EDUCATION & SKILLS

A deep dive into the PISA 2022 Creative Thinking assessment and results

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OECD
BETTER POLICIES FOR BETTER LIVES

Focus of today's deep dive

CONTEXT, FRAMEWORK AND METHODOLOGY

- Why creative thinking in PISA?
- How is creative thinking defined and operationalised?
- What assessment instruments?
- What was the development process?
- How did we validate the instrument and scoring methods?

PISA 2022 RESULTS

- How did students around the world perform, and which systems performed better than expected?
- How did performance vary across schools and student groups?
- How do attitudes and beliefs support performance in creative thinking?
- How can educators and systems support creative thinking?

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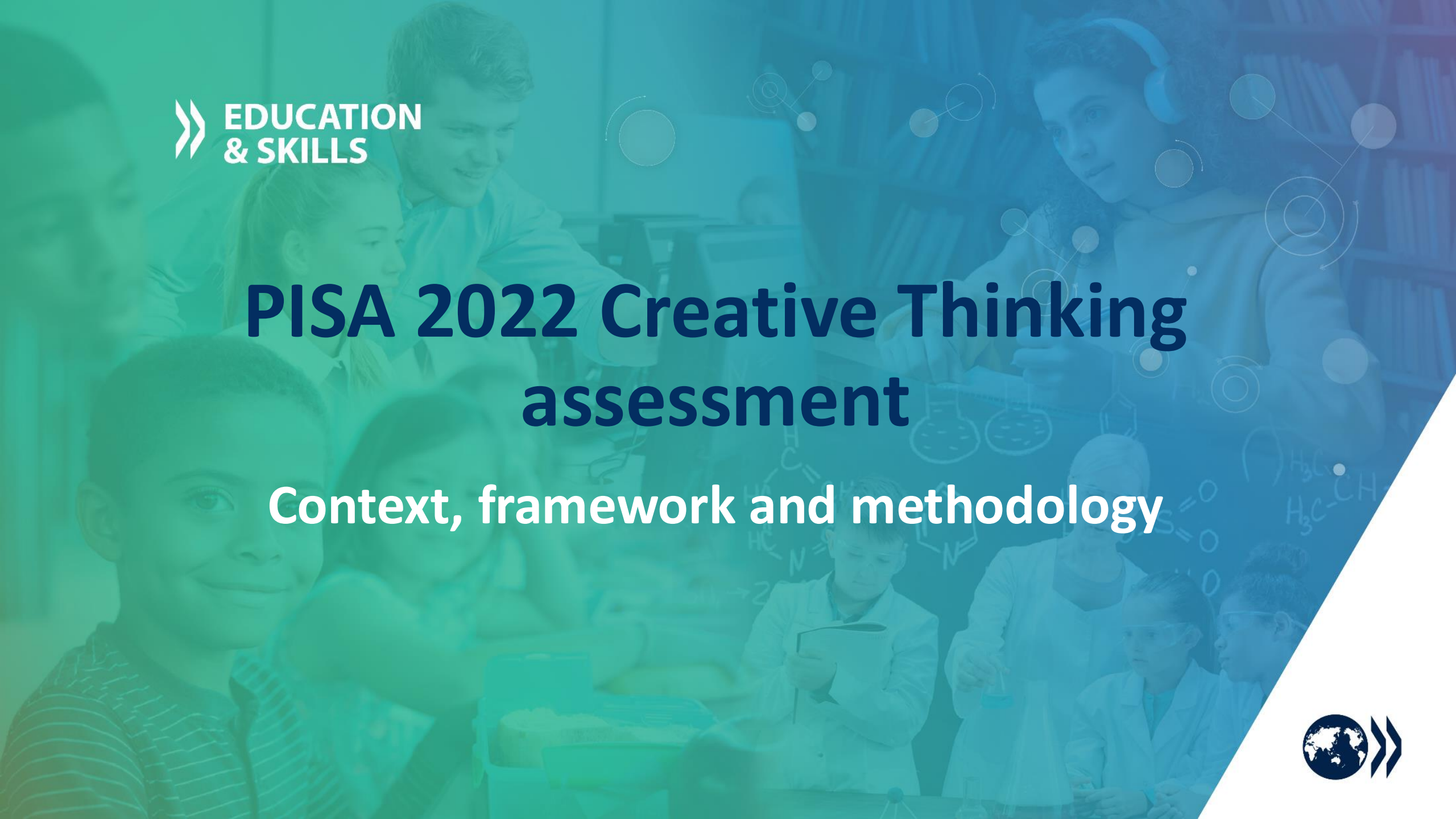

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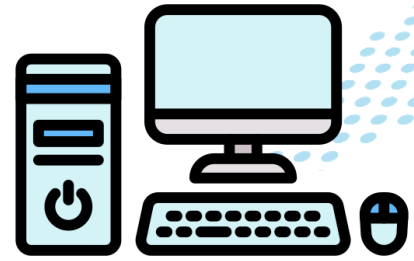
PISA 2022 Creative Thinking assessment

Context, framework and methodology

What is PISA?

Programme for International Student Assessment

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



2-hour test

Questionnaires for students, school principals, teachers and parents

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What is PISA?

Programme for International Student Assessment

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

Creative thinking

Financial literacy

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Defining the construct in PISA 2022

PISA defines creative thinking as…

"…the competence to engage productively in the generation, evaluation and improvement of ideas that can result in original and effective solutions, advances in knowledge, and impactful expressions of imagination."

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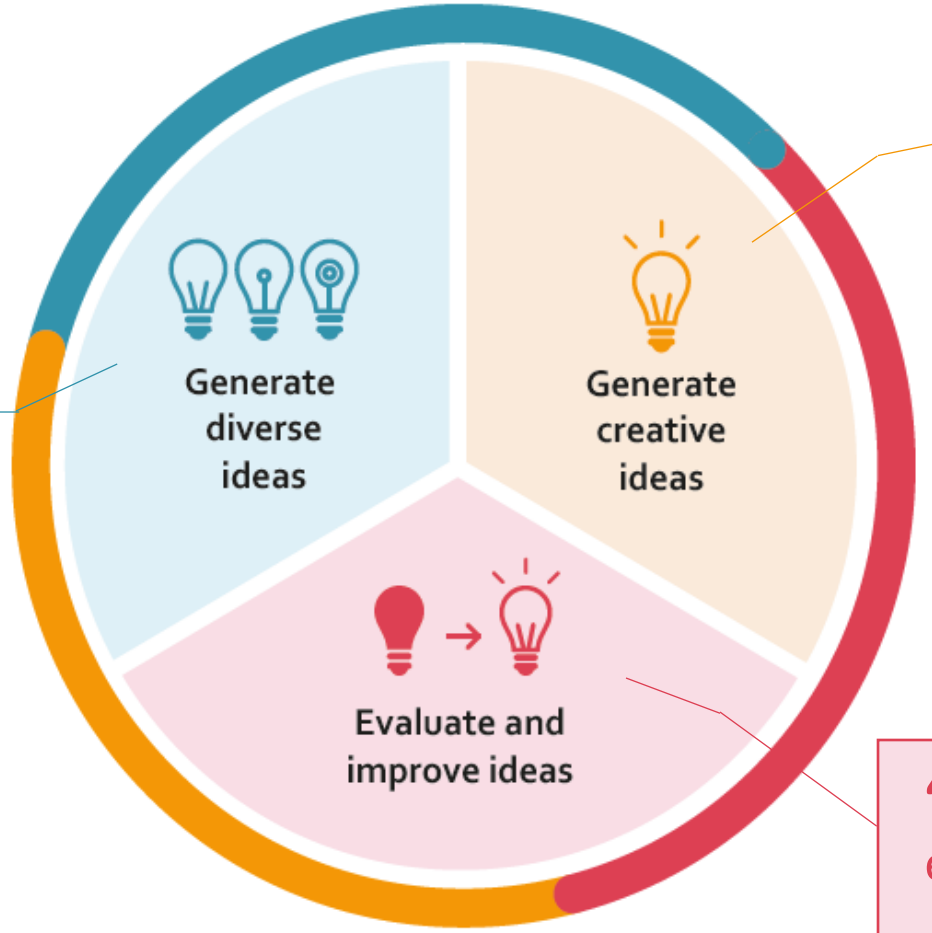
Measuring creative thinking – ideation processes

"Divergent thinking" – encompasses ideational fluency (number of ideas) and ideational flexibility (difference of ideas)



Focus on appropriateness and **originality** (statistical infrequency) as a proxy for novelty and usefulness of ideas

"Convergent thinking" – encompasses identifying and remediating weaknesses of ideas

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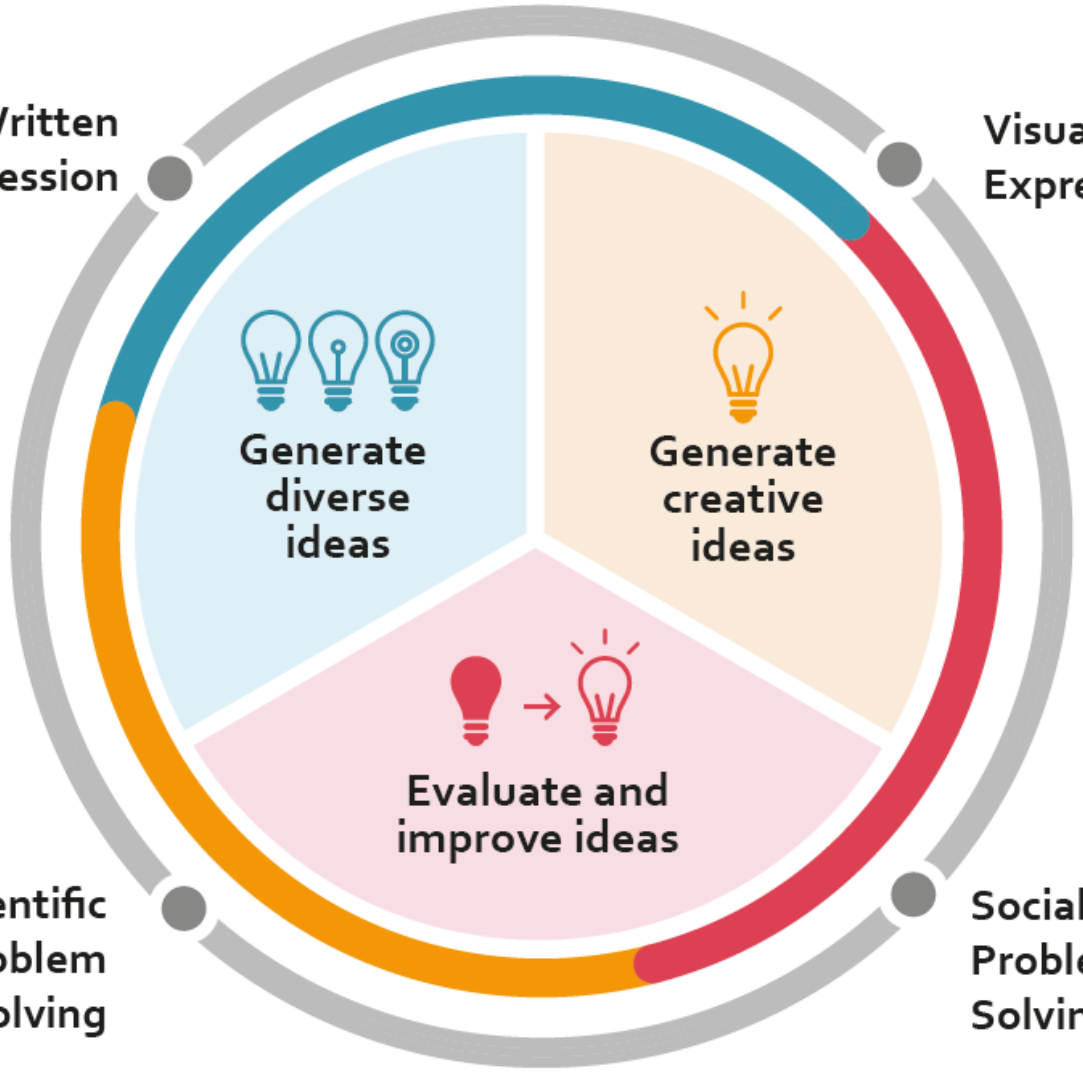
Measuring creative thinking – domain contexts

Written Expression



Visual Expression

Scientific Problem Solving

Social Problem Solving

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Scoring open constructed response items

- Fully human coded scoring
- Well-defined coding procedure for each ideation process
- Detailed coding rubrics for each task
- Validated through country review and genuine student data from multiple pilots

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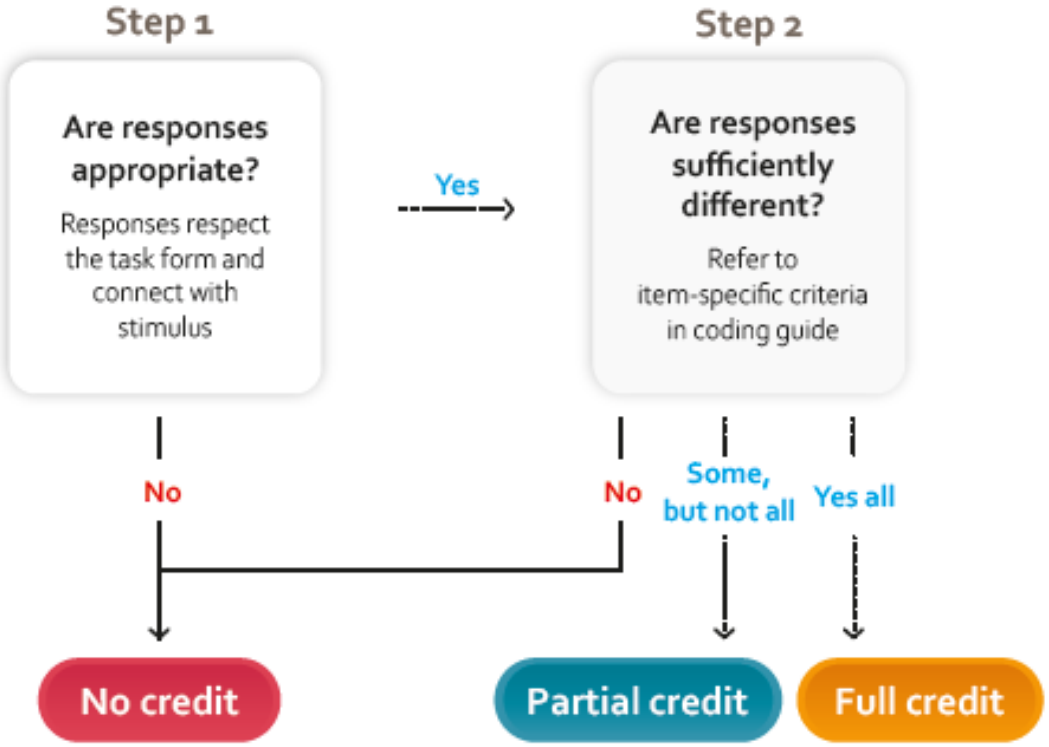
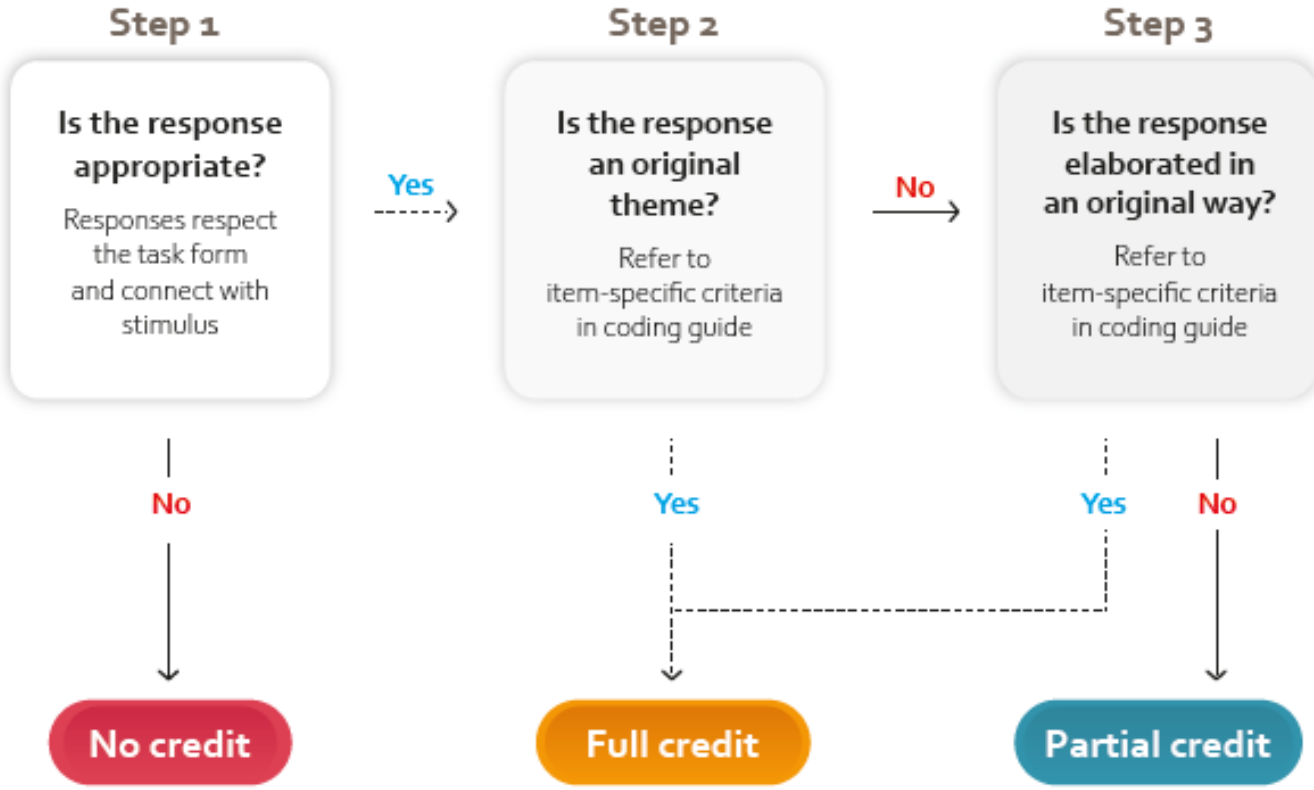
Fixed scoring procedures for each ideation process



