

PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA) RESULTS FROM PISA 2018

21st-century readers: Developing literacy skills in a digital world

The Programme for International Student Assessment (PISA) is a triennial survey of 15-year-old students around the world that assesses the extent to which they have acquired the key knowledge and skills essential for full participation in societies. The assessment in 2018 focuses on reading, mathematics, science and the innovative domain of global competence. Reading was the main subject assessed in PISA 2018, and the reading framework was devised to include essential literacy skills in a digital world.

The thematic report **21st-century readers: Developing literacy skills in a digital world** provides important insights into how 15-year-old students are developing reading skills that help them navigate through information in a technology-rich 21st century. This report focuses on policies and practices that can harness digitalisation to create better learning opportunities. It also looks at ways to counter digitalisation's disruptive effects in and for education.

Spain

Summary of key findings

- In Spain, approximately one of every four students (24%) followed a strictly focused navigation or actively explored single and multiple sources of information. These navigation behaviours were strongly correlated with knowledge of effective reading strategies and reading performance in PISA 2018. Approximately 24% of students also showed these navigation behaviours in Bulgaria, Chile, Indonesia, and Norway. In comparison, more than half of the students showed these navigation behaviours in Beijing, Shanghai, Jiangsu and Zhejiang (China) (hereafter “B-S-J-Z [China]”), Hong Kong (China), Korea, Singapore and Chinese Taipei, and at least 40% in Canada, Japan, Macao (China), New Zealand, the United Kingdom, and the United States.
- Education systems with a higher proportion of students who were taught how to detect biased information in school and who have digital access at home were more likely to distinguish fact from opinion in the PISA reading assessment, even after accounting for country per capita GDP. In Spain, the PISA reading released item of distinguishing fact from opinion was estimated to be 41% correct¹ (OECD average: 47%).
- In Spain, girls scored 21 points more than boys did in reading performance after accounting for students' socio-economic backgrounds. Approximately half of the gender differences in reading performance can be accounted for by the difference between boys' and girls' knowledge of effective reading strategies (i.e. understanding and memorising a text; summarising information; and assessing the credibility of sources).

- Students in Spain scored particularly high in two of the three indices of knowledge of reading strategies included in PISA 2018 – understanding and remembering a text, and writing a summary – but less so in the index of reading strategies for assessing the credibility of sources.
- The index of enjoyment of reading decreased between 2009 and 2018 on average across OECD countries, and in one-third of countries and economies with available data on this index. In Spain, however, the index of reading enjoyment increased by 0.10 of a standard deviation over the last decade.
- Compared to students who rarely or never read books, print-book readers in Spain scored 46 points more in reading; those who balance print and digital reading scored 44 points more; and digital-book readers scored 26 points more after accounting for students' and schools' socio-economic profile, and students' gender.
- In PISA 2018, the relationship between reading performance and time spent using digital devices for schoolwork was negative in 36 countries and economies after accounting for students' and schools' socio-economic status, including Spain.

Digital divide

- In Spain, 91% of students (OECD average-31: 89%) had both a connection to the Internet at home and a computer they could use for schoolwork in PISA 2018. This was 42 percentage points more than in PISA 2003 (OECD average-31: 28 percentage points more).
- In Spain, some 84% (OECD average: 79%) of students attending disadvantaged schools² compared to 95% (OECD average: 94%) of students attending advantaged schools reported having access to the Internet and a computer they can use for schoolwork at home. In Denmark, Iceland and Poland, over 95% of students attending disadvantaged schools report that they had a computer linked to the Internet for doing schoolwork at home. In contrast, this percentage is lower than 20% in Indonesia, Mexico, Morocco, Panama, Peru, the Philippines, and Viet Nam.

