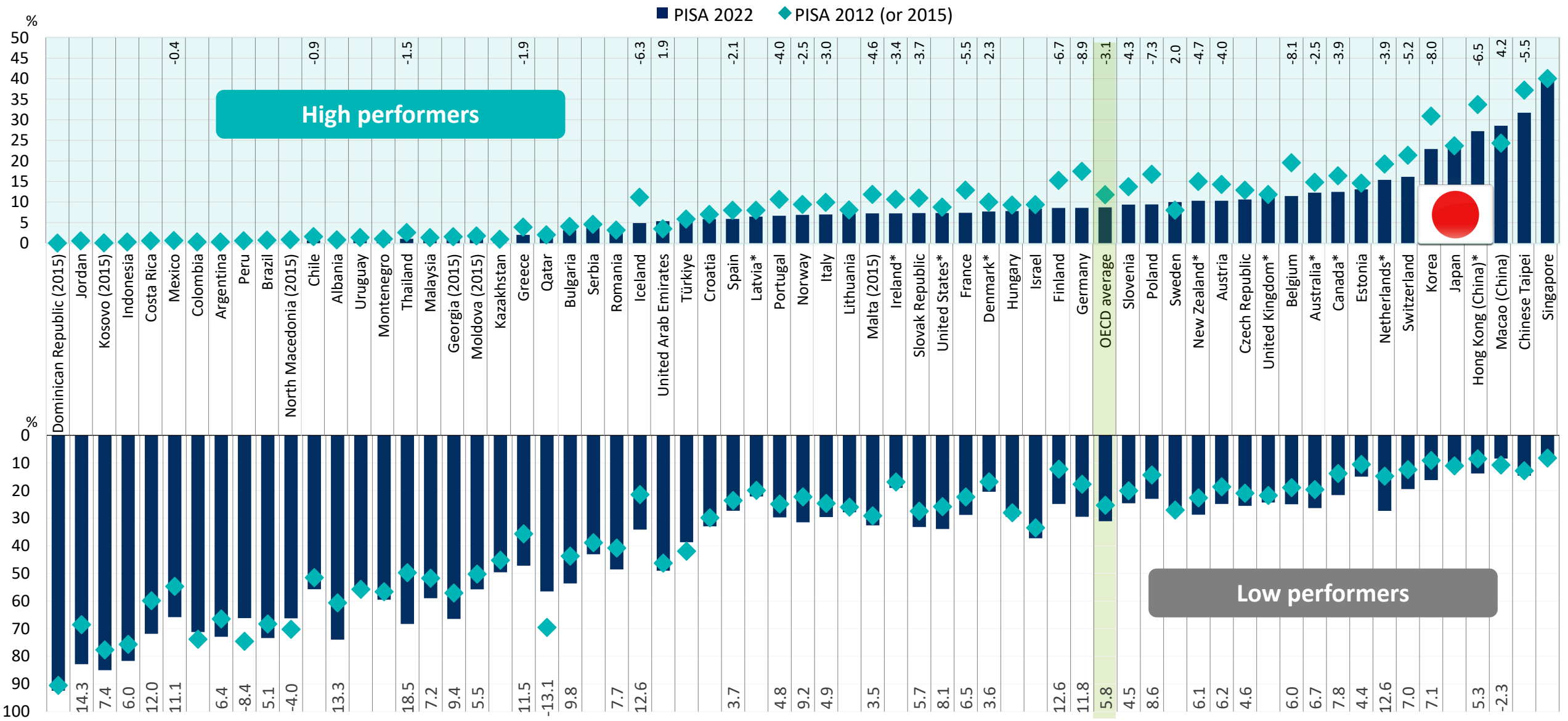
390
380
370
360
350
340
330
OECD ave
36% enrolled
55% enrolled
74% enrolled
76% enrolled
2003
2006
2009
2012
2015
2018
2022
Singapore
Macao (China)
Chinese Taipei
Hong Kong (China)*
Japan
Korea
Estonia
Switzerland
Canada*
Netherlands*
Ireland*
United Kingdom*
Australia*
Austria
Belgium
Poland
Czech Republic
Finland
Denmark*
Latvia*
Sweden
Slovenia
New Zealand*
Hungary
Germany
France
Lithuania
Portugal
Spain
Italy
Norway
Malta
Viet Nam
Slovak Republic
Croatia
United States*
Iceland
Israel
Türkiye
Brunei Darussalam
Ukrainian regions (18 of 27)
Serbia
United Arab Emirates
Greece
Romania
Kazakhstan
Mongolia
Moldova
Bulgaria
Qatar
Chile
Malaysia
Uruguay
Montenegro
Baku (Azerbaijan)
Mexico
Thailand
Peru
Saudi Arabia
Georgia
North Macedonia
Costa Rica
Colombia
Brazil
Jamaica*
Argentina
Albania
Indonesia
Palestinian Authority
Jordan
Morocco
Uzbekistan
Panama*
Philippines
Kosovo
Guatemala
El Salvador
Paraguay
Dominican Republic
Cambodia

Poverty need not be destiny



Percentage of low-performing students and top performers in mathematics in 2012 and 2022

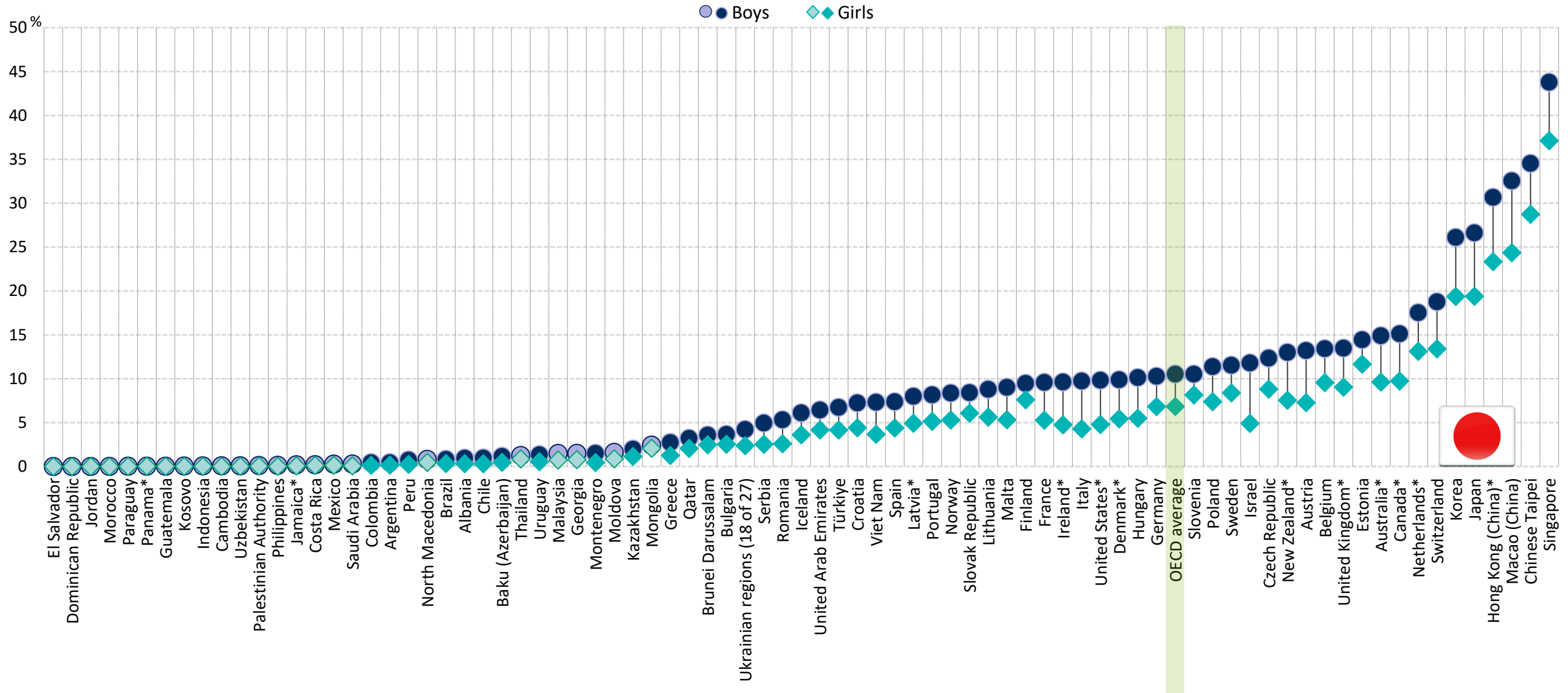
Figure I.6.5



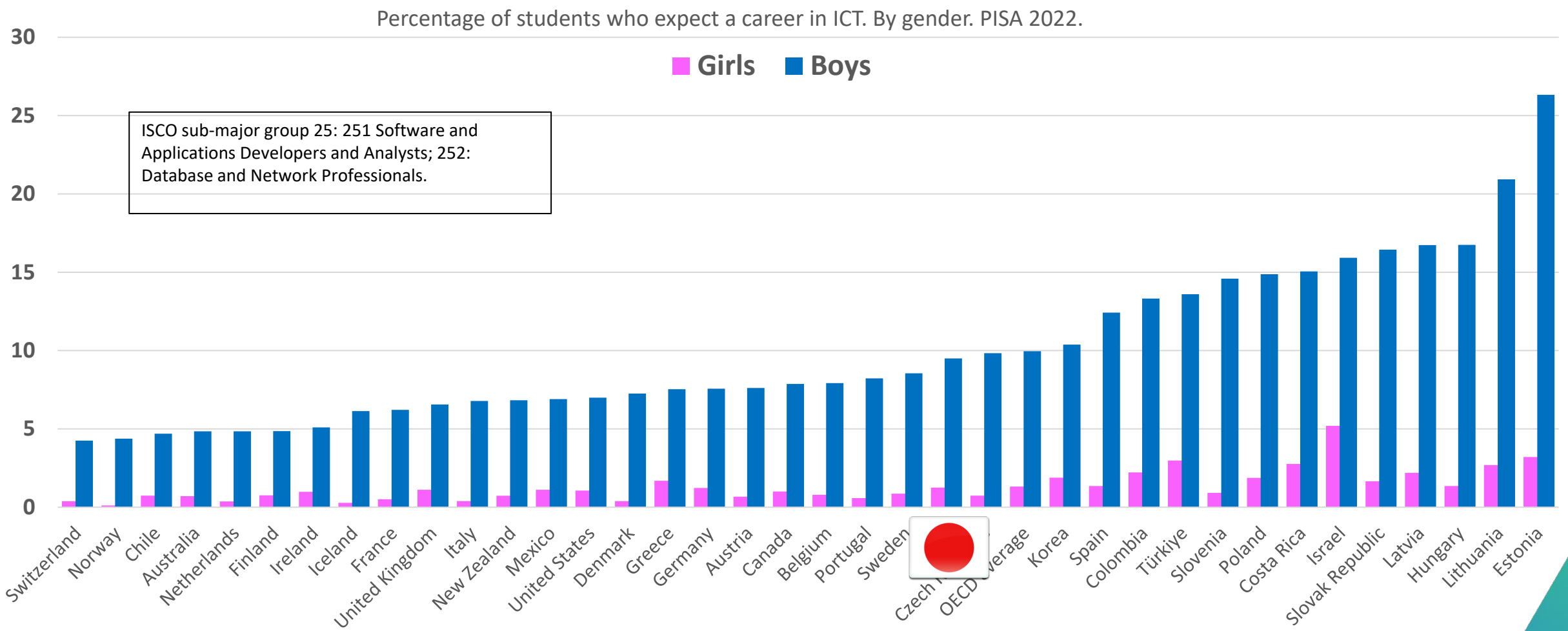
Top performers in mathematics, by gender

Figure I.4.11

Percentage of students who scored at proficiency Level 5 or above in mathematics, by gender



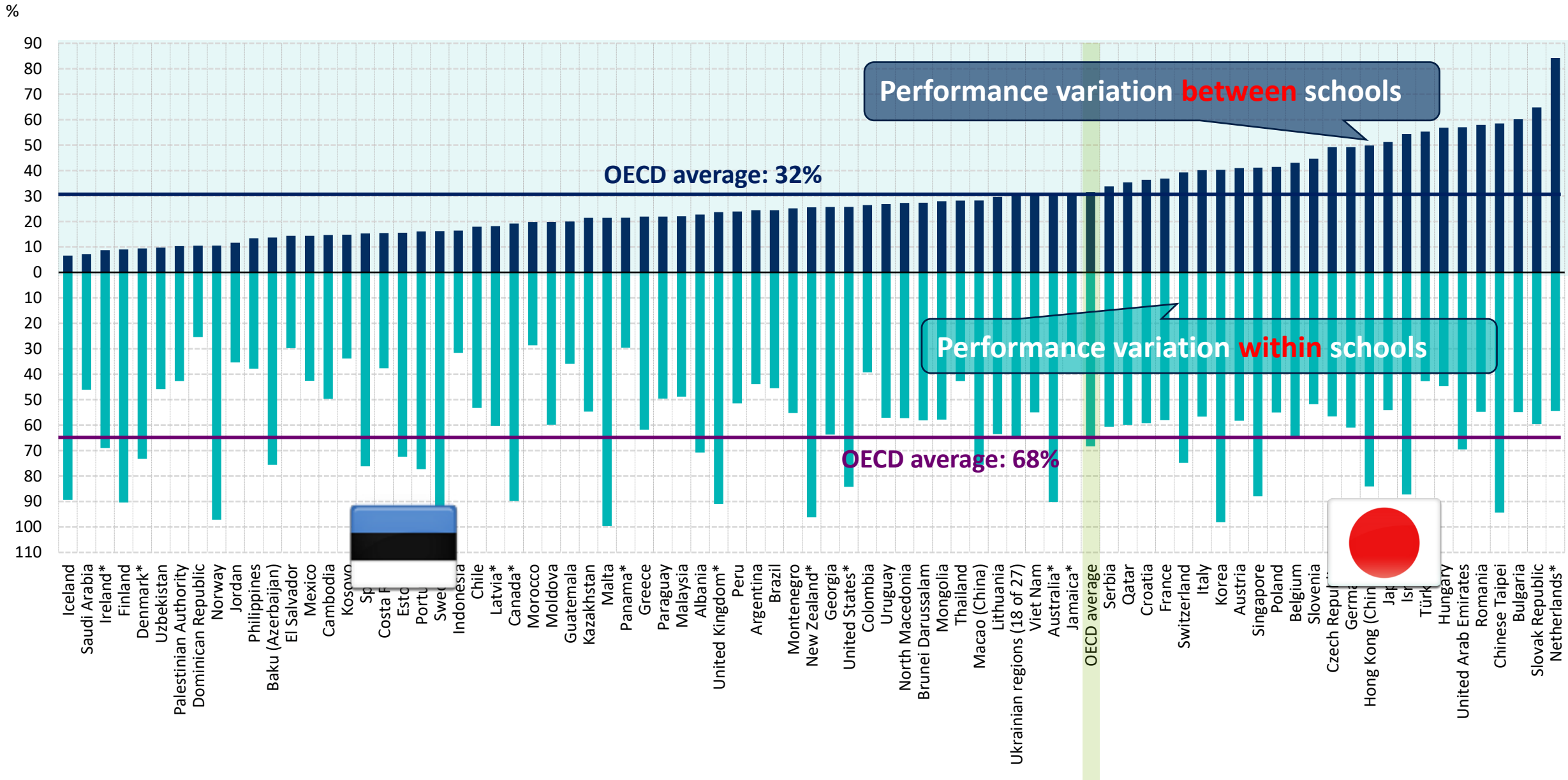
Student interest in IT careers remains severely gendered (PISA)



Can the closest school be the best school?

Variation in mathematics performance between and within schools

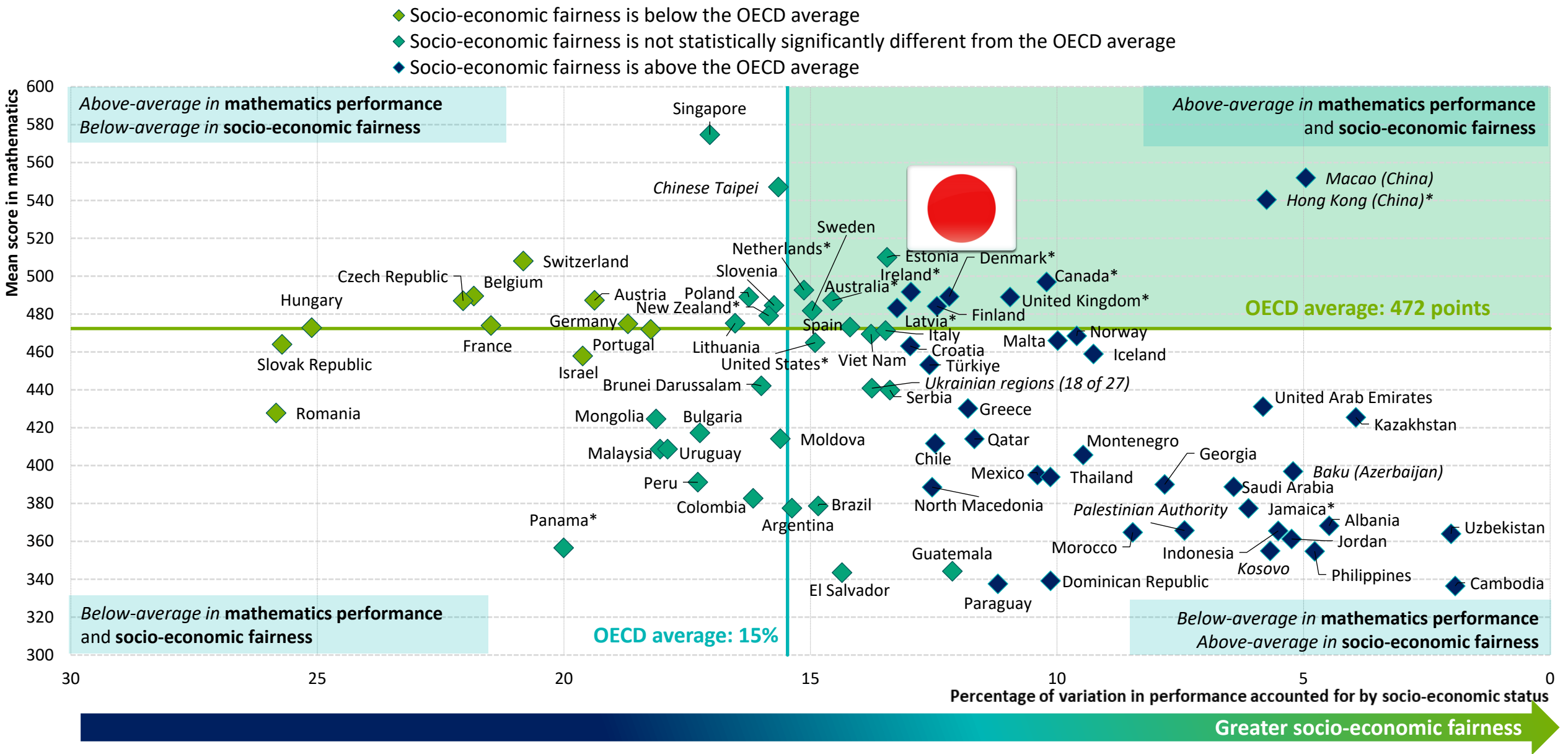
Figure I.2.6



Combining excellence and equity

Strength of socio-economic gradient and mathematics performance

Figure I.4.2



Other PISA outcomes

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

Other PISA outcomes

Academic performance refers to the knowledge and cognitive skills students have acquired throughout their education and the extent to which they can use what they have learnt to solve real-life problems.

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

Other PISA outcomes

Psychological wellbeing refers to the extent to which students experience positive emotions, are satisfied with their life and believe their life has meaning and purpose.

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

Other PISA outcomes

The agency and engagement dimension looks at whether students have the ability and willingness to positively influence their own lives and the world around them, by setting goals, reflecting on their roles and responsibilities and acting responsibly to improve themselves and bring about positive change.

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

Other PISA outcomes

The resilience dimension considers students' beliefs in their ability to withstand stressful and difficult situations, their confidence in themselves and their autonomy as learners

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

Other PISA outcomes

Engagement with school refers to the extent to which students assign value to their time at school, put effort in their studies so to achieve good results, and help their teachers create a productive learning environment.

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

Other PISA outcomes

The quality of relationships and community vitality dimension captures both the quantity and the quality of students' social networks. It reflects the extent to which students feel accepted and appreciated by their peers, and whether they perceive support and care from their parents and their teachers.

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

Other PISA outcomes

Study-life balance means putting enough time into academic work while also taking time to enjoy the other parts of one's life, including social, sporting and cultural opportunities.

