EDUCATION & SKILLS

# OECD, PISA and PISA for Schools

## Empowering Schools with comparative data and global peer-learning

**Tanja Vujičić**

Directorate of Education and Skills, OECD

18th October 2024

OECD
BETTER POLICIES FOR BETTER LIVES

# Agenda

**1 OECD & EDU** — About OECD, OECD Education Department and PISA

**2 PISA 2022** — Insights from PISA 2022

**3 PISA for Schools** — What is PISA for Schools?

**4 PISA for Schools - examples** — What actions can follow PISA for Schools?

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# Organisation for Economic Co-operation and Development (OECD) – quick facts

**Paris** based, staff of 3 000

around 200 in Education and Skills Directorate


Better policies for better lives


500 publications/year, **PISA** test, Economic Outlook, OECD.Stat, etc.

**38 member countries**: Including the UK, US, Canada, Australia, New Zealand, Japan, Korea, Mexico, and more.

PISA for Schools

# OECD Directorate for Education and Skills

## Measuring outcomes

- conduct international assessments of learning outcomes (like PISA, PIAAC, TALIS)

## Teaching and learning

- understanding of how students learn and teachers teach is at the core of education policy

## Policy development and implementation

- review the education and skills systems in countries, and assist in developing and implementing policies to improve those systems

## Innovation and the future of education

- provide policy makers with a deeper understanding of how the way we innovate is changing, and what this implies for education and training policies



PISA for Schools

# What is PISA?

## Programme for International Student Assessment

assesses 15-year-old students' abilities and knowledge in mathematics, reading and science

# 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**

# Key features of PISA 2022

## The assessment

**Computer-based tests**

Assessments lasting a total of **two hours**

**Multi-stage adaptive approach** in reading

**Mixture of multiple-choice questions and questions requiring students to construct their own responses**

## Background questionnaires

**Background questionnaire** (35min): information about the students themselves, their attitudes, dispositions and beliefs, their homes, and their school and learning experiences

**School principals**: school management and organisation, and the learning environment


## The students

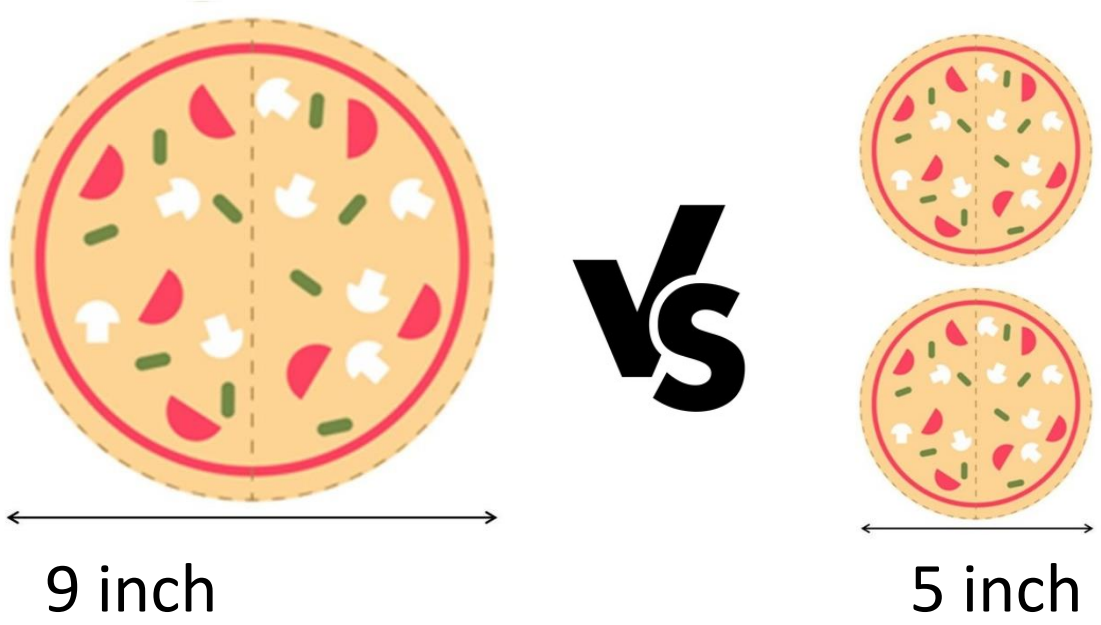
Some **690 000 students** completed the assessment in **81 participating countries and economies**

## The content

**Focus on mathematics**, with **reading, science**

# PISA measures PIZZA?

# PISA measures PIZZA?

# PISA measures PIZZA?

**roychandan** @cretiredroy · Jun 30, 2022

I gave him the  mathematical formula to calculate the area of a circle.
Circle Area = $\pi r^2$
where $\pi$ = 3.1415926,
r is the radius of the circle.
So, a 9-inch circle area = 63.62 sq.in.
while
a 5-inch circle area is 19.63 sq.in.

2/3

182 4,851 54.2K

**roychandan** @cretiredroy · Jun 30, 2022

The two 5-inch circle areas add up to 39.26 sq.in .
I said that even if he gave three pizzas, I would still lose-out.
"How can you say you are giving me an extra inch for free?"
The owner was speechless.
He finally gave me 4 pizzas.

Take Maths seriously!

3/3

## M154: Pizzas

A pizzeria serves two round pizzas of the same thickness in different sizes. The smaller one has a diameter of 30 cm and costs 30 zeds. The larger one has a diameter of 40 cm and costs 40 zeds.

### Question 1: PIZZAS

M154Q01- 0 1 2 8 9

Which pizza is better value for money? Show your reasoning.

**PIZZAS SCORING 1**

QUESTION INTENT: Applies understanding of area to solving a value for money comparison

Code 2: Gives general reasoning that the surface area of pizza increases more rapidly than the price of pizza to conclude that the larger pizza is better value.
- The diameter of the pizzas is the same number as their price, but the amount of pizza you get is found using diameter$^2$ , so you will get more pizza per zeds from the larger one

Code 1: Calculates the area and amount per zed for each pizza to conclude that the larger pizza is better value.
- Area of smaller pizza is $0.25 \times \pi \times 30 \times 30 = 225\pi$; amount per zed is 23.6 cm$^2$ area of larger pizza is $0.25 \times \pi \times 40 \times 40 = 400\pi$; amount per zed is 31.4 cm$^2$ so larger pizza is better value

Code 8: They are the same value for money. (This incorrect answer is coded separately, because we would like to keep track of how many students have this misconception).

Code 0: Other incorrect responses OR a correct answer without correct reasoning.

Code 9: Missing.

# Example Difficult PISA Item

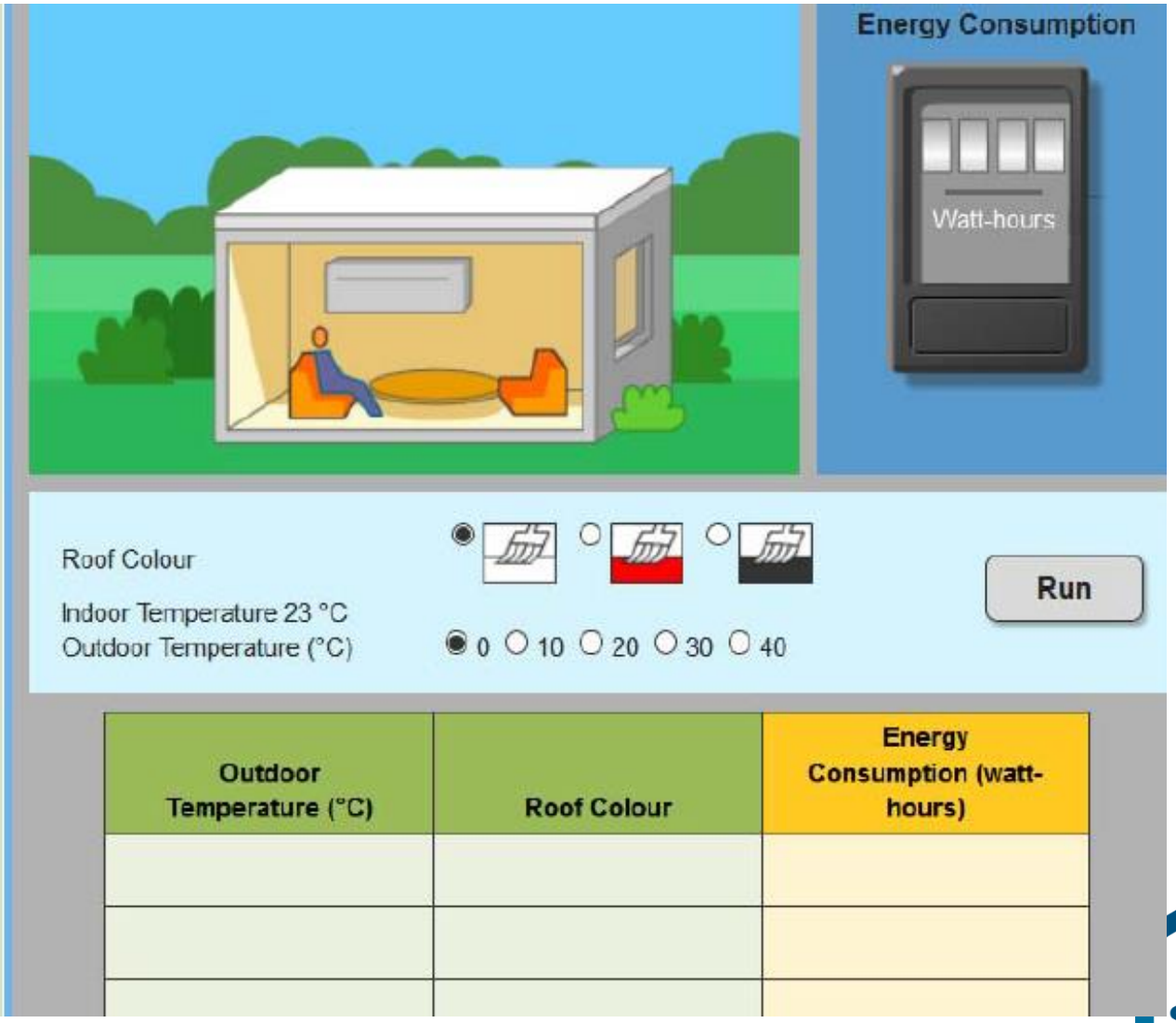
**Energy-Efficient House**
Question 4 / 4

▸ **How to Run the Simulation**

*Run the simulation to collect data based on the information below. Click on a choice to answer the question.*

Based on the simulation, what can you conclude about the relationship between the outdoor temperature and energy consumption for the full range of temperatures for all three roof colours?

