

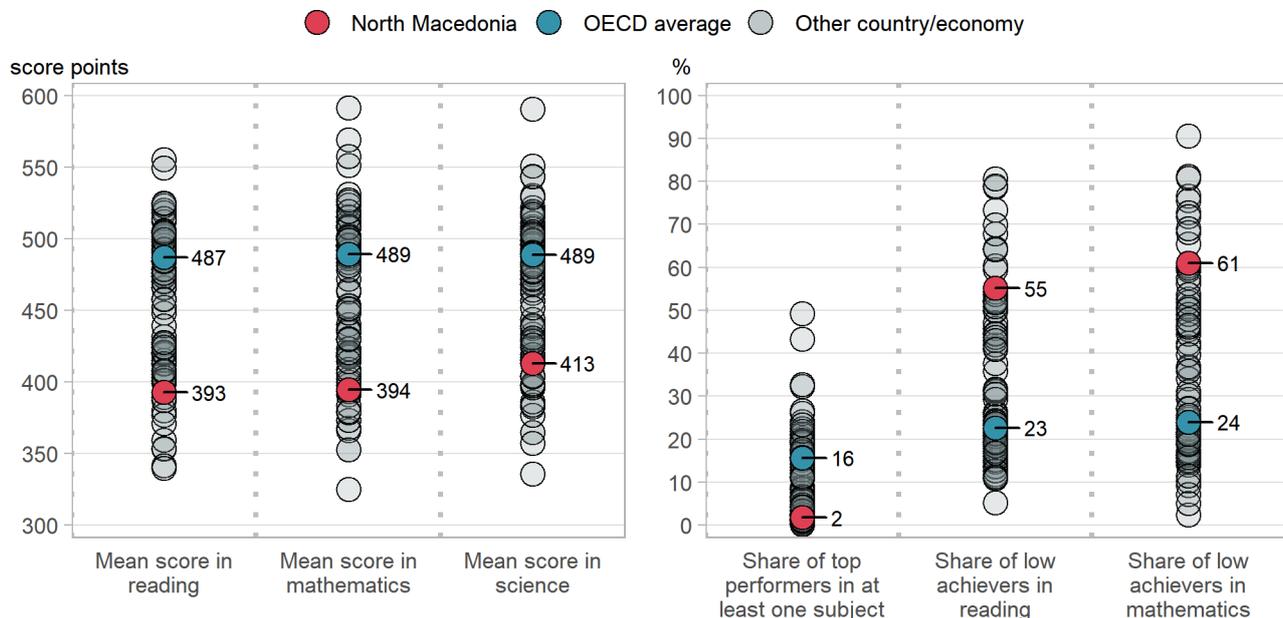
PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA) RESULTS FROM PISA 2018

The Programme for International Student Assessment (PISA) is a triennial survey of 15-year-old students that assesses the extent to which they have acquired the key knowledge and skills essential for full participation in society. The assessment focuses on proficiency in reading, mathematics, science and an innovative domain (in 2018, the innovative domain was global competence), and on students' well-being.

North Macedonia

What 15-year-old students in North Macedonia know and can do

Figure 1. Snapshot of performance in reading, mathematics and science



Note: Only countries and economies with available data are shown.

Source: OECD, PISA 2018 Database, Tables I.1 and I.10.1.

- Students in North Macedonia scored lower than the OECD average in reading, mathematics and science.
- Compared to the OECD average, a smaller proportion of students in North Macedonia performed at the highest levels of proficiency (Level 5 or 6) in at least one subject; at the same time a smaller

proportion of students achieved a minimum level of proficiency (Level 2 or higher) in at least one subject.

What students know and can do in reading

- In North Macedonia, 45% of students attained at least Level 2 proficiency in reading (OECD average: 77%). At a minimum, these students can identify the main idea in a text of moderate length, find information based on explicit, though sometimes complex criteria, and can reflect on the purpose and form of texts when explicitly directed to do so.
- Some a negligible percentage of students in North Macedonia were top performers in reading, meaning that they attained Level 5 or 6 in the PISA reading test (OECD average: 9%). At these levels, students can form a full and detailed understanding of a text whose content or form is unfamiliar, and deal with concepts that are contrary to expectations. In 20 education systems, including those of 15 OECD countries, more than 10% of 15-year-old students were top performers.