Opportunity to learn

- In Spain, 46% of students reported being trained at school on how to recognise whether information is biased (OECD average: 54%). Among OECD countries, more than 70% of students reported receiving this training in Australia, Canada, Denmark, and the United States. However, less than 45% of students reported received this training in Israel, Latvia, the Slovak Republic, Slovenia, and Switzerland.
- In Spain, the percentage difference between students from advantaged³ and disadvantaged backgrounds who were taught how to detect biased information was 8 percentage points in favour of advantaged students (OECD average: 8 percentage points). In Belgium, Brunei Darussalam, Denmark, Germany, Luxembourg, Sweden, the United Kingdom and the United States, this difference is around 14 percentage points or higher. No differences were observed in 27 countries/economies, and in 4 other countries/economies the differences were in the opposite direction.
- Education systems with a higher proportion of students who were taught how to detect biased information in school and who have digital access at home were more likely to correctly distinguish fact from opinion in the PISA reading assessment, even after accounting for country per capita GDP. In Spain, the PISA reading released item of distinguishing fact from opinion was estimated to be 41% correct¹ (OECD average: 47%).

Navigating digital environments

- In Spain, approximately 24% of students followed item instructions in the PISA reading assessment by carefully selecting pages relevant to the tasks and limiting visits to irrelevant pages (strictly focused navigation) and actively navigating both single- and multiple-source items (actively explorative navigation). Approximately 24% of students also followed these navigation behaviours in Bulgaria, Chile, Indonesia, and Norway. In comparison, more than half of the students showed these navigation behaviours in B-S-J-Z (China), Hong Kong (China), Korea, Singapore and Chinese Taipei, and at least 40% in Canada, Japan, Macao (China), New Zealand, the United Kingdom, and the United States. These navigation behaviours were strongly correlated with knowledge of effective reading strategies and reading performance.
- Almost one in five students (19%) on average across OECD countries reported feeling lost in the PISA test when navigating through different pages. In Spain, as well as in B-S-J-Z (China), Belarus, Denmark, Finland, Germany, Hungary, Ireland, Italy, Lithuania, and the Russian Federation, less than 15% of students reported these difficulties while approximately one out of two students did so in Indonesia, the Philippines, and Thailand.
- Reading performance and navigation quantity (i.e. average number of pages visited) had a positive correlation on the system-level in both single- and multiple-source items with an overall average correlation value of 0.65 and 0.75, respectively. No significant correlation was found in Spain between reading performance and the average number of pages visited on single- and multiple-source items, which could be evidence of the low engagement issues identified in this country in PISA 2018⁴.
- Students in Spain scored particularly high in two of the three indices of knowledge of reading strategies included in PISA 2018 – understanding and remembering a text, and writing a summary – but less so in the index of reading strategies for assessing the credibility of sources. Students in Spain, Germany, France, Italy, and Switzerland scored 0.20 points or more in the index of knowledge of reading strategies for understanding and remembering a text (OECD average: -0.01). Students in Spain, Italy, Denmark, France, and Germany scored 0.20 points or more in the index of reading strategies for writing a summary in Spain (OECD average: 0.00). However, students in Spain scored -0.01 in the index of reading strategies for assessing the credibility of sources (OECD average: -0.01).

Strategies to tackle inequality and gender gaps

- In Spain, students scored below the OECD average in reading (477¹, OECD average: 487). Students in Spain also reported having some difficulties in the index of difficulty of the PISA reading assessment (-0.06, OECD average: 0.01). As in 69 other countries/economies, disadvantaged students in Spain perceived the PISA reading assessment as more difficult than advantaged students, even after accounting for students' reading scores. This perception-of-difficulty gap between advantaged and disadvantaged students was the largest in B-S-J-Z (China), Luxembourg, and Singapore – close to a half standard deviation after accounting for reading performance (approximately -0.50). This gap in Spain was -0.24 (OECD average: -0.22).
- On average across OECD countries, more boys reported that they felt the PISA reading test was easier than girls did even though boys scored 25 points lower than girls did in reading after accounting for students' socio-economic backgrounds. However, in Spain, boys and girls reported similar levels in the index of difficulty of the PISA reading test even though boys scored 21 points lower than girls did in reading after accounting for students' socio-economic backgrounds.
- In Spain, some 28% (OECD average: 29%) of the association between socio-economic background and reading performance can be accounted for by the difference between socio-economically advantaged and disadvantaged students' reported self-perception of reading competence.