Generate diverse ideas

Generate creative / evaluate and improve ideas



PISA 2022 creative thinking item: Written expression

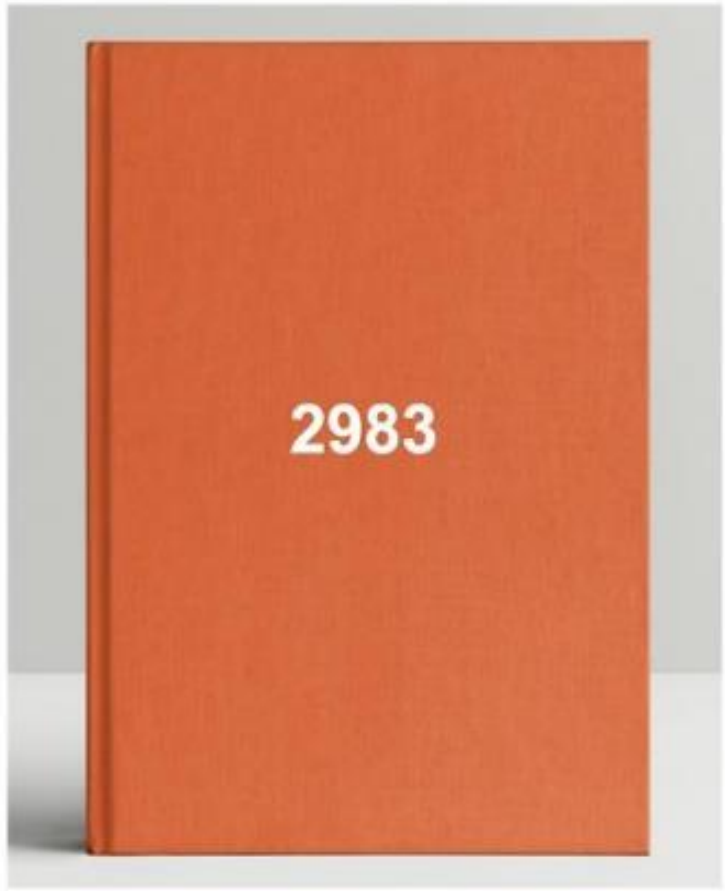
2983
Question 1 / 1

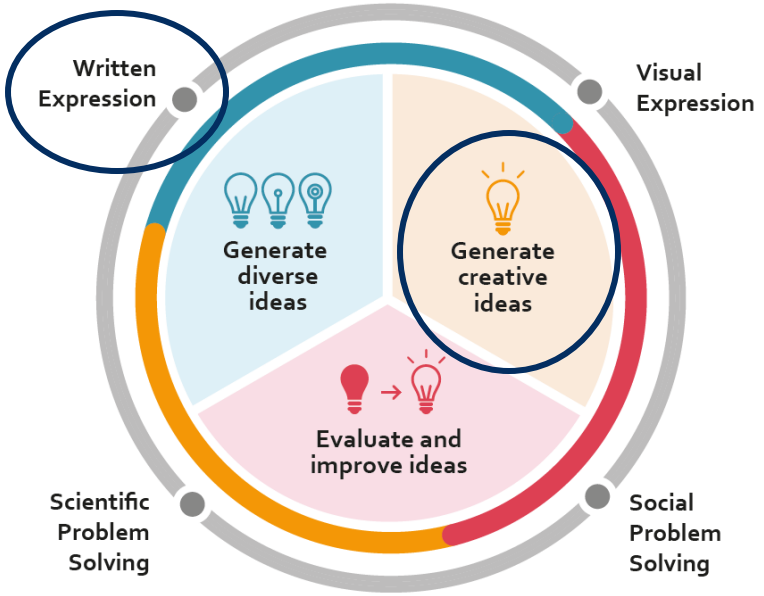
Refer to the book cover on the right. Type your answer to the question in the text box below.

Write an **original** story idea for the book with the cover on the right. An original story idea is a story idea that not many people would think of. You do not need to write the full story, but only describe what the book could be about.

We recommend that you spend no longer than **5 minutes** on this question, and use no more than **8 sentences**.

Story idea





Conventional Themes

- **Theme 1:** A story about humans in the future (i.e. year 2983);
- **Theme 2:** The number identifies a person, a place, or an object (e.g. location, a serial number, coordinates, etc.).

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PISA 2022 creative thinking item: Social problem solving

Library Accessibility
Question 1 / 2

Type your answers to the question in the boxes below.

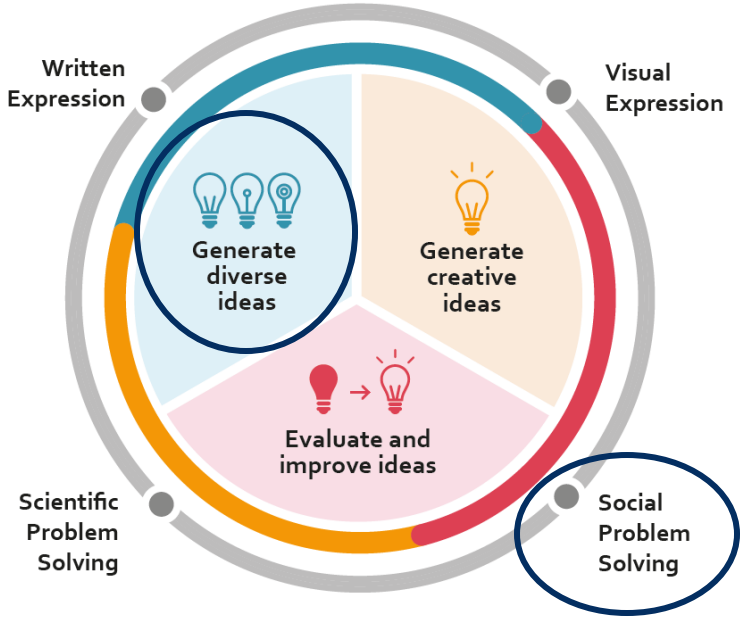
Describe **3 different ideas** for how to improve the wheelchair accessibility of the library. The ideas should be as different from each other as possible. Be specific in your descriptions.

We recommend that you spend no longer than **5 minutes** on this question.

Idea 1

Idea 2

Idea 3



- **Category 1** – Physical modifications
  - **Sub 1-1:** Adding ramps;
  - **Sub 1-2:** Modifying the staircase;
  - **Sub 1-3:** Adding an elevator;
  - **…**
- **Category 2** – Human assistance
- **Category 3** – Technological assistance

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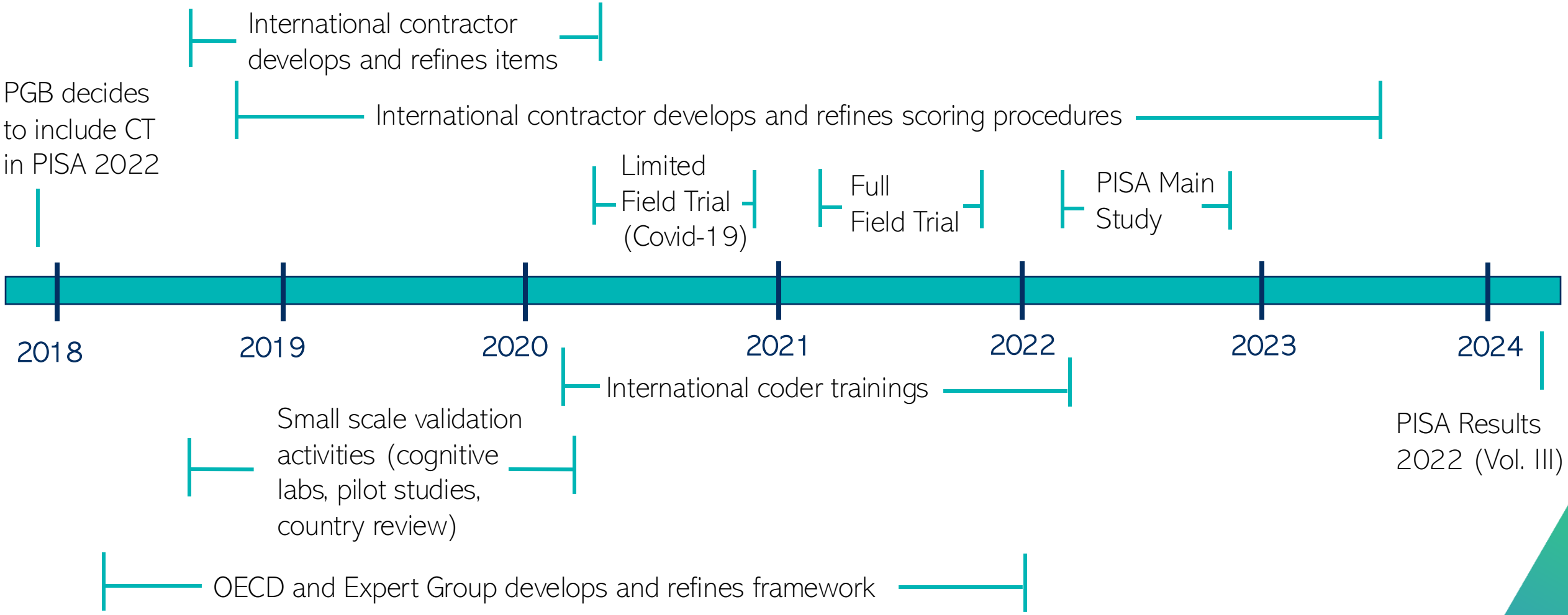
Development and validation timeline



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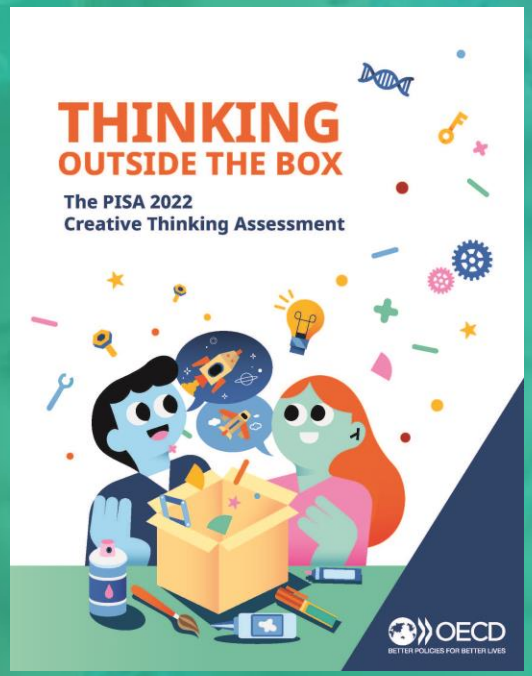
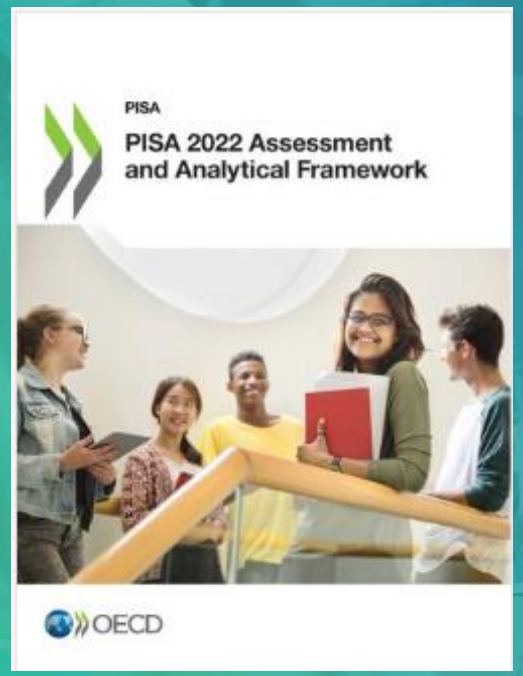
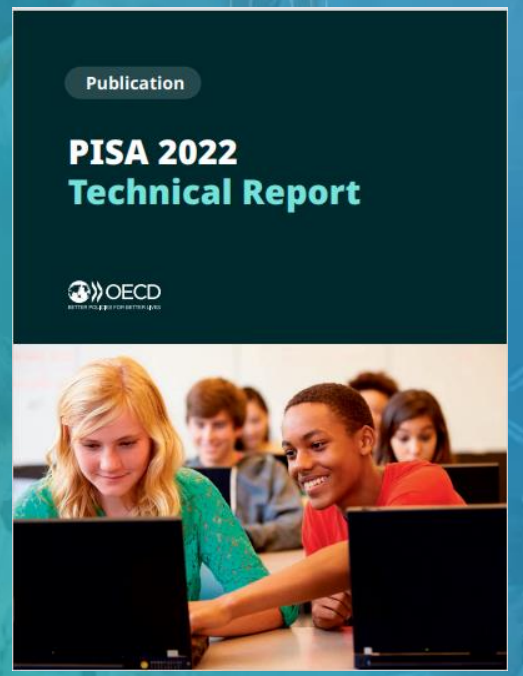
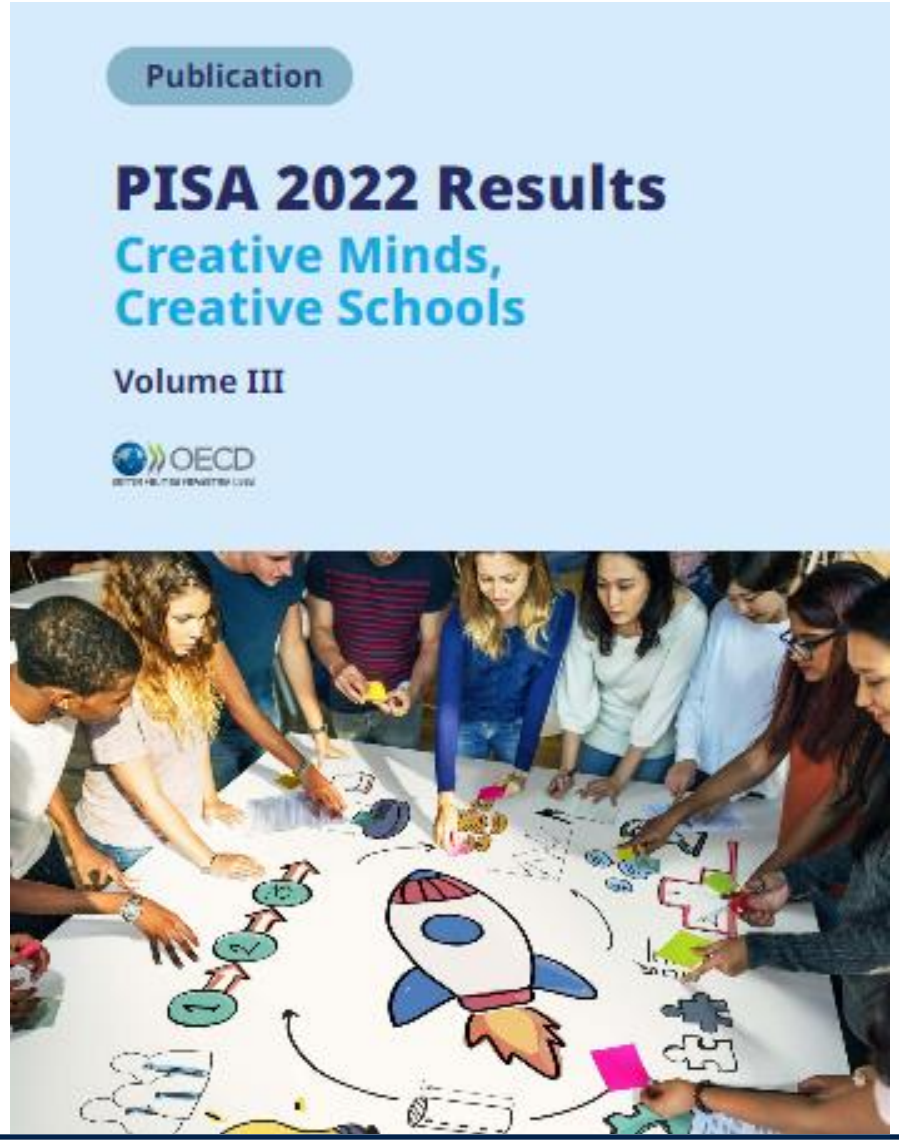
For more information on the test framework, development and validation see:







Focus of today's deep dive



PISA 2022 RESULTS

- How did students around the world perform, and which systems performed better than expected?
- How did performance vary across schools and student groups?
- How do attitudes and beliefs support performance in creative thinking?
- How can educators and systems support creative thinking?