What students know and can do in mathematics

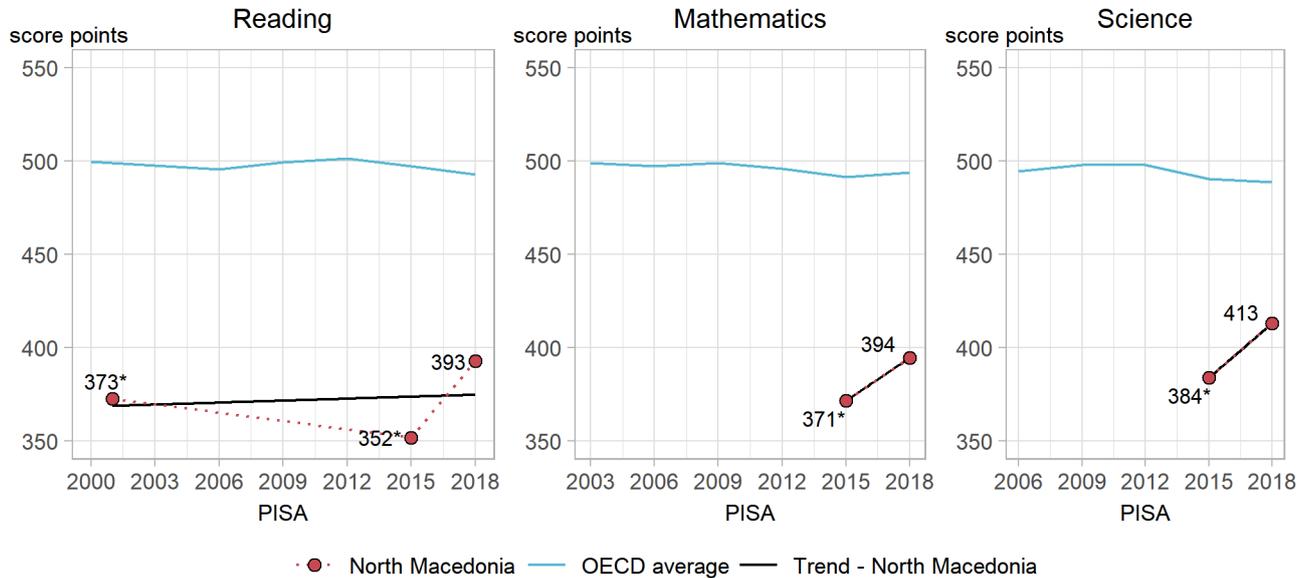
- Some 39% of students in North Macedonia attained Level 2 or higher in mathematics (OECD average: 76%). At a minimum, these students can interpret and recognise, without direct instructions, how a (simple) situation can be represented mathematically (e.g. comparing the total distance across two alternative routes, or converting prices into a different currency). The share of 15-year-old students who attained minimum levels of proficiency in mathematics (Level 2 or higher) varied widely – from 98% in Beijing, Shanghai, Jiangsu and Zhejiang (China) to 2% in Zambia, which participated in the PISA for Development assessment in 2017. On average across OECD countries, 76% of students attained at least Level 2 proficiency in mathematics.
- In North Macedonia, 1% of students scored at Level 5 or higher in mathematics (OECD average: 11%). Six Asian countries and economies had the largest shares of students who did so: Beijing, Shanghai, Jiangsu and Zhejiang (China) (44%), Singapore (37%), Hong Kong (China) (29%), Macao (China) (28%), Chinese Taipei (23%) and Korea (21%). These students can model complex situations mathematically, and can select, compare and evaluate appropriate problem-solving strategies for dealing with them.