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

Other PISA outcomes

Material and cultural wellbeing considers whether students enjoy living conditions that are sufficient for their cognitive and emotional development, as well as their access to a home environment that provides opportunities for cultural development.

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

Other PISA outcomes

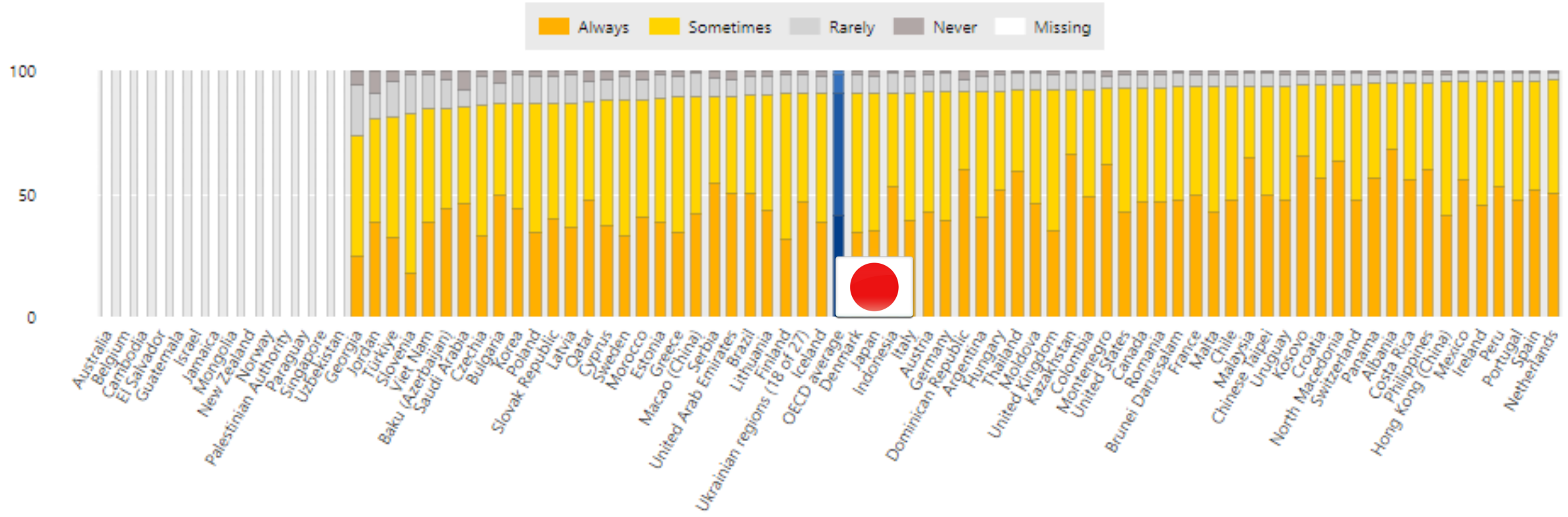
Openness to diversity refers to students' capacity to establish deep and respectful connections with people from different cultural backgrounds, being aware and open to different perspectives and willing to learn other people's language, habits and conventions.

- Academic performance
- Psychological well-being
- Agency and engagement
- Resilience
- Engagement with school
- Quality of relationship & community vitality
- School-leisure balance
- Material and cultural well-being
- Openness to diversity

PISA 2022

Emotional states

Happy: Percentage of students who reported experiencing this emotion



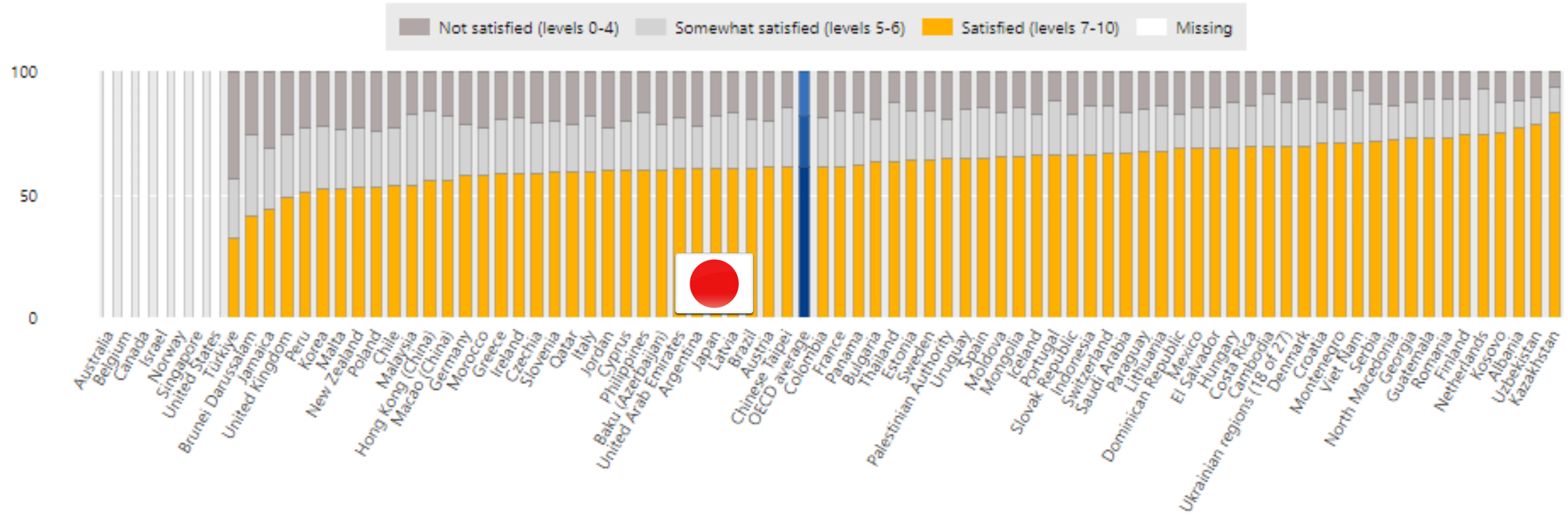
Note: White bars represent missing data.

Source: OECD, PISA 2018 Database.

PISA 2022

Life satisfaction

Percentage of students who reported the feeling satisfied or not satisfied about life

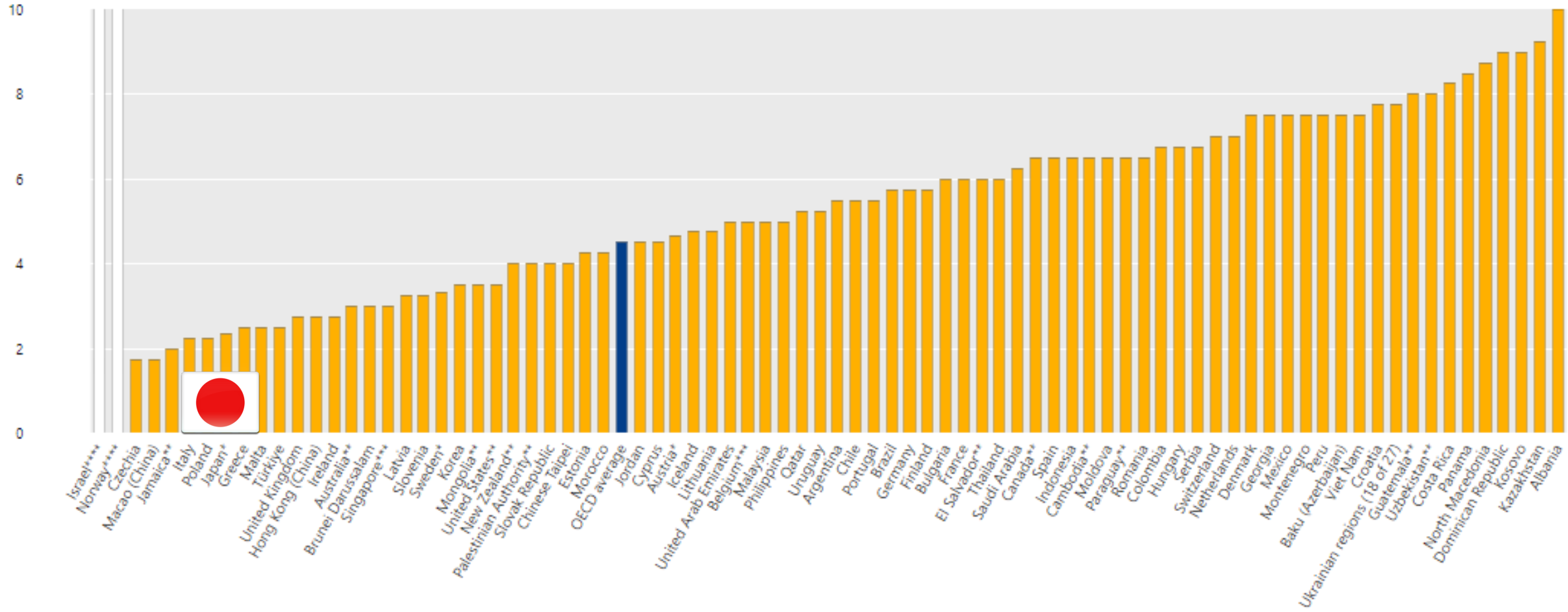


Note: The life-satisfaction scale ranges from 0 to 10 where "0" means 'not at all satisfied' and "10" means 'completely satisfied'.

Source: OECD, PISA 2022 Database.

PISA 2022

Index of psychological well-being



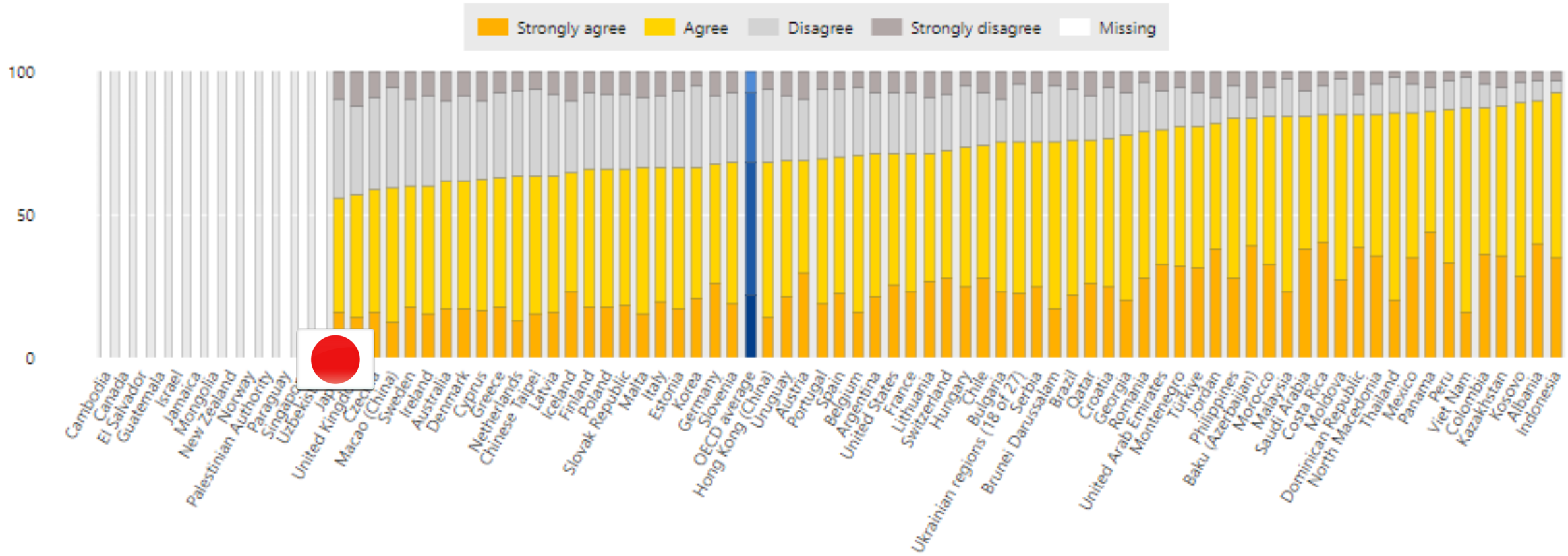
Note: White bars represent missing data and each * beside the country name represents the number of missing indicators in the index. Note that results for countries with missing indicators are not fully comparable with those of countries without missing indicators, and so should be used with caution.

Source: OECD, PISA 2018 Database and PISA 2022 Database.

PISA 2022

Sense of purpose in life

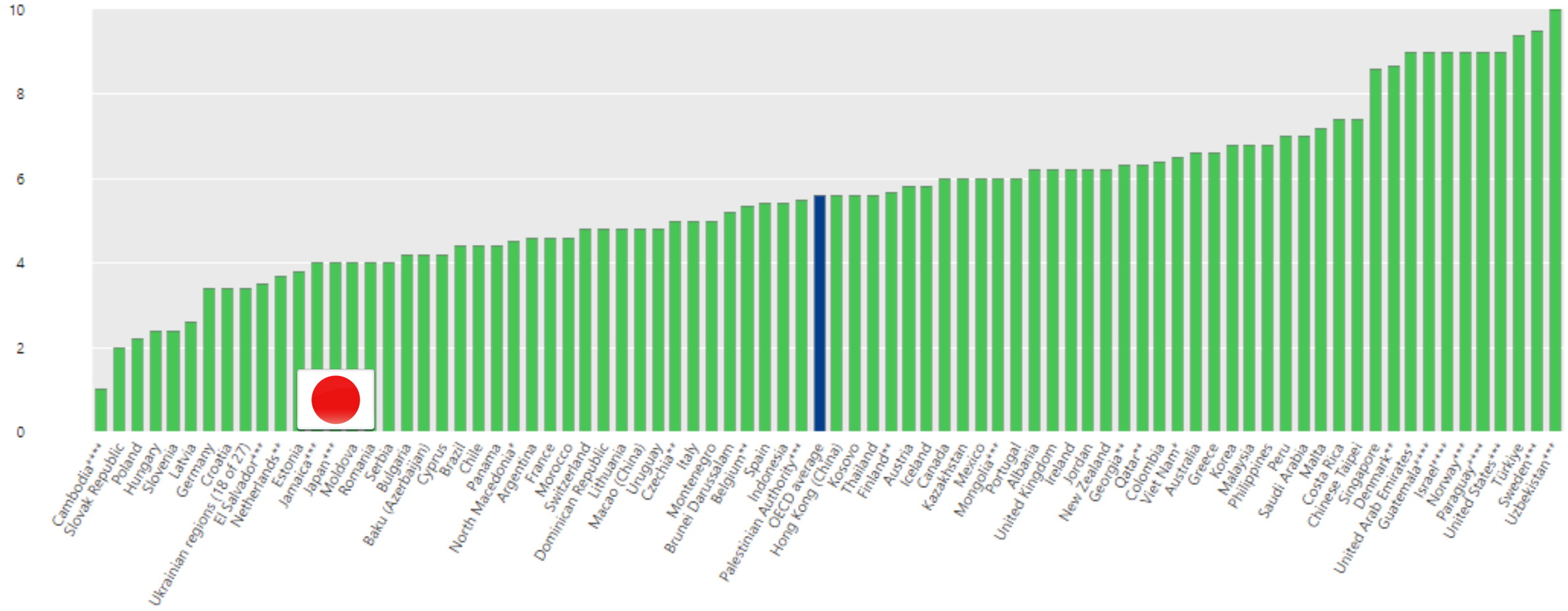
Percentage of students who reported they agreed or disagreed that their life had a clear meaning



Source: OECD, PISA 2018 Database.

PISA 2022

Index of agency and engagement



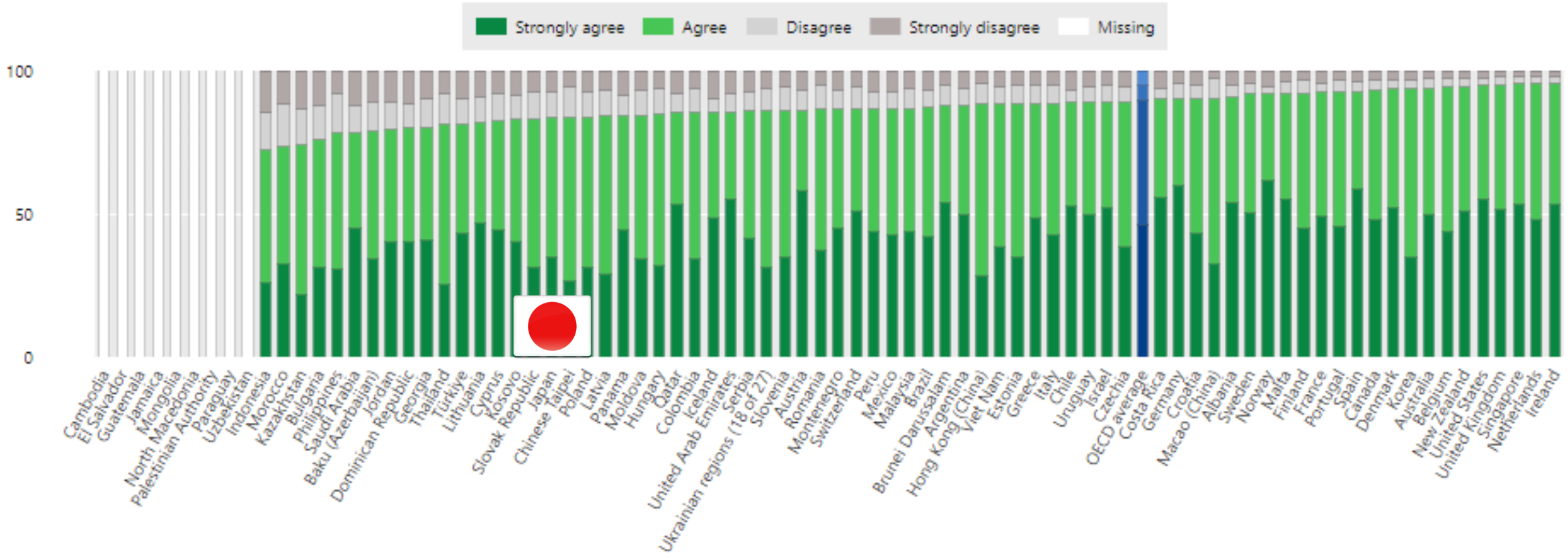
Note: Each * beside the country name represents the number of missing indicators in the index. Note that results for countries with missing indicators are not fully comparable with those of countries without missing indicators, and so should be used with caution.

Source: OECD, PISA 2018 Database and PISA 2022 Database.

PISA 2022

Engagement to stop bullying

I like it when someone stands up for other students who are being bullied: Percentage of students who reported they agreed or disagreed with this statement

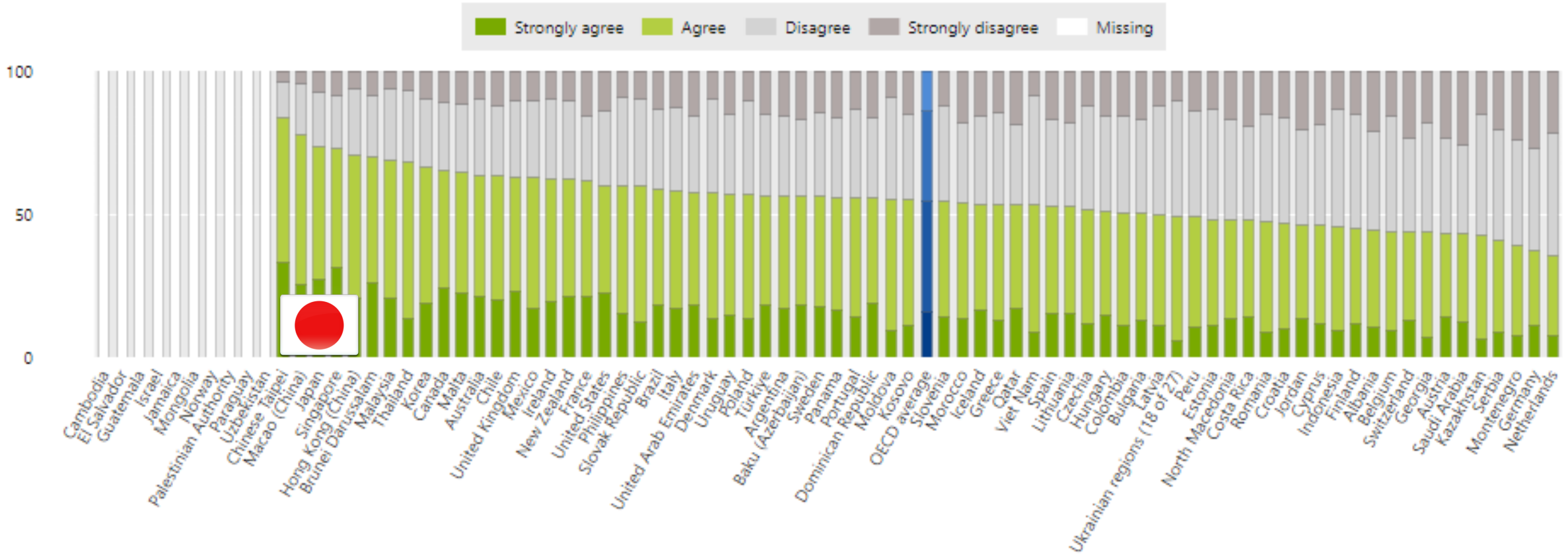


Source: OECD, PISA 2018 Database.

