


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 around the world that assesses the extent to which they have acquired the key knowledge and skills essential for full participation in society. In parallel, PISA also looks into the policies and practices used in schools and school systems, and their relationship with education outcomes more generally, through background questionnaires. *PISA 2018 Volume V: Effective Policies, Successful Schools* presents these results.

As PISA consistently finds, after a certain threshold is reached, it's not how much money a country invests in its education system that makes the greatest difference, but rather how that money is allocated. When governments have to make tough choices about how to spend their money most effectively, especially in times of economic challenges, they can see – through PISA – which subgroup of students (or schools) may be most affected by a crisis, and which policies and practices have the strongest associations with performance, equity in education and student well-being. They can then make the necessary trade-offs and spending decisions, to meet the specific needs of their students, based on hard data.

Germany

Key findings

- Amongst countries and economies whose cumulative expenditure was greater than USD 50 000 per student, which include Germany, higher expenditure on education was not significantly associated with higher scores in the PISA reading test. While cumulative expenditure per student from the age of 6 to 15 is around USD 100 000 in Germany, Canada and the Netherlands, students in Canada scored higher than Germany in reading and students in the Netherlands scored lower than Germany.
- A socio-economically disadvantaged student in Germany was about 1.5 times more likely than an advantaged student (more than twice as likely, on average across OECD countries) to have repeated a grade at least once, after accounting for students' performance in the PISA reading test. Countries/economies with smaller shares of students who had repeated a grade showed higher mean performance and greater equity, even after accounting for per capita GDP.
- According to the PISA 2018 results, 33% of students attended a school with an effective online learning platform in Germany, while on average across OECD countries, more than 50% of students attended such schools. Socio-economic disparities were observed in Germany as in many other countries: 37% of students in advantaged schools attended a school whose principal reported that the school has an effective online learning platform, while only 30% of students in disadvantaged schools attended such a school.
- In Germany, socio-economic disparities (in favour of advantaged students) in learning time in regular school lessons were observed in science and foreign-language lessons, with the biggest gap in foreign-language lessons. The disparities are some of the largest amongst PISA-participating countries and economies: advantaged students spent 66 minutes more per week in foreign-language lessons than

disadvantaged students. Learning time also varies between different types of schools. Students in private schools reported to spend 65 minutes more per week in science lessons than students in public schools. Regarding learning time in foreign-language lessons, students in private schools reported to spend 65 minutes more per week than students in public schools, and 15-year-old students in lower-secondary schools reported to spend 88 minutes more per week than those in upper-secondary schools.

A higher percentage of advantaged than disadvantaged students in Germany had attended pre-primary education which is related to better reading performance at age 15

- In Germany, 98% of students had attended pre-primary education at least one year and 95% of students had attended for at least two years. On average across OECD countries, 94% of students had attended pre-primary education at least one year and 80% of students had attended for at least two years (Table V.B1.2.1).
- On average across OECD countries, students who had attended pre-primary education for at least two years but less than three years scored 45 points higher (491 points) in reading than students who had not attended or had attended for less than one year (444 points) (Table V.B1.2.4).
- Similarly, in Germany, students who had attended pre-primary school for at least two years but less than three years outperformed those students who had not attended or had attended for less than a year by 74 score points (512 vs. 438).
- In Germany, 1% of advantaged students compared with 5% of disadvantaged students had not attended or had attended pre-primary education for less than one year, compared with 3% of advantaged and 10% of disadvantaged students on average across OECD countries (Table V.B1.2.2).

Early tracking does not translate into a more equitable education system

- Selecting students into different programmes at an earlier age was correlated with less equity in reading performance, even after accounting for per capita GDP (Figure V.3.9). On average across OECD countries, students are selected into different programmes at the age of 14.2, while in Germany the age at selection is 10 years.
- Some 3% of 15-year-old students were enrolled in a vocational programme in Germany, while 14% of students were in such a programme on average across OECD countries. In Germany, differences in reading performance between students in general (academic) programmes and those in vocational programmes were not statistically significant, after accounting for students' and schools' socio-economic profile, in contrast with the OECD average difference of 28 points in favour of students in general programmes (Table V.B1.3.2). At the system level, across OECD countries, school systems with larger shares of students in general programmes generally showed greater equity in reading performance, even after accounting for per capita GDP.

Principals in Germany reported similar levels of shortages of education staff in 2015 and 2018

- On average across OECD, principals reported fewer shortages of education staff in 2018 than in 2015. In contrast, in Germany, principals' reports were similar in 2015 and 2018 (Table V.B1.4.2).
- According to principals' reports, in Germany, and on average across OECD countries, a lack of teaching staff is the biggest hindrance to learning amongst the issues related to teaching and assistance staff (Figure V.4.3).

- In Germany, perceived shortages of education staff were negatively related to student achievement in reading, before and after accounting for students' and schools' socio-economic profile. Overall, in 17 countries and economies, students attending schools with more shortages scored lower in reading than students in schools with fewer shortages of staff, even after accounting for students' and schools' socio-economic profile (Table V.B1.4.1 and Figure V.4.2).