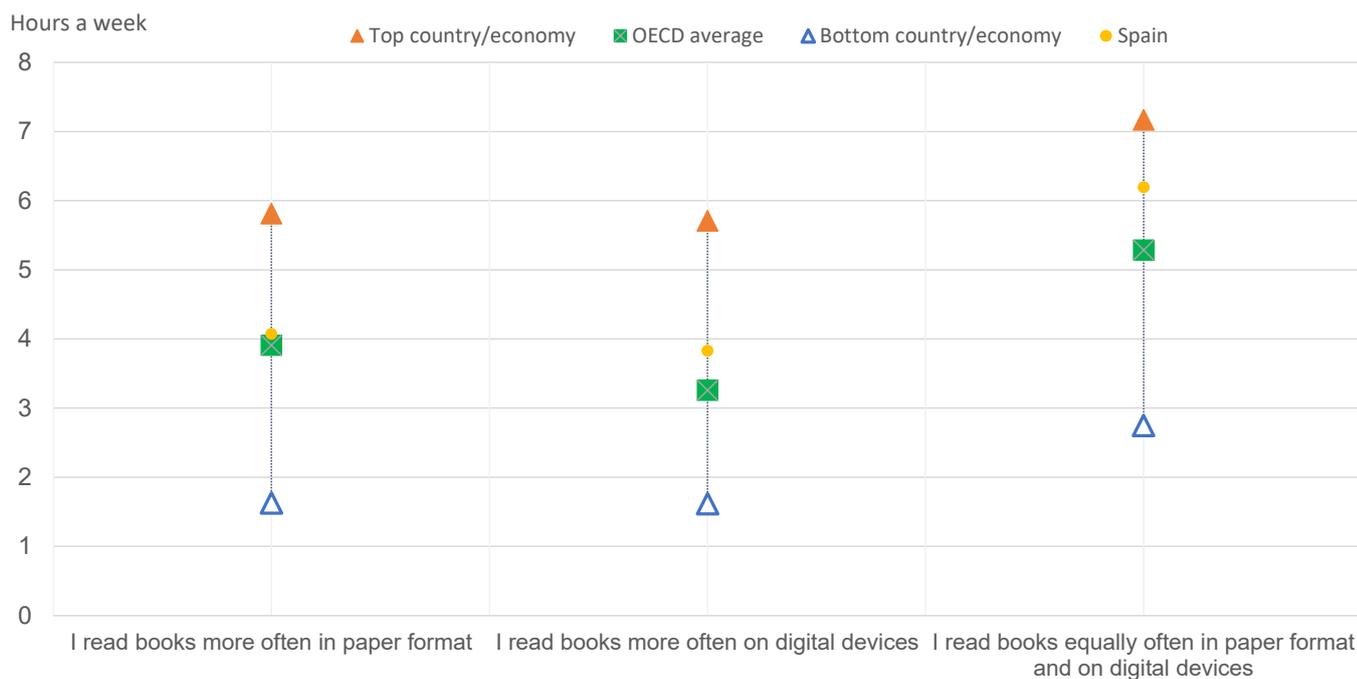
- Compared to almost two-thirds on average across OECD countries, approximately half of the gender differences in reading performance in Spain can be accounted for by the difference between boys' and girls' knowledge of effective reading strategies - understanding and memorising a text; summarising information; and assessing the credibility of sources.

Print reading in a digital world

- Compared to students who rarely or never read books, print-book readers in Spain scored 46 points (OECD average: 49) more in reading; those who balance print and digital reading scored 44 points more (OECD average: 37); and digital-book readers scored 26 points more (OECD average: 15) after accounting for students' and schools' socio-economic profile, and students' gender.
- Compared to students who rarely or never read books, digital-book readers in Spain read about 4 hours more a week (OECD average: 3 hours); print-book readers about 4 hours more a week (OECD average: 4 hours); and those who balance both formats about 6 hours or more a week after accounting for students' and schools' socio-economic background and students' gender (OECD average: 5 hours).
- The index of enjoyment of reading decreased between 2009 and 2018 on average across OECD countries and in one-third of countries and economies with available data on this index. The most pronounced decline was observed in Germany, Finland and Norway where the index of enjoyment of reading decreased by around 0.30 or more of a standard deviation over the last decade. However, in Spain, the index of reading enjoyment increased by 0.10 of a standard deviation between PISA 2009 and PISA 2018.
- Girls and students from a higher socio-economic background typically report higher levels of enjoyment of reading. This gap between boys and girls in Spain was 0.73 (OECD average: 0.60) and between disadvantaged and advantaged, 0.35 (OECD average: 0.45).