PISA 2022

Fear of failure

When I am failing, I am afraid that I might not have enough talent: Percentage of students who reported they agreed or disagreed with this statement

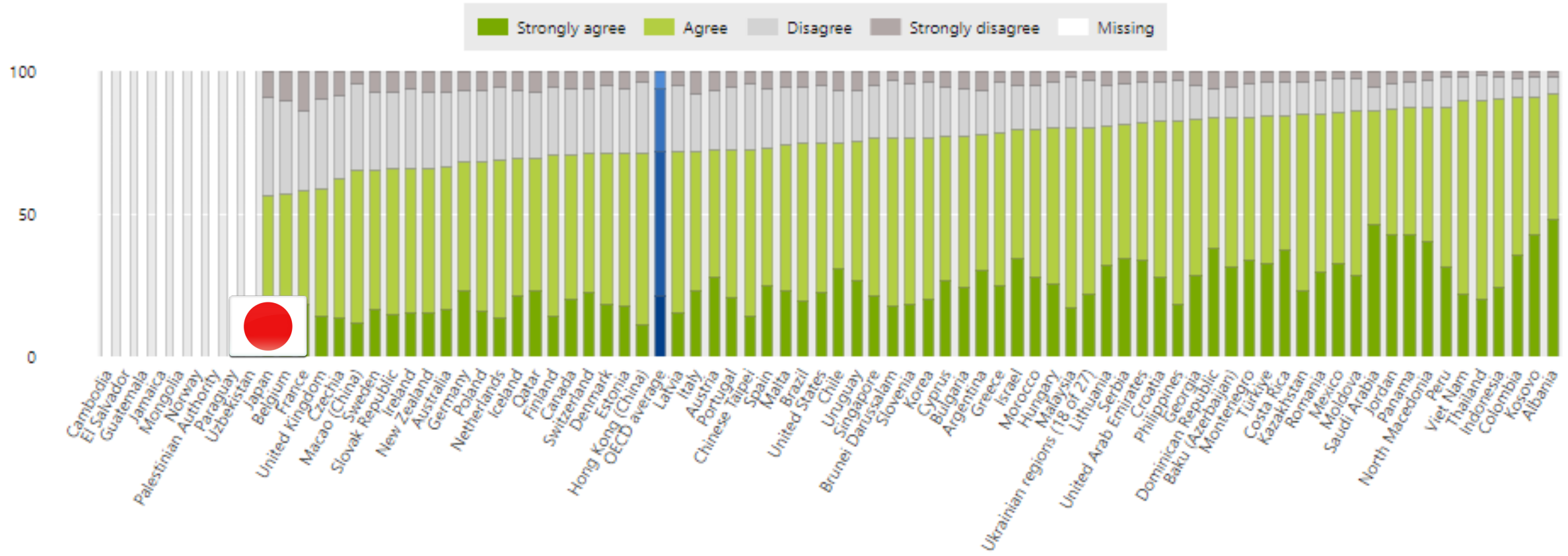


Source: OECD, PISA 2018 Database.

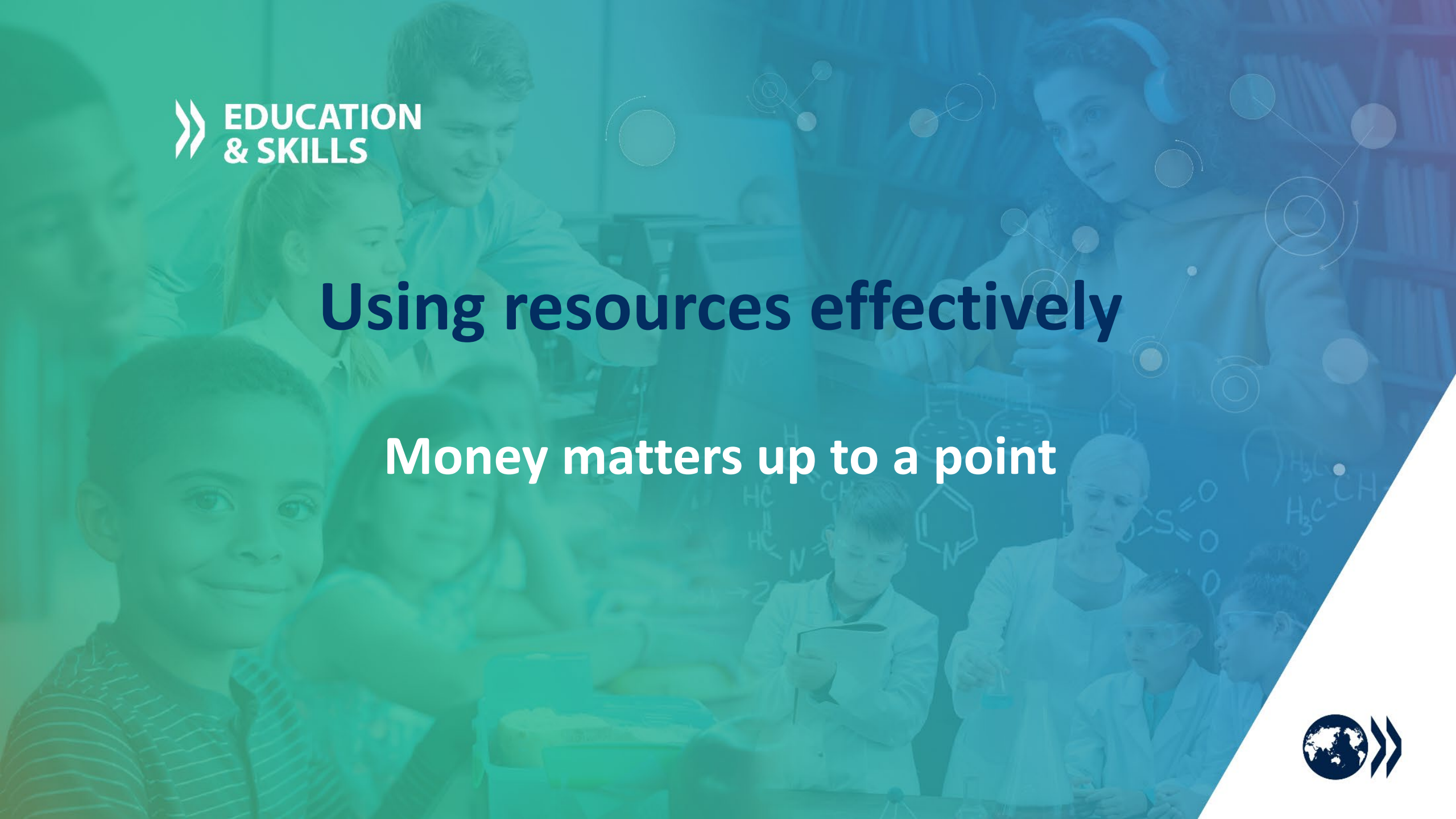
PISA 2022

Belief in self

My belief in myself gets me through hard times: Percentage of students who reported they agreed or disagreed with this statement



Source: OECD, PISA 2018 Database.

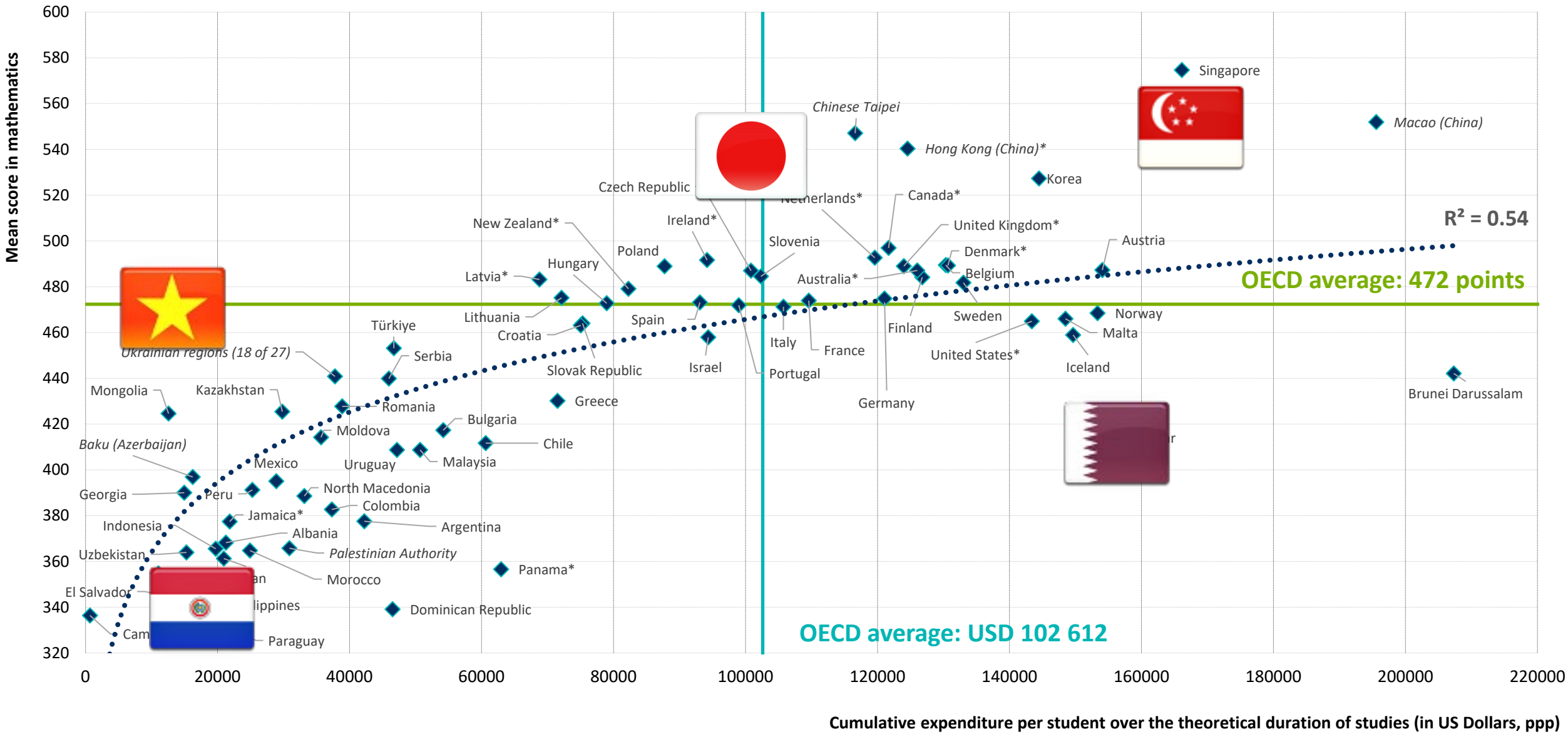


Using resources effectively

Money matters up to a point

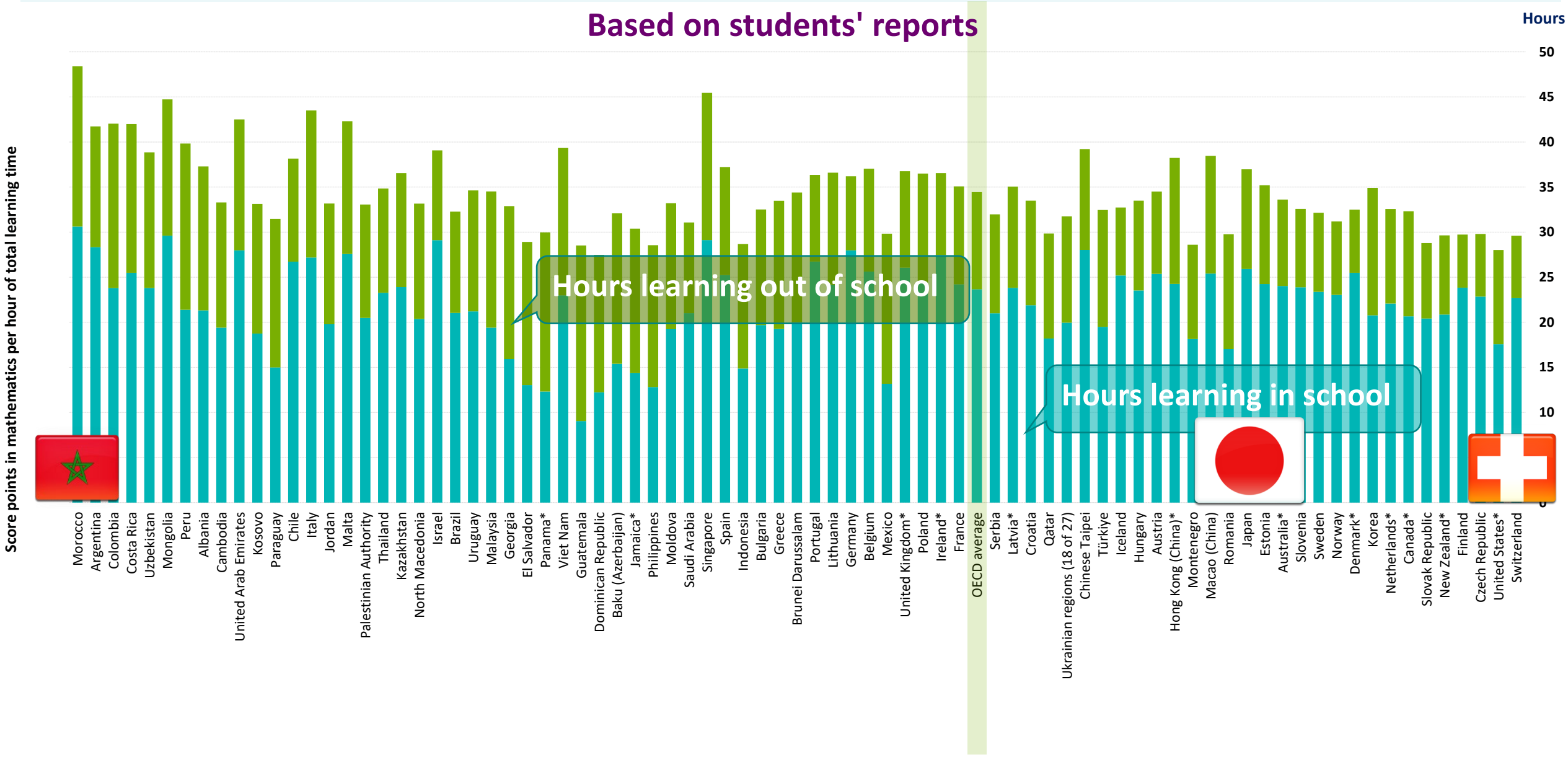
Money is necessary but not sufficient

Figure I.4.15



Learning time ≠ learning outcomes

Figure II.5.11



Learning time ≠ learning outcomes

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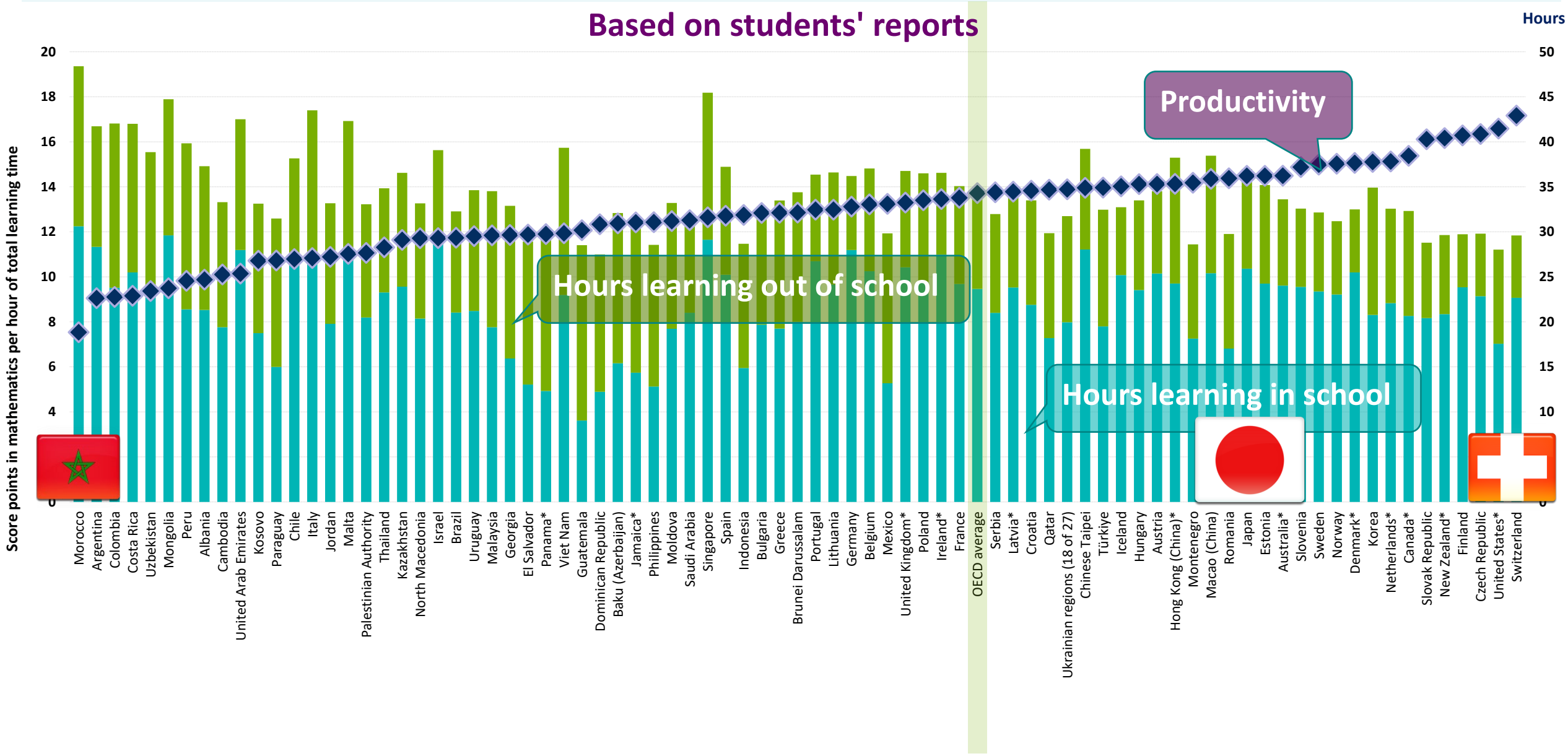


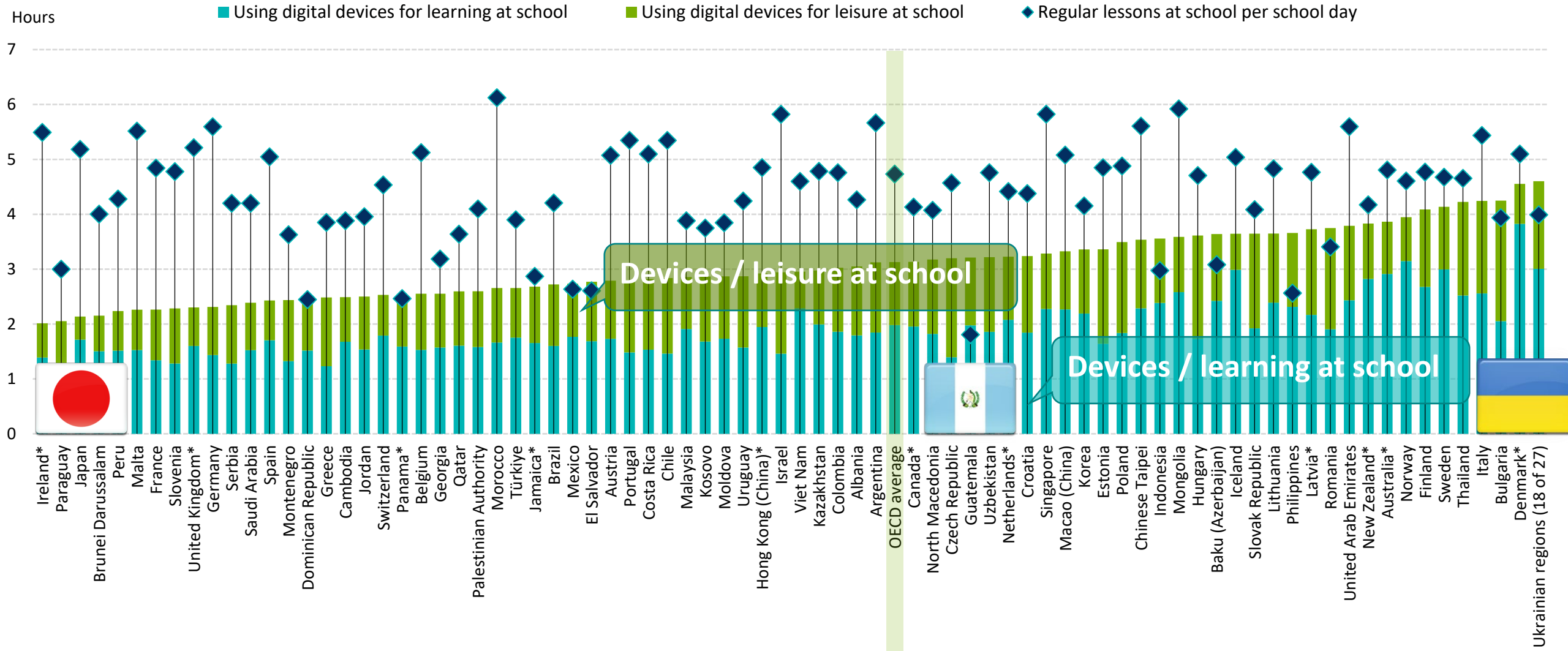
Revolutionising learning?