- When the outdoor temperature increases, energy consumption increases.
- When the outdoor temperature decreases, energy consumption increases.
- When the difference between the outdoor temperature and the indoor temperature increases, energy consumption increases.
- When the difference between the outdoor temperature and the indoor temperature decreases, energy consumption increases.



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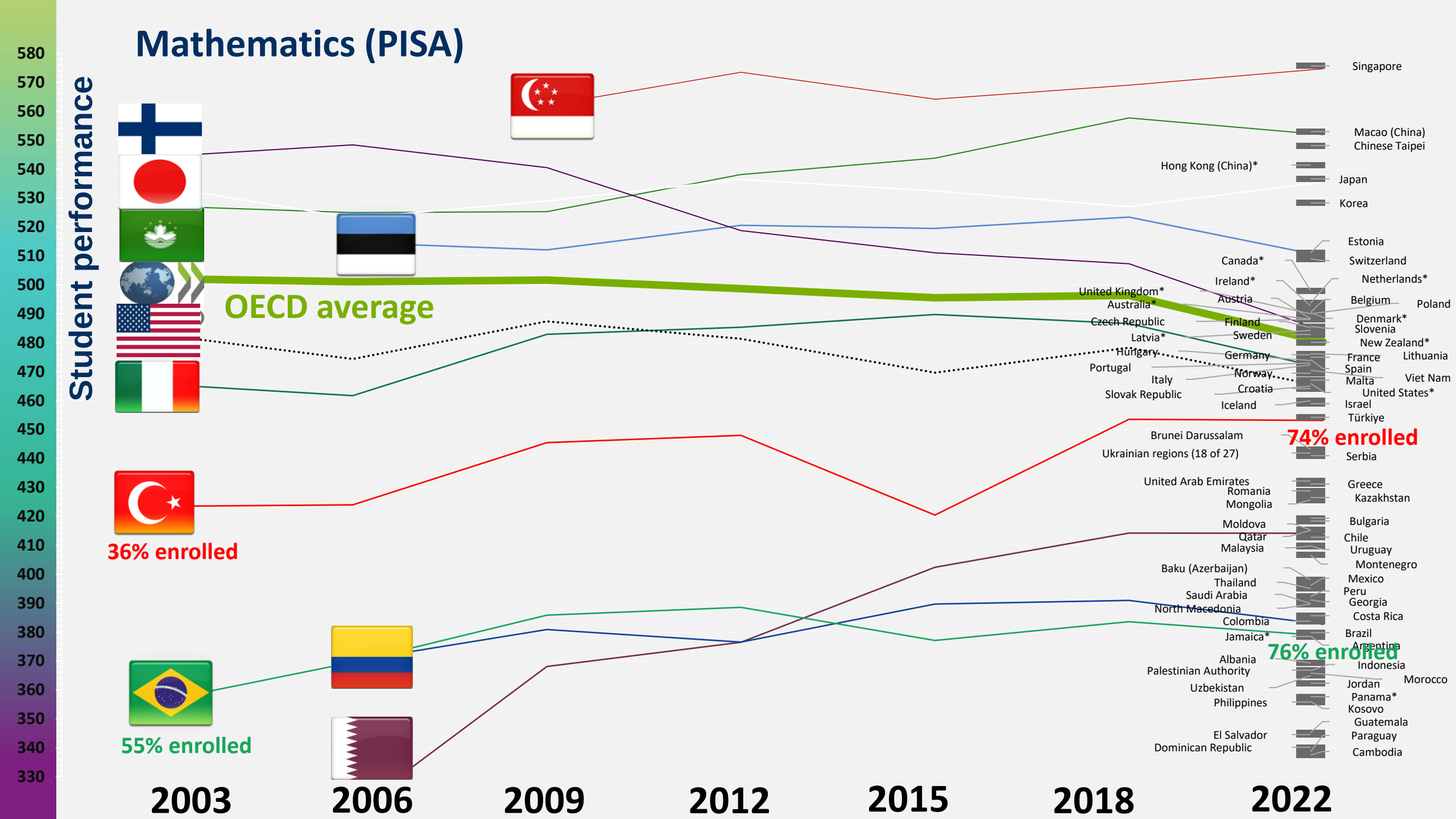
# PISA 2022