Figure 1. Average time of reading for enjoyment by the format of reading

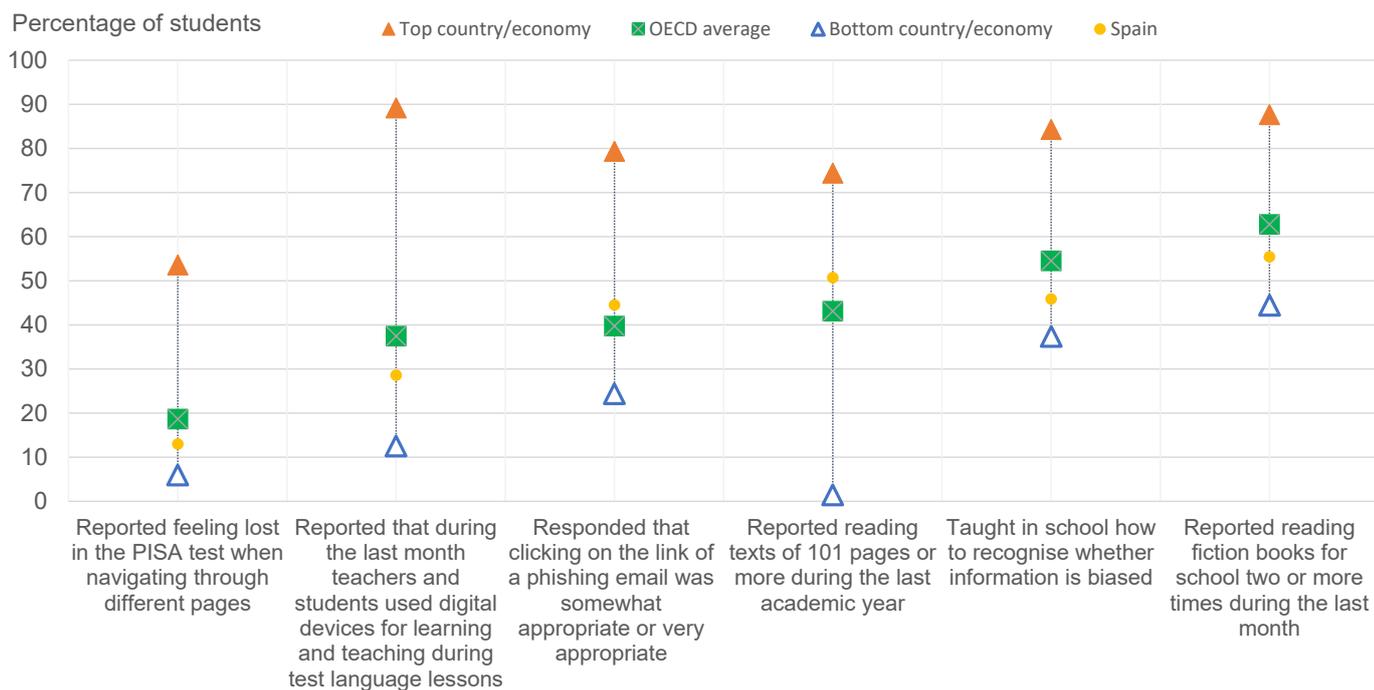
Difference between students who read books in the following way and those who "rarely or never read books", after accounting for students' and schools' socio-economic profile, and students' gender