Unlocking the potential of the digital world

Time spent at school in regular lessons and on digital devices

Figure II.5.15

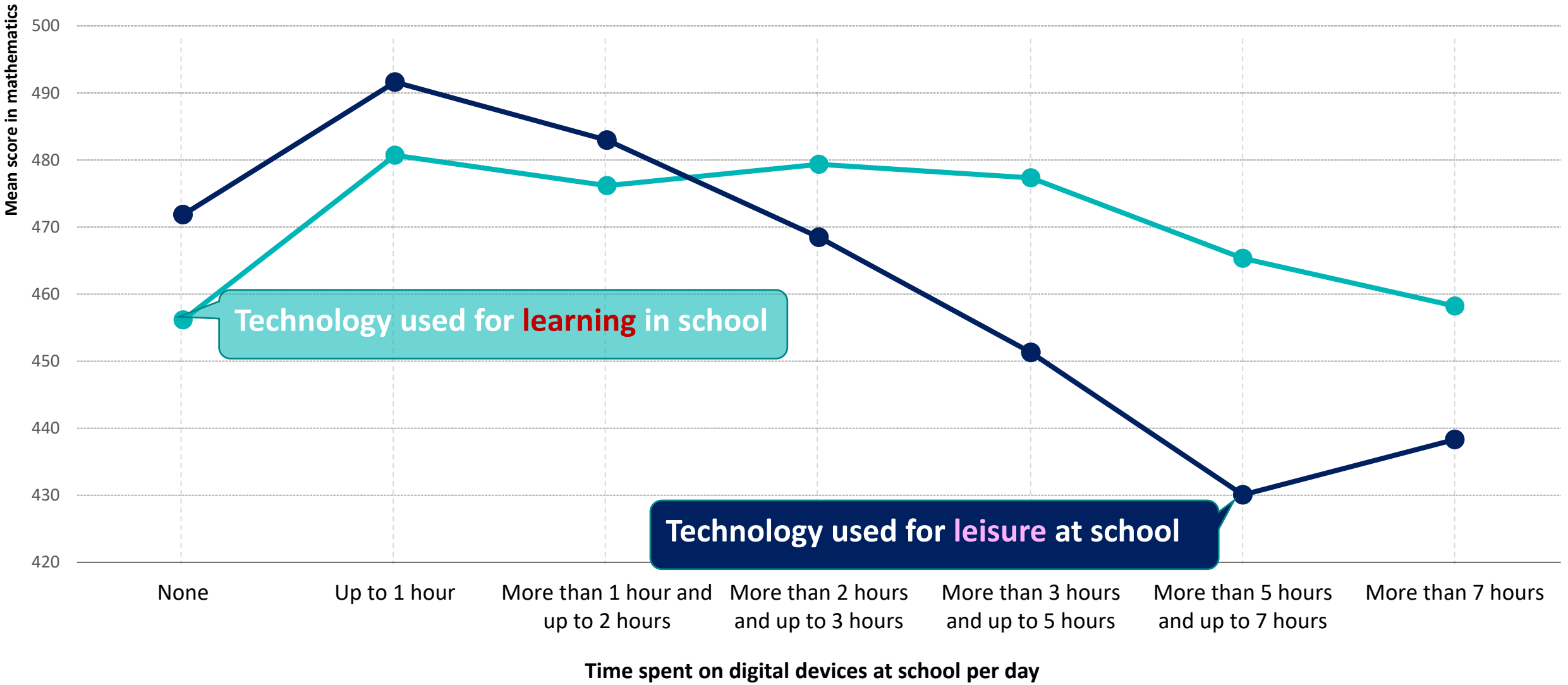
Time spent per day by students (in hours)



Time spent on digital devices at school and mathematics performance

Figure II.5.14

Based on students' reports; OECD average



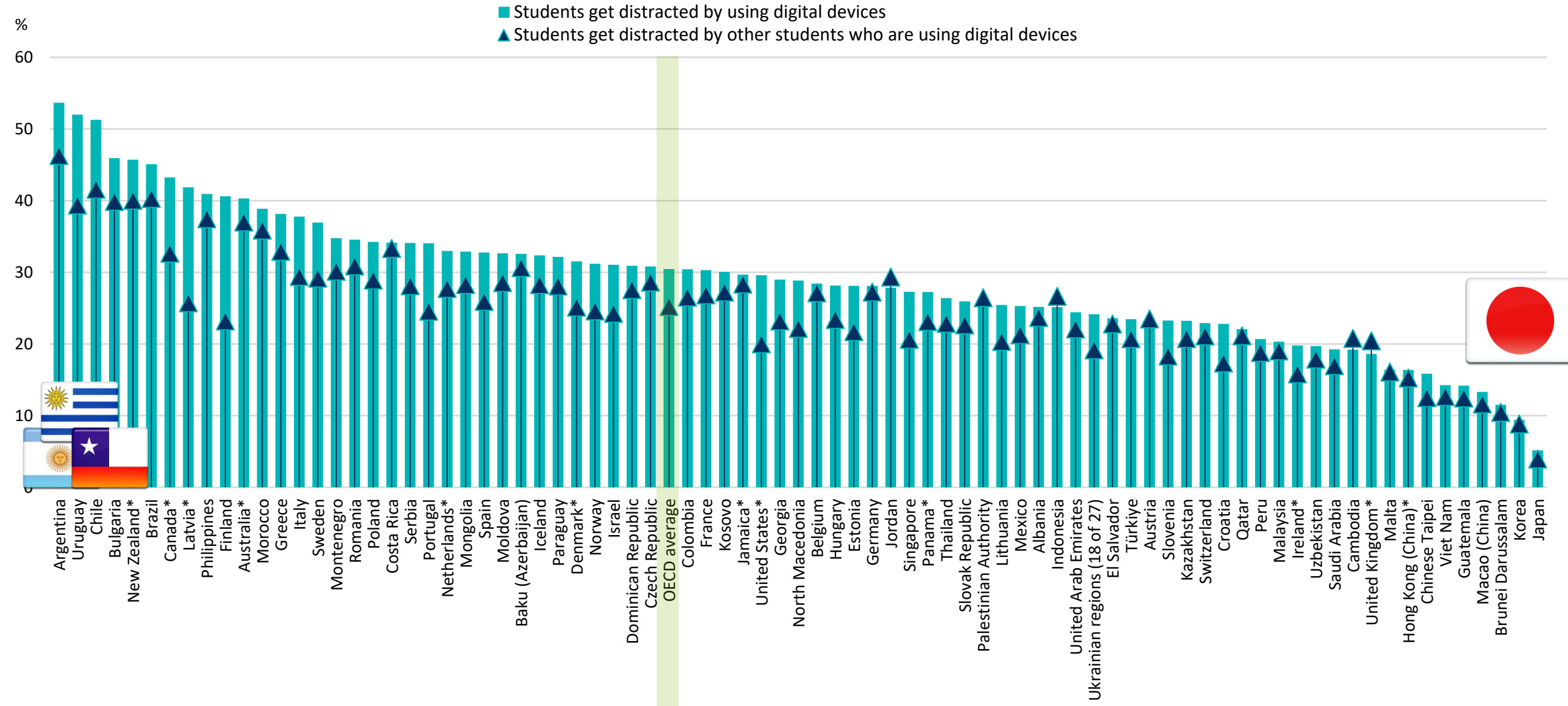
Digital distractions

How smart phones and tablets can impair learning

Distraction from digital devices in mathematics lessons

Figure II.3.4

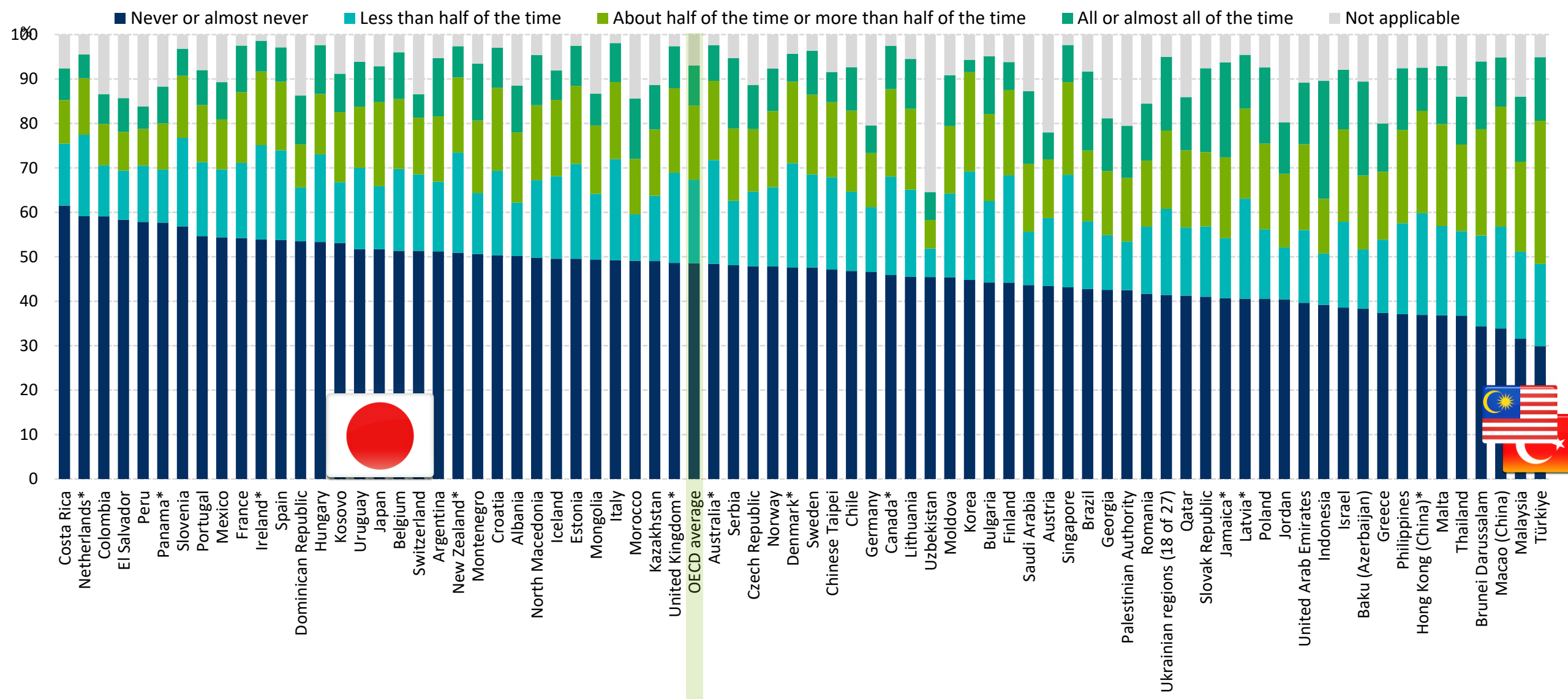
Percentage of students who reported that the following happens in every or in most of their mathematics lessons



Feeling nervous/anxious when digital devices are not near

Figure II.5.16

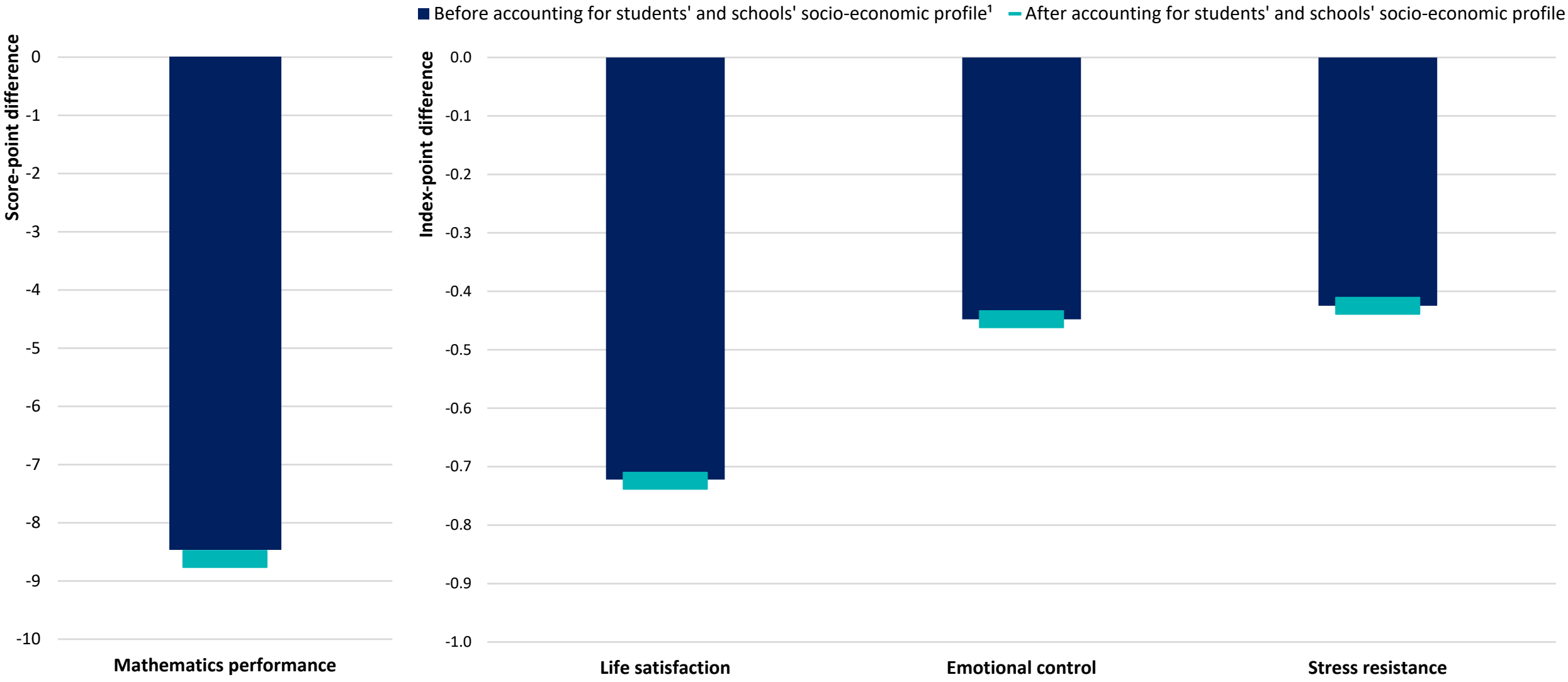
Based on students' reports



Outcomes of feeling nervous/anxious when digital devices are not near

Figure II.5.17

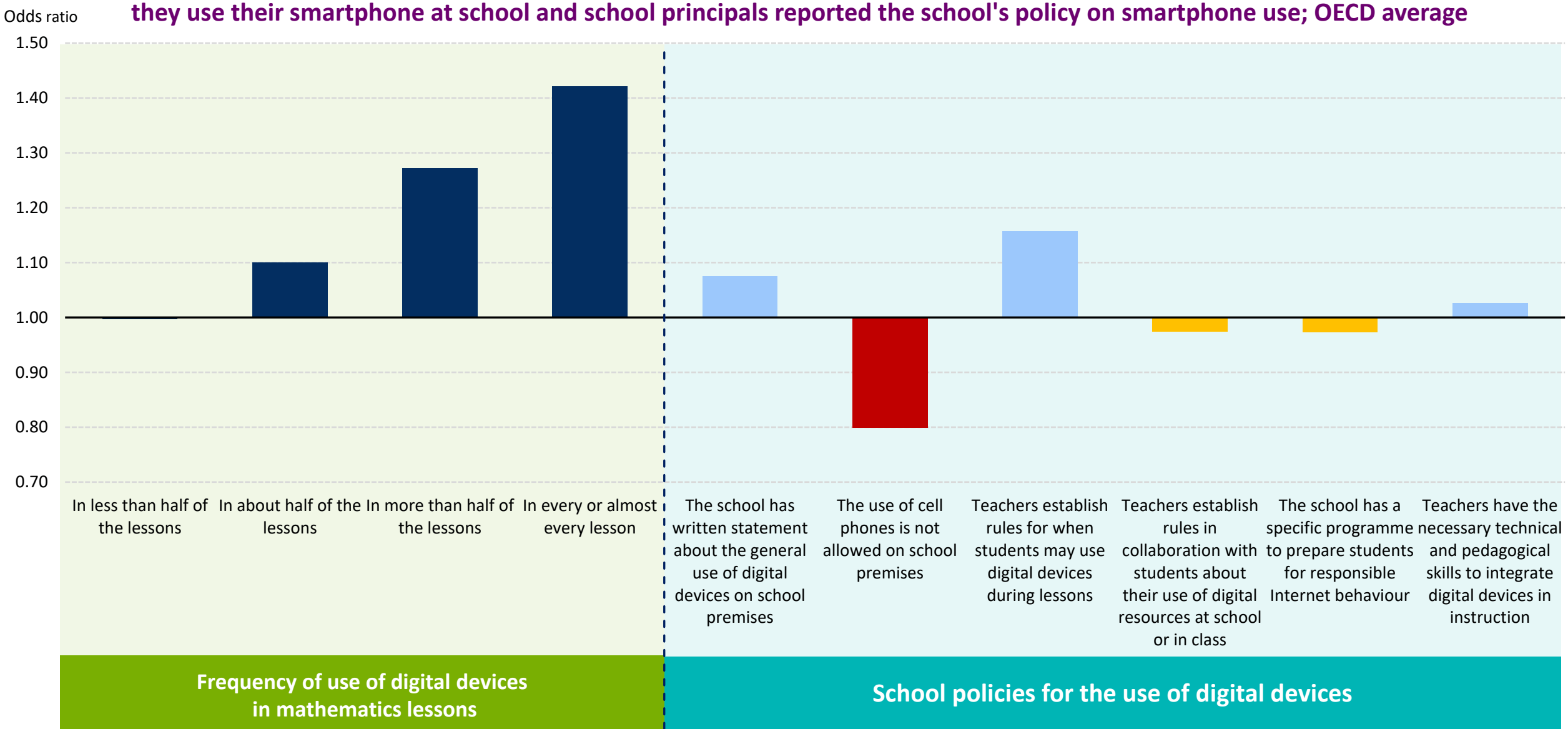
Based on students' reports; OECD average



Digital devices, distraction and school policies

Figure II.5.9

Change in the likelihood of students becoming distracted by using digital devices in mathematics lessons when students reported that they use their smartphone at school and school principals reported the school's policy on smartphone use; OECD average



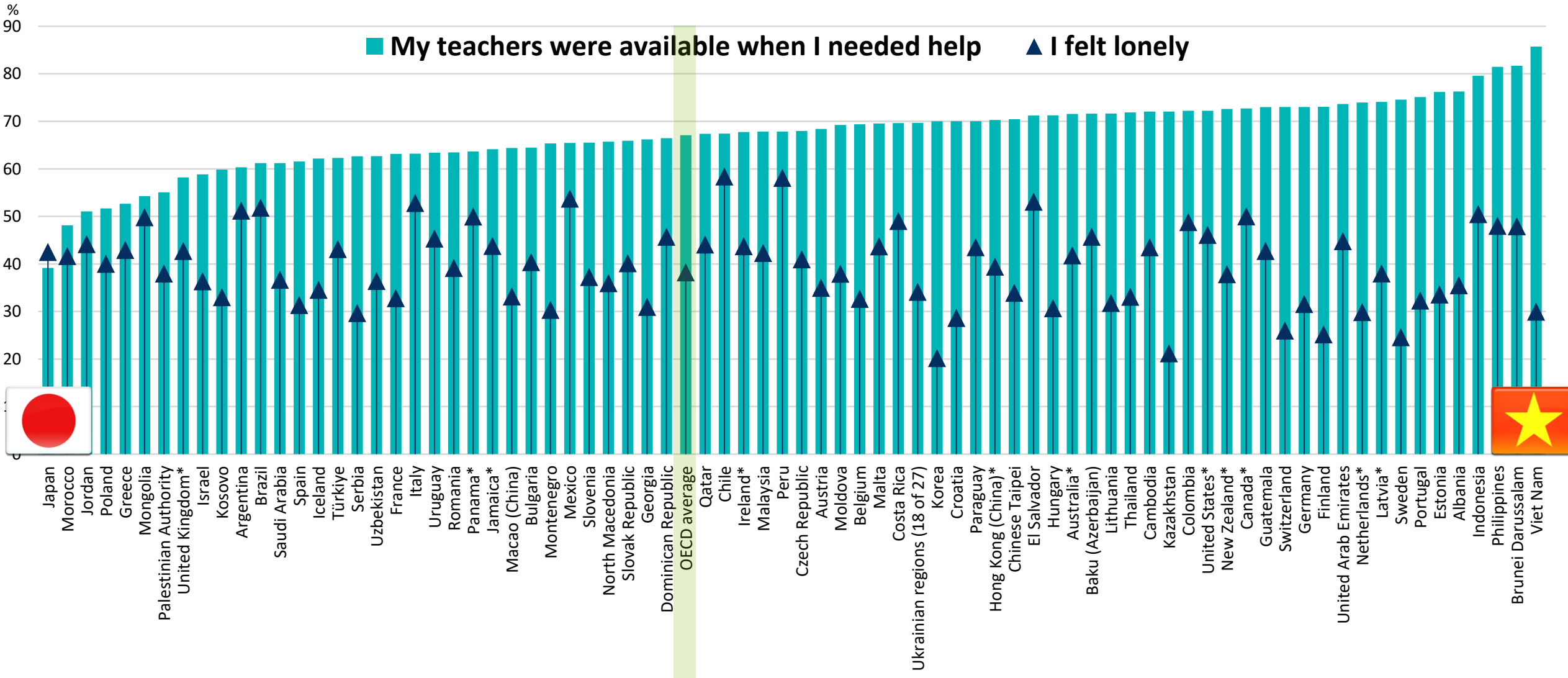
Teachers and teaching

Are some students being let down?