What students know and can do in science

- Some 51% of students in North Macedonia attained Level 2 or higher in science (OECD average: 78%). At a minimum, these students can provide possible explanations in familiar contexts or draw conclusions based on simple investigations.
- In North Macedonia, 1% of students were top performers in science, meaning that they were proficient at Level 5 or 6 (OECD average: 7%). These students can creatively and autonomously apply their knowledge of and about science to a wide variety of situations, including unfamiliar ones.

Performance trends

Figure 2. Trends in performance in reading, mathematics and science



Notes: * indicates mean-performance estimates that are statistically significantly above or below PISA 2018 estimates for North Macedonia.

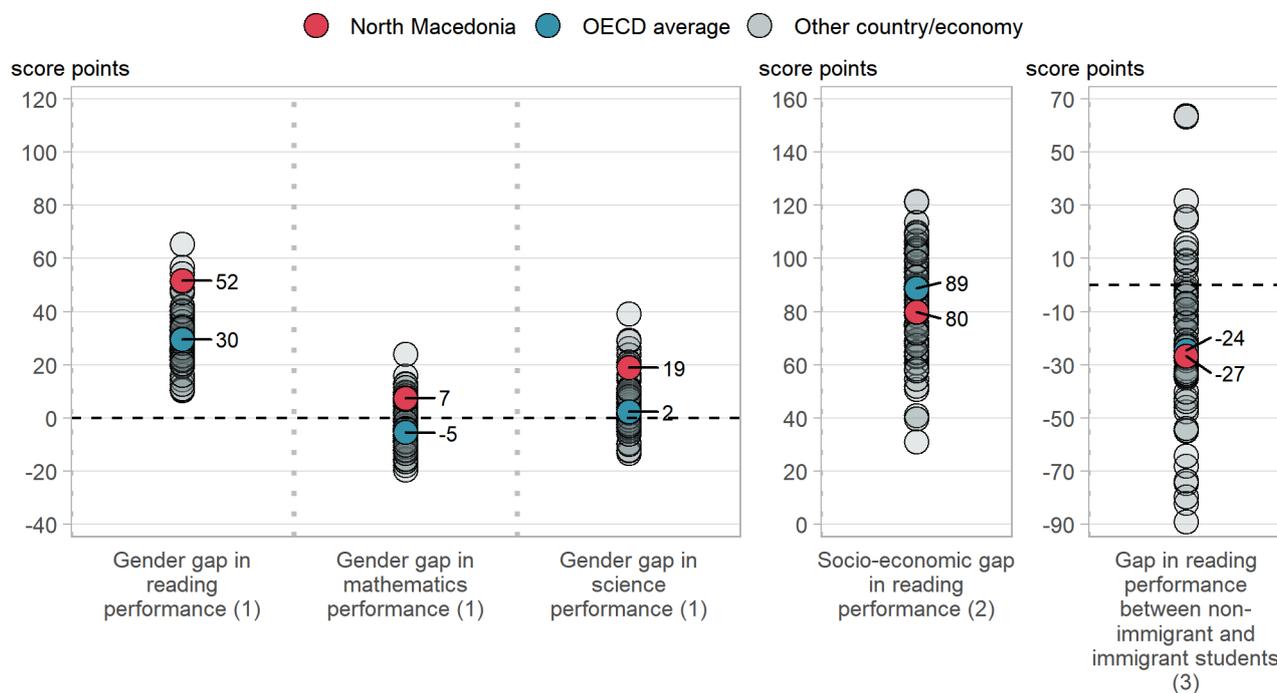
The blue line indicates the average mean performance across OECD countries with valid data in all PISA assessments. The red dotted line indicates mean performance in North Macedonia. The black line represents a trend line for North Macedonia (line of best fit).

Source: OECD, PISA 2018 Database, Tables I. B1.10, I. B1.11 and I. B1.12.