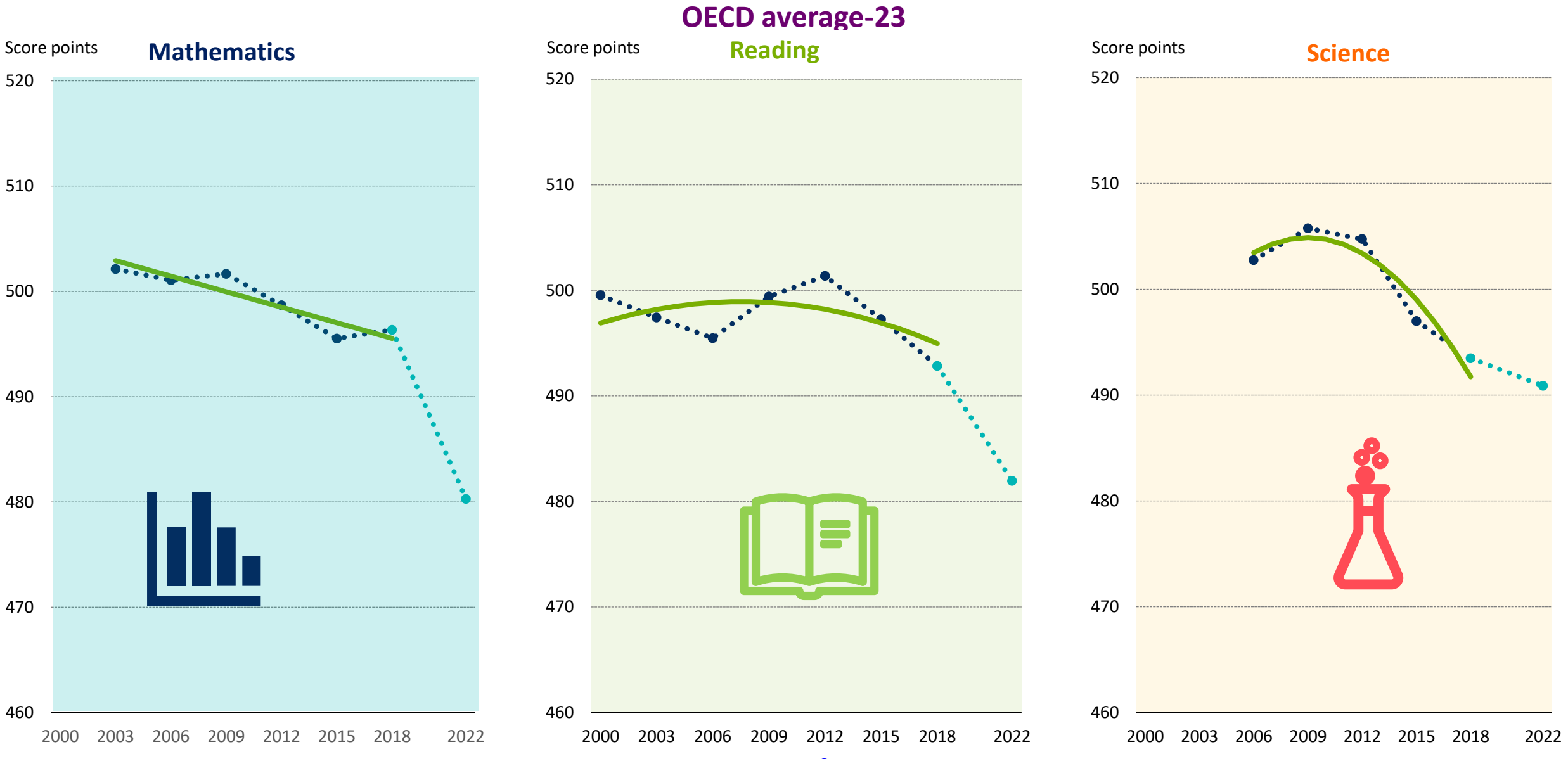
## Insights from PISA

# Mathematics (PISA)



# Mathematics, reading and science performance declined significantly since PISA began

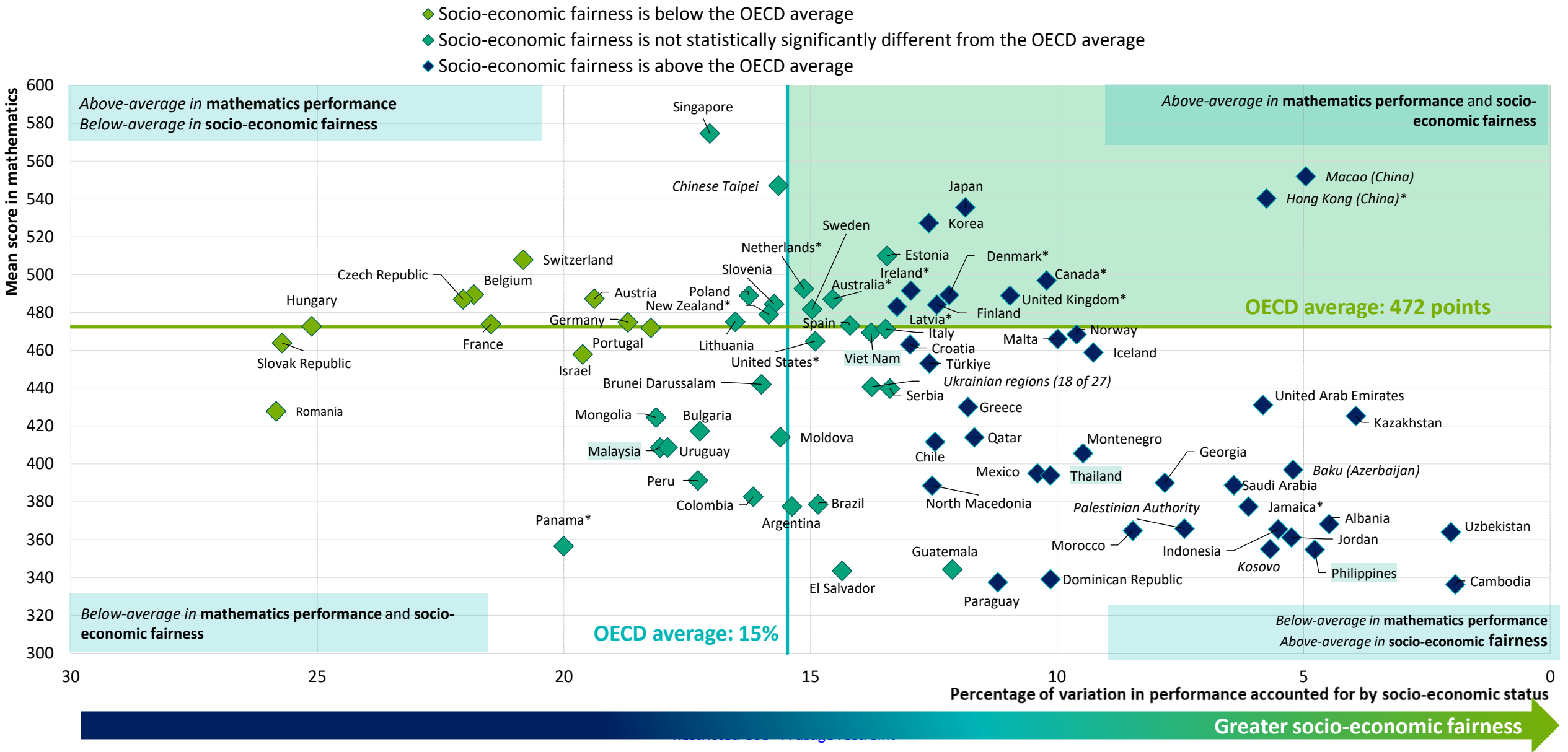
Figure I.5.2



# Combining excellence and equity

## Strength of socio-economic gradient and mathematics performance

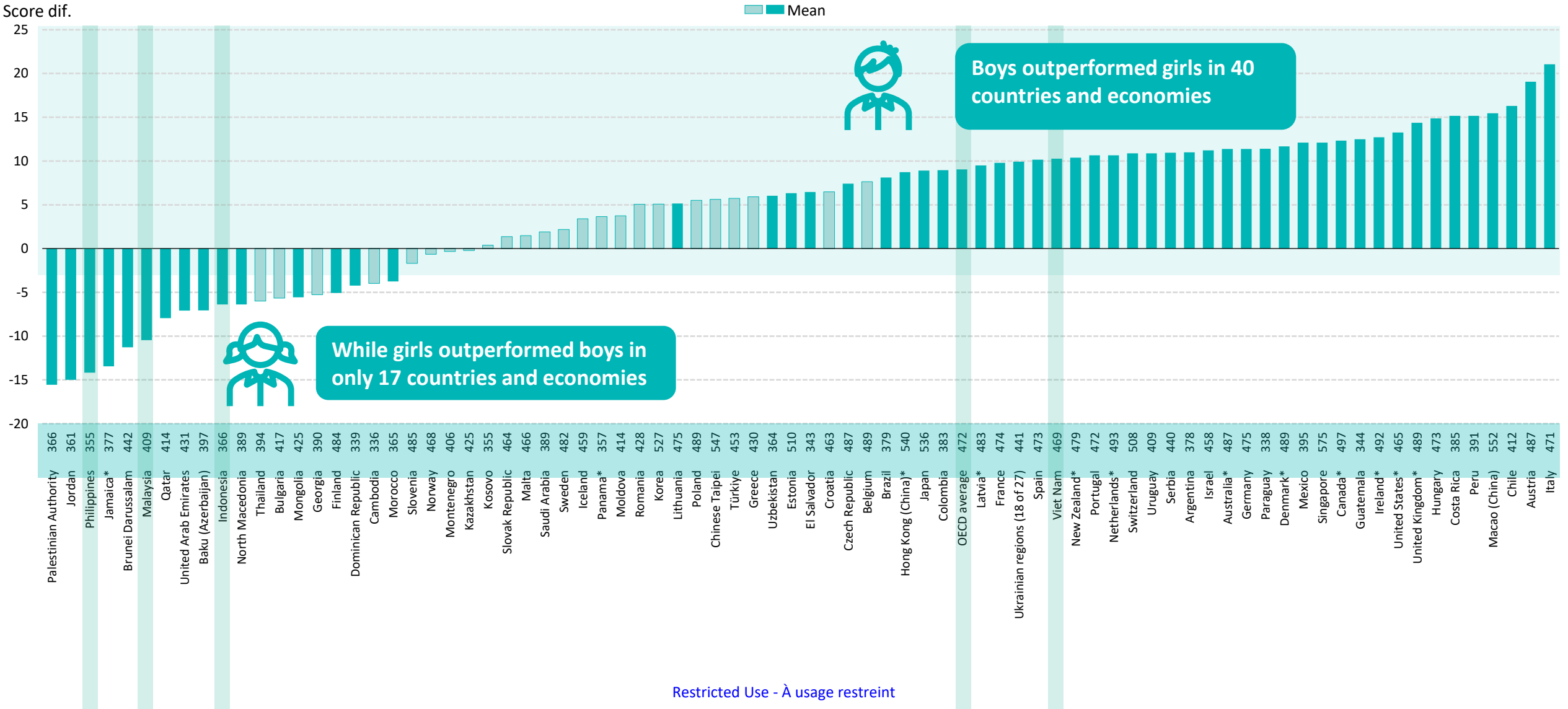
Figure I.4.2



# On average across the OECD boys outperformed girls in mathematics by 9 points

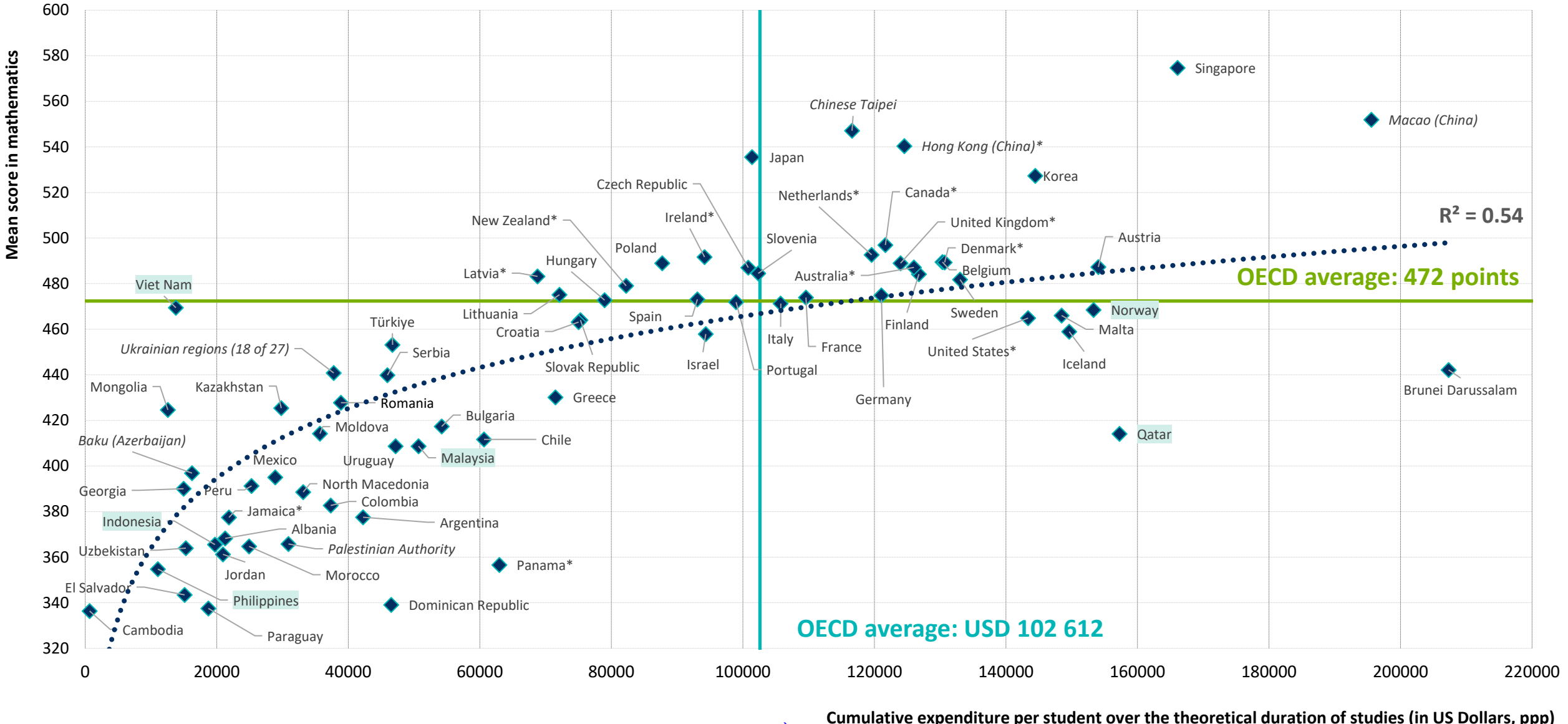