Teachers' practices

- Disadvantaged students and boys – who typically have a lower reading performance – perceived less stimulation from their teachers in reading activities in 49 countries/economies participating in PISA 2018. In Spain, the difference between disadvantaged and advantaged students in their perception of teachers' reading engagement stimulation was 0.06 (OECD average: 0.15). However, unlike the OECD average, no differences were observed between boys and girls in their perception of teachers' reading engagement stimulation.
- The association between teachers' stimulation of reading engagement and students' enjoyment of reading is positive in all participating countries and economies in PISA 2018. It is positive, as well, with reading performance in 61 countries and economies after accounting for students' and schools' socio-economic profile. This is also the case in Spain but the change in enjoyment of reading associated with a one-unit increase in the index of teacher's stimulation of reading engagement perceived by students is the lowest across all participating countries/economies in PISA 2018 (0.08, OECD average: 0.14). The change in reading performance associated with a one-unit increase in the index of teacher's stimulation of reading engagement perceived by student was small in magnitude (2 points, OECD average: 7).
- Reading fiction texts and reading long texts for school more frequently was positively associated with reading performance in most countries/economies after accounting for students' and schools' socio-economic profile. In Spain, students who reported reading fiction books two or more times during the last month scored 7 points more in reading than students who did not, after accounting for students' and schools' socio-economic profile (OECD average: 9 points). Students who had to read longer pieces of texts for school (101 pages or more) achieved 31 points more in reading than those who reported reading smaller pieces of text (10 pages or less) after accounting for students' and schools' socio-economic profile and students' gender (OECD average: 31).
- The average duration of time per week students spent using digital devices during classroom lessons and outside of the classroom for language lessons across OECD countries was 41 minutes. Students in Australia, New Zealand, Sweden and the United States reported spending more than 1 hour a week, and students in Denmark reported about 2 hours a week. In Spain, students reported spending 31 minutes a week (OECD average: 41 minutes). Some 28% of these students also reported that during the last month both the teacher and students used a digital device for learning and teaching during test-language lessons (OECD average: 37%). In contrast, more than 60% of students in Australia, Denmark, New Zealand, Sweden, and the United States reported the same.
- The relationship between reading performance and time spent using digital devices for schoolwork was negative in 36 countries and economies, including Spain. In Spain, the change in reading performance associated with a one-hour increase in the total time a week using digital devices for school is -5 points (OECD average: -7 points) after accounting for students' and schools' socio-economic status. In Australia, Denmark, Korea, New Zealand, and the United States, this relationship was positive after accounting for students and schools' socio-economic status.

Figure 2. Indicators of reading in a digital world



Key features of PISA 2018

The content

- The PISA 2018 survey focused on reading, with mathematics, science and global competence as minor areas of assessment. PISA 2018 also included an assessment of young people's financial literacy, which was optional for countries and economies.

The students

- Some 600 000 students completed the assessment in 2018, representing about 32 million 15-year-olds in the schools of the 79 participating countries and economies.

The assessment

- Computer-based tests were used in most countries with assessments lasting a total of two hours. In reading, a multi-stage adaptive approach was applied in computer-based tests whereby students were assigned a block of test items based on their performance in preceding blocks.
- Test items were a mixture of multiple-choice questions and questions requiring students to construct their own responses. The items were organised into groups based on a passage of text describing a real-life situation. About 930 minutes of test items for reading, mathematics, science and global competence were covered, with different students taking different combinations of test items.
- Students also answered a background questionnaire, which took about 35 minutes to complete. The questionnaire sought information about the students themselves, their attitudes, dispositions and beliefs, their homes, and their school and learning experiences. School principals completed a questionnaire that covered school management and organisation, and the learning environment.
- Some countries/economies also distributed additional questionnaires to elicit more information. These included: in 19 countries/economies, a questionnaire for teachers asking about themselves and their teaching practices; and in 17 countries/economies, a questionnaire for parents asking them to provide information about their perceptions of and involvement in their child's school and learning.
- Countries/economies could also choose to distribute three other optional questionnaires for students: 52 countries/ economies distributed a questionnaire about students' familiarity with computers; 32 countries/economies distributed a questionnaire about students' expectations for further education; and 9 countries/economies distributed a questionnaire, developed for PISA 2018, about students' well-being.

What is unique about PISA?

PISA is unique because of its:

- policy orientation, which links data on student learning outcomes with data on students' backgrounds and attitudes towards learning, and with key factors that shape their learning in and outside of school; by doing so, PISA can highlight differences in performance and identify the characteristics of students, schools and education systems that perform well.
- innovative concept of "literacy", which refers to students' capacity to apply their knowledge and skills in key areas, and to analyse, reason and communicate effectively as they identify, interpret and solve problems in a variety of situations.
- relevance to lifelong learning as PISA asks students to report on their motivation to learn, their beliefs about themselves, and their learning strategies.
- regularity, which enables countries to monitor their progress in meeting key learning objectives.
- breadth of coverage, which, in PISA 2018, encompassed all 37 OECD countries and 42 partner countries and economies.