- Students in the Republic of North Macedonia improved significantly in all three subjects since 2015. While performance is still significantly below the OECD average in reading, mathematics and science, the percentage of low performers in each subject shrank by at least nine percentage points. Improvements were observed throughout the performance distribution, as the lowest- and highest-achieving students improved their proficiency between 2015 and 2018. The highest- and lowest-performing students in mathematics saw similar improvements in performance, while the highest-performing students in science improved significantly more than the lowest-performing students.
- North Macedonia also participated in the reading assessment in PISA 2000; if these results were taken into account, mean reading performance in North Macedonia would be classified as stable.

Where All Students Can Succeed

Figure 3. Differences in performance related to personal characteristics



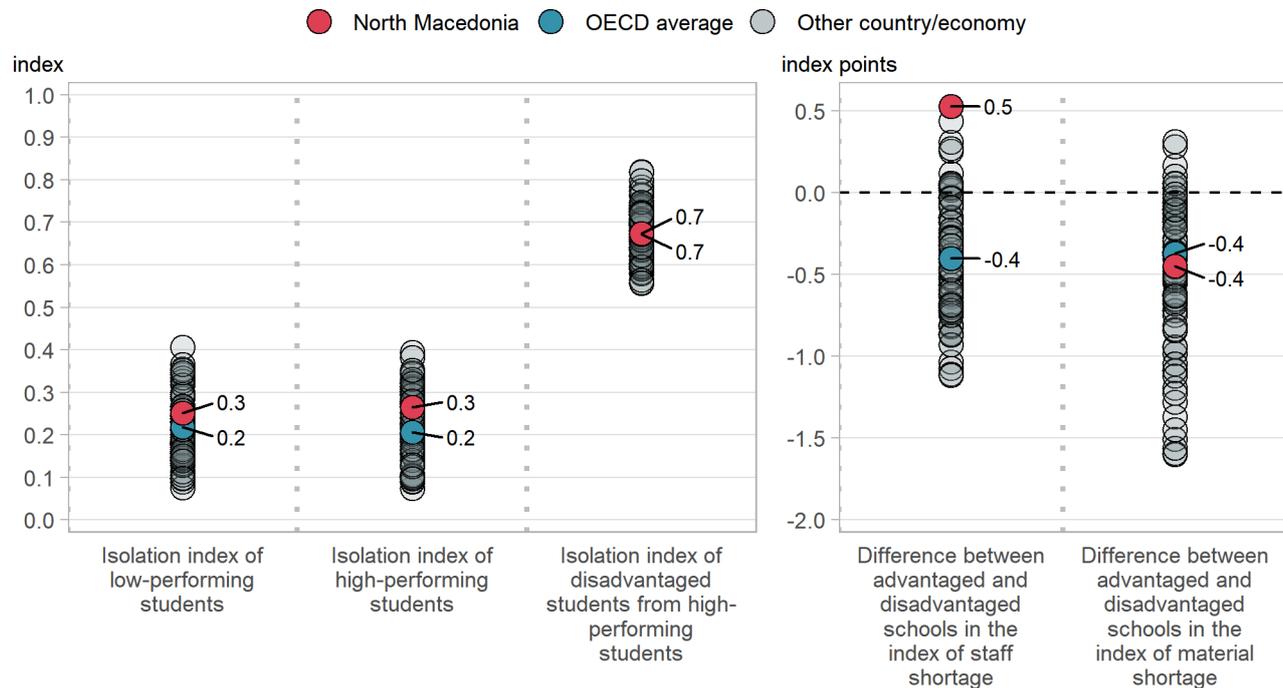
Notes: Only countries and economies with available data are shown. (1) Girls' minus boys' performance; (2) Advantaged minus disadvantaged students' performance; (3) Immigrants' minus non-immigrants' performance in reading; After accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2018 Database, Tables II.B1.2.3, II.B1.7.1, II.B1.7.3, II.B1.7.5 and II.B1.9.3.