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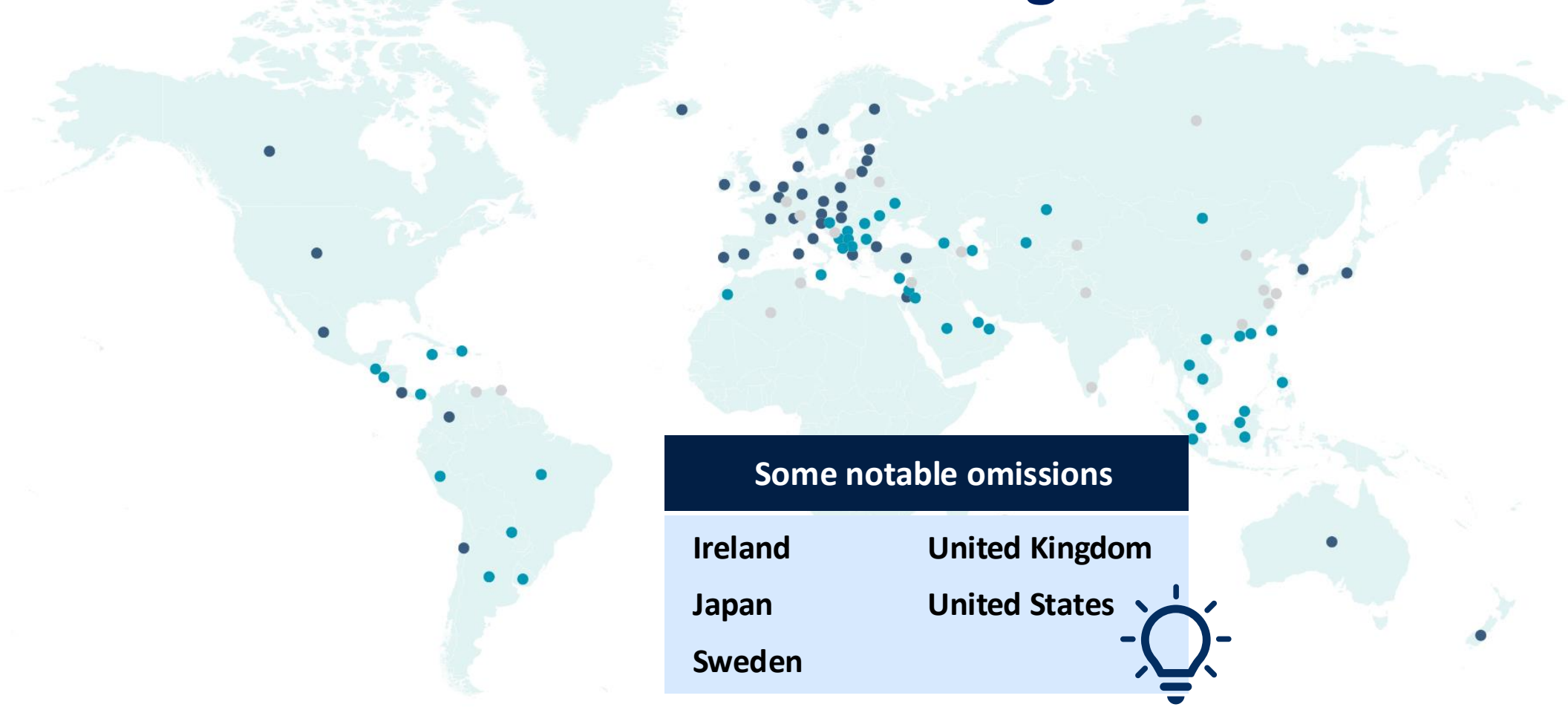
Knowing where we are and what is possible

Students in 64 countries and economies took the PISA 2022 creative thinking module



Some notable omissions	
Ireland	United Kingdom
Japan	United States
Sweden	

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PISA 2022 Results

How well are students able to think creatively around the world?

Mean performance

Table III.2.1

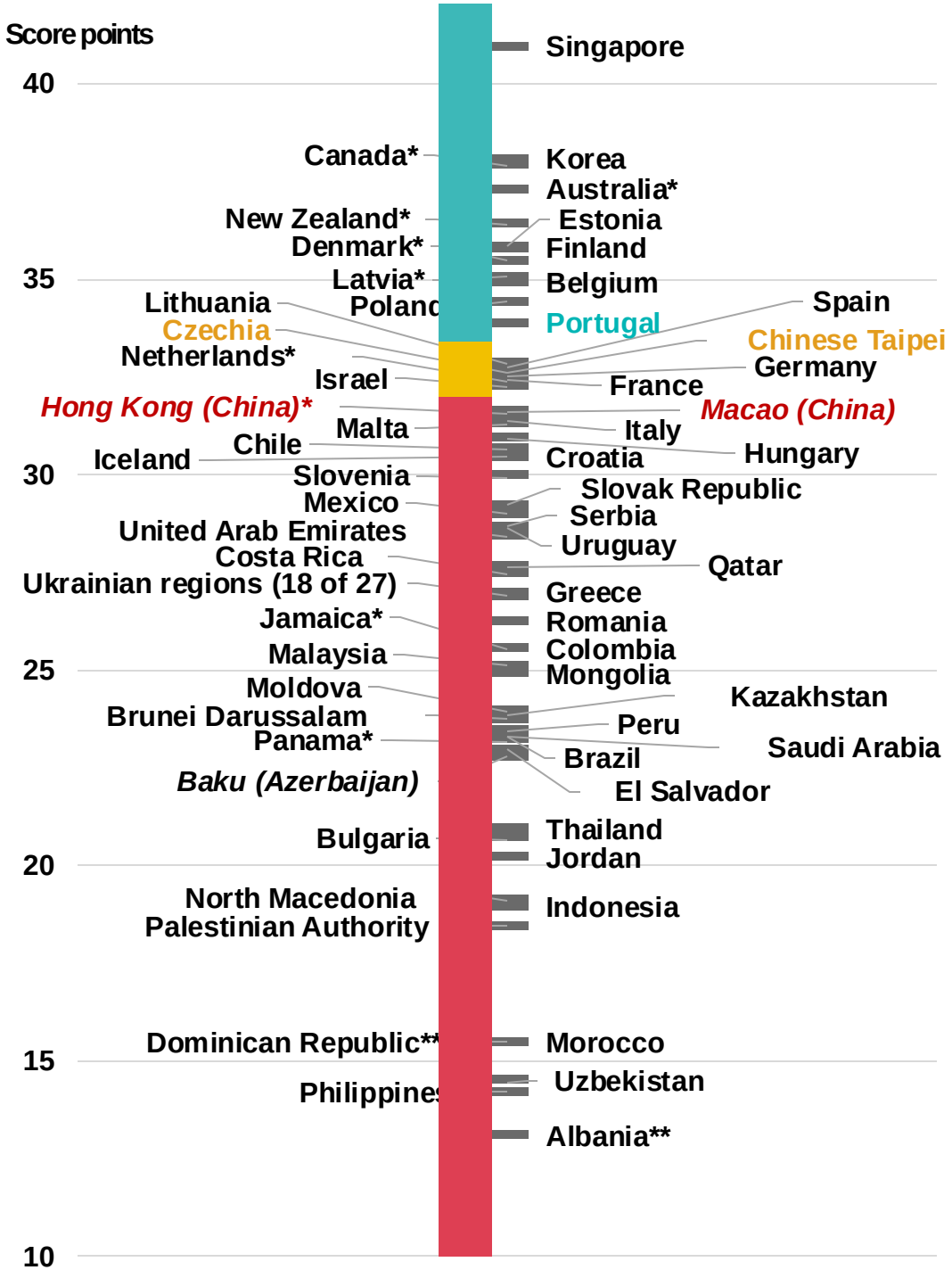
Countries/economies statistically significantly above the OECD average

Countries/economies NOT statistically significantly different from the OECD average

Countries/economies statistically significantly different below the OECD average

! Countries/economies showing one asterisk (*): caution is advised when interpreting estimates because one or more PISA sampling standards were not met.

! Countries/economies showing double asterisks (**): a strong linkage to the international PISA scale could not be established because around 50% of the items were assigned unique parameters in creative thinking.



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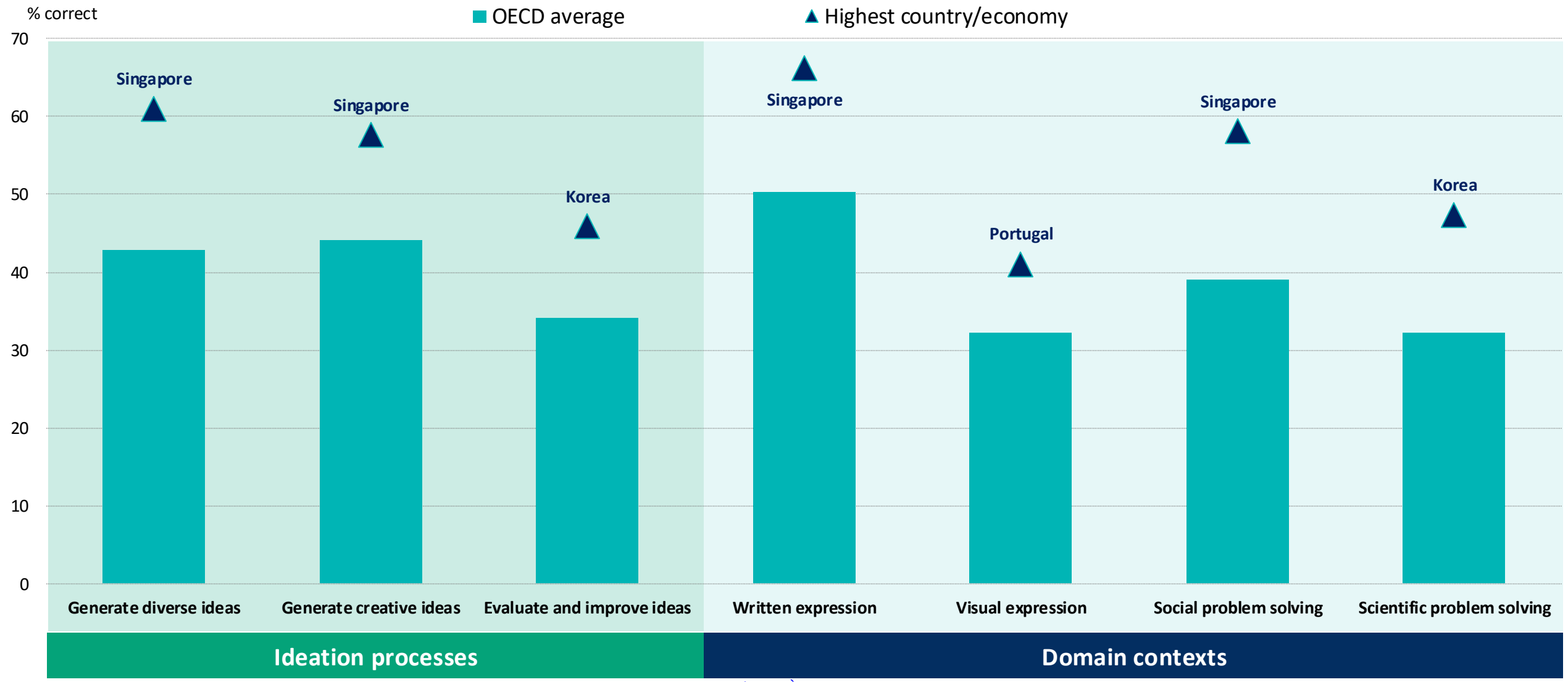
Performance across task types

Figure III.4.1

Average percent of correct responses (full credit only)



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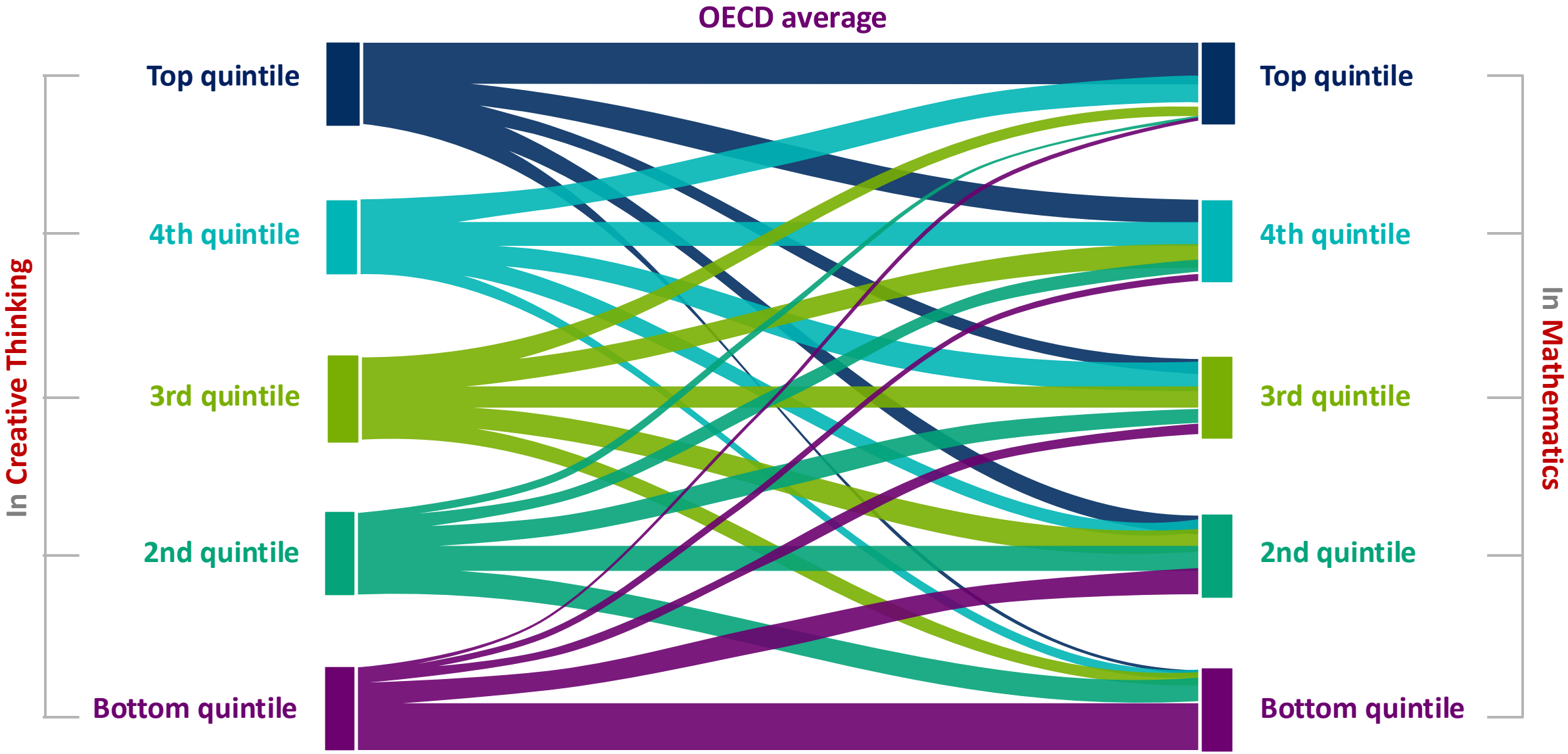
Distribution of students across quintiles of performance in creative thinking and mathematics

Figure III.2.4



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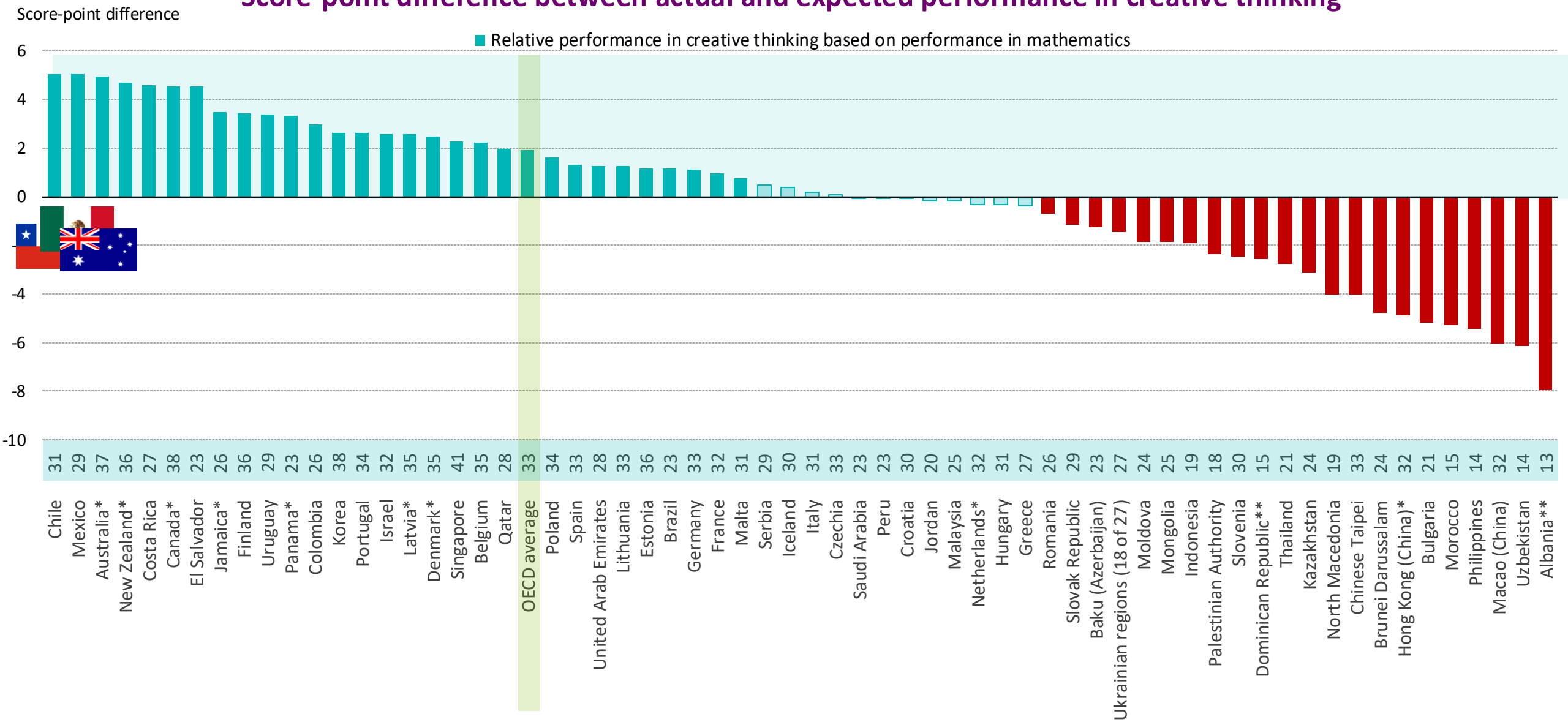
Some countries do much better in creative thinking than expected from PISA mathematics performance