Figure I.4.7

## Score-point difference in mathematics between boys and girls



# Money is necessary but not sufficient

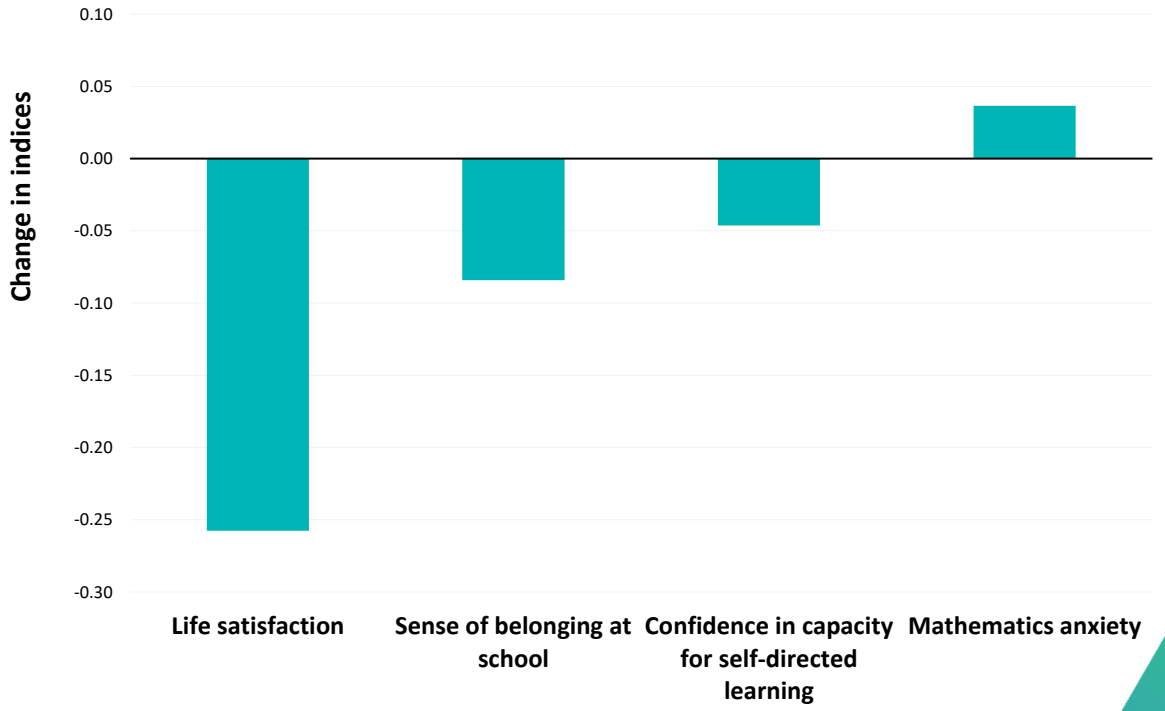
Figure I.4.15



# Safety at school

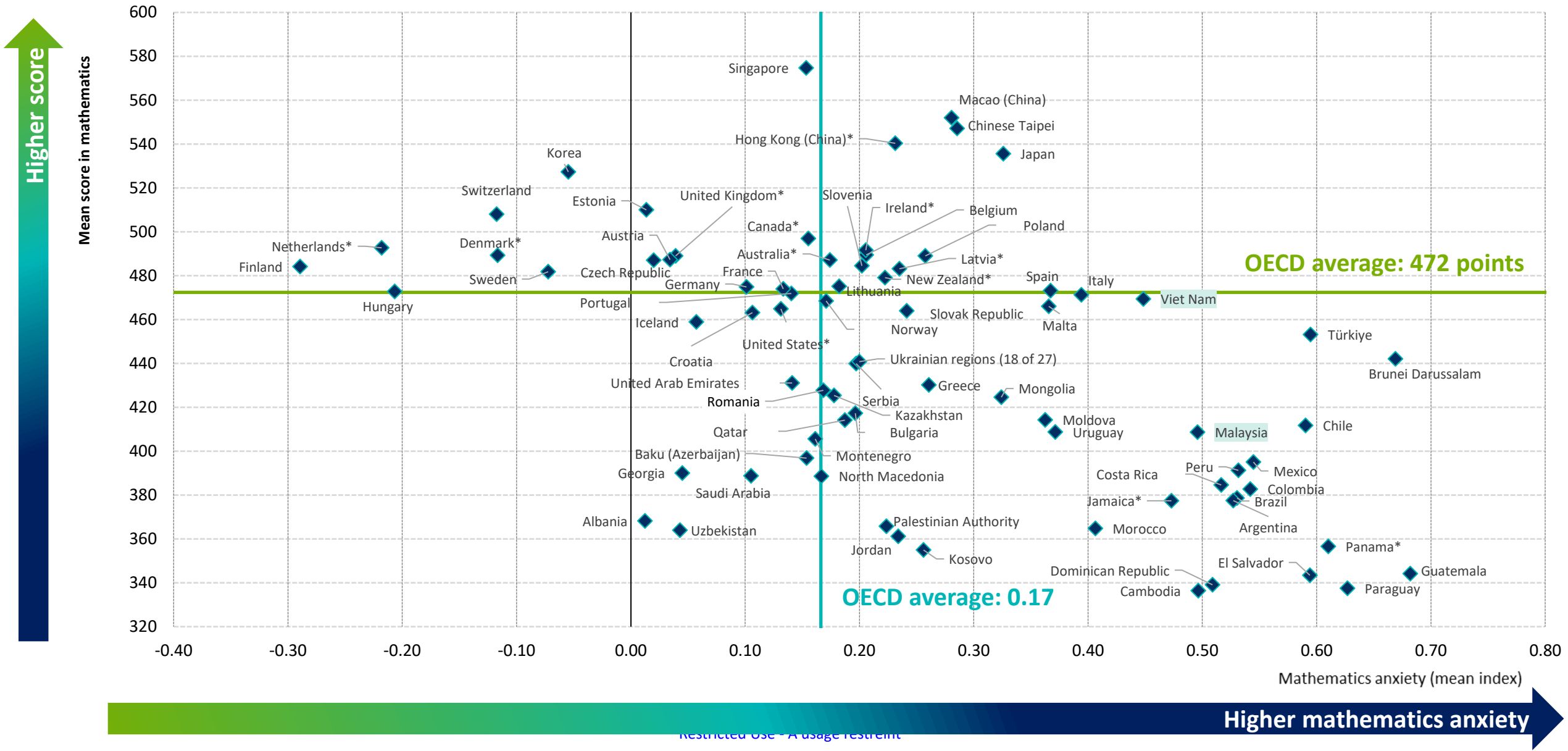

## School safety risks and student well-being

Change in the following indices per one-unit increase in the index of school safety risks - OECD average