In Germany, only 33% of students attend a school with an effective online learning platform; by contrast, on average across OECD countries, 54% of students attend such a school

- An effective, online learning platform – especially when remote learning becomes education's lifeline – has become a must-have if countries are to make good use of whatever computer hardware they make available to their students. Moreover, such an online platform is related to equity in student performance in all core subjects, on average, across all countries and economies, before and after accounting for per capita GDP. In Germany, 37% of students in advantaged schools attended a school whose principal reported that the school has an effective online learning platform, while only 30% of students in disadvantaged schools attended such a school according to the PISA 2018 results. This is below the OECD average, with 59% of students in advantaged schools and 49% of students in disadvantaged schools attending a school whose principal reported that the school has an effective online learning platform (Table V.B1.5.16).
- In Germany, differences in reading scores amongst students attending schools whose principal reported fewer shortages of material resources were not statistically significant, before and after accounting for students' and schools' socio-economic profile. This is in contrast to the average across OECD countries and in 12 countries and economies where reading scores were higher amongst students attending schools whose principal reported fewer shortages of material resources, after accounting for students' and schools' socio-economic profile (Table V.B1.5.2).
- In Germany, the number of computers available to students (0.61 computer per student) is fewer than the average across OECD countries (0.85 computer per student) (Table V.B1.5.6). Portable computers, including laptops and tablets, as a share of total computers available to students, became more prevalent in 2018 (25%) compared with 2015 (18%) in Germany, but this is still less than the average across OECD countries (40%) (Tables V.B1.5.8 and V.B1.5.9). Data show that the distribution of computers for schoolwork at home is not equitable in most countries and economies participated in PISA 2018. In Germany, 98% of students in advantaged schools reported to have a computer for schoolwork at home, while 83% of students in disadvantaged schools reported so (Table V.B1.9.2).
- Moreover, in countries and economies with higher mean performance in reading, there tended to be smaller differences in material resources between advantaged and disadvantaged schools; in some cases, disadvantaged schools tended to have more material resources than advantaged schools. In Germany these differences were not statistically significant (Figure V.5.11 and Table V.B1.5.2).

In Germany, and on average across OECD countries, after a certain number of hours, there are diminishing returns to spending more time in regular lessons

- On average across OECD countries, and in Germany, performance in reading improved with each additional hour of language-of-instruction lessons per week, up to three hours. However, this positive association between learning time in regular language-of-instruction lessons and reading performance weakened amongst students who spent more than three hours per week in these lessons (Table V.B1.6.5). This may imply that struggling students may have been given more language-of-instruction lessons to catch up with course contents.

- Consistent with the average hump-shaped pattern observed across OECD countries, system level analyses show that education systems where more students tended to spend extremely short or long hours in regular lessons tended to score lower in reading (Figures V.6.13 and V.6.14).
- In Germany, students who spent 2 hours or less per week in language-of-instruction lessons scored at least 75 points lower in reading than students who spent a moderate amount of time – 3 hours or less – in these lessons (Table V.B1.6.5).

Advantaged students spend more time in foreign-language lessons than disadvantaged students

- In Germany, and on average across OECD countries, socio-economic disparities in learning time in regular school lessons are most prominent in foreign-language lessons and science lessons. Equal access to foreign-language learning is related to greater equity across OECD countries (Figure V.6.15).
- Disadvantaged students in Germany reported spending 3.9 hours per week in foreign-language lessons, compared with 3.3 hours, on average across OECD countries, while advantaged students reported spending 5 hours per week, compared with 4 hours, on average across OECD countries. This means that, in Germany, advantaged students spent 66 minutes per week more than disadvantaged students in foreign-language lessons (Table V.B1.6.3).
- Learning time also varies between different types of schools. In Germany, students in private schools reported to spend 65 minutes more per week in science lessons than students in public schools. Regarding learning time in foreign-language lessons, students in private schools reported to spend 65 minutes more per week than students in public schools, and 15-year-old students in lower-secondary schools reported to spend 88 minutes more per week than those in upper-secondary schools (Table V.B1.6.4).

Various aspects of quality assurance and improvement actions at school are related to greater equity in education

- Those countries/economies that show greater equity in education tended to use student assessments more frequently to inform parents about their child's progress and identify aspects of instruction/curriculum that could be improved. For every 10 percentage-point increase in the share of parents who discussed their child's progress on the teachers' initiative, the average reading score improved by 10 points, on average across the 74 countries and economies with available data. These results imply that sharing the results of student assessments and discussing with parents their child's progress may be an effective way for schools to be accountable for their students' learning.
- In Germany, 90% of principals reported using student assessments to inform parents about their child's progress, and 41% reported using student assessments to identify aspects of instruction or the curriculum that could be improved (Table V.B1.8.1).
- Those countries/economies that show greater equity in education also tended to use written specifications for student performance based on the school's initiative, seek written feedback from students based on district or national policies, and have regular consultations on school improvement at least every six months, based on district or national policies.
- In Germany, 35% of students attended a school whose principal reported having written specifications for student performance on the school's initiative (34% of students on average across OECD countries), and 3% attended schools that reported seeking written feedback from students based on district or national policies (12% on average). Some 4% were in schools that have regular consultations on school improvement, at least every six months, based on district or national policies (11% on average) (Table V.B1.8.11).

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. In Germany, 5 451 students, in 226 schools, completed the assessment, representing 734 915 of 15-year-old students (99% of the total population of 15-year-olds).

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. 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 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.

References

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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.

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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/>.

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