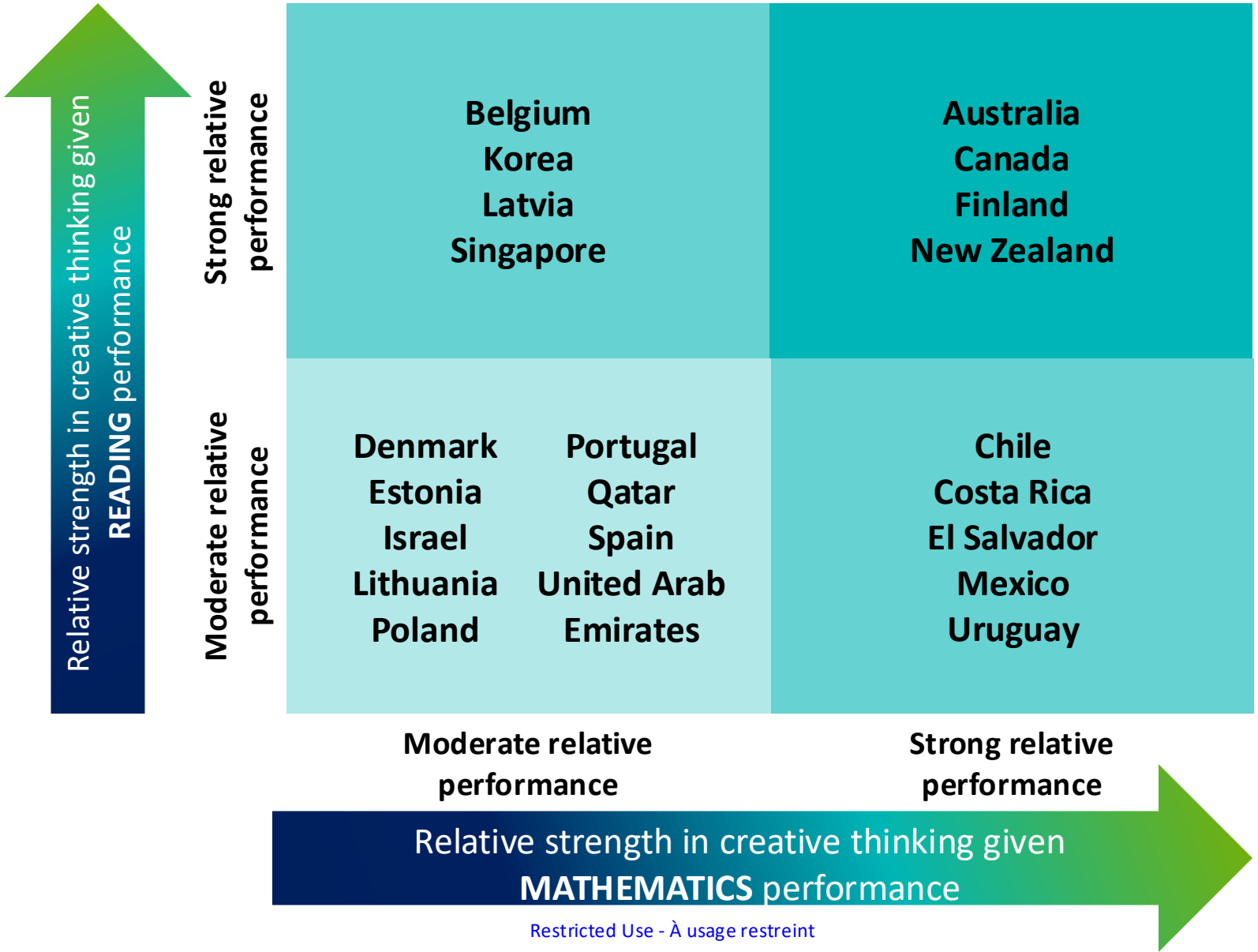
Figure III.2.5

Score-point difference between actual and expected performance in creative thinking



Systems that performed better than expected

Figure III.2.6



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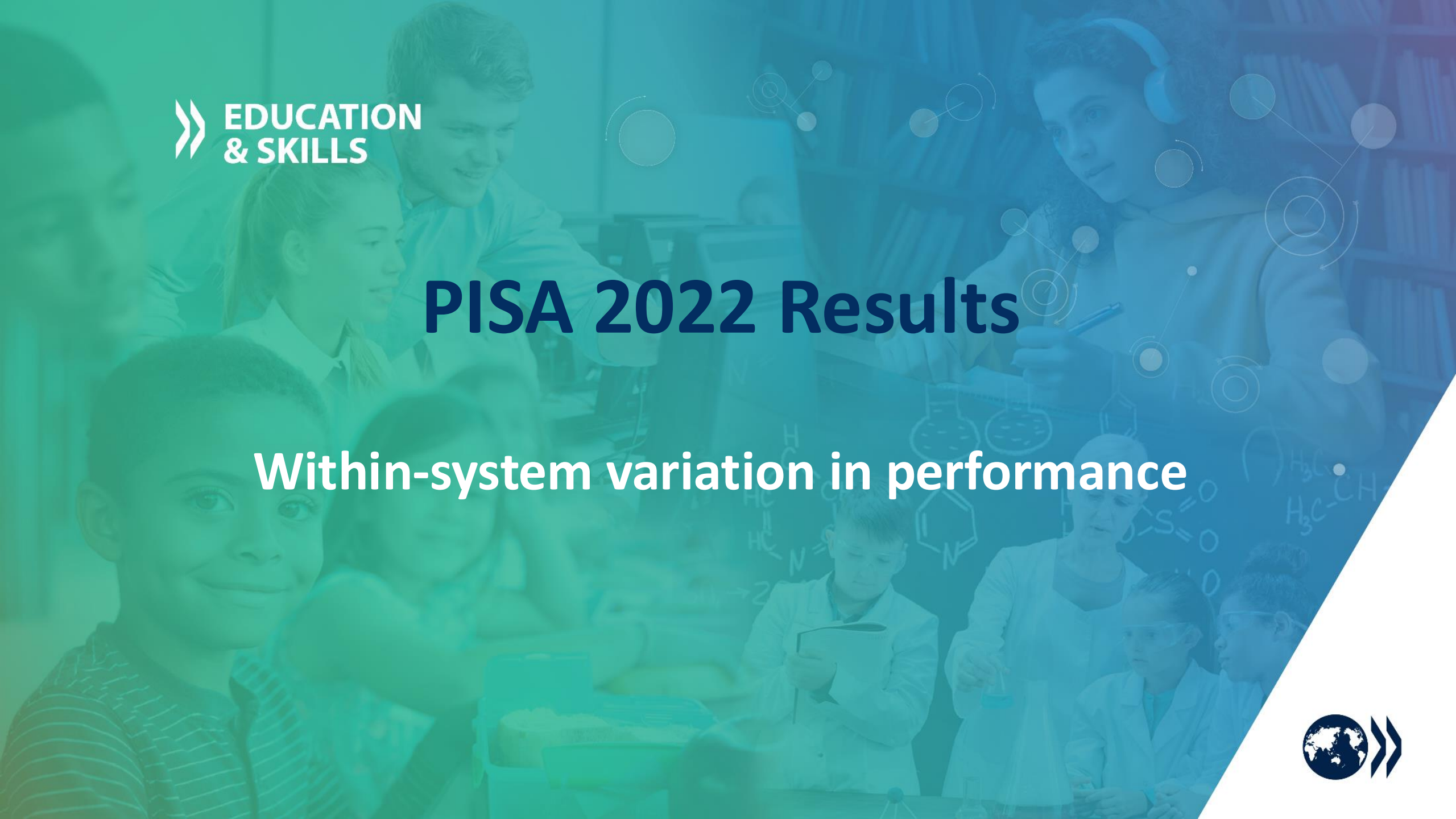


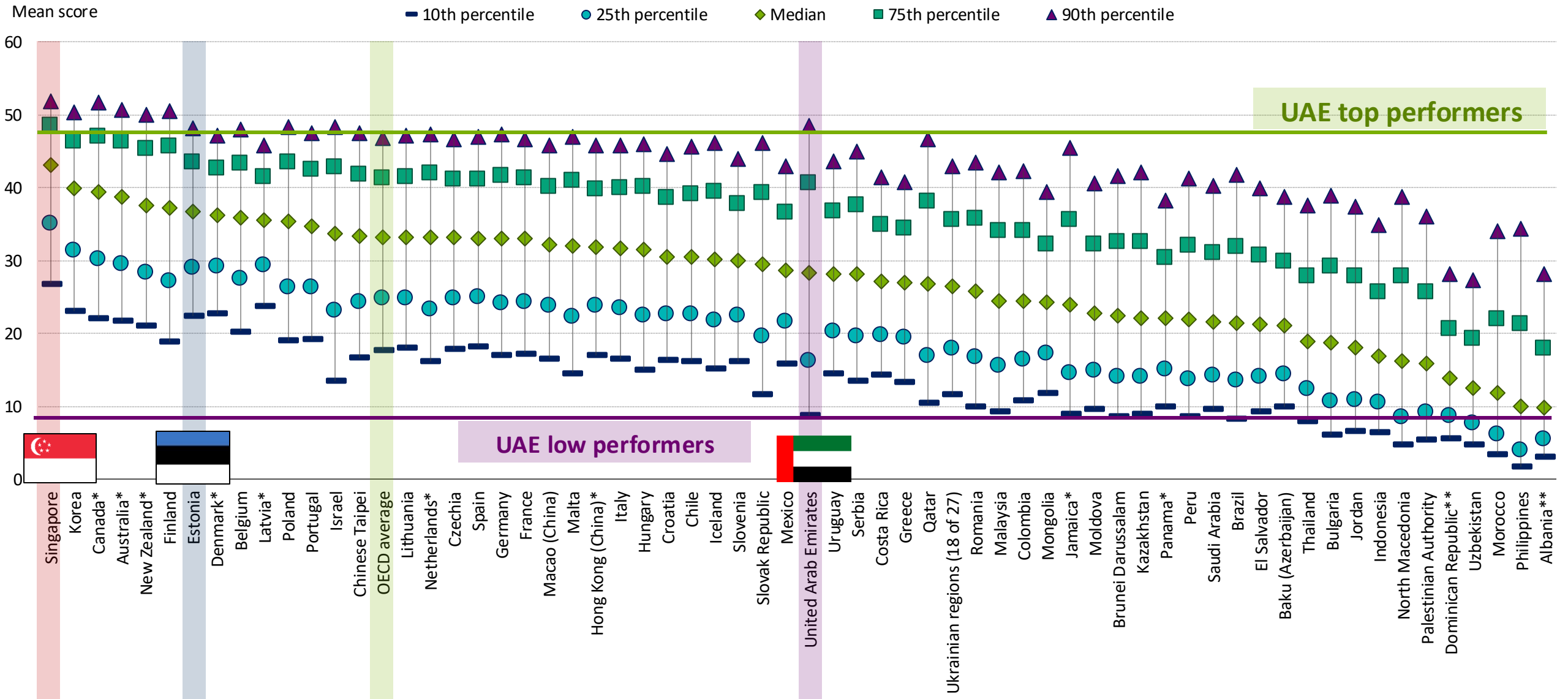
PISA 2022 Results

Within-system variation in performance

Some significant within-country variation

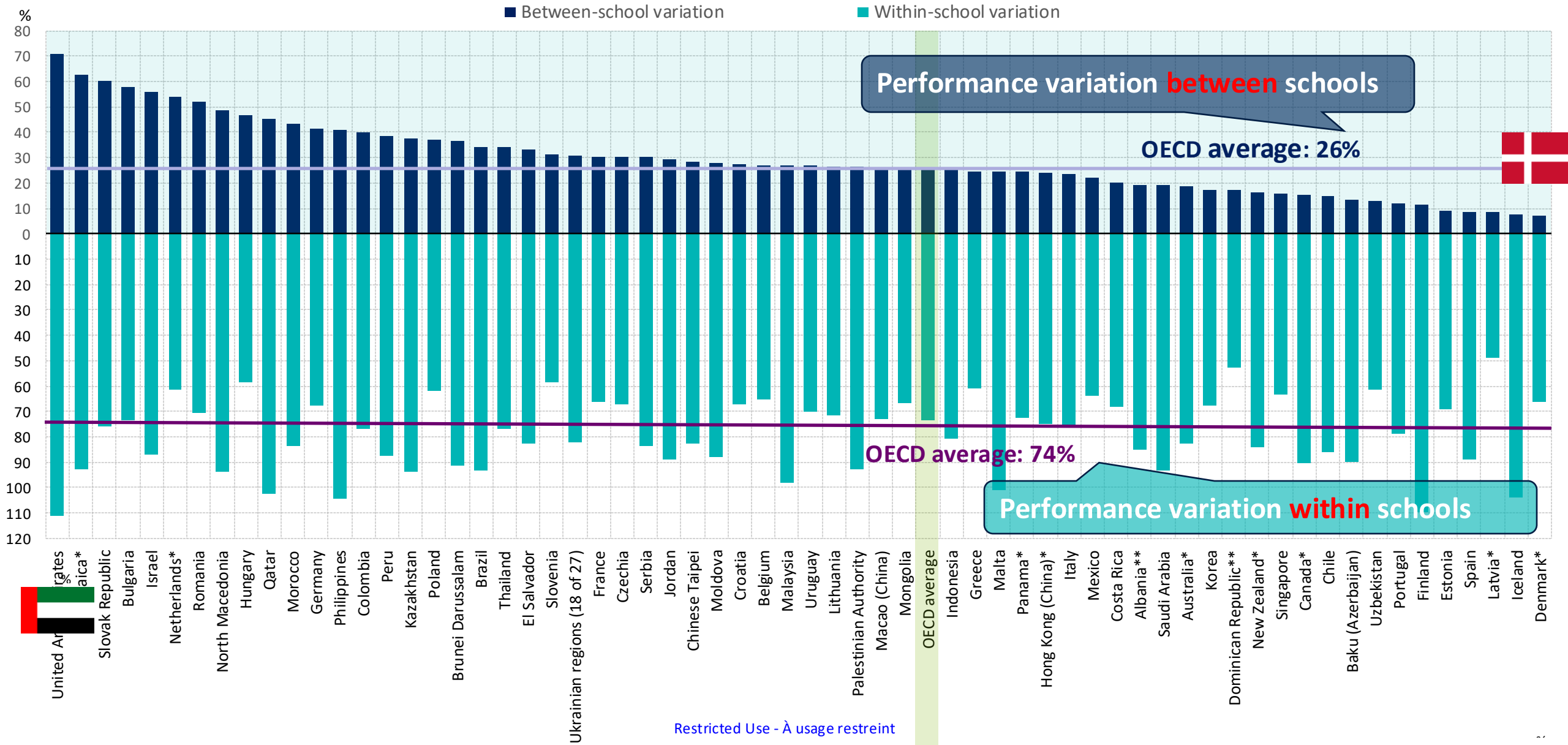
Figure III.2.1

Differences in mean score between students in the 90th percentile and the 10th percentile



Is the closest school the best for creative thinking?

Figure III.3.2



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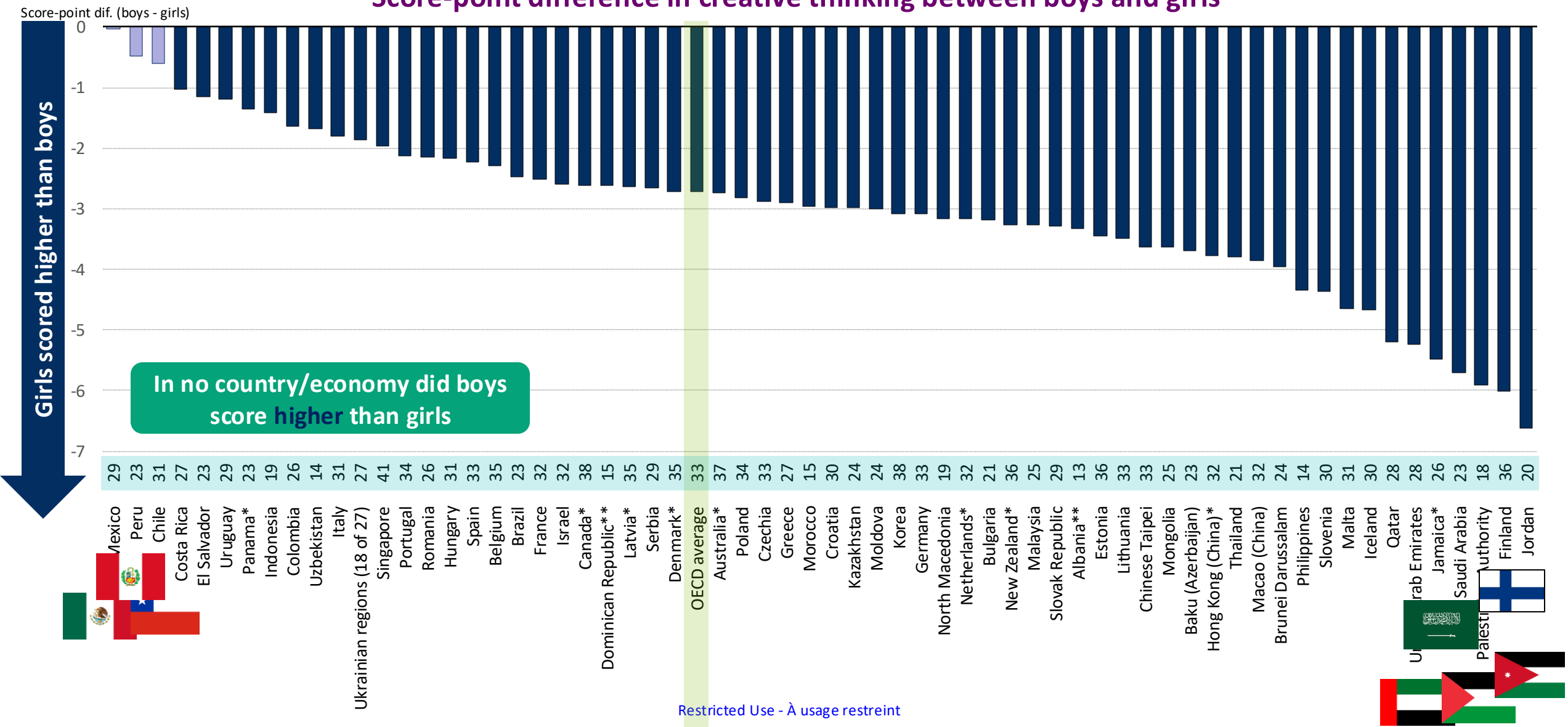
PISA 2022 Results