Equity related to socio-economic status

- In North Macedonia, socio-economically advantaged students outperformed disadvantaged students in reading by 80 score points in PISA 2018. This is smaller than the average difference between the two groups (89 score points) across OECD countries.
- Some 1% of advantaged students in North Macedonia, but 0% of disadvantaged students, were top performers in reading in PISA 2018. On average across OECD countries, 17% of advantaged students, and 3% of disadvantaged students, were top performers in reading.
- Socio-economic status was a strong predictor of performance in mathematics and science in all PISA participating countries. It explained 11% of the variation in mathematics performance in PISA 2018 in North Macedonia (compared to 14% on average across OECD countries), and 10% of the variation in science performance (compared to the OECD average of 13% of the variation).
- Some 13% of disadvantaged students in North Macedonia were able to score in the top quarter of reading performance within North Macedonia, indicating that disadvantage is not destiny. On average across OECD countries, 11% of disadvantaged students scored amongst the highest performers in reading in their countries.
- In North Macedonia, low- and high-performing students are clustered in the same schools more often than the OECD average.

Figure 4. School segregation, and gap in material and staff shortage between advantaged and disadvantaged schools



Notes: Only countries and economies with available data are shown. The isolation indices ranging from 0 (no segregation) to 1 (full segregation) measure whether low-/high-performing students or disadvantaged students are more or less concentrated in some schools. See detailed description of the indices in Volume II Chapter 4.

Source: OECD, PISA 2018 Database, Tables II.B1.4.1, II.B1.4.8, II.B1.5.13 and II.B1.5.14.

- School principals in North Macedonia reported less staff shortage and more material shortage than the OECD average; and school principals of disadvantaged schools reported less often staff shortage than principals of advantaged schools. In North Macedonia, 2% of students enrolled in a disadvantaged school and 5% of students enrolled in an advantaged school attend a school whose principal reported that the capacity of the school to provide instruction is hindered at least to some extent by a lack of teaching staff. On average across OECD countries, 34% of students in disadvantaged schools and 18% of students in advantaged schools attend such a school.
- According to school principals in North Macedonia, 39% of teachers in advantaged schools and 68% of teachers in disadvantaged schools are “fully certified”. The proportions of teachers with at least a master’s degree are larger in advantaged schools than in disadvantaged schools.
- Many students, especially disadvantaged students, hold lower ambitions than would be expected given their academic achievement. In North Macedonia, about one in seven high-achieving disadvantaged students – but 1 in 20 high-achieving advantaged students – do not expect to complete tertiary education.

Equity related to gender

- In North Macedonia, girls scored higher than boys in mathematics by seven score points. Across OECD countries, boys outperformed girls by five score points. While girls slightly outperformed boys in science (by two score points) on average across OECD countries in PISA 2018, in North Macedonia girls outperformed boys in science by 19 score points.