# Mathematics anxiety and mean score in mathematics in PISA 2022

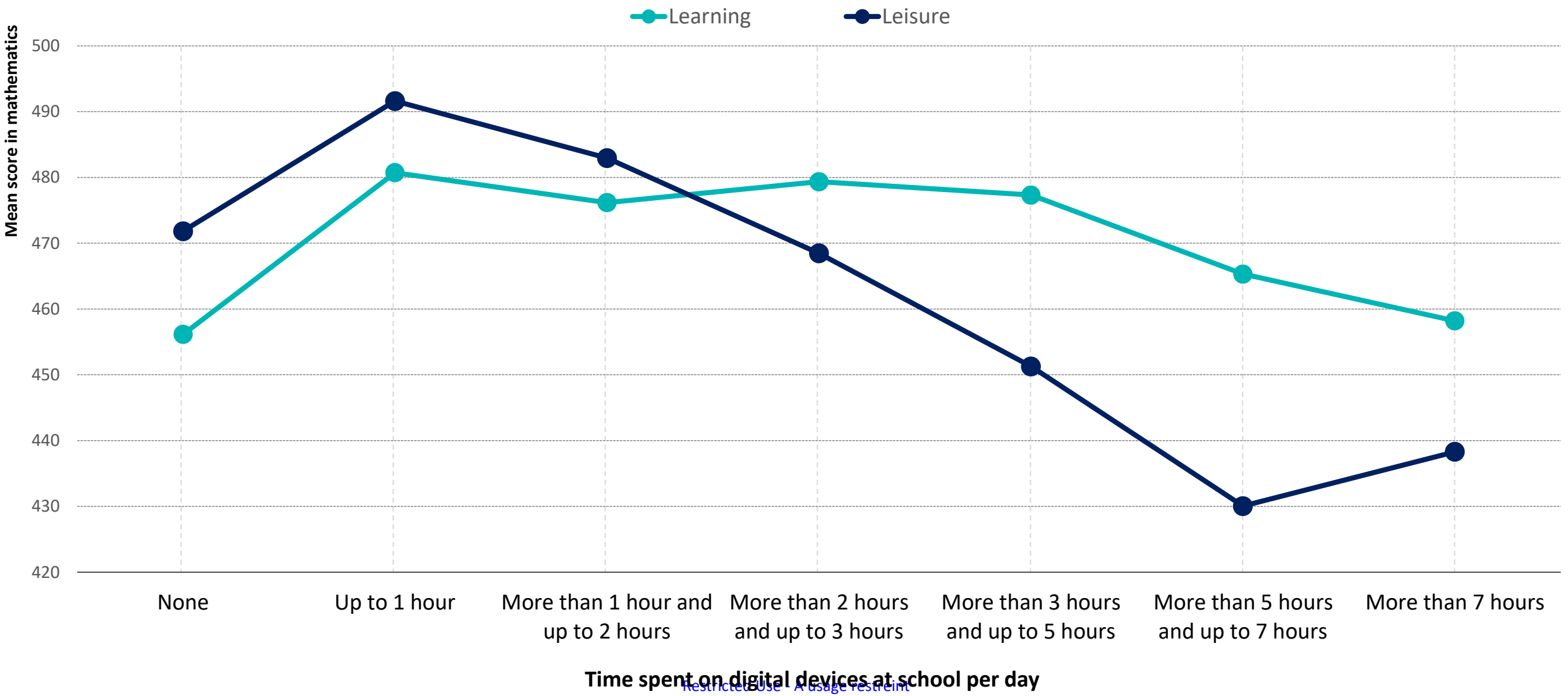
Figure I.2.1



# Time spent on digital devices at school and mathematics performance

Figure II.5.14

## Based on students' reports; OECD average

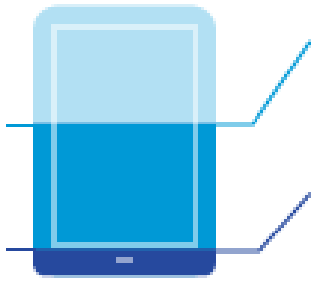


# Students in the digital world

**Students who spent up to 1 hour per day on learning on digital devices at school outperformed those who didn't by 14 points***

** After accounting for socio-economic profiles*

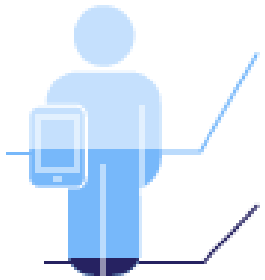
Some students report being distracted by using digital devices in mathematics classes, from:



**54%** in Argentina

to **5%** in Japan

Or they report distraction due to other students using digital devices, from:



**46%** in Argentina

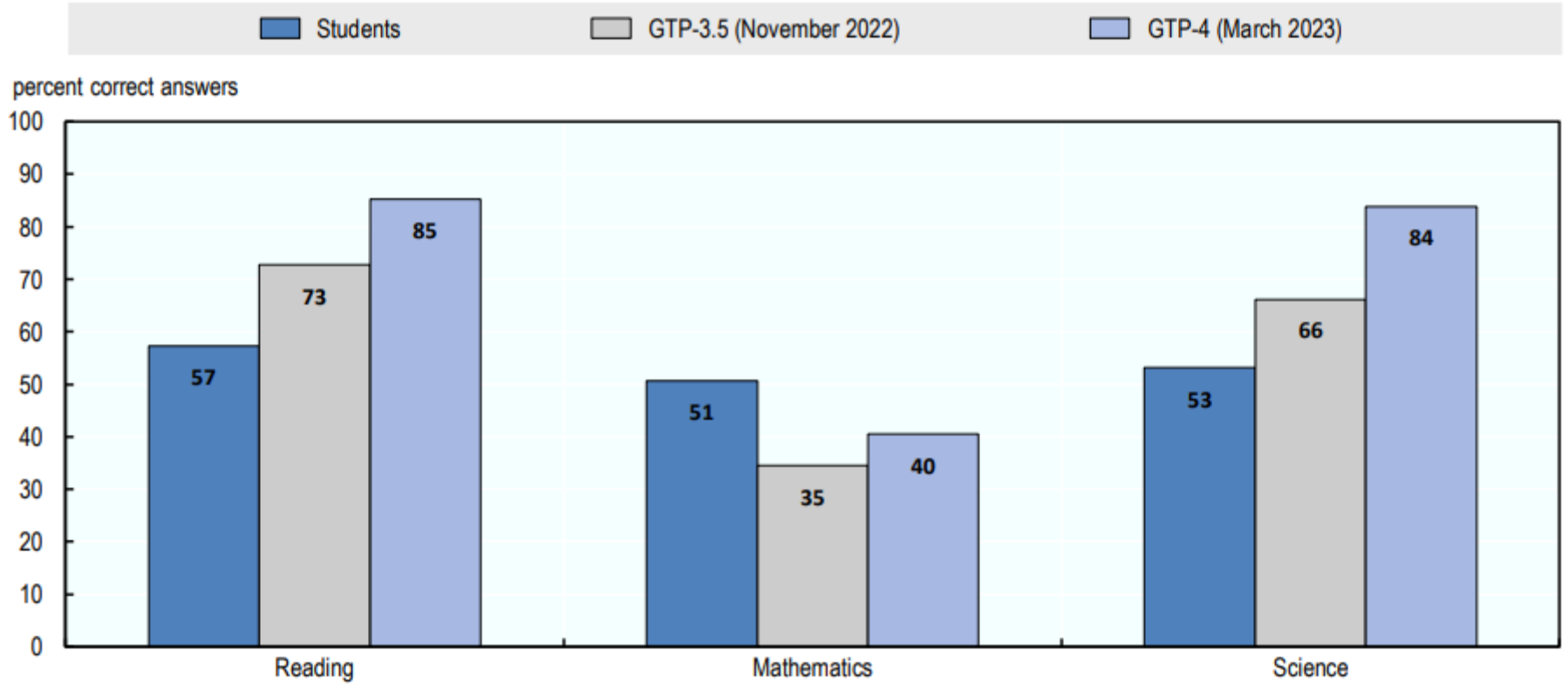
to **4%** in Japan

Enforced cell phone bans in class may help reduce distractions, but could stop students self-regulating their own use.

# Putting AI to test

## Figure 1. GPT and student performance on PISA core domains

Share of questions correctly answered by students, GPT-3.5 and GPT-4 on released items from PISA tests




Source: « Putting AI to the test : How does the performance of GPT and 15-year-old students in PISA compare? », *OECD Education Spotlights*, n° 6, Éditions OCDE, Paris, https://doi.org/10.1787/2c297e0b-en.

# When fast gets really fast, being slow to adapt can make education really slow

| The past | | The future |
|---|---|---|
| Routine cognitive skills | Curriculum, instruction and assessment | Complex ways of thinking and working |
| **Some** students learn at high levels | Student inclusion | **All** students learn at high levels |
| Standardisation and compliance | Role of teachers | High-level professional knowledge workers |
| 'Tayloristic', industrial | Work organisation | Flat, collegial, entrepreneurial |
| Primarily to authorities | Accountability | Primarily to peers and stakeholders |

EDUCATION & SKILLS

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

PISA main reports

PISA Country notes

Take the test: bit.ly/PISA-Test
PISA FAQs: www.oecd.org/pisa/pisafaq
PISA Data Explorer: www.oecd.org/pisa/data

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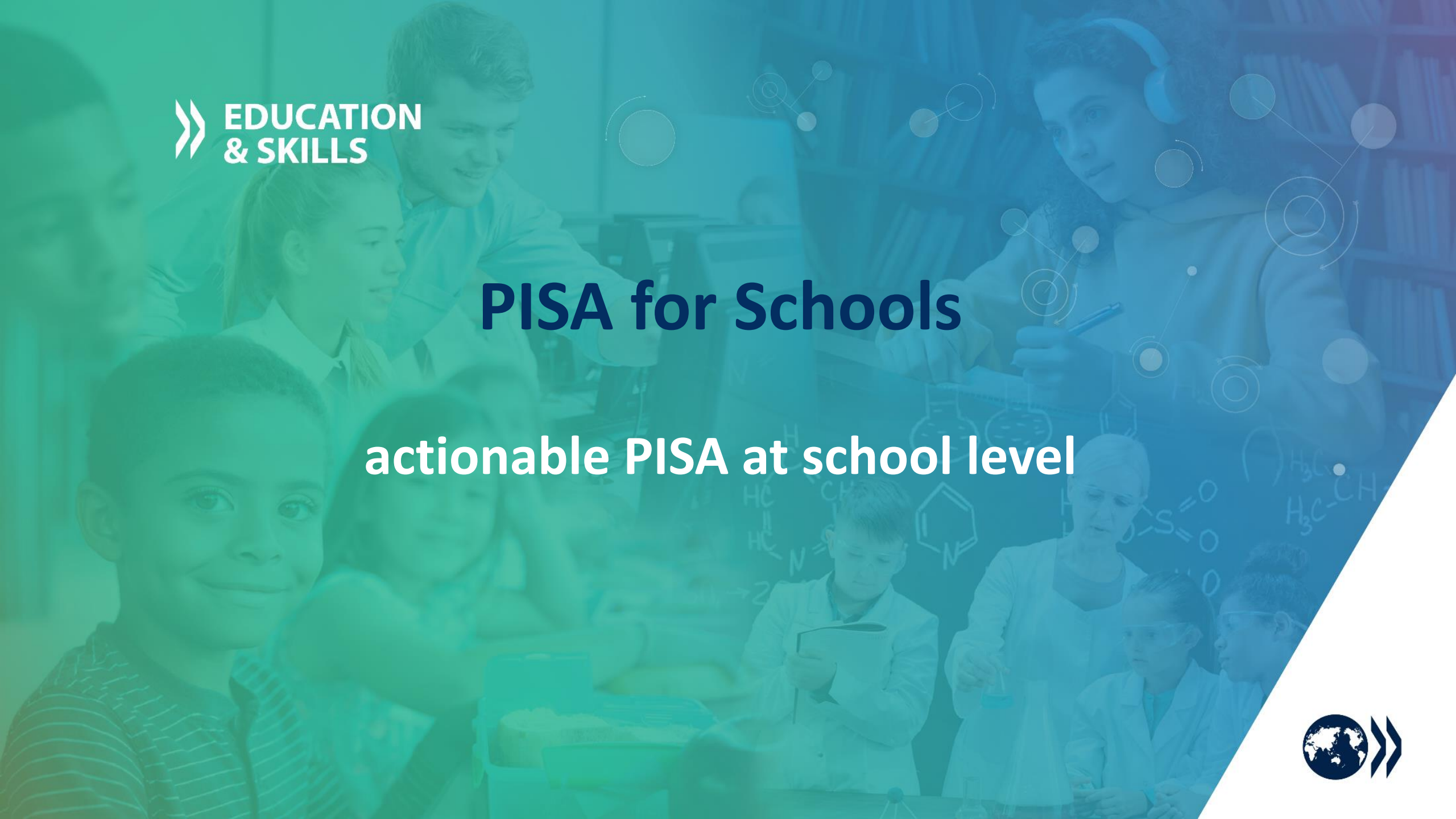