Significant gender gaps in most countries

Large gender gap in some countries

Figure III.3.4

Score-point difference in creative thinking between boys and girls



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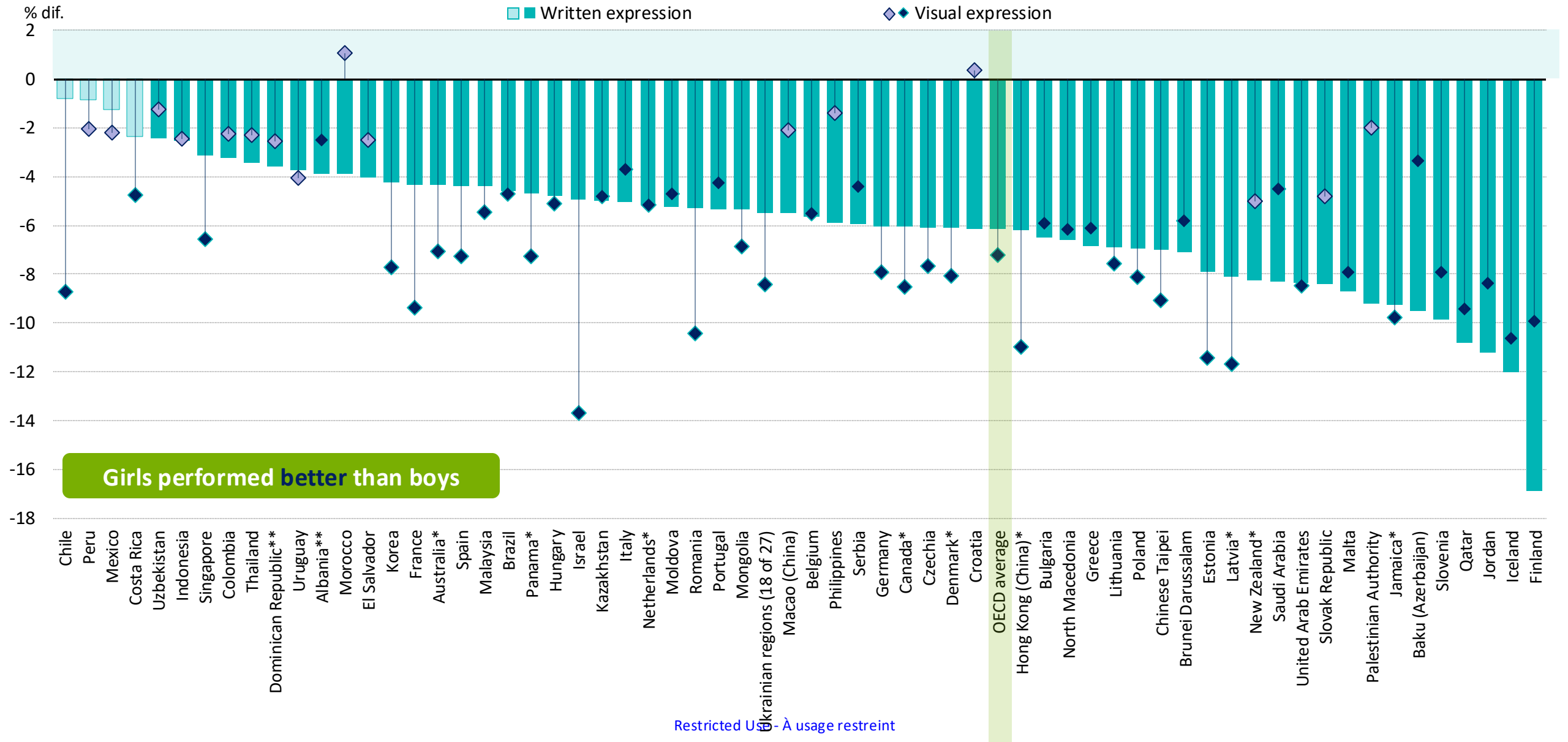
Differences by gender persist across all task types

Figure III.4.12(1)



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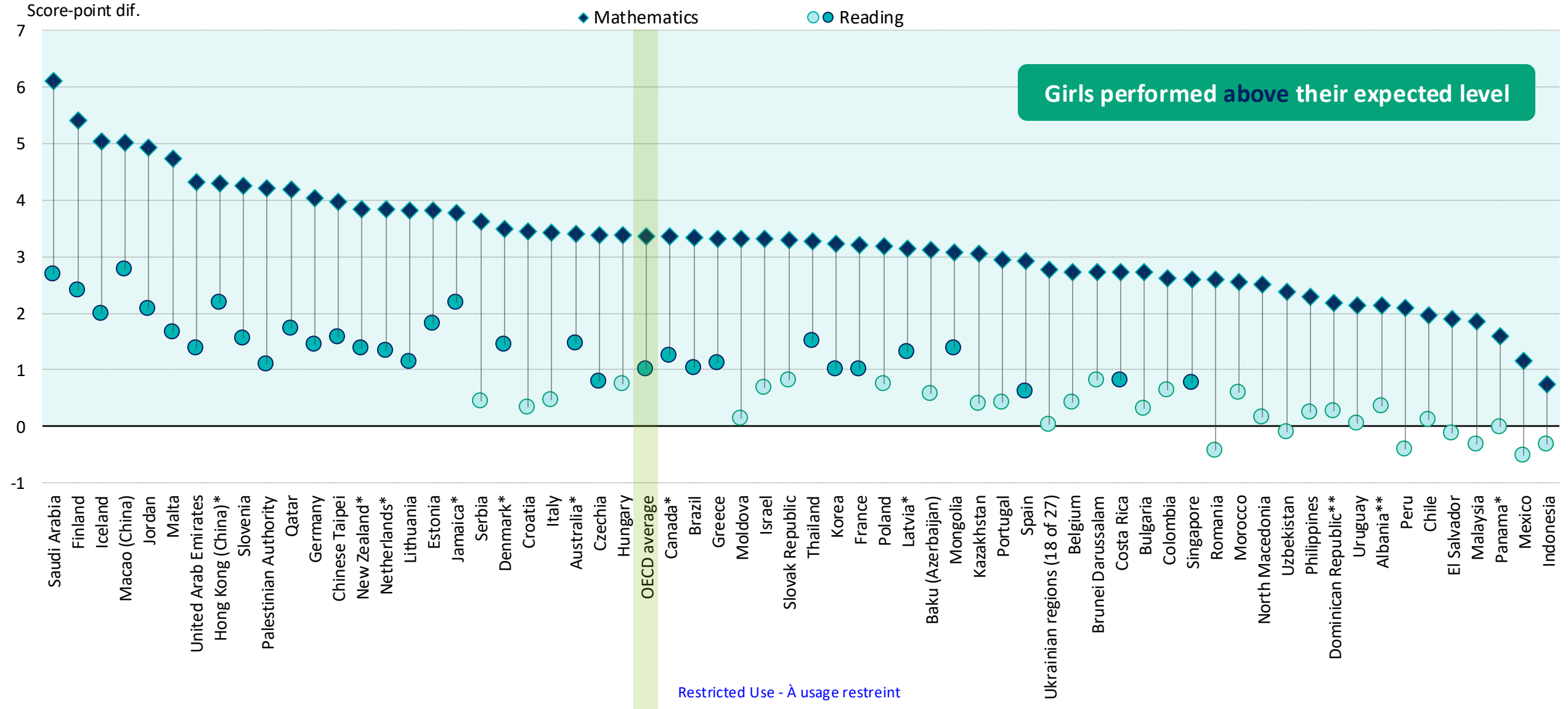
Gender differences in creative thinking after accounting for mathematics and reading scores

Figure III.3.9

Score-point difference between the actual and expected performance of girls in creative thinking



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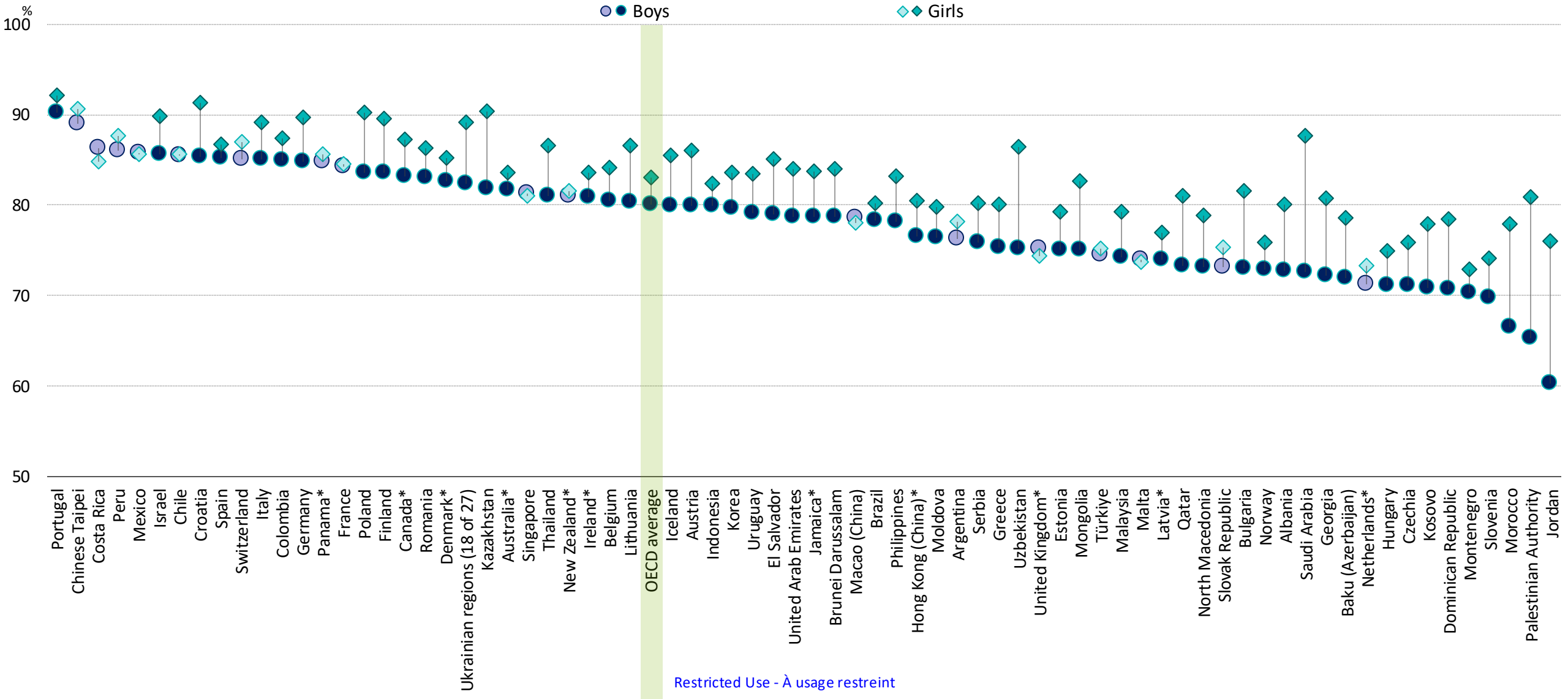
Student beliefs about the nature of creativity

Figure III.5.2

Percentage of students who agree/strongly agree that it is possible to be creative in nearly any subject, by gender



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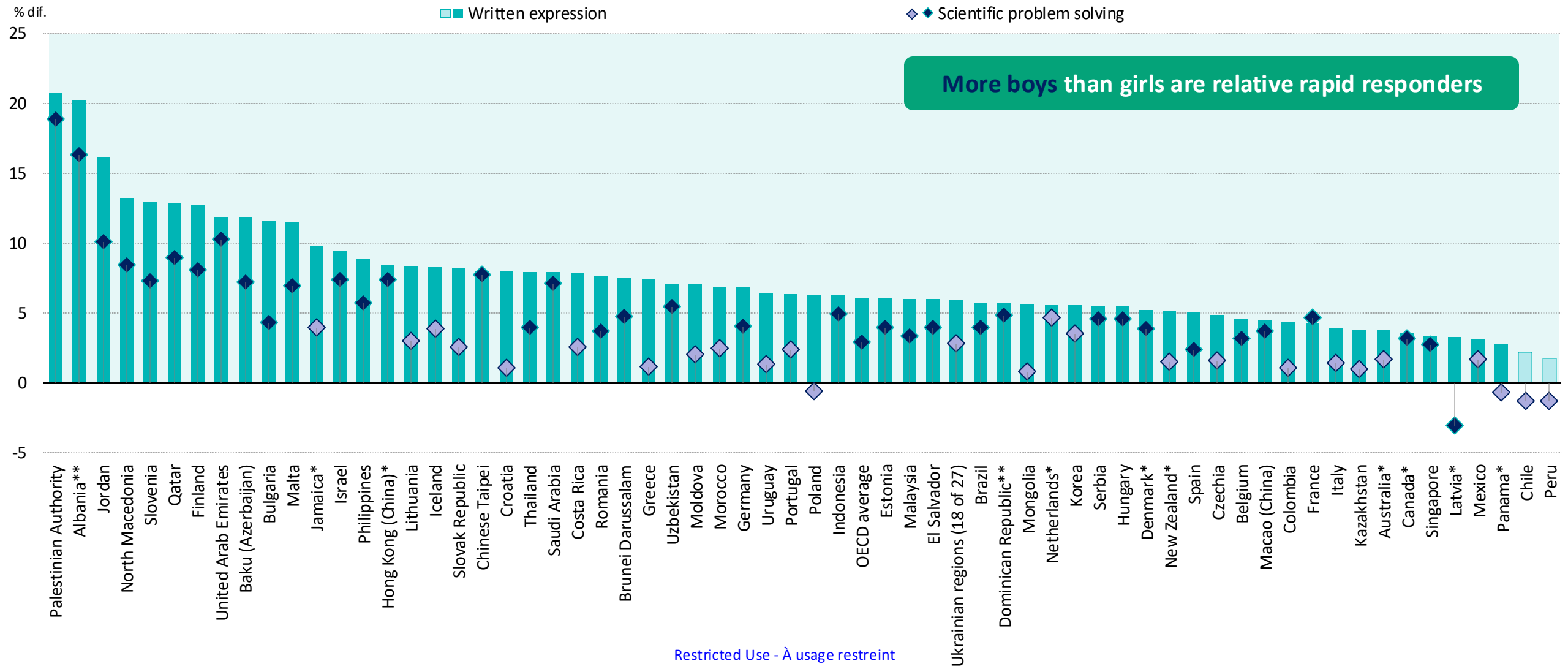
Gender differences in task engagement

Figure III.4.13

Difference in percentage of relative rapid responders students who received no credit in written expression and science problem solving item tasks, by gender



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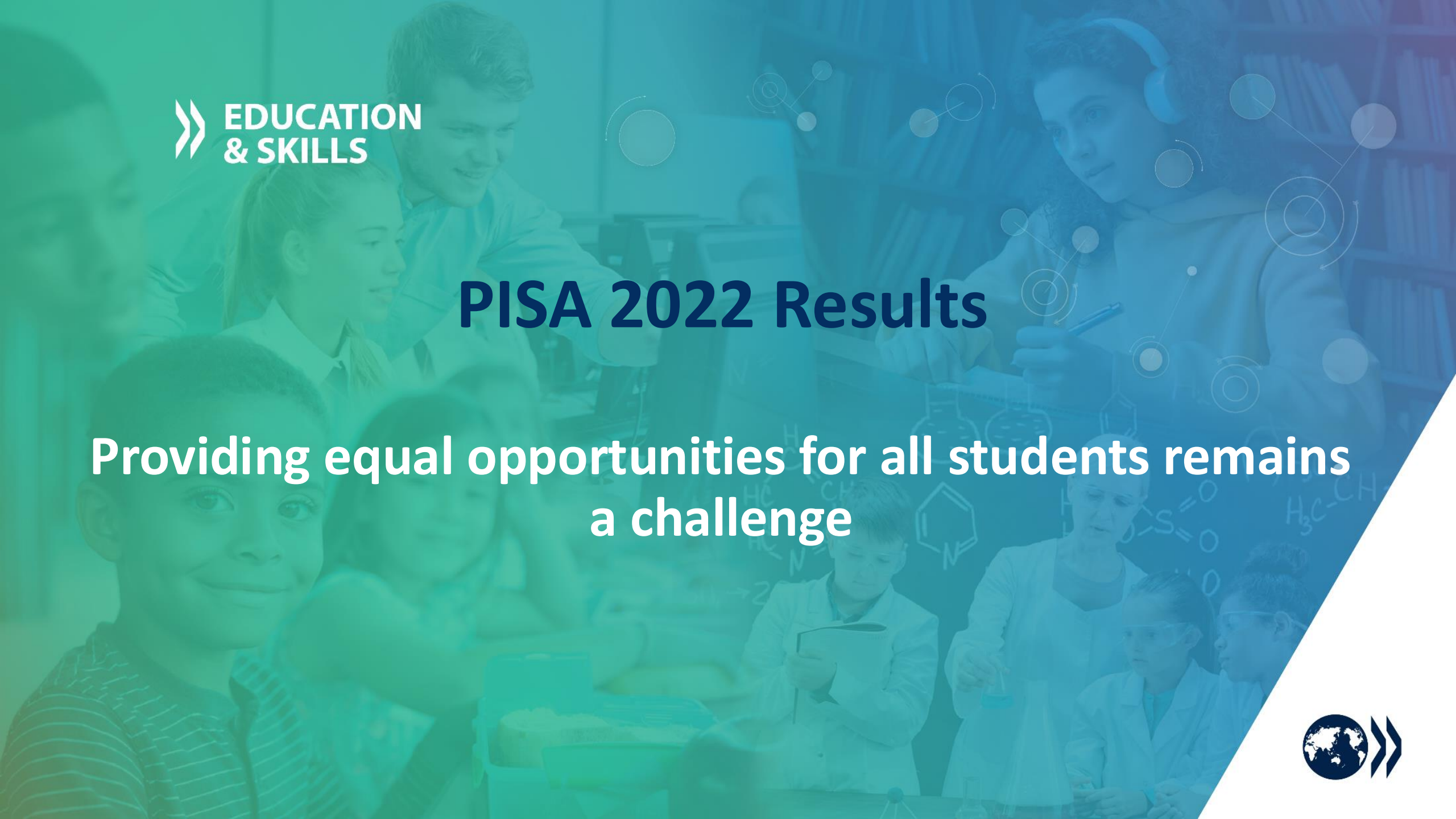