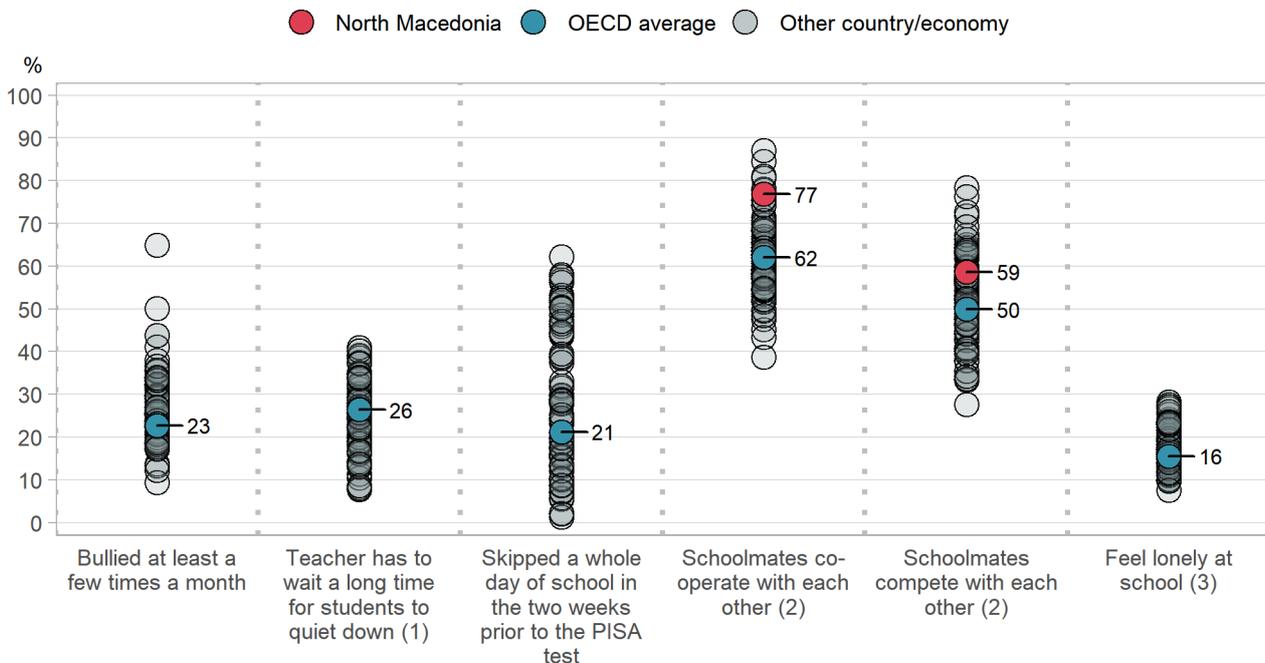
- Amongst high-performing students in mathematics or science, one in seven boys in North Macedonia expect to work as an engineer or science professional at the age of 30, while one in five girls expects to do so (the difference is not statistically significant). One in seven high-performing girls expect to work in health-related professions, while fewer than one in ten high-performing boys expect to do so (the difference is not statistically significant). Some 10% of boys and 3% of girls in North Macedonia expect to work in ICT-related professions.

What School Life Means for Students' Lives

How is the school climate in North Macedonia?

- In North Macedonia, 77% of students reported that their schoolmates co-operate with each other (OECD average: 62%) and 59% reported that they compete with each other (OECD average: 50%).

Figure 5. School climate



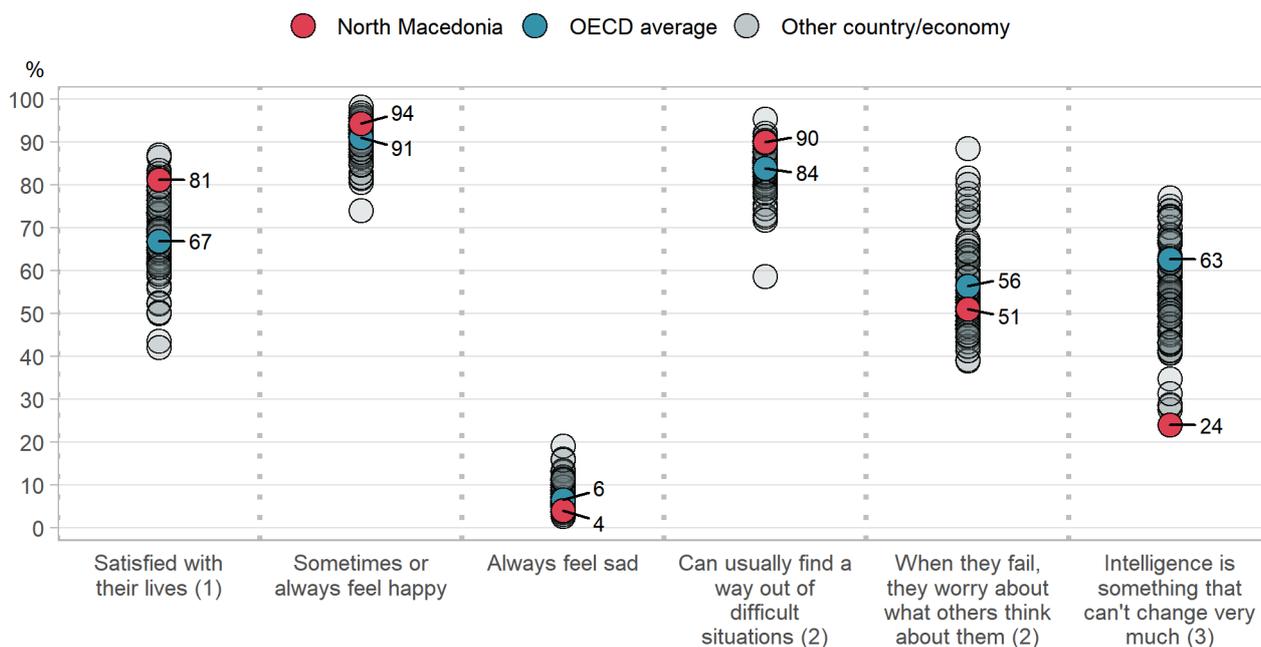
Notes: Only countries and economies with available data are shown. (1) In every or most language-of-instruction lessons; (2) Very or extremely true; (3) Agreed or strongly agreed.