# PISA for Schools

## actionable PISA at school level

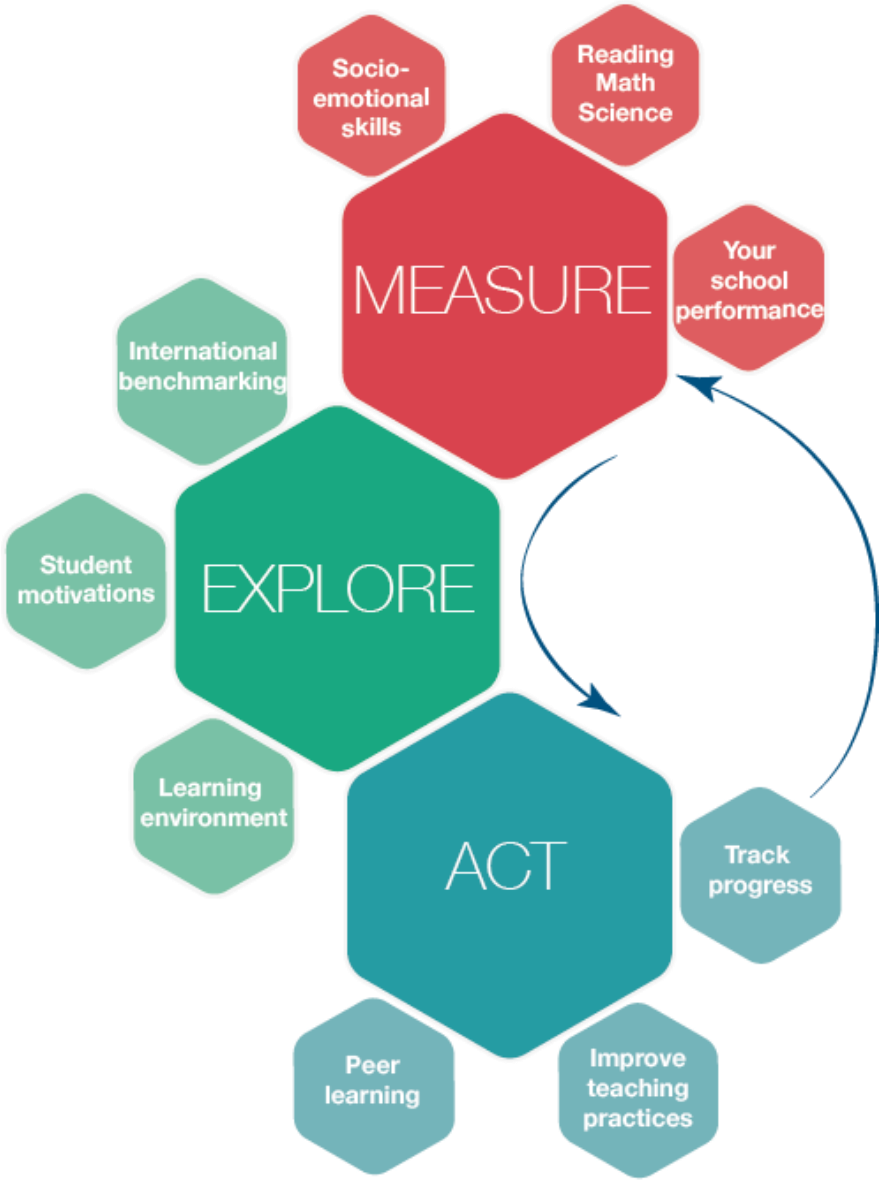
# PISA and the PISA-based Test for Schools

PISA and the PISA-based Test for Schools assess students' ability to extrapolate their knowledge and apply it creatively in novel contexts.

Comparable Scales

| PISA | PISA for Schools |
| --- | --- |
| Measures a *country's* performance | Measures a *school's* performance |

# What is PISA for Schools?




**Measure** how well students can extrapolate what they know and creatively apply their knowledge in novel contexts.

**Explore** the data on student learning outcomes in math, science, and reading, as well as on their social and emotional skills and well-being.

**Act** on school data and peer learning insights with school leaders and teachers from around the world.

PISA for Schools

# PISA for Schools: educational achievement + student voice

- PISA for Schools is a *competence-based assessment* in Reading, Mathematics and Science.
- It includes a student questionnaire that collects student perspectives on:

| | | | |
|---|---|---|---|
| Resilience | Motivation for learning | Self-efficacy | Teaching practices |
| Learning environment | Relationships with peers | Life satisfaction | Health |

# Key facts on the PISA-based Test for Schools

| | |
|---|---|
| **15-year-olds** | Like PISA, the PISA-based Test for Schools is **designed to assess secondary school students** near the end of their compulsory education |
| **+12 000 schools** | Since launch, over 200,000 students have participated in the assessment, which has been administered **in over 12 000 schools in more than 16 countries** |
| **2 hours** | The assessment takes **2 hours** to complete and focuses on how well students can apply their skills in **reading, mathematics and science** |
| **30 minutes** | The student questionnaire takes **30 minutes** and delivers valuable insights into **socio-economic background, social and emotional skills**, etc. |
| **+15 languages** | The assessment is delivered in the **language of instruction**, and is offered on the digital platform in several languages (e.g. English, Thai, Chinese, Japanese, Russian) |
| **Digital delivery** | All items are available in digital format, **both online and offline**, for streamlined delivery via the **international platform** |

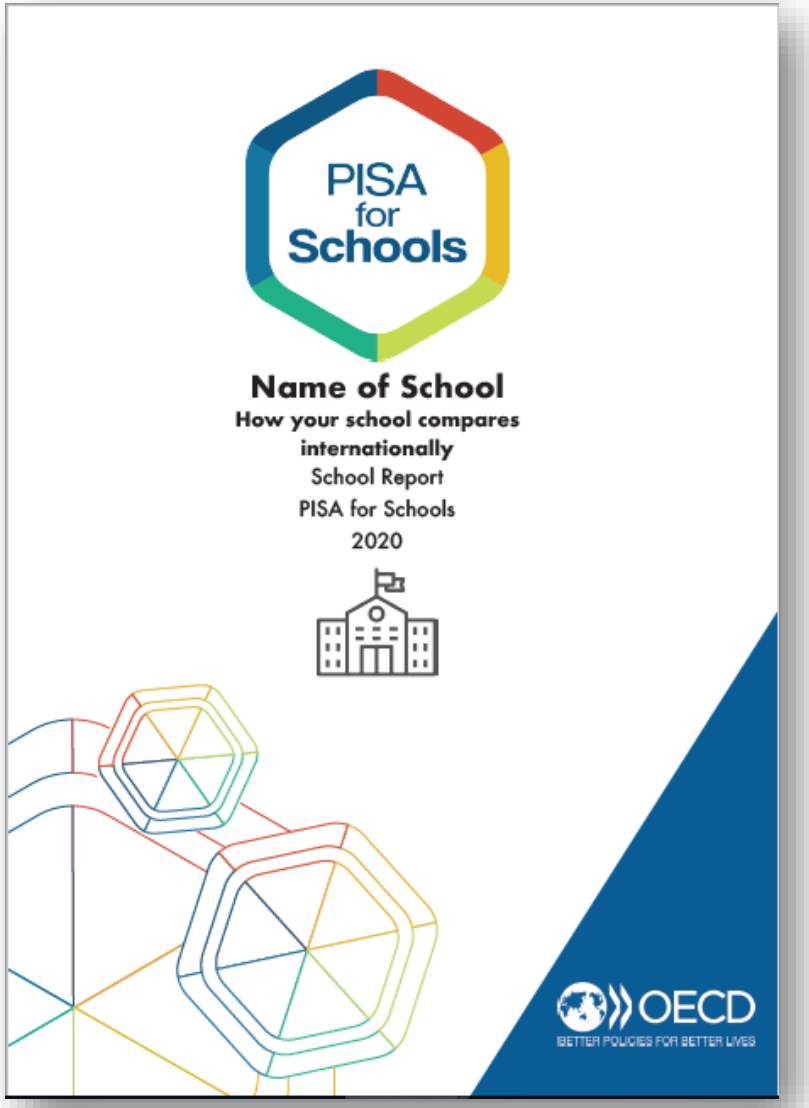
PISA for Schools

# PISA for Schools: a global community of educators

| | | | | |
|---|---|---|---|---|
| Andorra | Australia | Azerbaijan | Brazil | Brunei Darussalam |
| People's Republic of China | Colombia | Japan (Saitama Prefecture) | Kazakhstan | Portugal |
| Russian Federation | Spain | Thailand | United Arab Emirates | United Kingdom |
| USA | European Schools Network | | | |