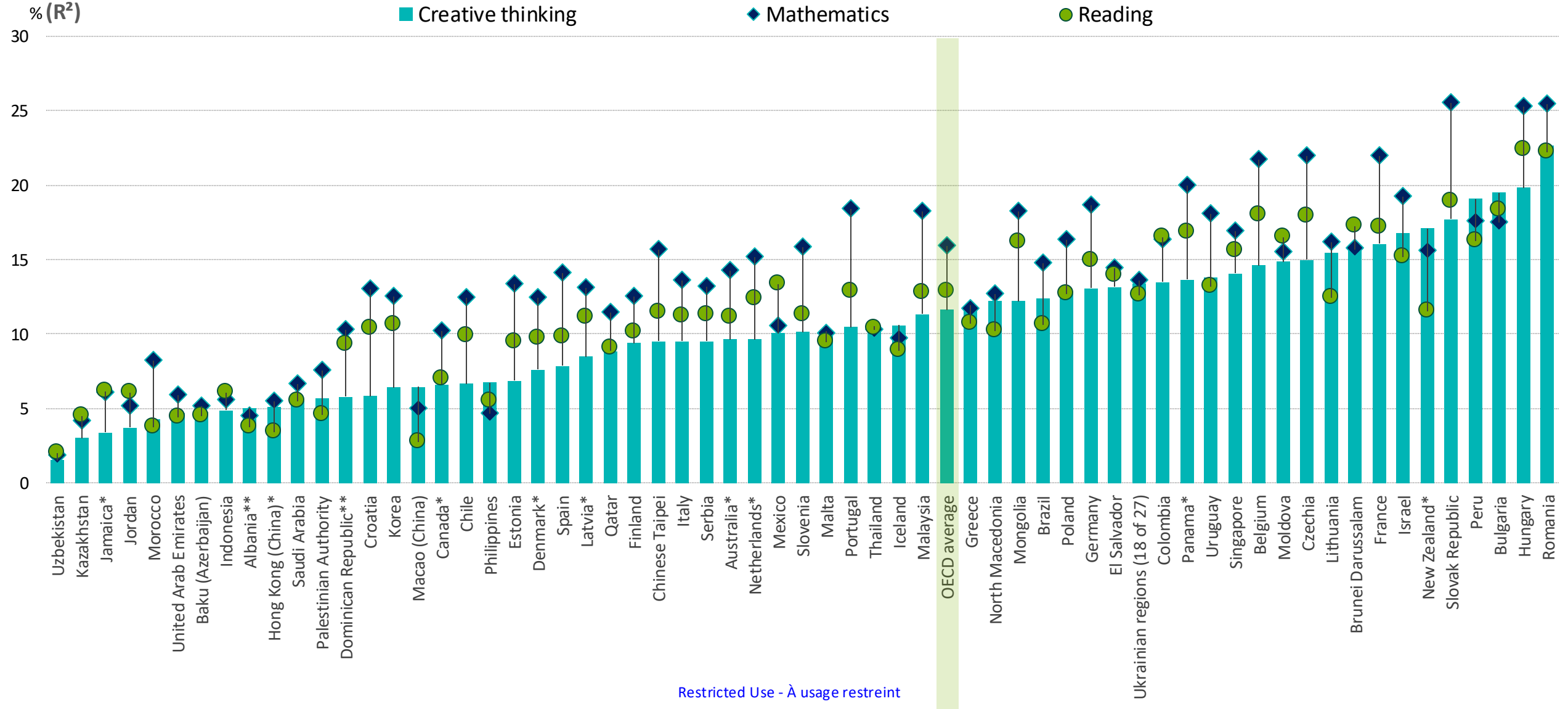
PISA 2022 Results

Providing equal opportunities for all students remains a challenge

Relationship between students' socio-economic status and performance in creative thinking, mathematics and reading

Figure III.3.10

Percentage of variation in performance explained by socio-economic status



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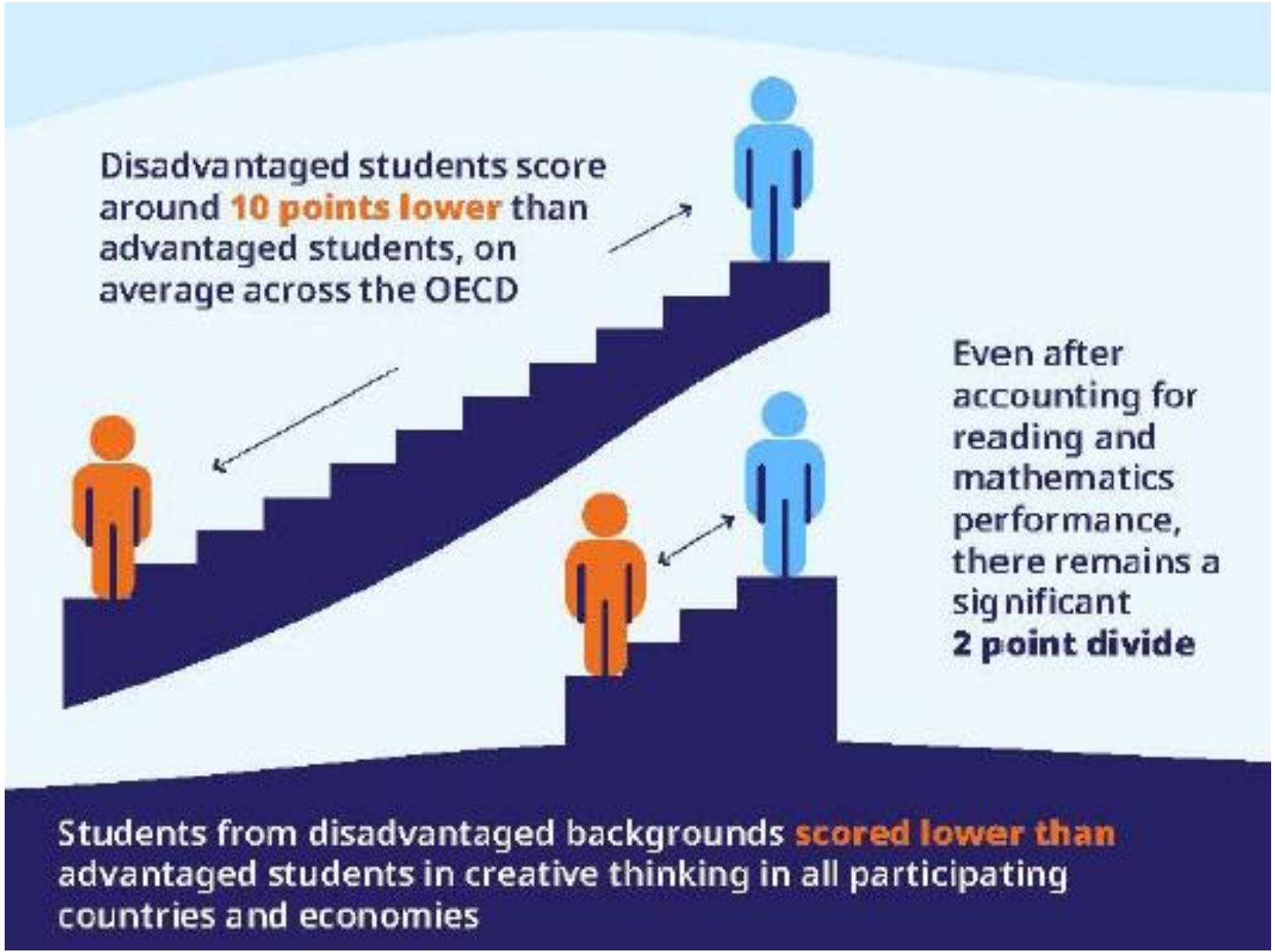
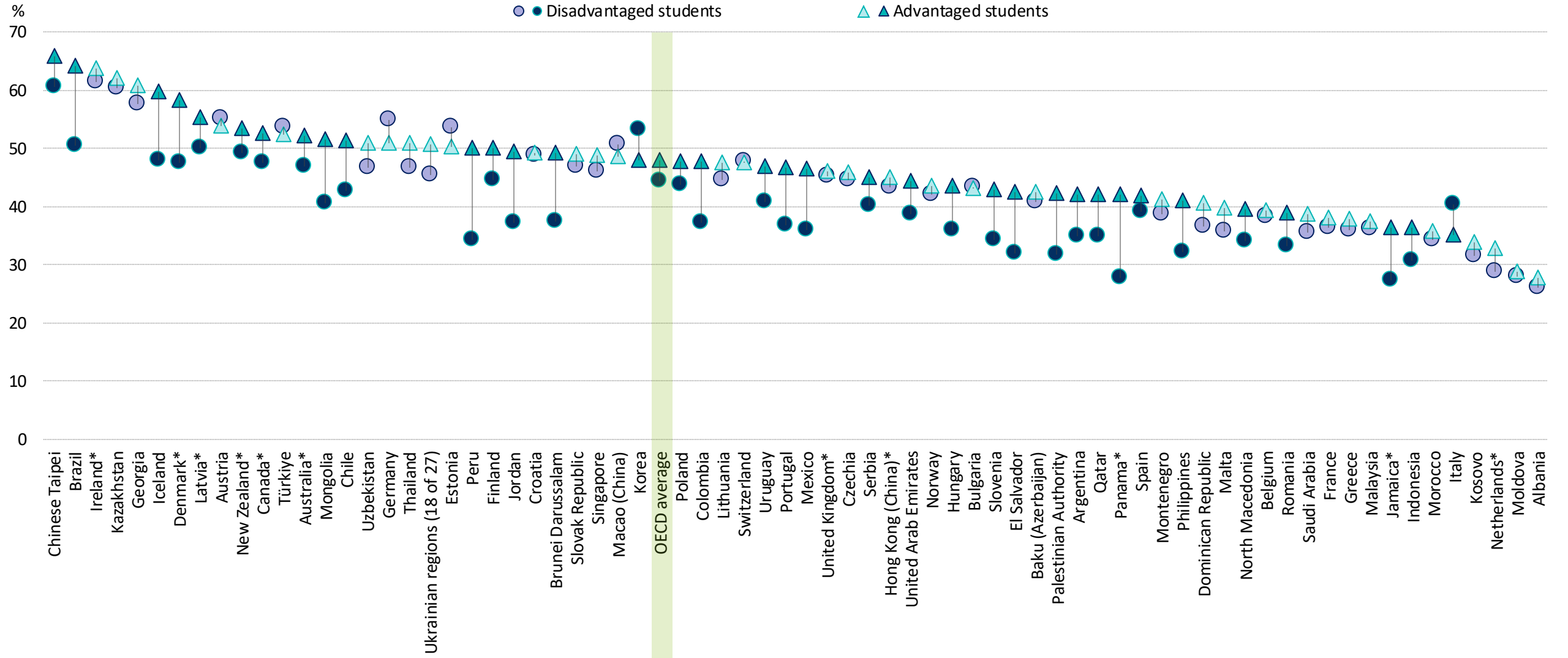
Socio-economic divides persist in creative thinking



Student growth mindset on creativity, by student' socio-economic status

Figure III.5.4

Percentage of students who disagree/strongly disagree with the statement "creativity is something about you that you cannot change very much", by student' socio-economic status



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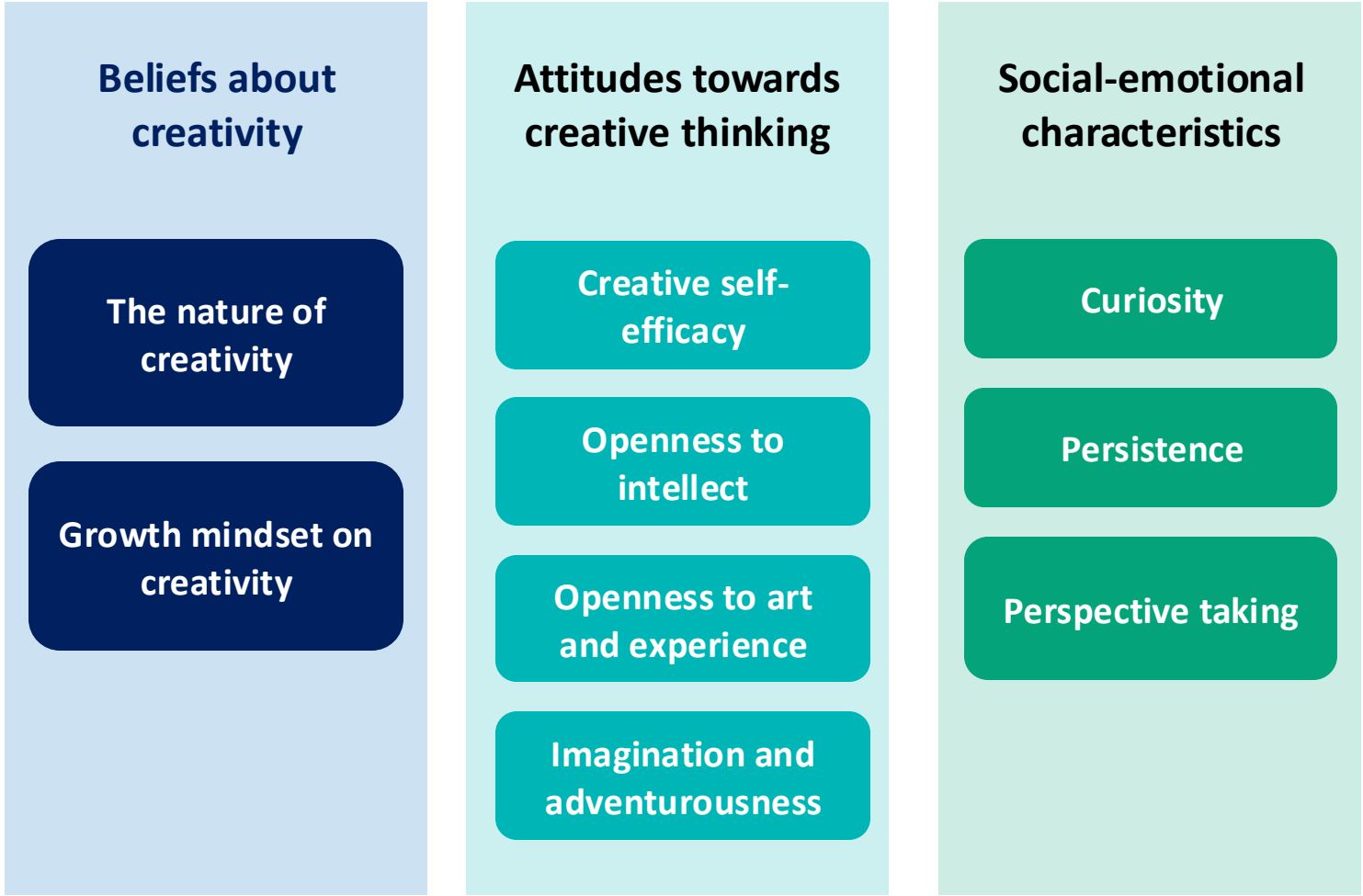
PISA 2022 Results

What students believe about creativity and their own creative potential matters

Student beliefs, attitudes and expectations

Figure III.5.1



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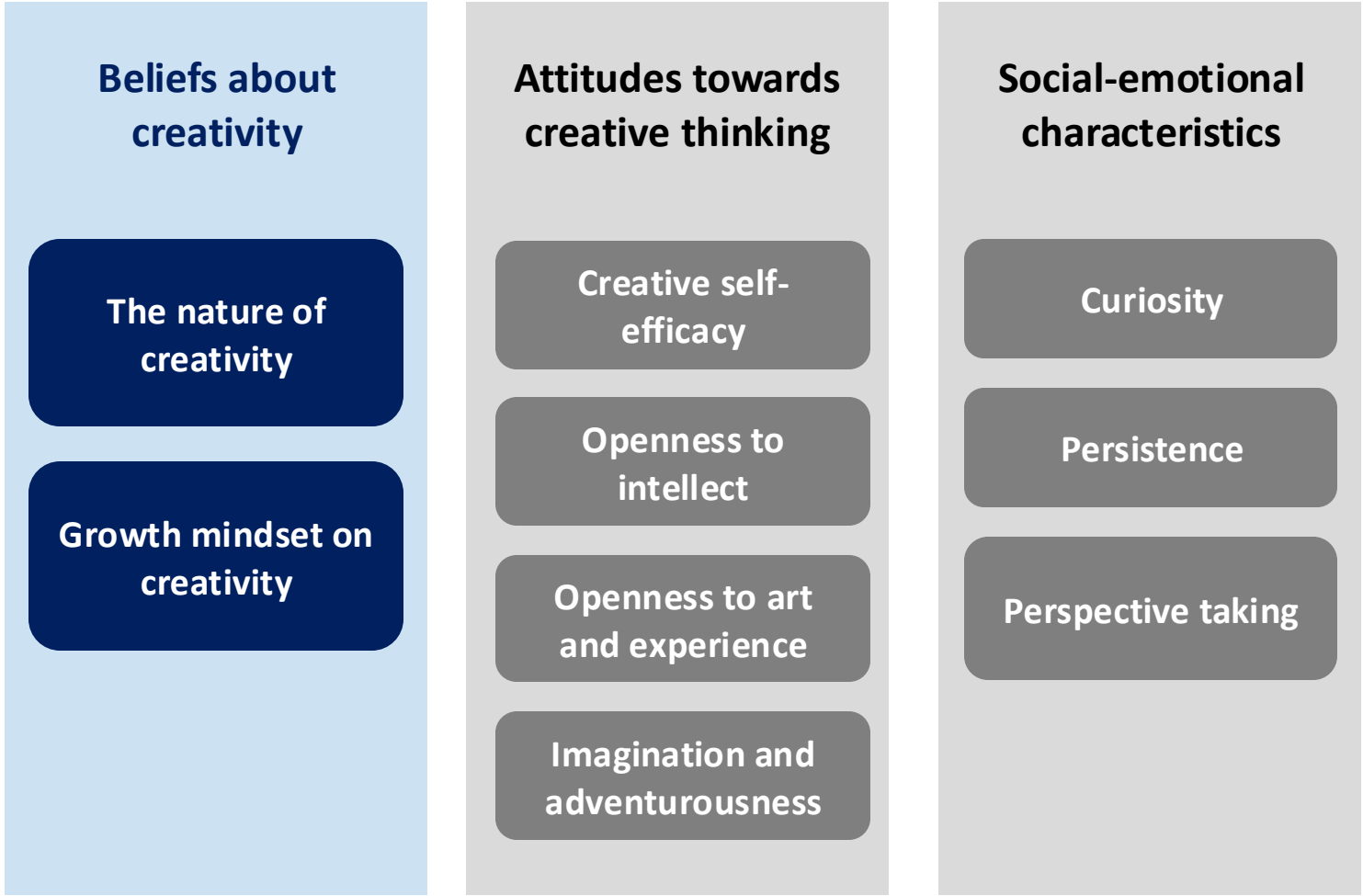
Student beliefs, attitudes and expectations