Source: OECD, PISA 2018 Database, Tables III.B1.2.1, III.B1.3.1, III.B1.4.1, III.B1.8.1, III.B1.8.2 and III.B1.9.1

How do students in North Macedonia feel about their lives and learning?

- In North Macedonia, 81% of students (OECD average: 67%) reported that they are satisfied with their lives (students who reported between 7 and 10 on the 10-point life-satisfaction scale).
- Some 94% of students in North Macedonia reported sometimes or always feeling happy and about 4% of students reported always feeling sad. In most countries and economies, students were more likely to report positive feelings when they reported a stronger sense of belonging at school and greater student co-operation, and were more likely to express sadness when they were bullied more frequently.
- In North Macedonia, 90% of students agreed or strongly agreed that they can usually find a way out of difficult situations (OECD average: 84%), and 51% agreed or strongly agreed that, when they fail, they worry about what others think of them (OECD average: 56% of students). In almost every education system, including North Macedonia, girls expressed greater fear of failure than boys, and this gender gap was considerably wider amongst top-performing students.
- A majority of students across OECD countries holds a growth mindset (they disagreed or strongly disagreed with the statement "Your intelligence is something about you that you can't change very much"). In North Macedonia, 24% of students hold a growth mindset.

Figure 6. Student well-being and growth mindset



Notes: Only countries and economies with available data are shown. (1) Between 7 and 10 on the life-satisfaction scale; (2) Agreed or strongly agreed; (3) Disagreed or strongly disagreed.

Source: OECD, PISA 2018 Database, Tables III.B1.11.1, III.B1.12.1, III.B1.12.2, III.B1.13.1, III.B1.13.2 and III.B1.14.1

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; North Macedonia did not participate in the assessment of global competence. PISA 2018 also included an assessment of young people's financial literacy, which was optional for countries and economies. Results for reading, mathematics and science are released on 3 December 2019 and results for global competence and financial literacy in 2020.

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. In North Macedonia, 5 569 students, in 120 schools, completed the assessment, representing 17 820 15-year-old students (95% of the total population of 15-year-olds).

The assessment

- Computer-based tests were used in most countries (North Macedonia, however, used a pen-and-paper test), 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. More than 15 hours 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 chose 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.

References

OECD (2019), *PISA 2018 Results (Volume I): What Students Know and Can Do*, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/5f07c754-en>

OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/b5fd1b8f-en>

OECD (2019), *PISA 2018 Results (Volume III): What School Life Means for Students' Lives*, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/acd78851-en>

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/municipalities: Beijing, Shanghai, Jiangsu and Zhejiang. In PISA 2015, the four PISA participating Chinese provinces/municipalities 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.

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document, as well as any data and any map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

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

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

Explore, compare and visualise more data and analysis using: <http://gpseducation.oecd.org/>.

Questions can be directed to:

PISA team
Directorate for Education and Skills
edu.pisa@oecd.org

Country note authors:

F. Avvisati, A. Echazarra, P. Givord and M. Schwabe
Directorate for Education and Skills