Map of PISA countries and economies


OECD member countries

Australia
 Austria
 Belgium
 Canada
 Chile
 Colombia
 Czech Republic
 Denmark
 Estonia
 Finland
 France
 Germany
 Greece
 Hungary
 Iceland
 Ireland
 Israel
 Italy
 Japan
 Korea
 Latvia
 Lithuania
 Luxembourg
 Mexico
 Netherlands
 New Zealand
 Norway
 Poland
 Portugal
 Slovak Republic
 Slovenia
 Spain
 Sweden
 Switzerland
 Turkey
 United Kingdom
 United States*

Partner countries and economies in PISA 2018

Albania
 Argentina
 Baku (Azerbaijan)
 Belarus
 Bosnia and Herzegovina
 Brazil
 Brunei Darussalam
 B-S-J-Z (China)**
 Bulgaria
 Costa Rica
 Croatia
 Cyprus¹
 Dominican Republic
 Georgia
 Hong Kong (China)
 Indonesia
 Jordan
 Kazakhstan
 Kosovo
 Lebanon
 Macao (China)
 Malaysia
 Malta
 Republic of Moldova
 Montenegro
 Morocco
 Republic of North Macedonia
 Panama
 Peru
 Philippines
 Qatar
 Romania
 Russian Federation
 Saudi Arabia
 Serbia
 Singapore
 Chinese Taipei
 Thailand
 Ukraine
 United Arab Emirates
 Uruguay
 Viet Nam

Partner countries and economies in previous cycles

Algeria
 Azerbaijan
 Guangdong (China)
 Himachal Pradesh (India)
 Kyrgyzstan
 Liechtenstein
 Mauritius
 Miranda (Venezuela)
 Tamil Nadu (India)
 Trinidad and Tobago
 Tunisia

* Puerto Rico participated in the PISA 2015 assessment (as an unincorporated territory of the United States).

** B-S-J-Z (China) refers to four PISA 2018 participating Chinese provinces: Beijing, Shanghai, Jiangsu and Zhejiang. In PISA 2015, the four PISA participating Chinese provinces were: Beijing, Shanghai, Jiangsu and Guangdong.

1. Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

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Note by Turkey

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

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References

OECD (2021), *21st-century readers: Developing literacy skills in a digital world*, PISA, OECD Publishing, Paris,

<https://doi.org/10.1787/a83d84cb-en>

For more information on PISA 2018 visit <http://www.oecd.org/pisa/>

Data can also be found online by following the *StatLinks*  under the tables and charts in the publication.

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Footnotes

¹ Rapa Nui Question 3 is a partial credit item where non-credit is scored 0, partial credit is scored 0.5, and full credit is scored 1. Therefore, the estimated percentage correct for full credit in this item is lower than 47% on average across OECD countries. This item was estimated to be 39% correct on average across all PISA 2018 participating countries and economies. Rapa Nui Question 3 is a Level 5 item. This means that students need to have a proficiency level 5 to have a 62% probability of getting full credit in this item (see Figure I.2.1, (OECD, 2019^[2])).

² The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS). A socio-economically disadvantaged (advantaged) school is a school in the bottom (top) quarter of the ESCS in the relevant country/economy.

³ The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS). A socio-economically disadvantaged (advantaged) student is a student in the bottom (top) quarter of the ESCS in the relevant country/economy.

⁴ In 2018, some regions in Spain conducted their high-stakes exams for tenth-grade students earlier in the year than in the past, which resulted in the testing period for these exams coinciding with the end of the PISA testing window. Because of this overlap, a number of students were negatively disposed towards the PISA test and did not try their best to demonstrate their proficiency. Although the data of only a minority of students show clear signs of lack of engagement (see PISA 2018 Results Volume I, Annex A9), the comparability of PISA 2018 data for Spain with those from earlier PISA assessments cannot be fully ensured.