Figure III.5.1



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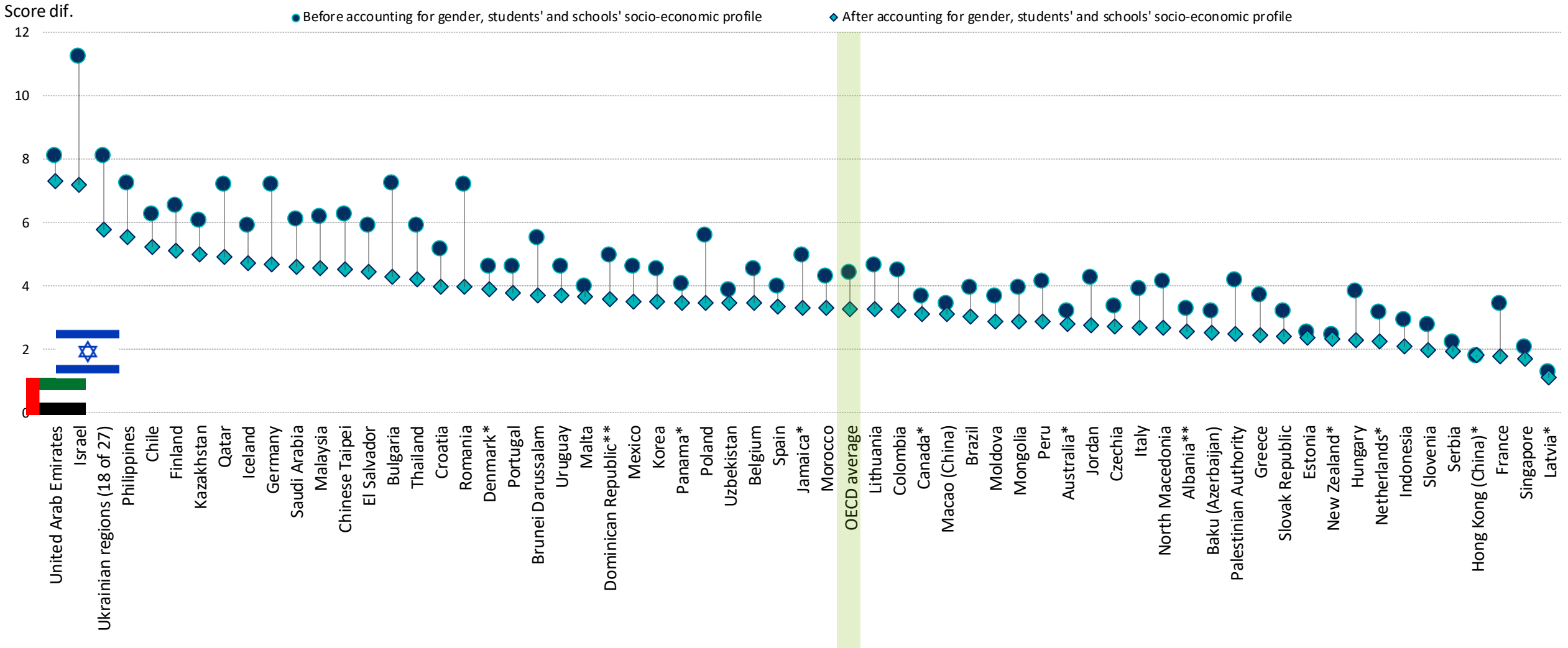
Change in creative thinking performance associated with more open beliefs about creativity

Figure III.5.3

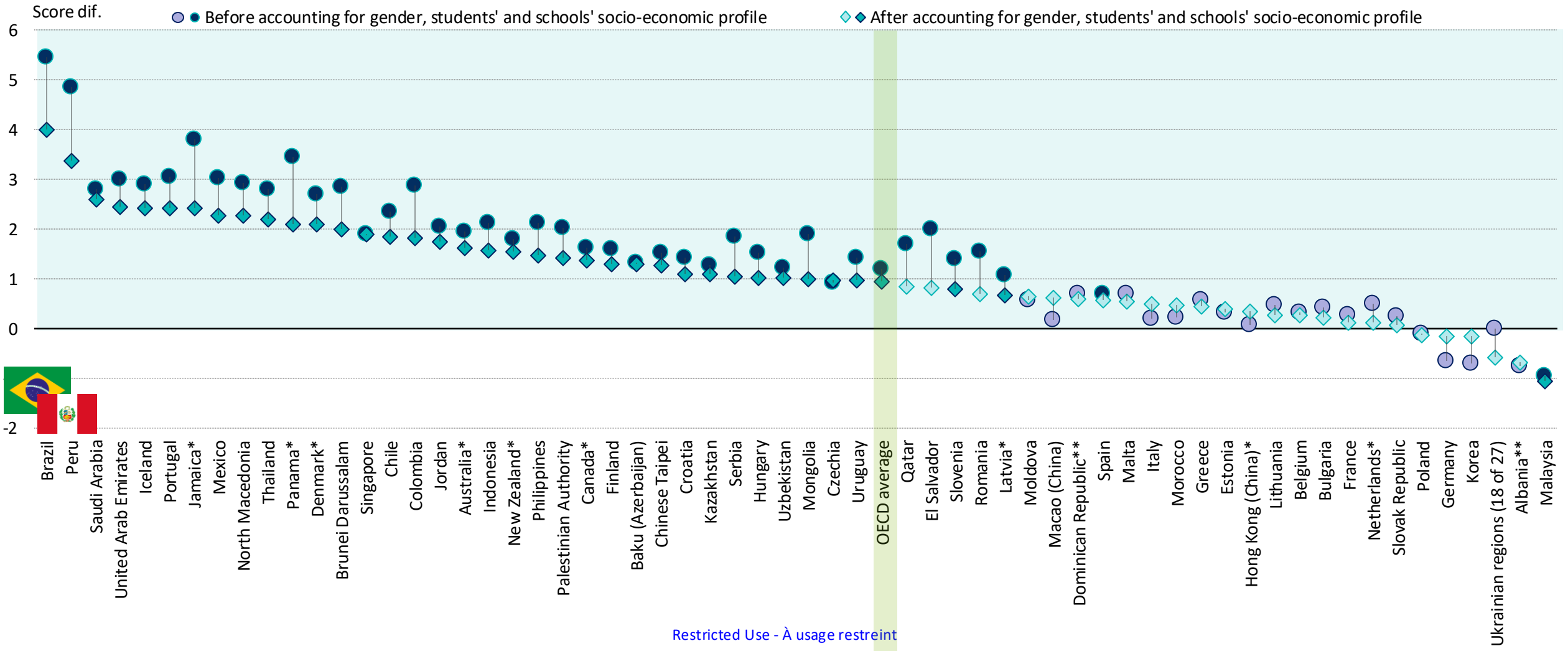
"It is possible to be creative in nearly any subject"



Change in creative thinking performance associated with holding a growth mindset on creativity

Figure III.5.5

"Your creativity is something about you that you cannot change very much"



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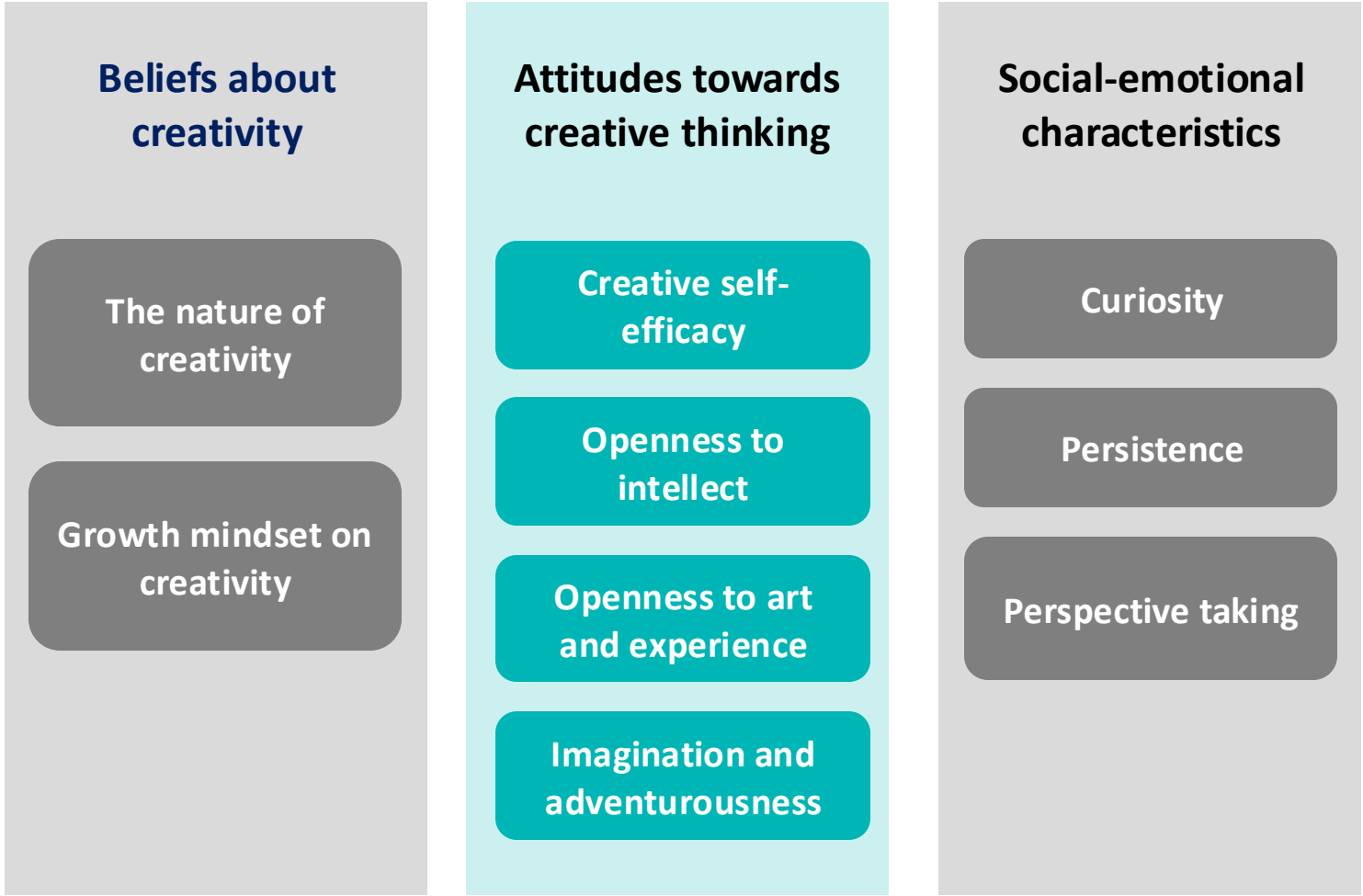
Student beliefs, attitudes and expectations

Figure III.5.1



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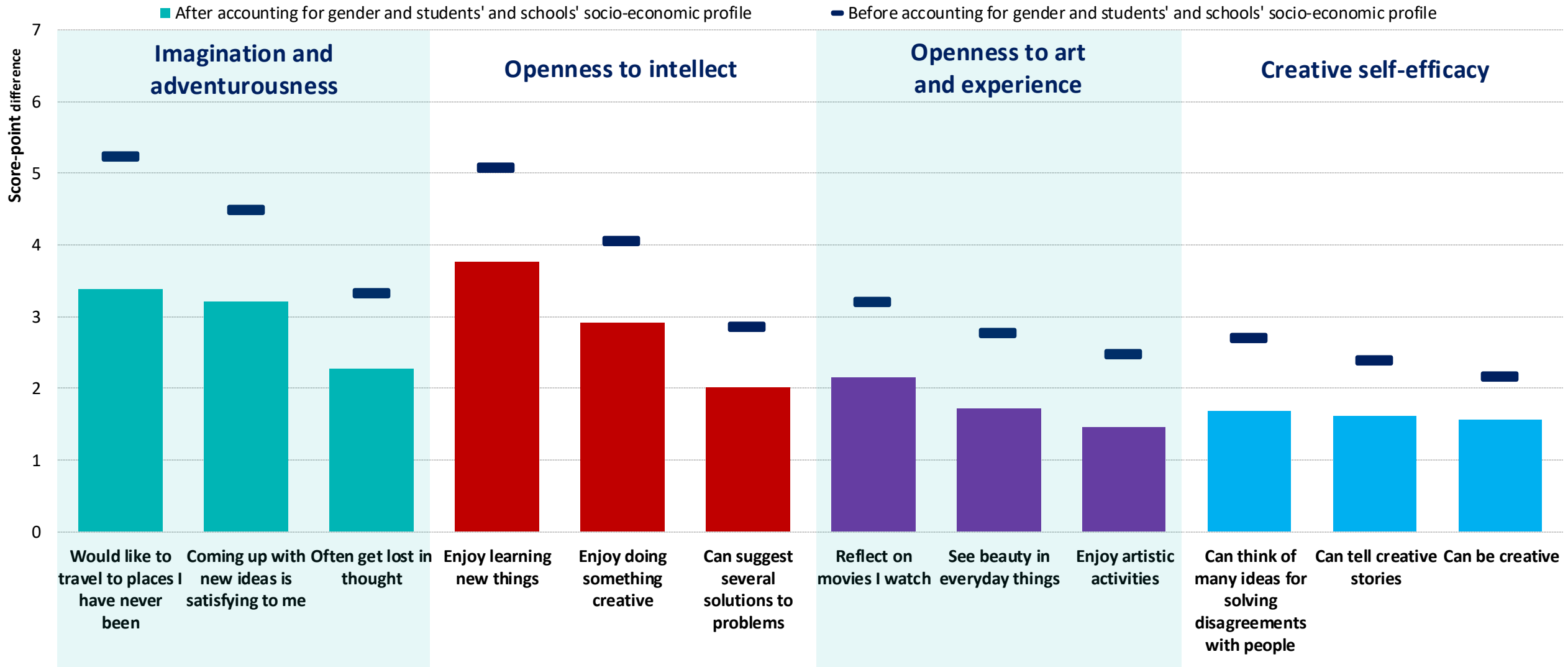
Change in creative thinking performance associated with change in attitudes towards creative thinking

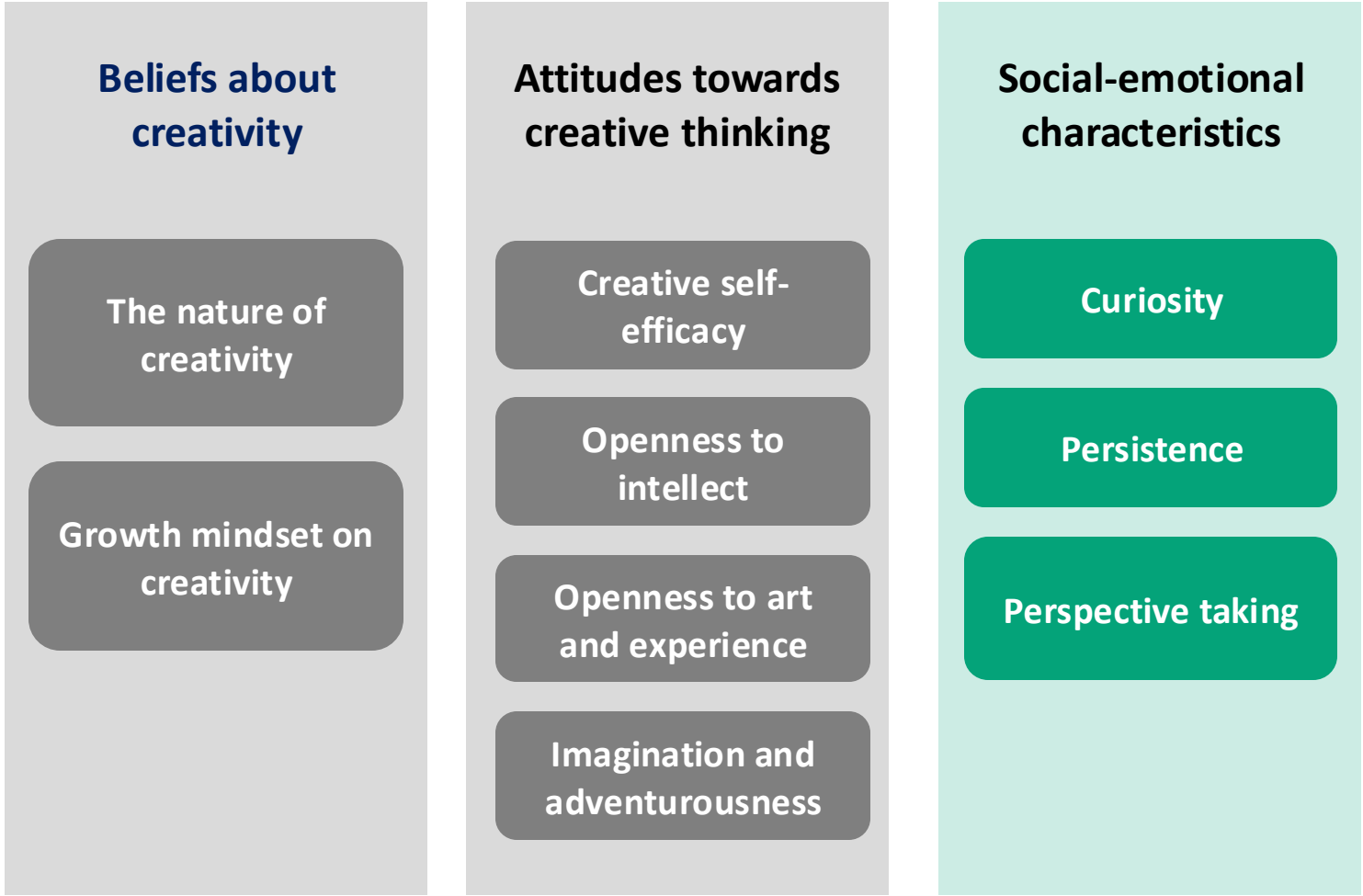
Figure III.5.7

Change in creative thinking score associated with agreeing/strongly agreeing or feeling confident/very confident with the following statements; OECD average