Teacher support

Figure II.2.10

Percentage of students who agreed or strongly agreed with the following statements about the time when their school building was closed because of COVID-19; based on students' reports

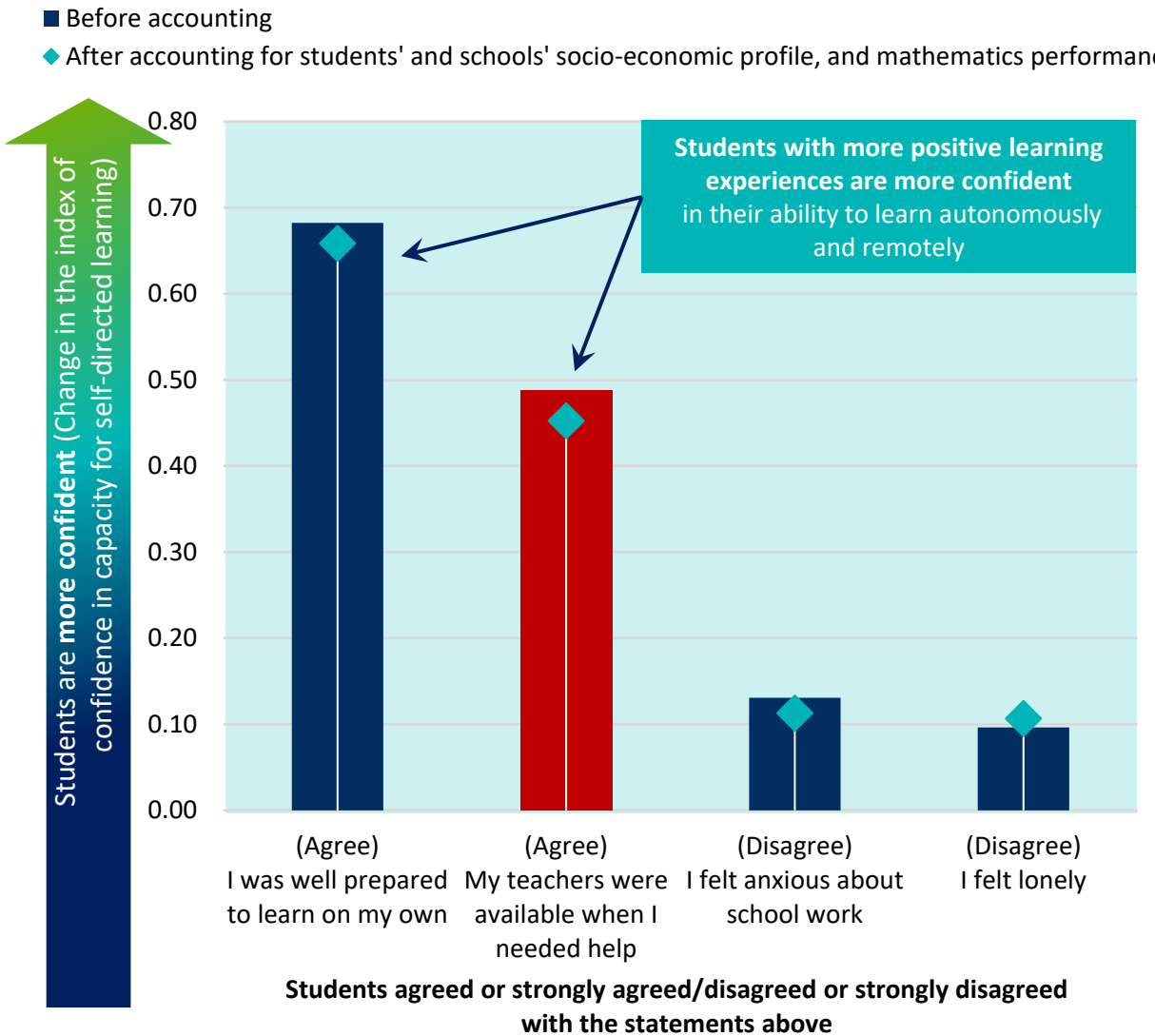


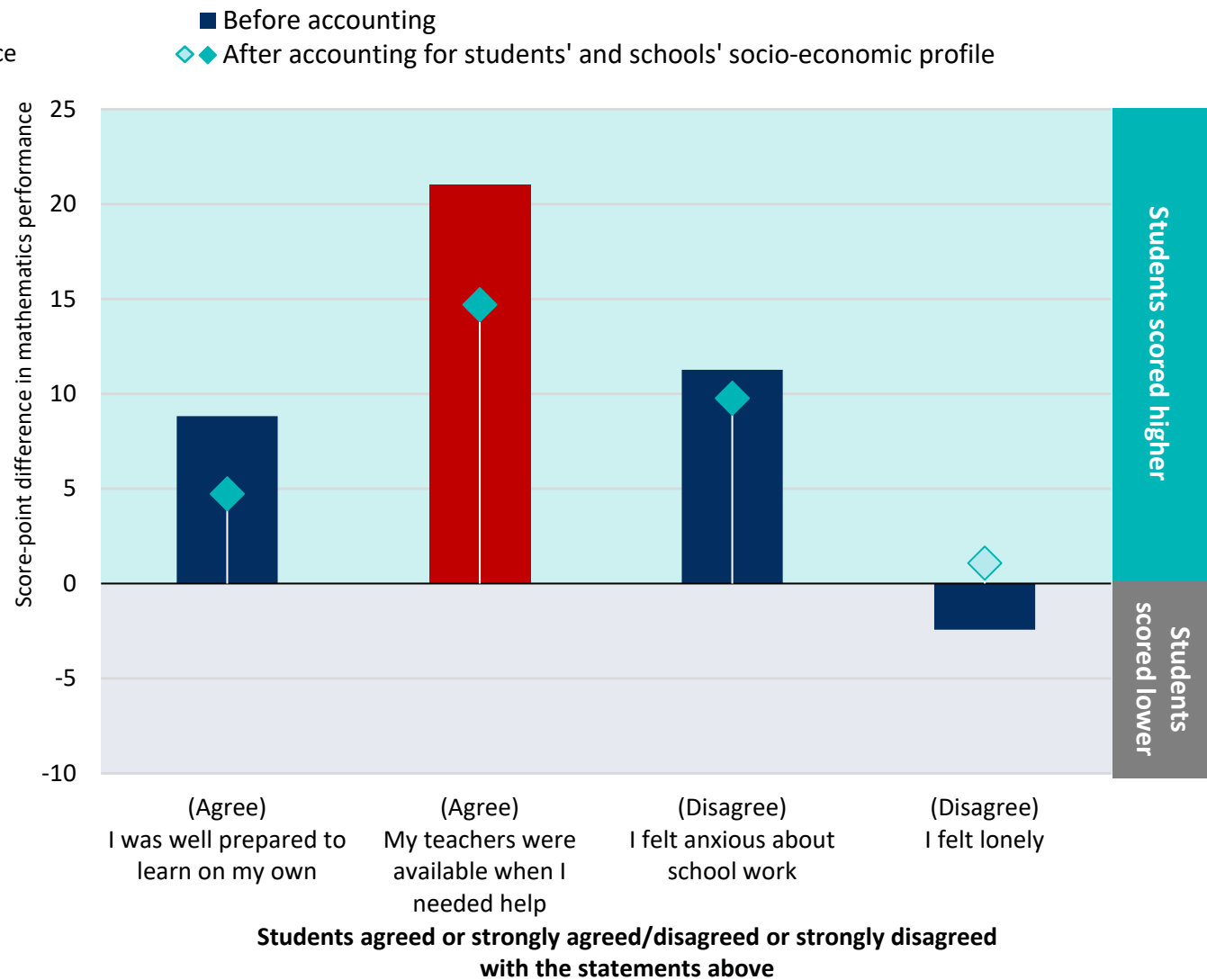
Students learn best from teachers they love

Remote learning, mathematics performance and confidence in self-directed learning

Figure II.2.12

Change in the index of confidence in students' capacity for self-directed learning/in mathematics performance, when students agreed or disagreed with the following statements about the time when their school building was closed because of COVID-19; OECD average

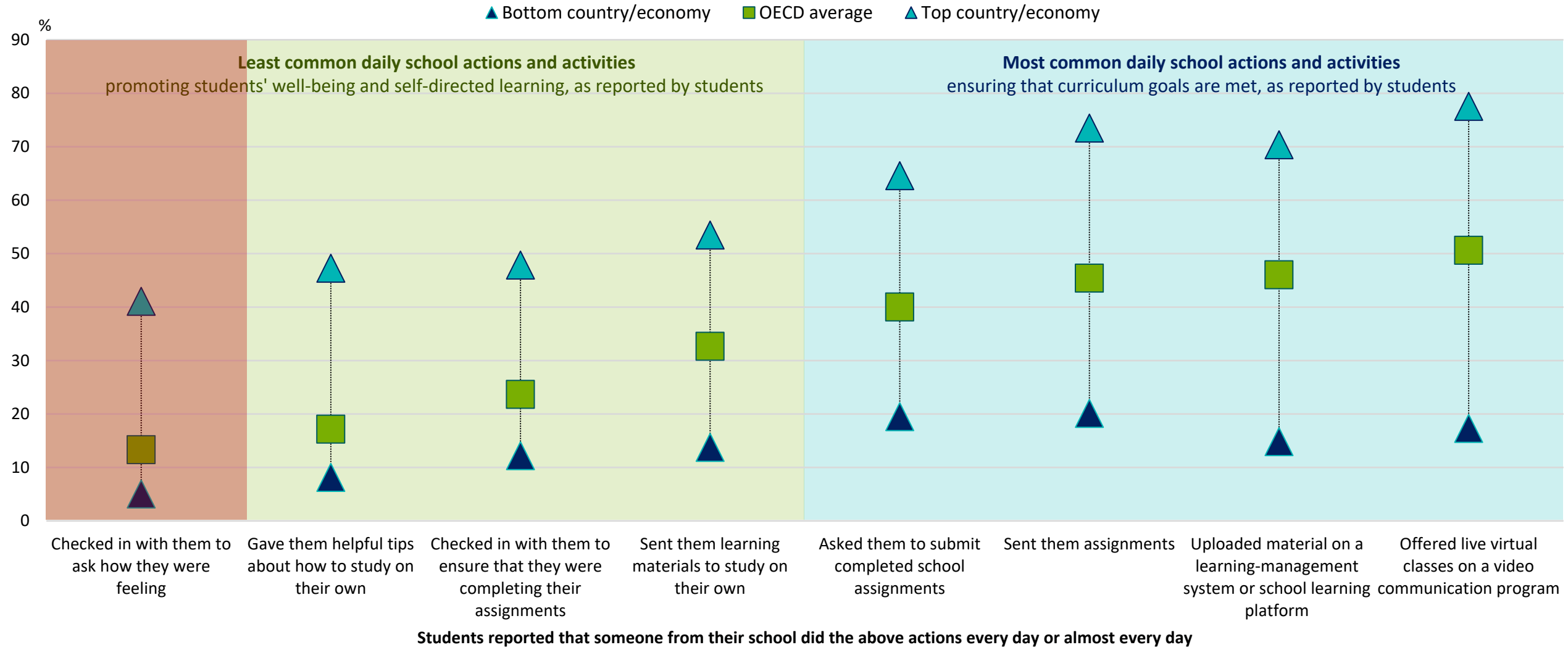




School actions and activities to maintain learning and well-being

Figure II.2.16

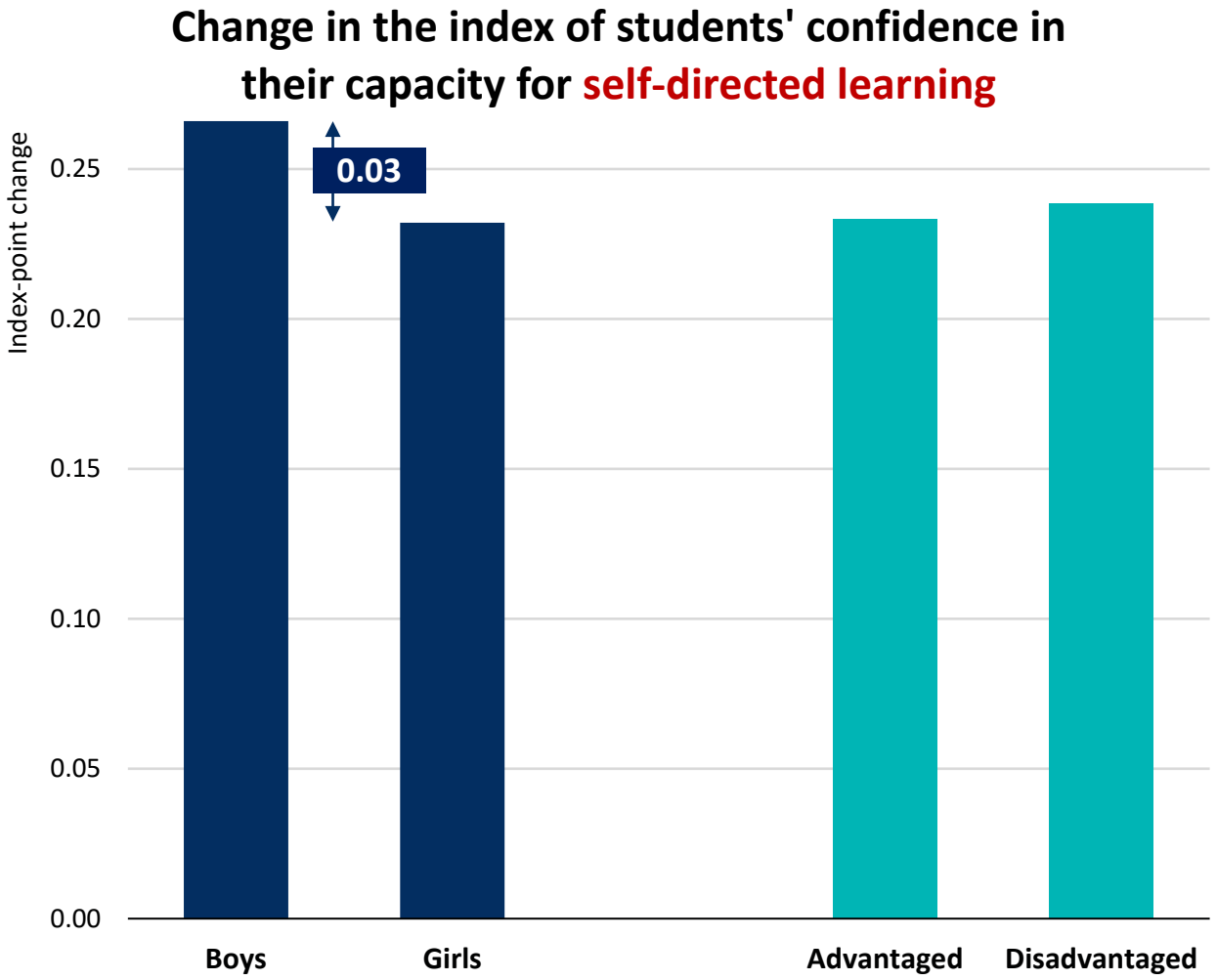
Percentage of students who reported that someone from their school did the following actions every day daily when their school building was closed because of COVID-19; OECD average