+ India

# School Report




## 1. Executive Summary

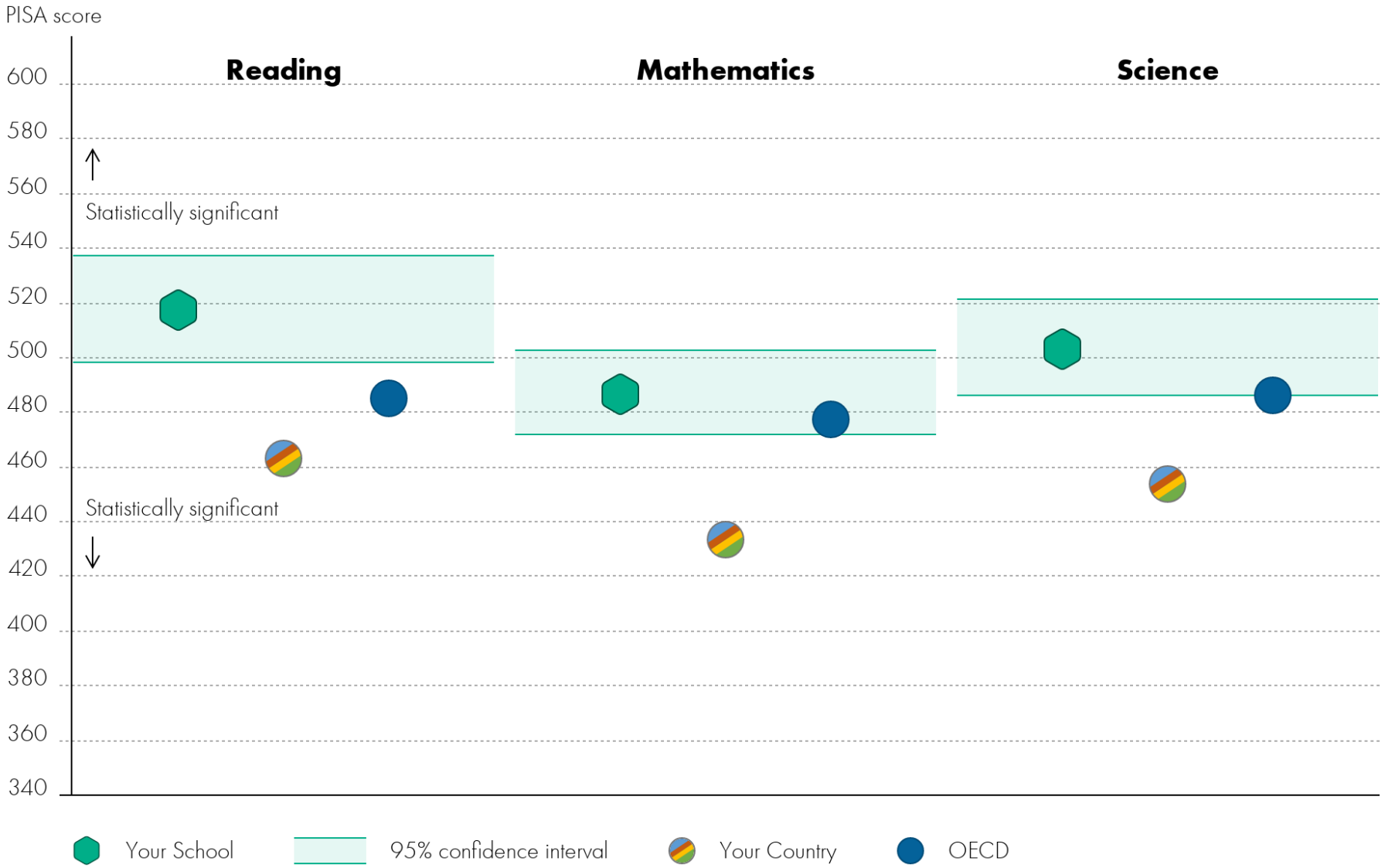
**Comparative statements describe results that are statistically significant at a 95% confidence level.** Performance is reported on a scale having a mean score of 500 and a standard deviation of 100 across OECD participating countries.

### Your School Name

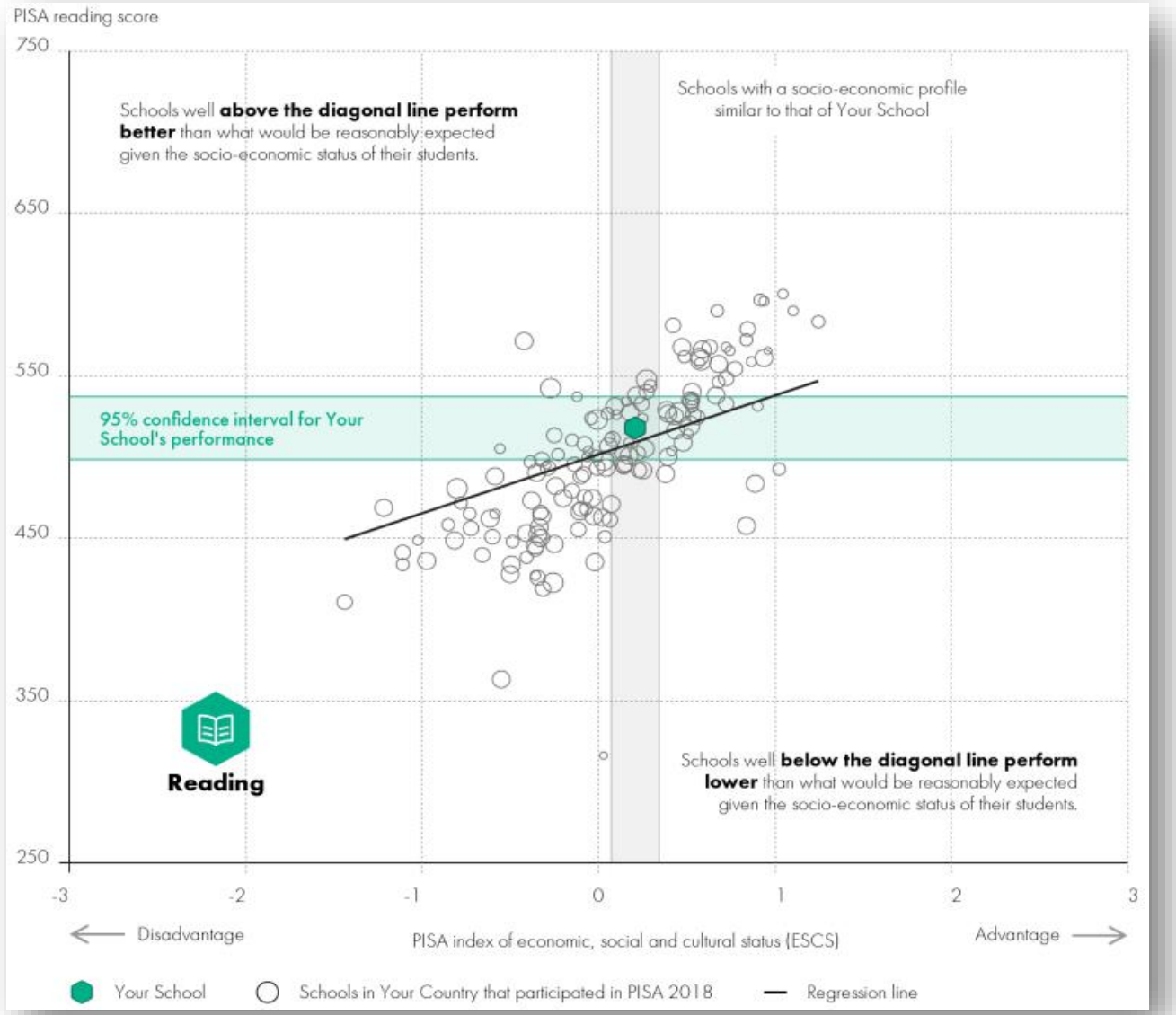
| | Reading | Mathematics | Science |
|---|---|---|---|
| Average performance of your school | **518** which is **higher** than Your Country 463 OECD 485 | **487** which is **higher** than Your Country 434 OECD 478 | **504** which is **higher** than Your Country 454 OECD 486 |
| Gender differences in performance | Girls and boys **perform similarly** | Girls and boys **perform similarly** | Girls and boys **perform similarly** |
| Socio-economic differences in performance | Most and least advantaged students **perform similarly** | Most and least advantaged students **perform similarly** | Most and least advantaged students **perform similarly** |
| Student engagement and feelings | **69%** Believe what they learn in science is important for their future.<br>**20%** Observe their teachers providing individual help to struggling students.<br>**21%** Experience noise and disorder. | | |
| Social and emotional skills | The strongest relationships between social and emotional skills and life outcomes were observed for: | Classroom disciplinary climate ↔ Curiosity<br>Students' perceived health ↔ Optimism<br>Students' overall life satisfaction ↔ Optimism | |

https://www.oecd.org/pisa/pisa-for-schools/PISA-for-Schools-School-Report-Template.pdf