Student beliefs, attitudes and expectations

Figure III.5.1



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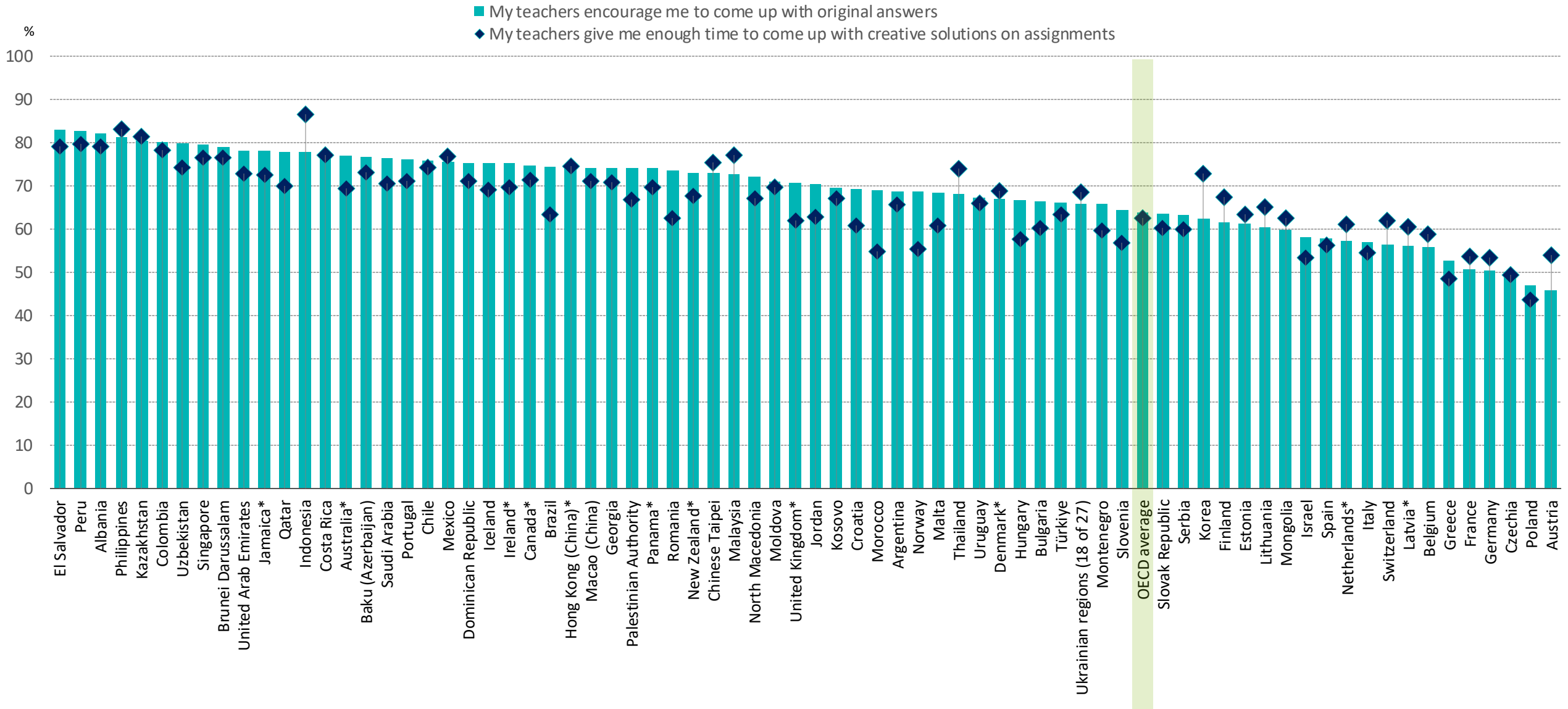
PISA 2022 Results

Cultivating school environments that encourage creative thinking

Student-reported use of pedagogies encouraging creative thinking

Figure III.6.3

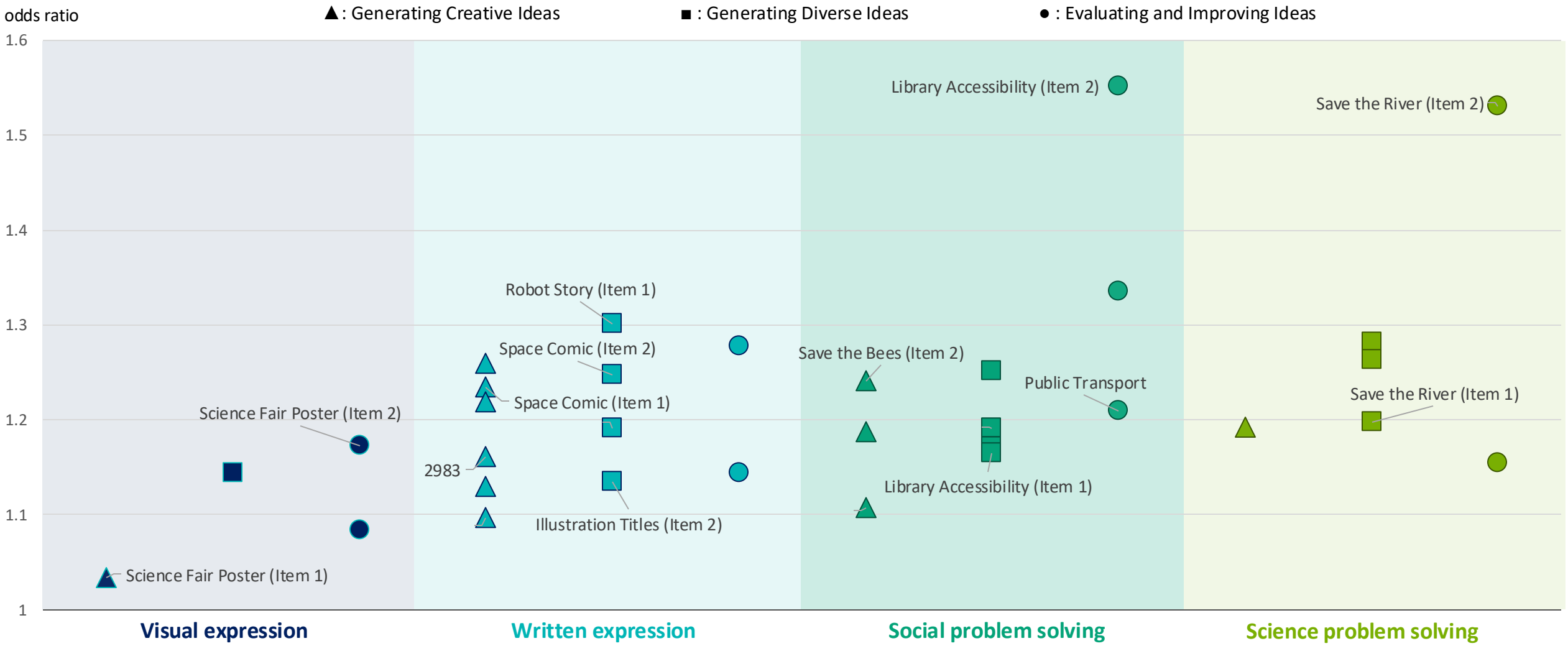
Percentage of students who agree/strongly agree with the following statements:



Pedagogies encouraging creative thinking and creative thinking proficiency across assessment domains and facets

Figure III.6.5

Likelihood (odds ratio) of getting full credit on the test items when students agree/strongly agree that "their teachers value students' creativity", by ideation processes and domain contexts; OECD average



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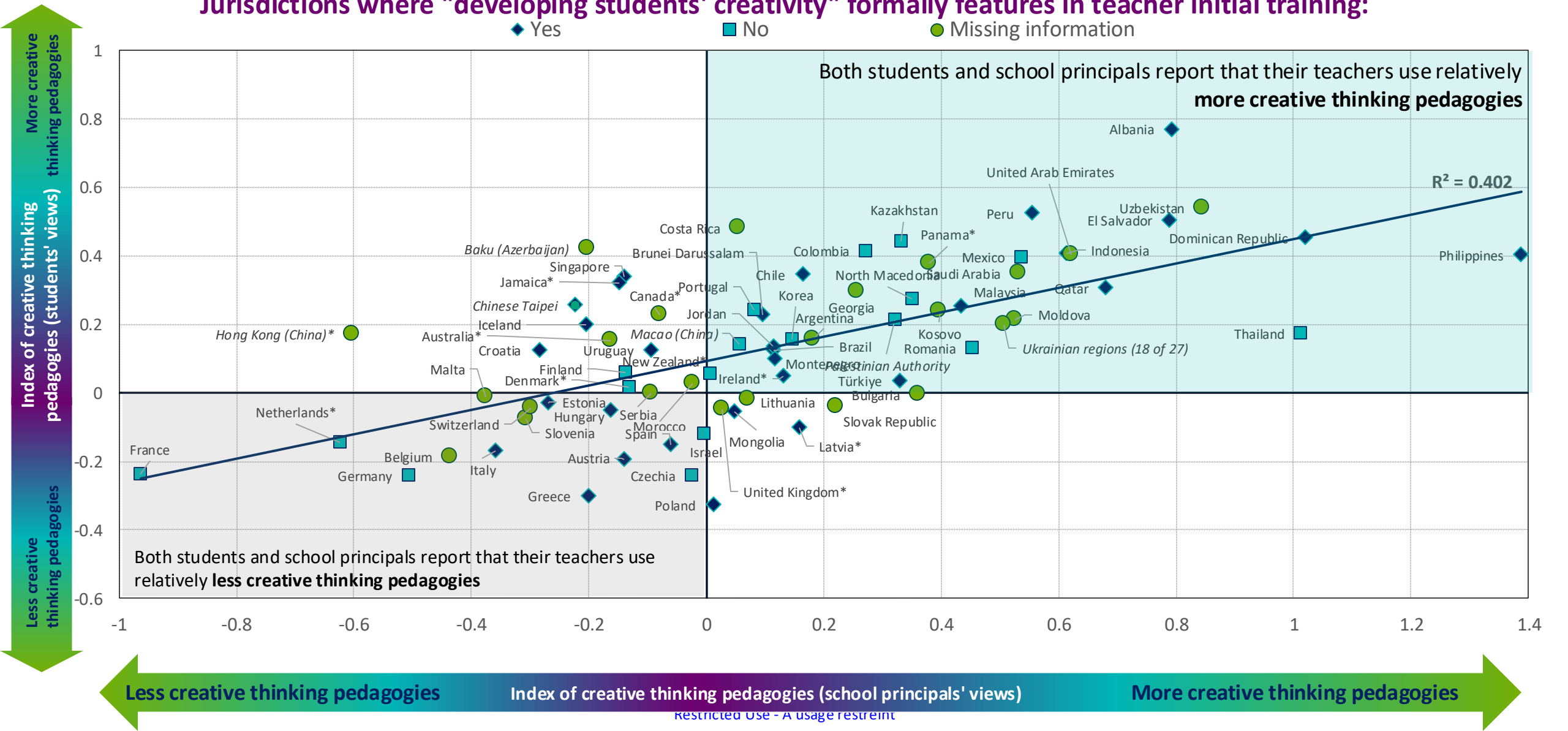
Students' and school principals' views on their teachers' use of pedagogies encouraging creative thinking

Figure III.6.4



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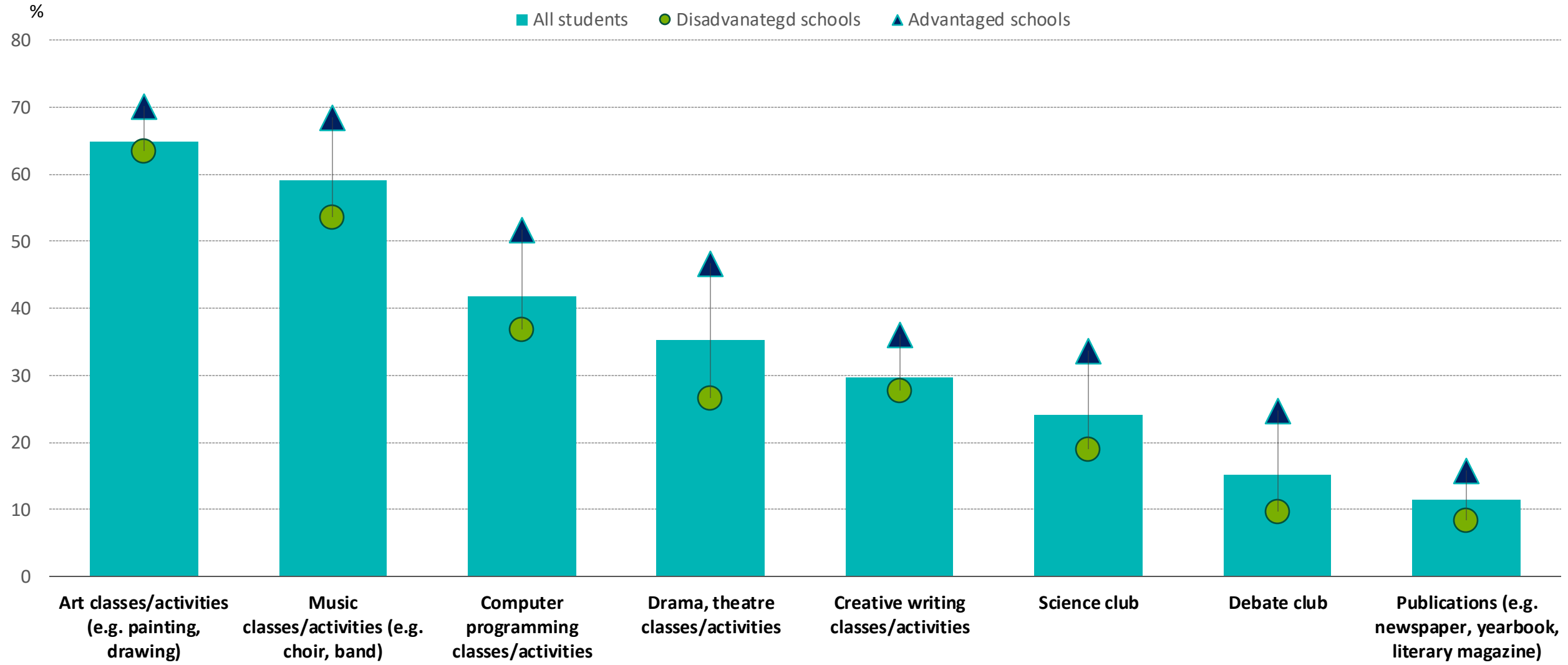
Availability of activities offered at school, by school socio-economic profile

Figure III.6.6

Percentage of students in schools whose principal reported that their school offers the following activities at least once a week; OECD average



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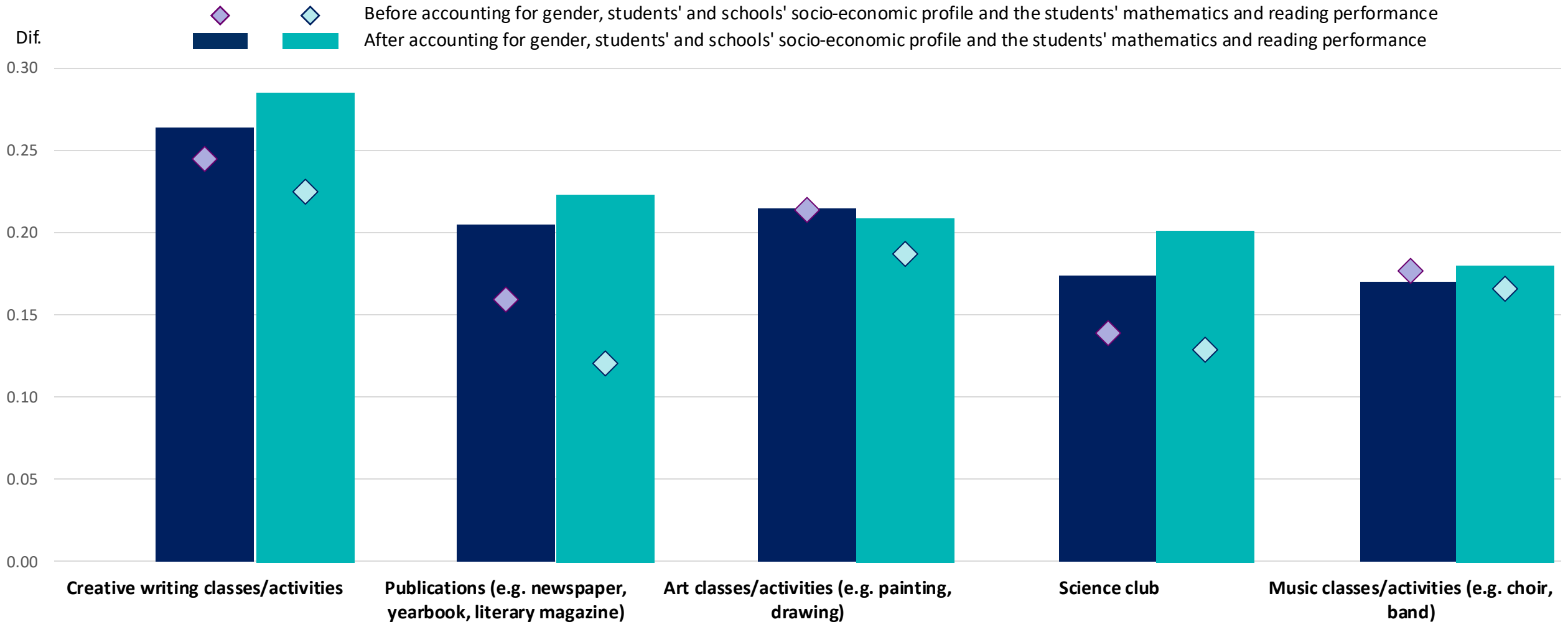
Student participation in activities at school and their attitudes towards creative thinking

Figure III.6.8

Mean index difference between students who participate at least once a week in the following activities compared to the rest of students; OECD average



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Thank you!

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