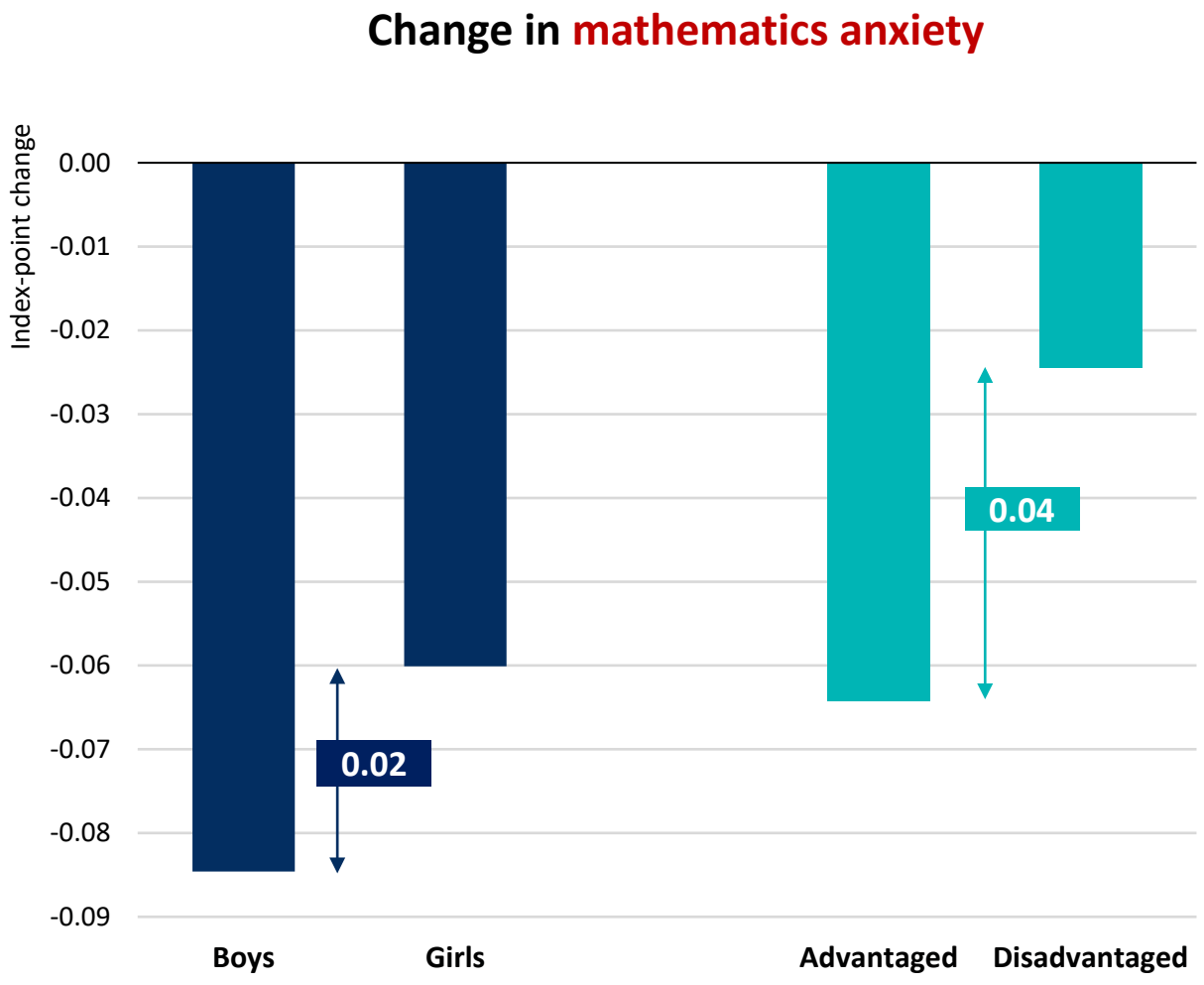


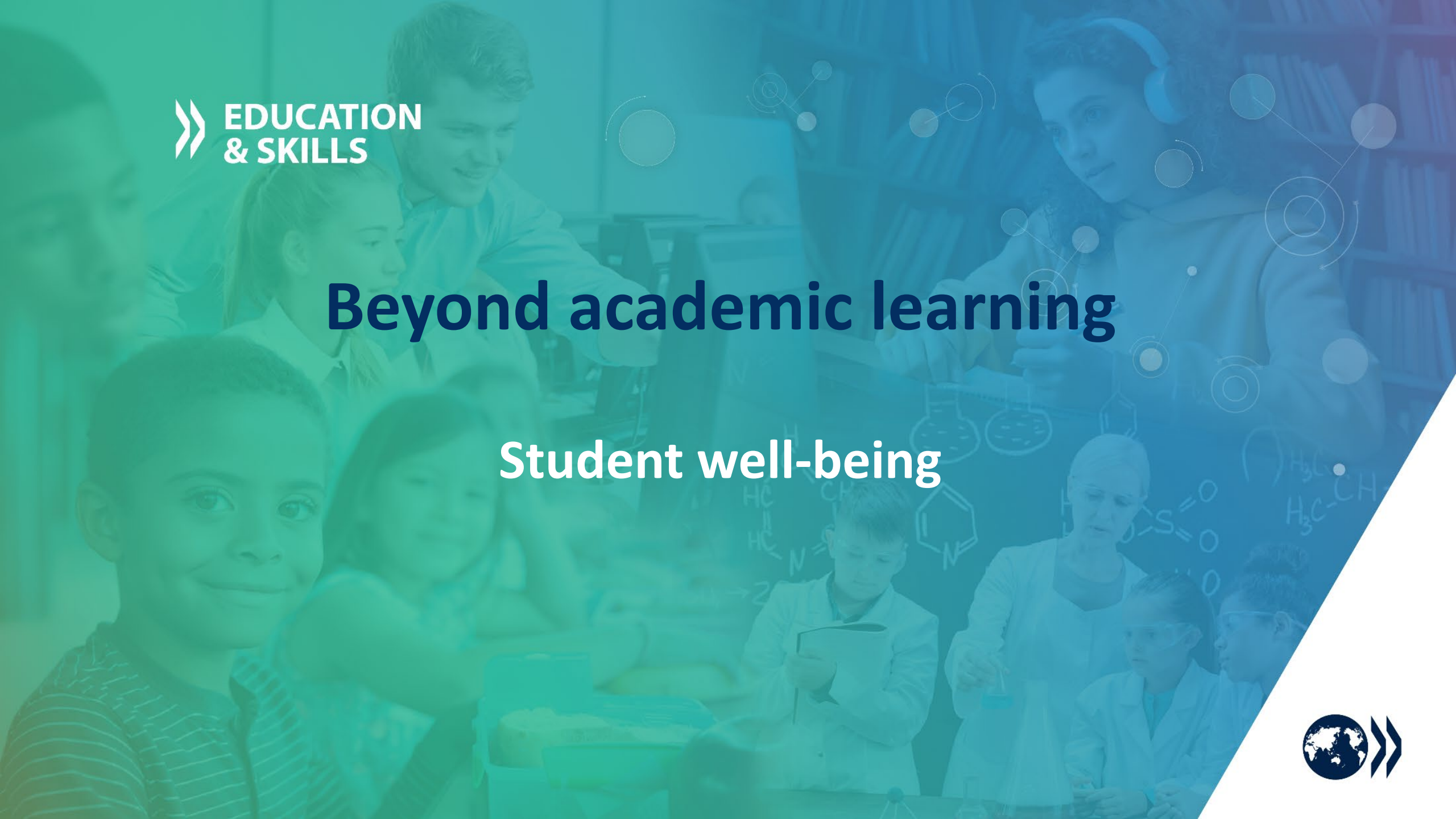
School actions to maintain learning and selected student outcomes

Figure II.2.18

Change associated with a one-unit increase in the index of school actions and activities to maintain learning; OECD average







EDUCATION & SKILLS

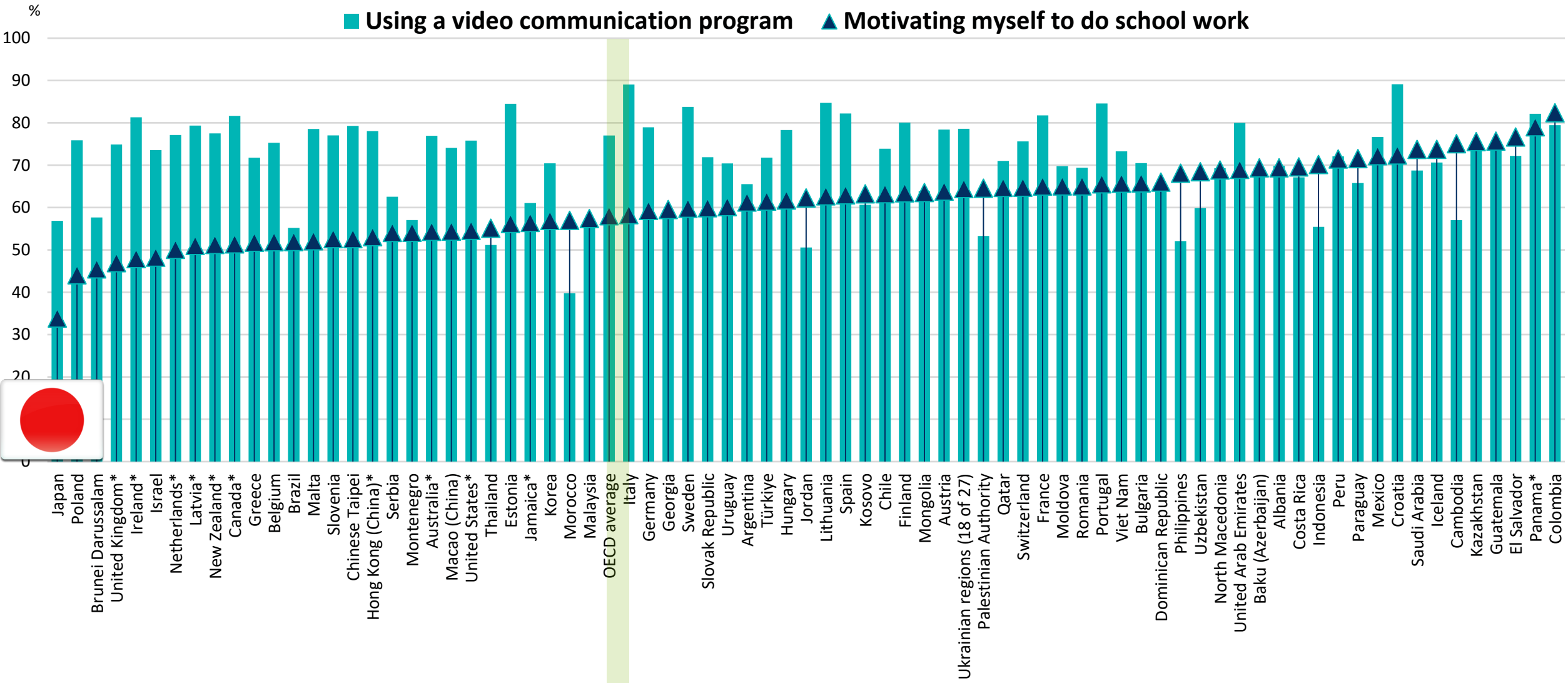
Beyond academic learning

Student well-being

Students' confidence in self-directed learning

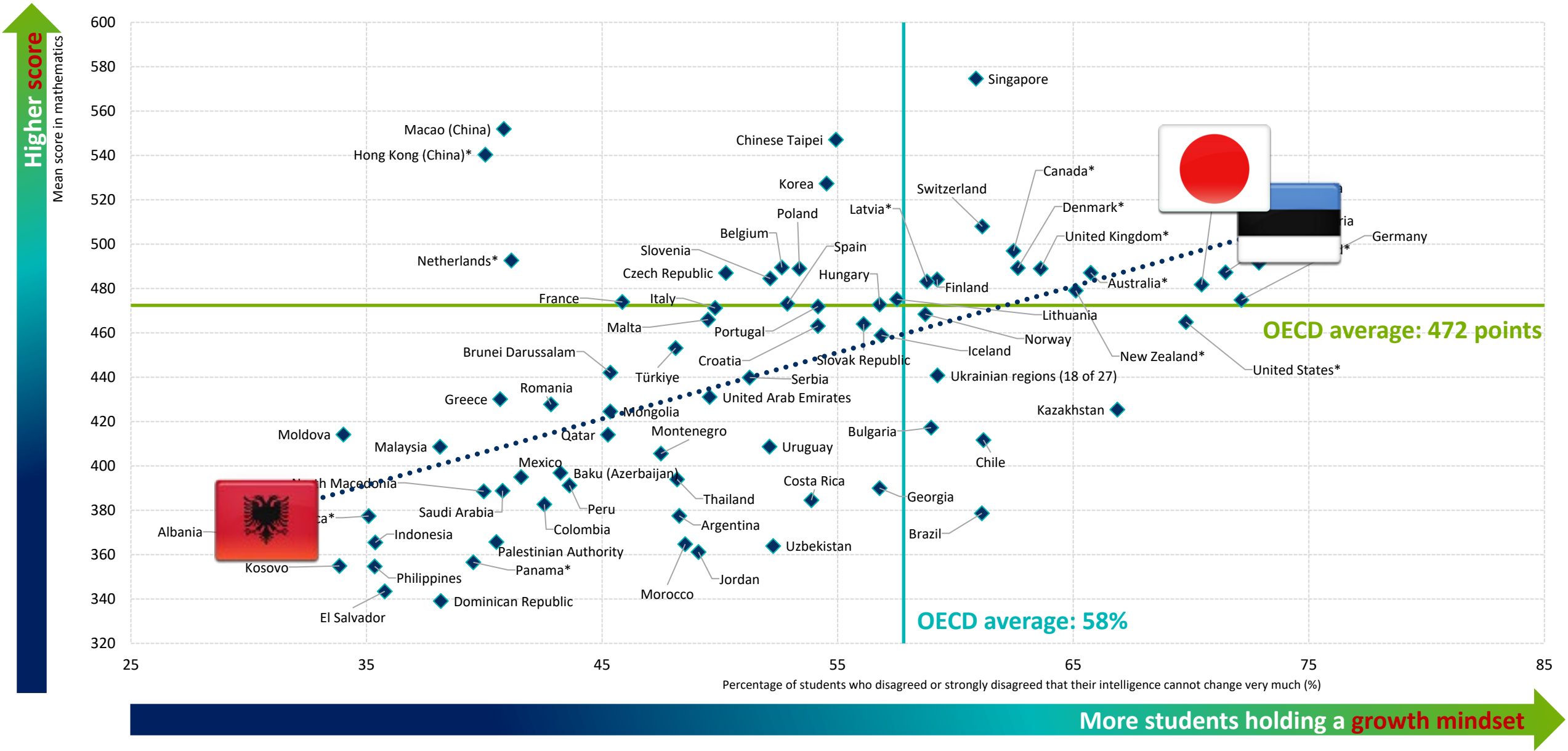
Figure II.2.5

Percentage of students who reported feeling confident/very confident in taking the following actions if their school building closes again in the future



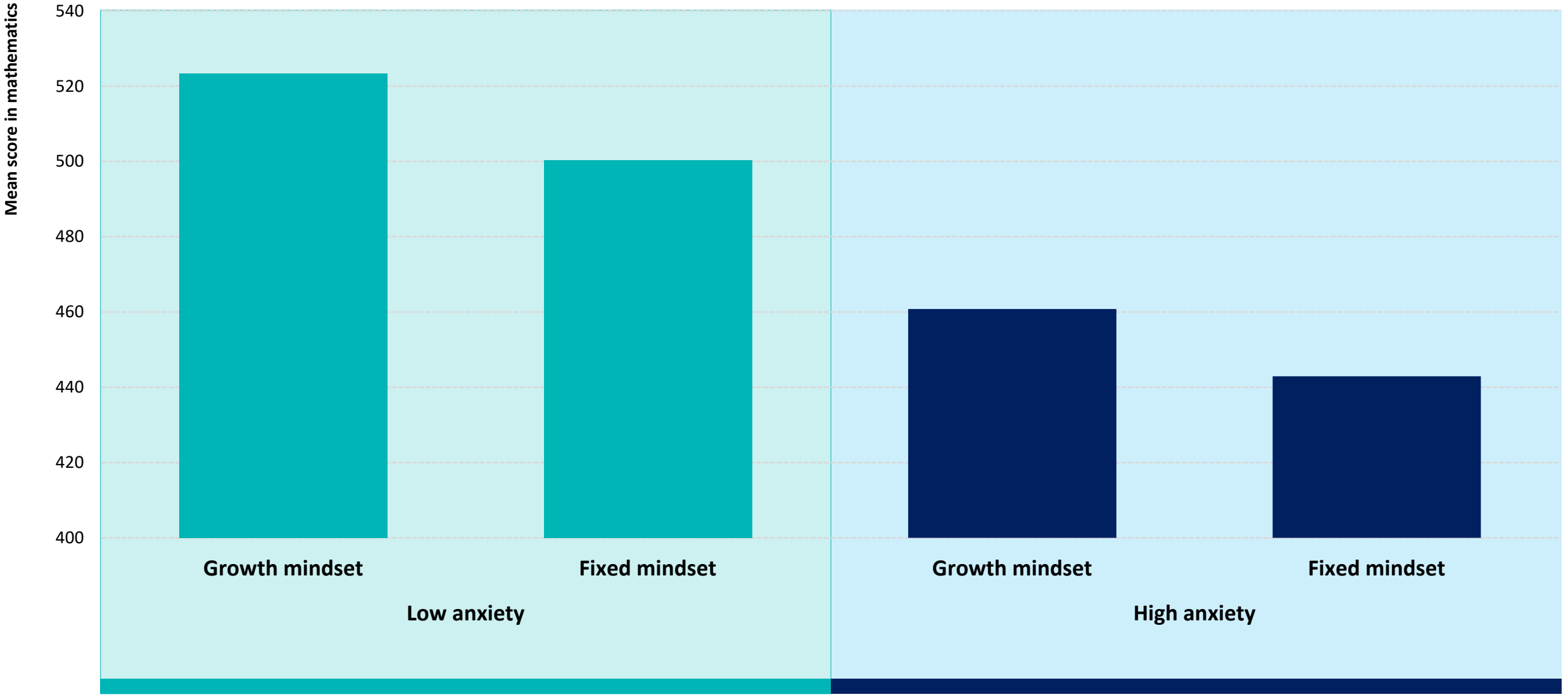
Growth mindset
and mathematics performance

Table I.B1.2.1 &
Table I.B1.2.16



Mathematics performance and anxiety in mathematics among students with fixed and growth mindsets

Figure I.2.2

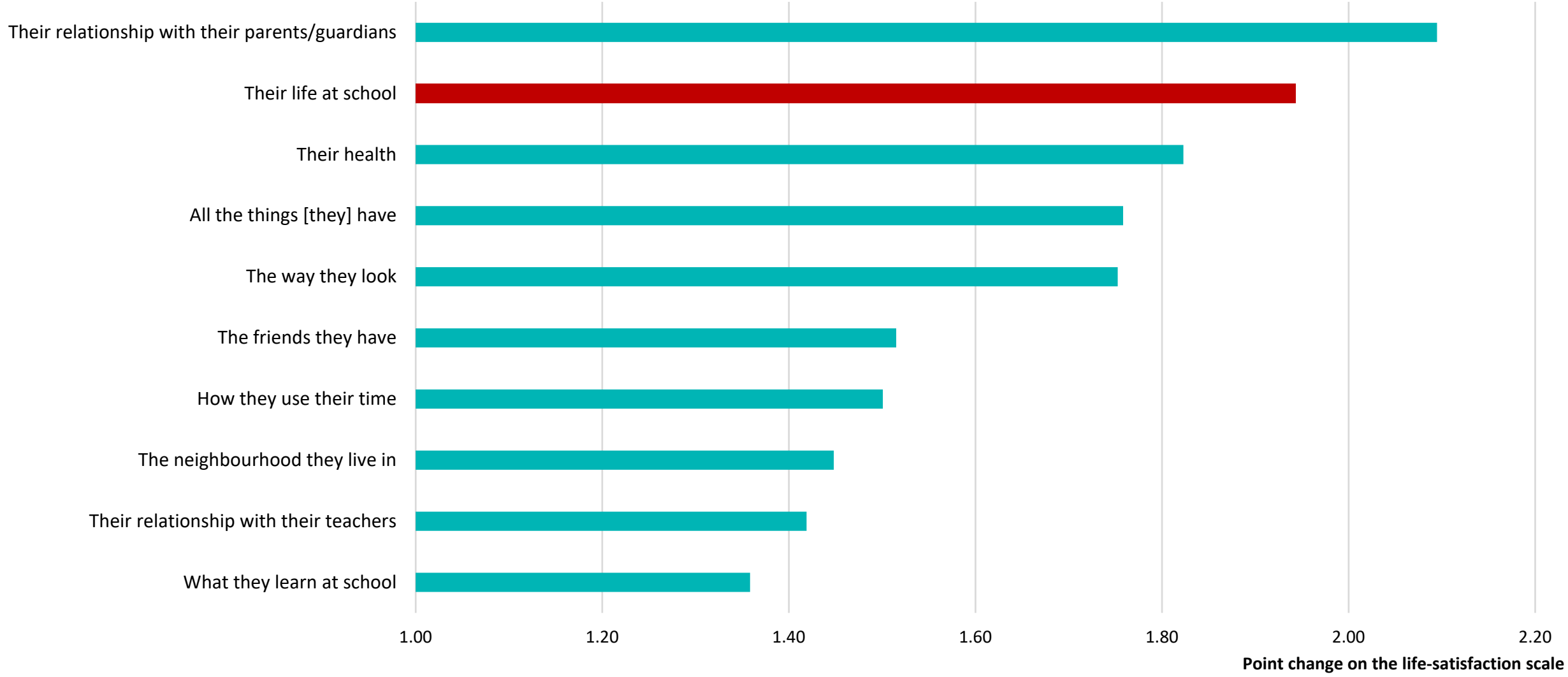


Life satisfaction and satisfaction with different aspects of life

Figure II.1.7

Average of countries/economies with available data

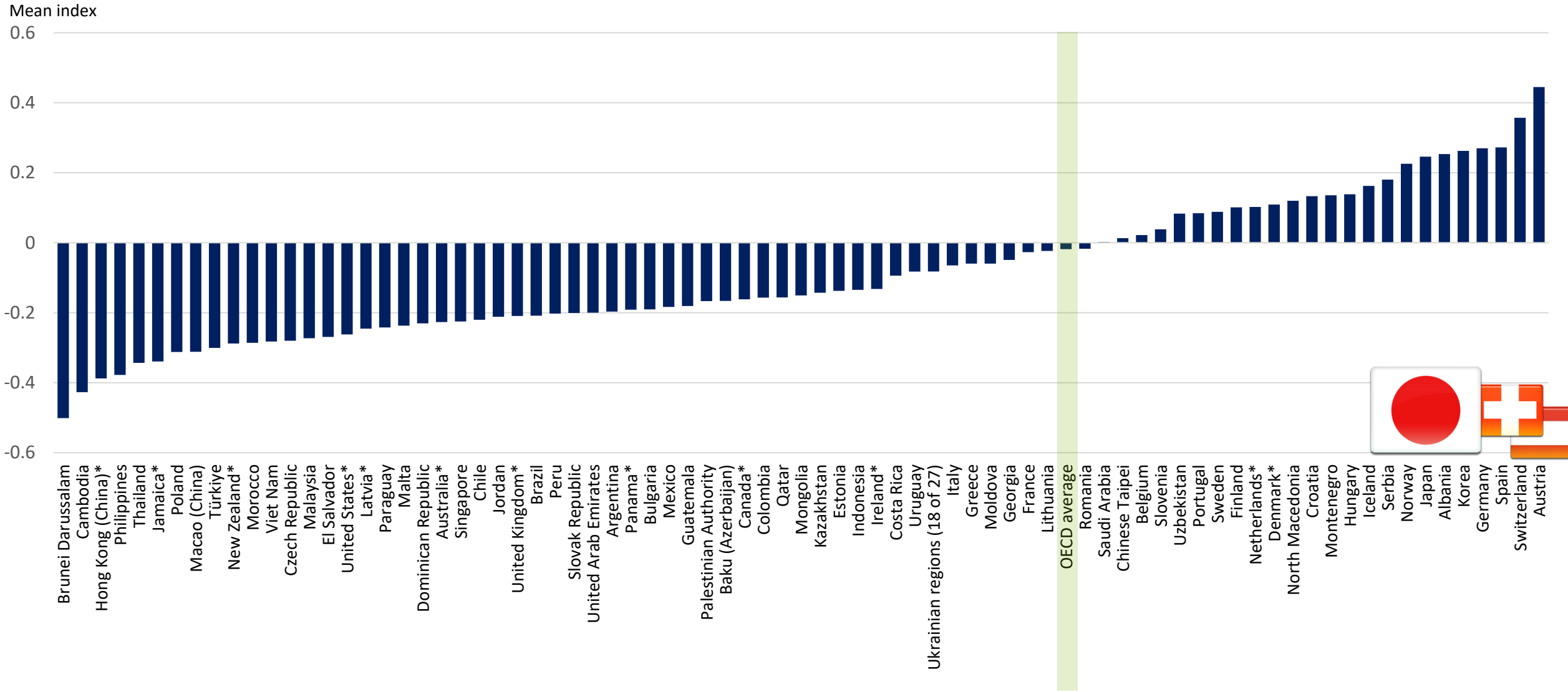
Change in life satisfaction when students reported that they are satisfied or totally satisfied with the following:



Students' sense of belonging at school, across all countries and economies

Table II.B1.1.1

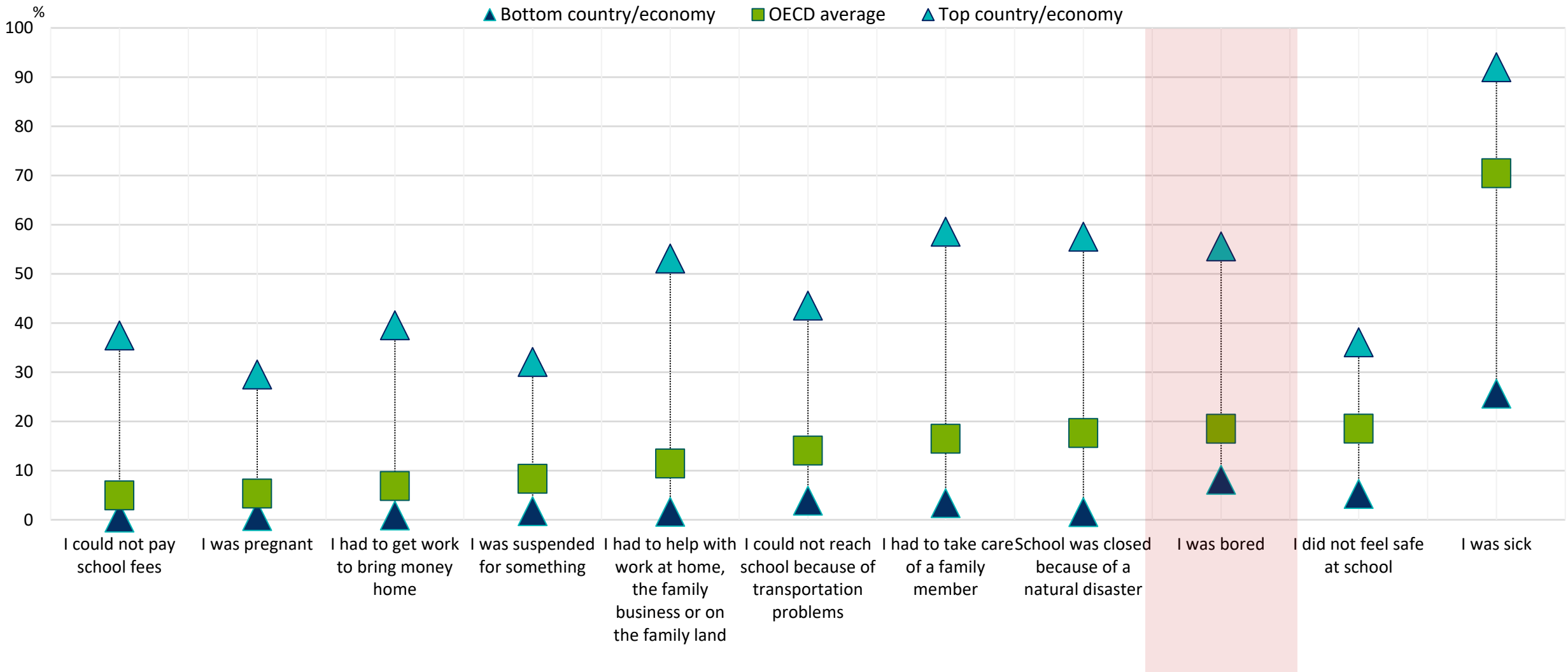
Based on students' reports



Reasons for long-term absenteeism

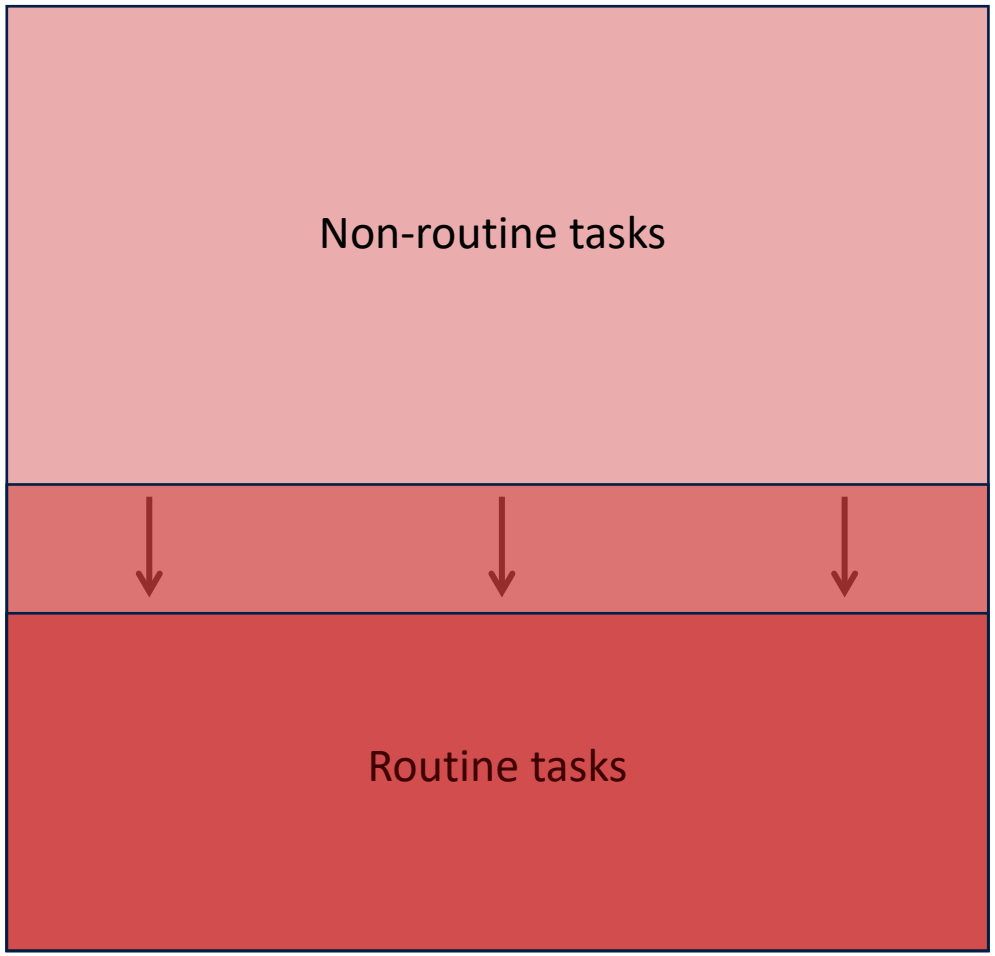
Figure II.3.13

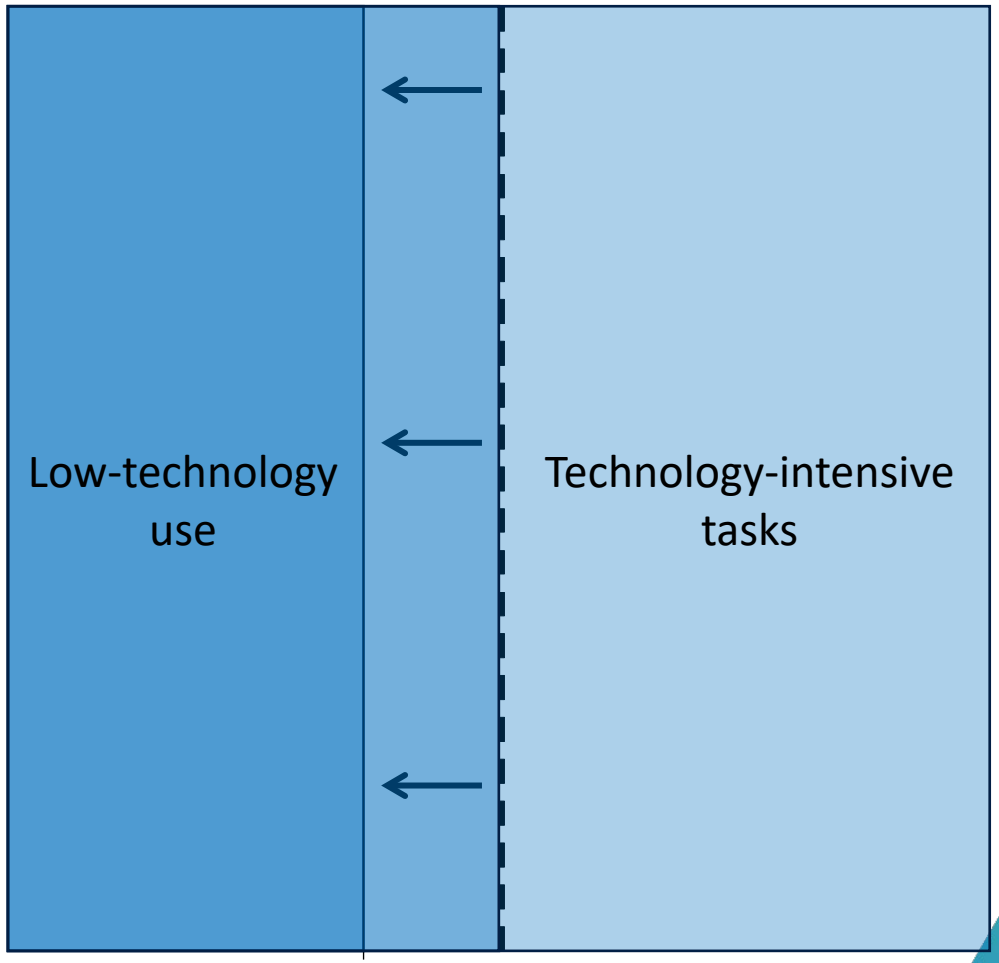
Percentage of students who reported the following reasons for having missed school for more than three consecutive months



The kinds of things that are easy to teach…

… have now become easy to digitise and automate





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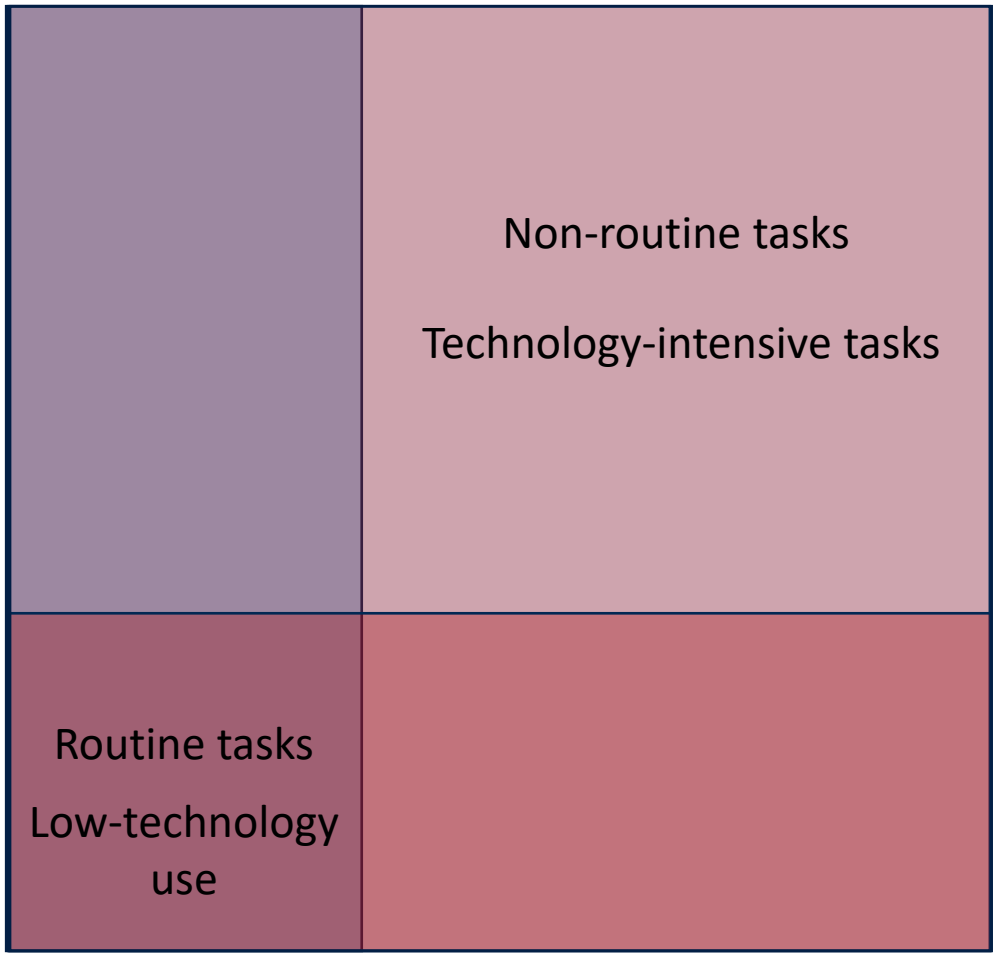
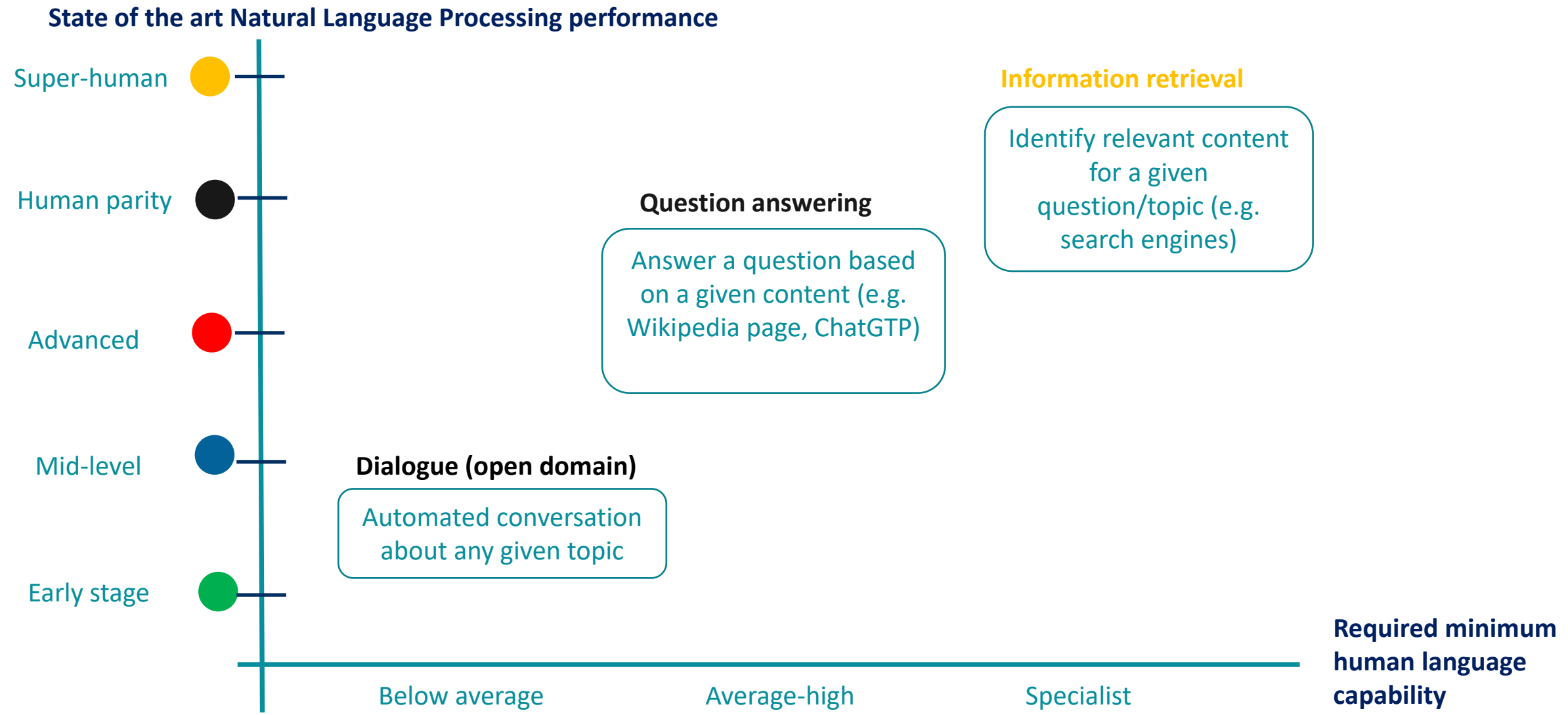


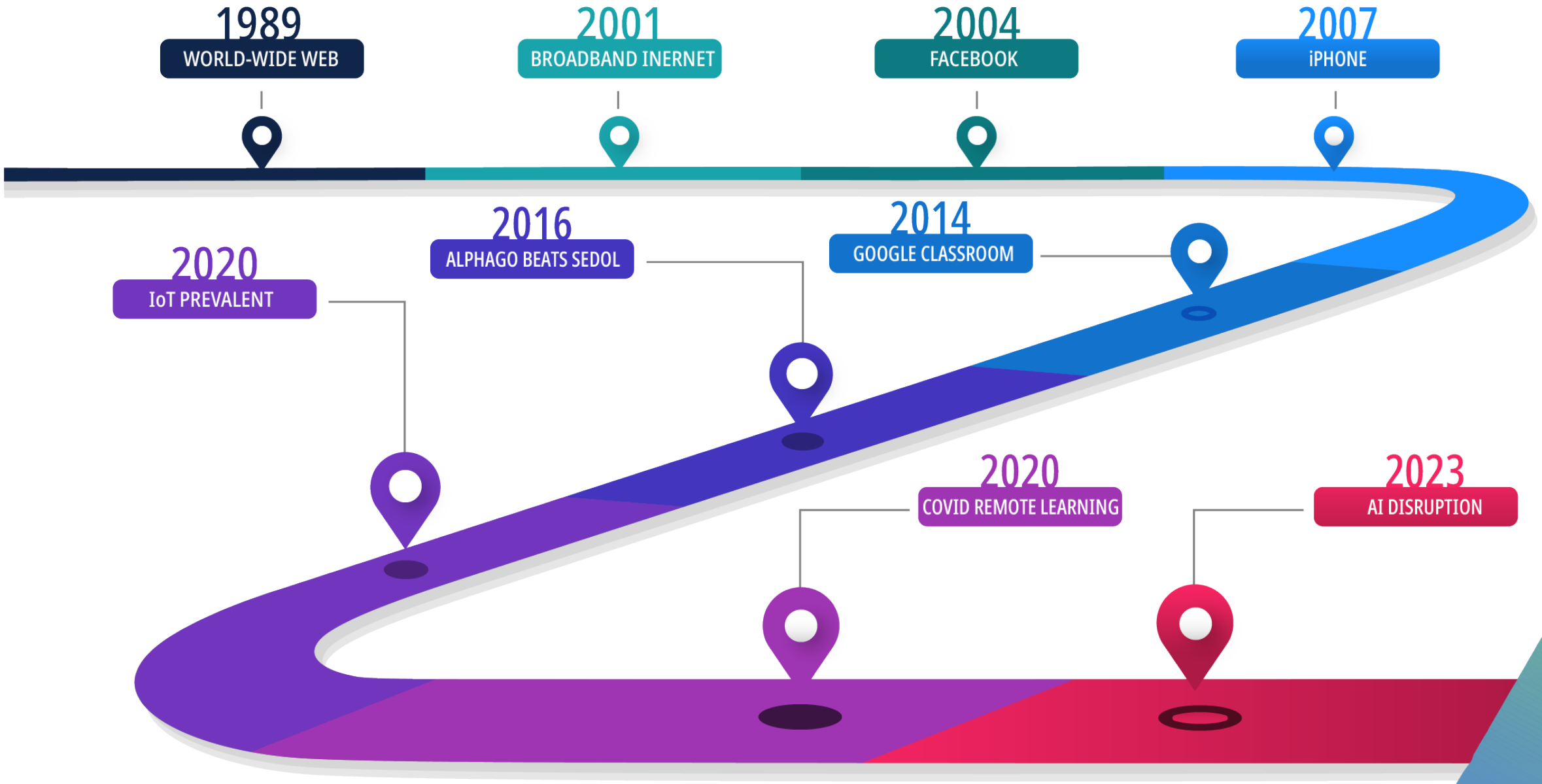
AI versus humans – benchmarks



What does it mean for education?