# Compare your school to your country and other countries

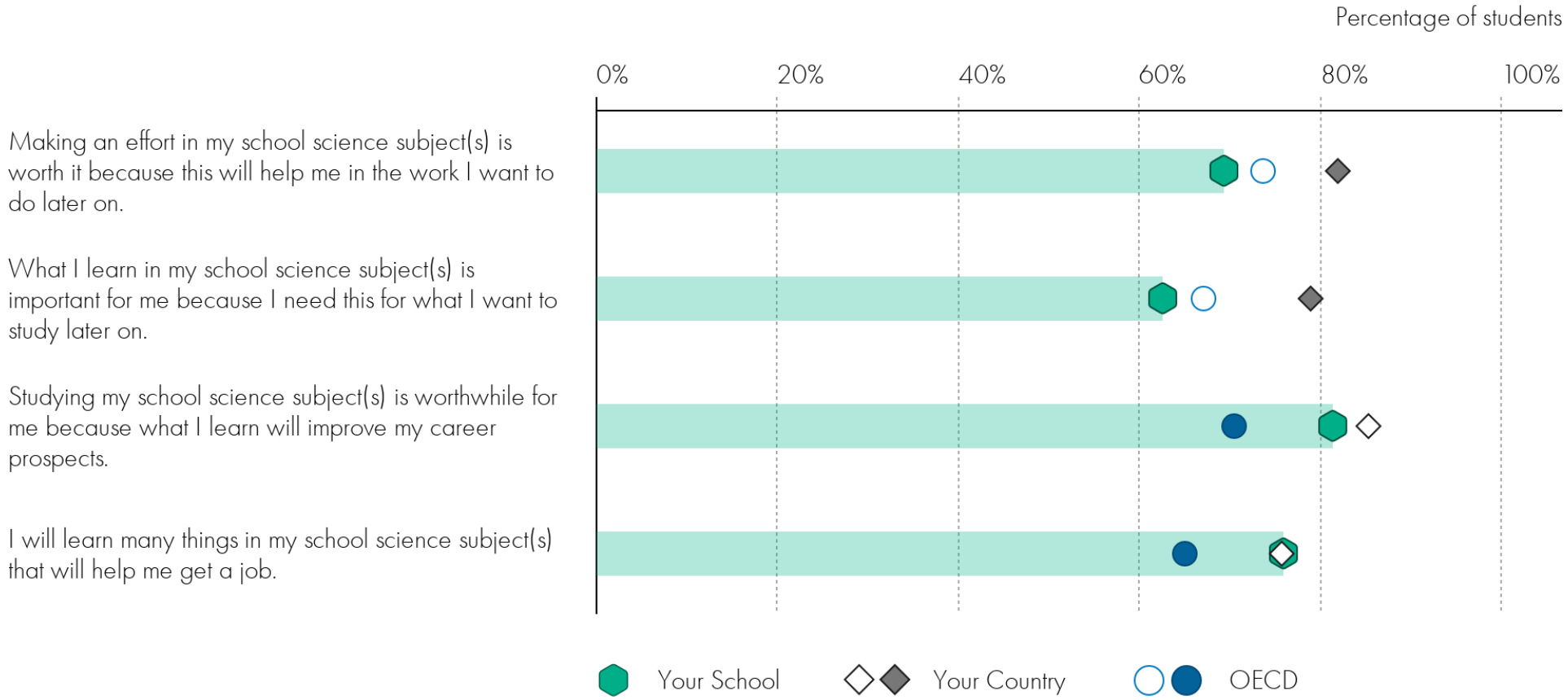


# Compare your school to similar schools



# Compare your school to national averages on key factors

## Student motivation for learning science (students *strongly agree* or *agree*)



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# PBTS as a school monitoring tool: Brazil

- Brazil joined the project to monitor and **benchmark public schools** of excellent academic performance
  - Funded by an NGO to **monitor schools** in a disfavoured region in Brazil
  - **Started with 46 schools** in **a** convenience sample, **more than 1 300 schools** tested since then with the participation with large states such as the states of São Paulo and of Rio Grande do Sul
  - Many repeat schools interested in **longitudinal monitoring**

- Outputs
  - **School Reports** that were discussed within the Brazilian community
  - **Datasets** with school indicators were delivered to schools and partners
  - Series of **post-assessment events**

# PBTS as a school network monitoring tool: European Schools Network (ES)

- The European Schools is a unique network of 13 schools across 6 European Countries.
  - The test was delivered in three languages: English, French and German.
  - ES and the OECD collaborated to design a **research project** where the student cohort were divided into students who took the test in their **first language**, and those who took it in their **second language**.
  - ES is preparing to re-test students in 2025 to **monitor progress**

- Outputs
  - **School Reports** for each school
  - A **group report** for the network, including a customised chapter on assessing in multiple languages.

# PBTS as a school district monitoring tool: USA

- USA was the founding country of PISA for Schools and has participated since 2012.
  - More than **800 schools** have taken the test.
  - Several school districts use the assessment regularly. For example, Gwinnett County Public Schools, USA is a large school district with over 120 schools serving 177,000 students that has participated in PISA for Schools for the **last 7 years consecutively**.

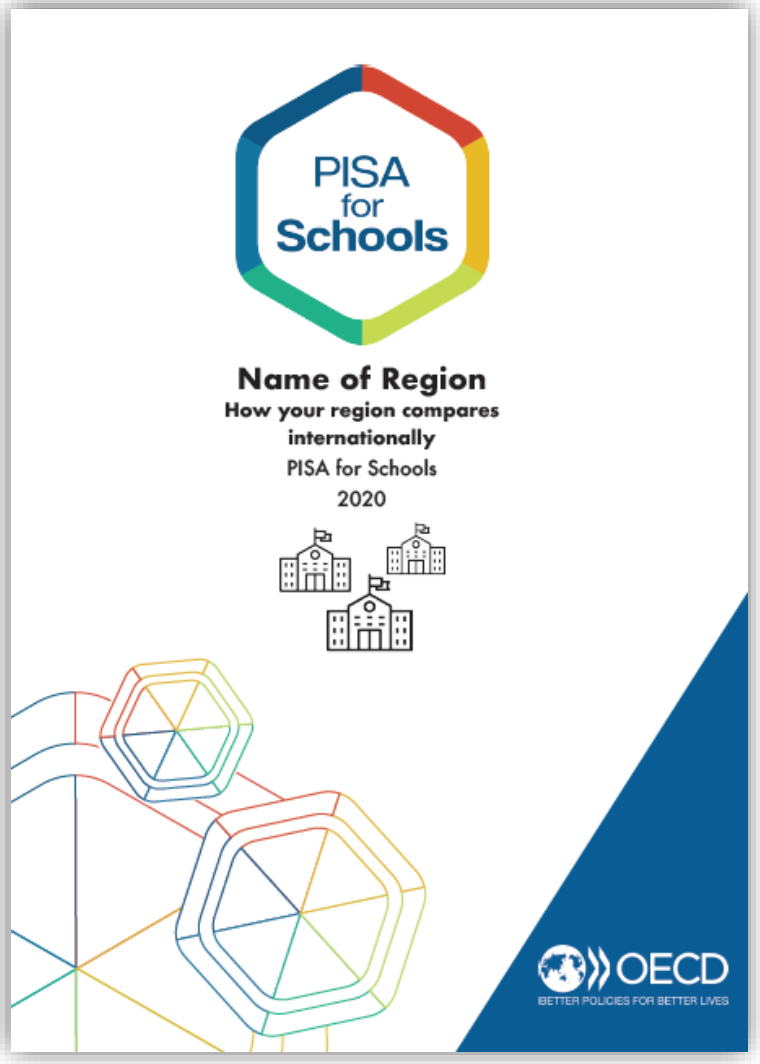
- Outputs
  - **School Reports** that were discussed within the US community
  - School districts **create their own group-level report and professional development opportunities based on PISA for Schools ' data and framework.**
  - Series of **post-assessment events**

# PBTS as a focused data source: Thailand

- Thailand joined the project to **collect high quality data on disadvantaged students**
  - Commissioned by an educational state-funded fund **focusing on equity**
  - Monitoring **bursary recipients' learning outcomes** and gap to population
  - "Soft skills" such as **motivation**, fear of failure and **growth mindset**
  - In 2021 participated with 66 schools throughout the country in a convenience sample and in 2023 participated again with 150 schools

- Outputs
  - Individualized **school reports**
  - Tailored group report **focusing on equity issues**
  - Technical **capacity building** and post-assessment events

# Tailored Group Report(s)




PISA-based Test for Schools results can be the subject of further analysis by the OECD such as:

- **Territorial:**
  - Spain: the Ministry of Education separately analyses the results of Spanish schools abroad.
- **Subgroups:**
  - Thailand: Thematic reports based on a specific sub-group of economically disadvantaged students.
- **Customised (territorial and thematic):**
  - European Schools Network: an analysis of a school network's performance in the context of the EU, with specialised analysis on testing in first and second languages

# PISA for Schools – Research

## Explore Our Research

- "*AI scoring for international large-scale assessments using a deep learning model and multilingual data*" (2023), OECD Education Working Papers, No. 287, OECD Publishing, Paris. https://doi.org/10.1787/9918e1fb-en
- "*Towards more diverse and flexible international large-scale assessments*" (2024), OECD Education Working Papers, No. 310, OECD Publishing, Paris. https://doi.org/10.1787/0417b5ec-en
- "*Proof of concept : Leveraging machine learning technologies for automating ISCO coding*." (EDU Working paper, In review).

# PISA for Schools – Capacity building

## Workshops

1. Workshops for school-based educators
2. Workshops on test development
3. Workshops for data specialists
4. Integrated test development and management project

**Webinar:** “How to read your School Report?”

EDUCATION & SKILLS

# Thank you!

For more information about PISA for Schools: www.oecd.org/pisa/pisa-for-schools/

For more information about PISA for Schools in India: https://www.excel-one.in/


Tanja.Vujicic@oecd.org

PISA

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