- Education should offer new ways of seeing, sensing and interpreting the world, in ways that reconcile competing beliefs and values, re-build meaning in people's lives and restore well-being.
- Education should provide opportunity and fulfilment for everyone, respecting and nurturing a broader range of strengths, including dispositions for caring and creativity.
- Education should equip people to design and establish the next set of economic, societal and organisational models.

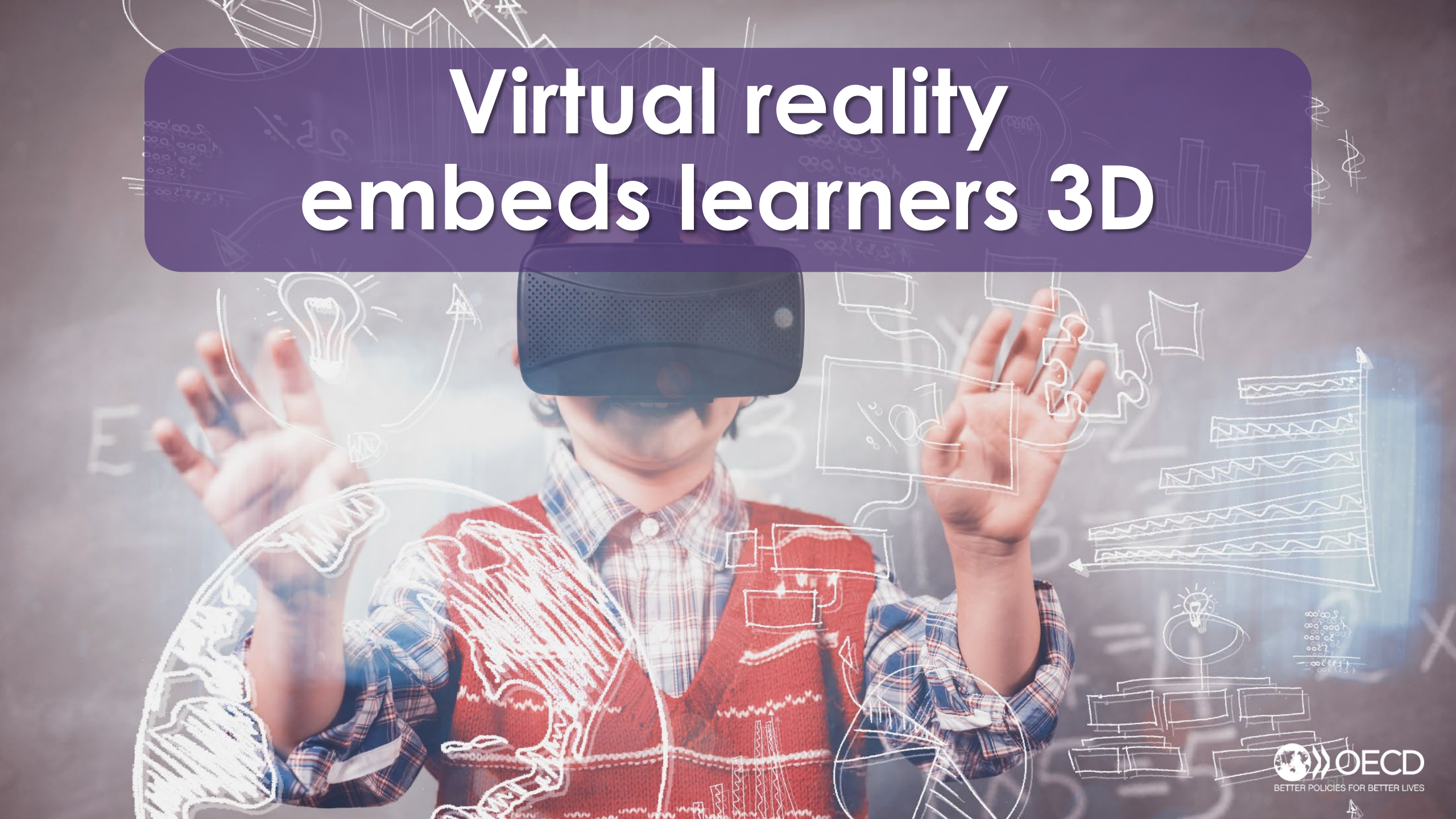
The digital education transition is accelerating



Personalising learning


Fun
SONY
OECD
BETTER POLICIES FOR BETTER LIVES

Virtual reality embeds learners 3D



OECD
BETTER POLICIES FOR BETTER LIVES

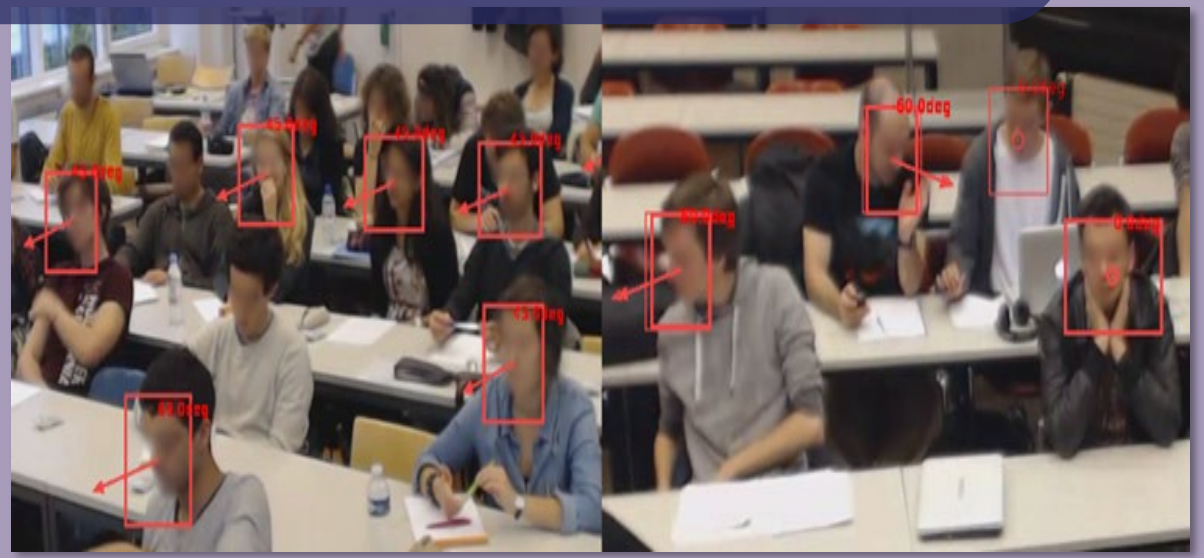
Augmented reality superempowers the real world

Learning through teaching?

Classroom analytics: make visible what's invisble

Source: Raca, Kidzinski and Dillenbourg, 2015

Input
(sensors)



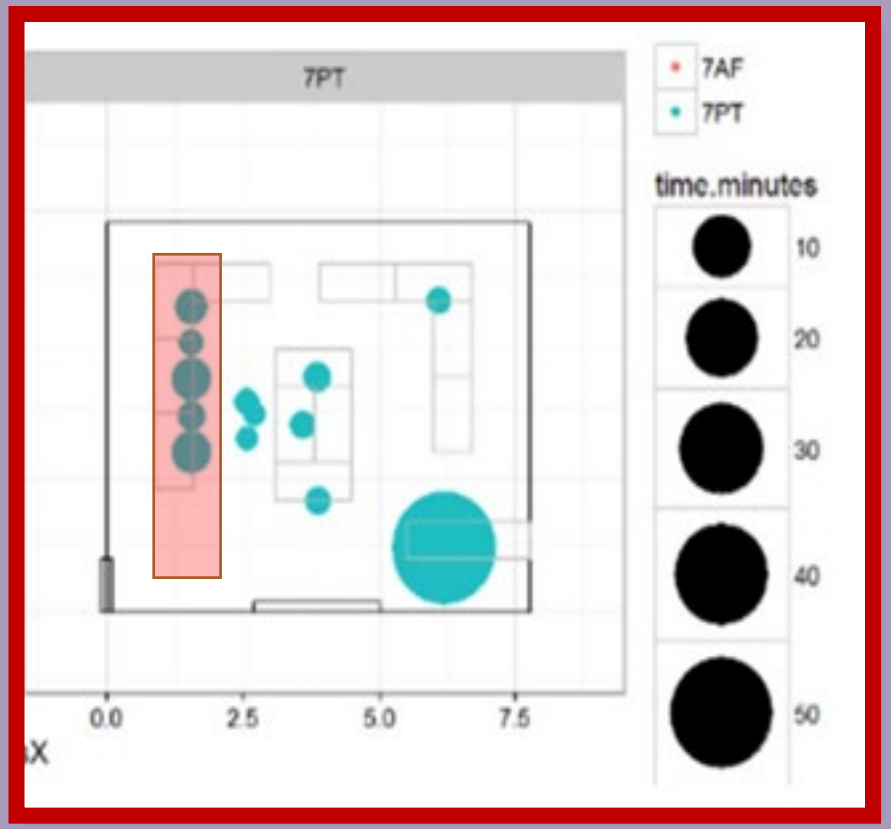
A. Regulating teachers' attention using Lantern devices

Source: (Alavi and Dillenbourg, 2012[22])

Output
(dashboard)

Professional feedback

Showing teachers where the spend time in the classroom



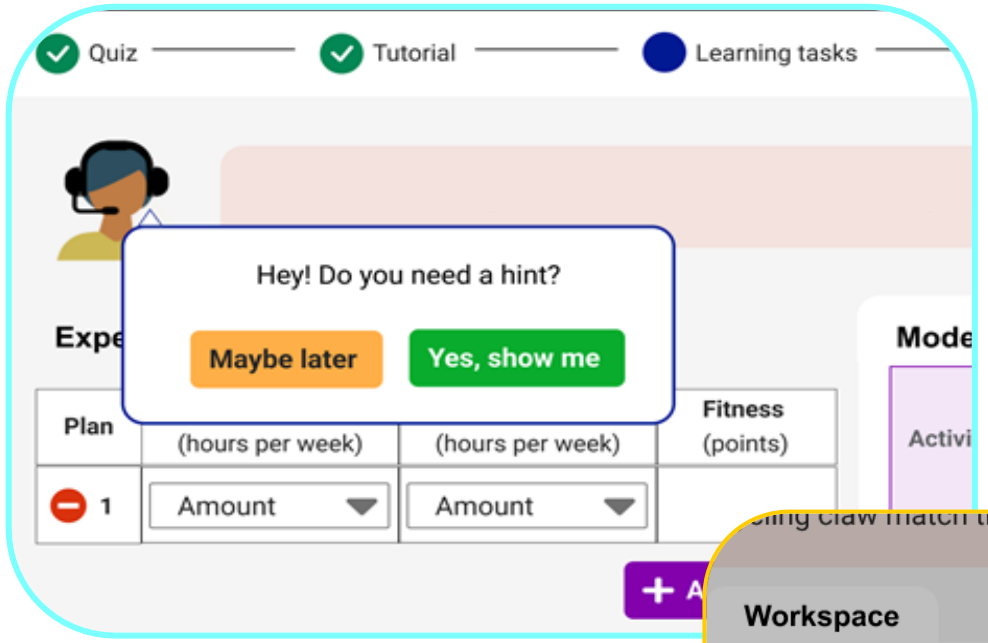
Source: Prieto et al., 2017

Re-integrating learning and assessment

VS

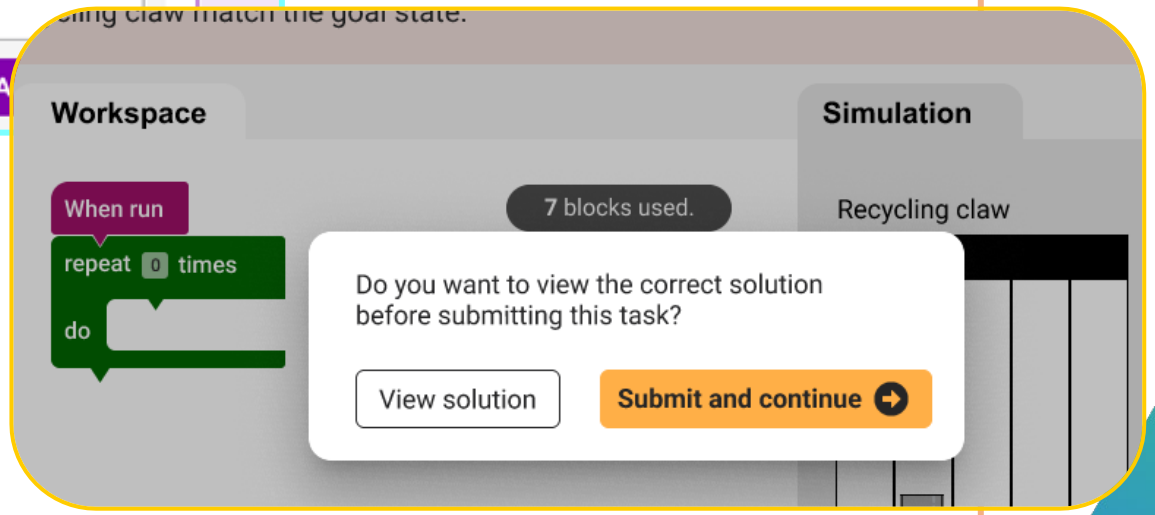
How will students **demonstrate their learning skills?**

Students will also…



- **Interact with an intelligent tutor** to get help when they are stuck

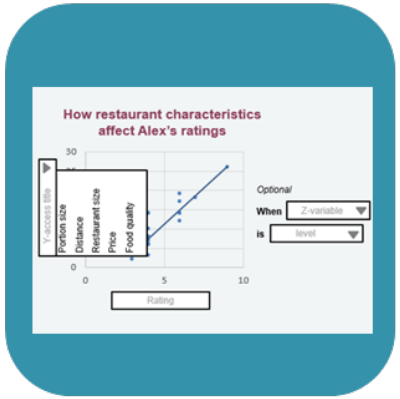
- **Reflect on their achievements** during the assessment



What can we learn from these assessments about education systems?

Information on student learning

Pre-test



Tutorial

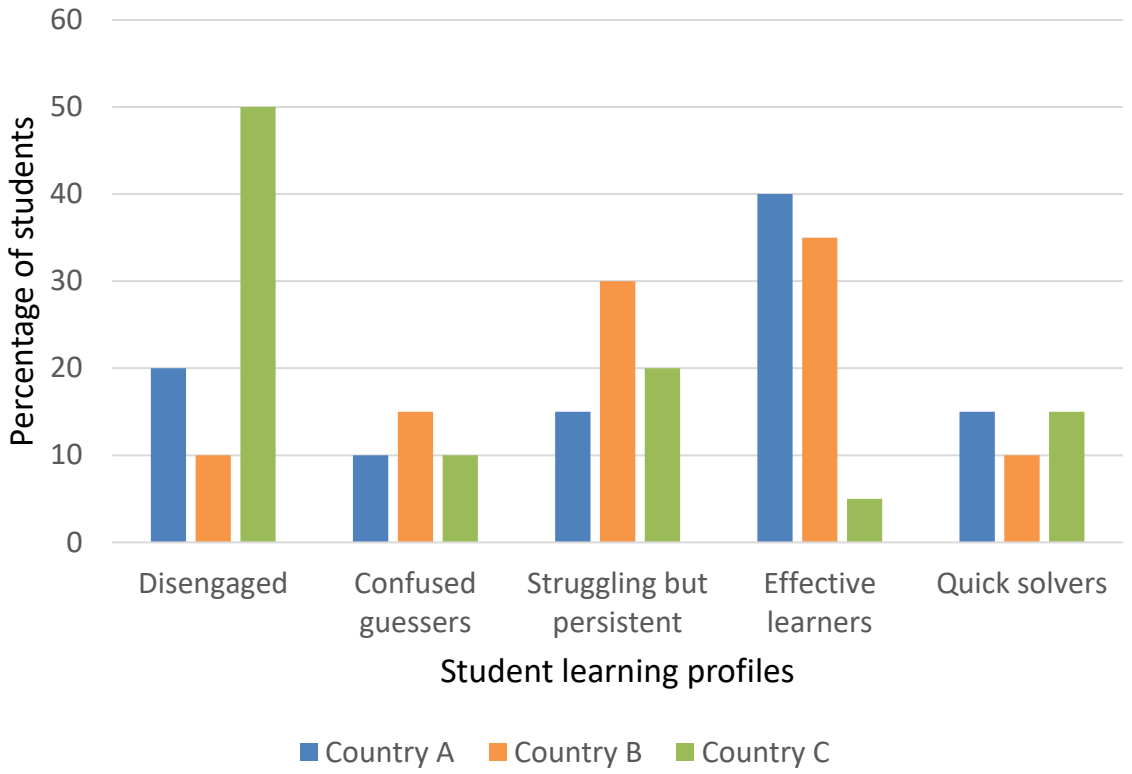
Learning Activities

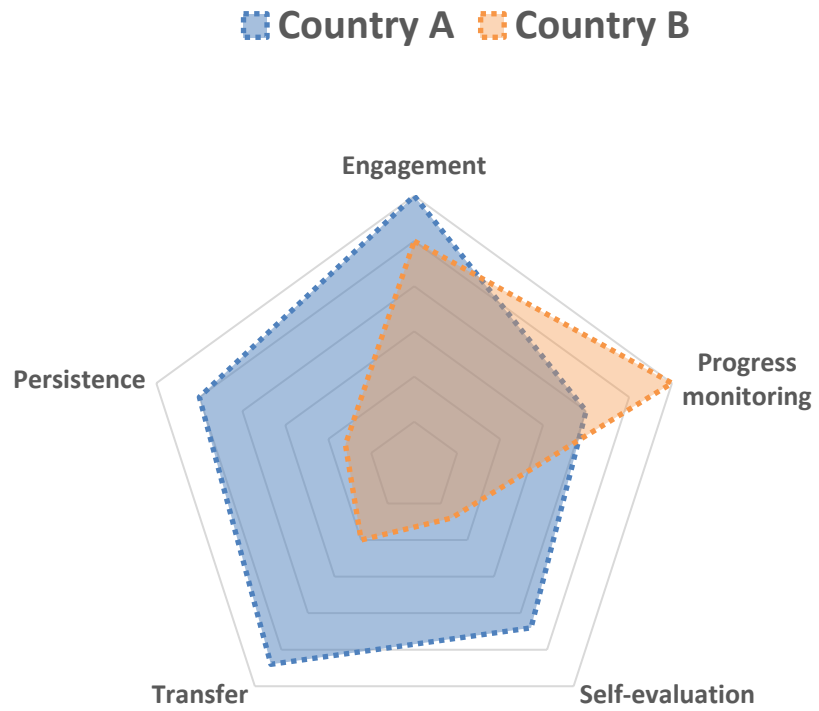
Challenge

Baseline measure of students' prior knowledge

Measure of **learning gain** =
Score on LDW test after accounting for pre-test score

What can we learn from these assessments about education systems?





Profiles of self-regulated learners

Seizing the opportunities of AI and digital technology in education…

- **Personalising** learning and education
- Fostering **inclusion and equity**
- Enhancing the **quality of teaching**
- Improving **efficiency**
- Enhancing **research and innovation**
- Making **education more relevant** to modern times (e.g. generative AI apps)

… while mitigating risks and addressing challenges with guardrails

- **Digital divides**: provide equal access
- **Performance of digital tools**: assess the stakes and involve humans
- **New or amplified biases**: ensure not only advantaged students reap the benefits
- **Inefficiencies of a digital ecosystem**: provide what's useful more than just what's possible
- **Privacy and data protection**: cover new possibilities, address new challenges
- **Ethics of AI**: promote adaptive regulation
- **Social acceptance**: communicate benefits while questioning naïve endorsement

EDUCATION & SKILLS

Find out more about our work at www.oecd.org/pisa

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