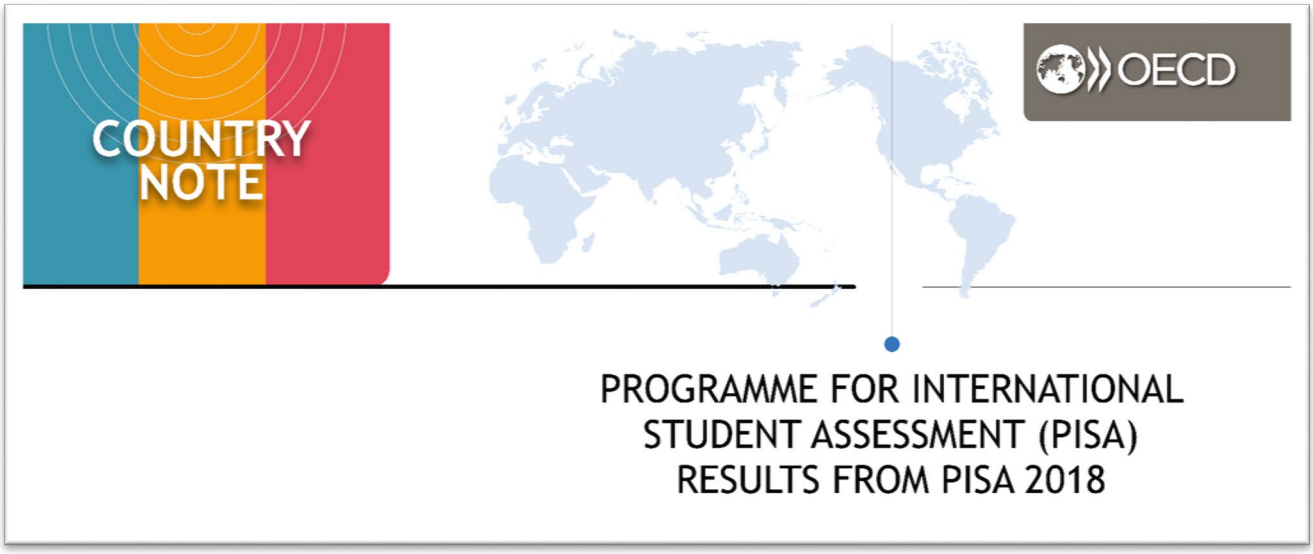

The Programme for International Student Assessment (PISA) is a triennial survey of 15-year-old students around the world that assesses the extent to which they have acquired the key knowledge and skills essential for full participation in society. In parallel, PISA also looks into the policies and practices 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.

United States

Key findings

- Amongst countries and economies whose cumulative expenditure was greater than USD 50 000 per student, which include the United States (USD 121 917 per student), 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 or less than USD 100 000 in Canada, Estonia and Ireland, students in these countries scored higher than in the United States in reading.
- Some 27% of disadvantaged students in the United States had not attended or had attended pre-primary education for less than one year compared with 10% of disadvantaged students on average across OECD countries.
- In the United States, virtually all 15-year-old students are enrolled in general academic programmes compared to 85% of students on average across OECD countries.
- In the United States, even though more than 70% of students in both advantaged and disadvantaged schools attend a school with an effective online learning platform, socio-economic disparities are observed in other aspects of schools' capacity to enhance teaching and learning using digital devices. Disadvantaged schools might not have access to sufficient Internet bandwidth or speed, or to teachers who have the necessary technical and pedagogical skills to integrate digital devices into instruction.
- In the United States, socio-economic disparities in learning time in regular school lessons were observed in language-of-instruction, mathematics, science and foreign-language lessons, with the biggest gaps in foreign-language lessons. Advantaged students spent 60 minutes more per week in foreign-language lessons than disadvantaged students.

A higher percentage of advantaged than disadvantaged students in the United States had attended pre-primary education for at least two years – which is related to better reading performance at age 15

- In the United States, 9% of advantaged students compared with 27% 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).
- On average across OECD countries, students who had attended pre-primary education for at least two years but less than three scored at least 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 the United States, students who had attended pre-primary school for at least two years but less than three outperformed those students who had not attended or had attended for less than a year by 20 score points.

Countries that do not practice early tracking and offer only one instructional programme to 15-year-old students, such as in the United States, scored higher in reading, on average

- Students in the United States are selected into different programmes at 16 years or older, compared to the OECD average age at selection of 14 years (Figure V.3.9). In PISA 2018, education systems with a larger number of education programmes available to 15-year-olds generally showed lower mean performance in reading and less equity in reading performance (Table V.3.12).
- Of the 15 countries and economies with mean scores in reading higher than 500 points, 9 countries, including the United States, offer one instructional programme to 15-year-olds compared to three programmes on average across OECD countries. What's more, students in the United States scored 18 points higher in reading than the OECD average (Figure V.3.8).
- In the United States, virtually all 15-year-old students are enrolled in general academic programmes compared to 85% of students on average across OECD countries (Table V.B1.3.1).

Grade repetition affects students in disadvantaged schools disproportionately and is negatively related to holding a growth mindset

- In the United States, 15% of students in disadvantaged schools (20% on average across OECD countries) had repeated a grade at least once, compared to only 3% of students in advantaged schools (5% on average across OECD countries) (Table V.B1.2.10).
- In the United States, the percentage of students who hold a growth mindset (i.e. they believe that their intelligence is something they can change) was 15 percentage points higher amongst advantaged students than amongst disadvantaged students, compared to the OECD average difference of 12 percentage points in favour of advantaged students (Table III.B1.14.3).
- Students who had not repeated a grade in primary or secondary school in the United States were more than twice as likely as students who had repeated a grade to endorse a growth mindset, after accounting for students' and schools' socio-economic profile (Figure V.2.13 and Table V.B1.2.17).

In 2018, principals in the United States reported shortages of education staff similar to those reported by their counterparts in 2015

- On average across OECD countries, principals reported fewer shortages of education staff in 2018 than in 2015. In contrast, in the United States, principals' reports were similar in 2015 and 2018 (Table V.B1.4.2).
- According to principals' reports in the United States, and on average across OECD countries, a shortage of assistance staff is the biggest hindrance to learning (Figure V.4.3).
- In the United States, perceived shortages of education staff were not related to student achievement in reading 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 the United States, even though there are small differences in the distribution of material resources, schools vary in their capacity to enhance teaching and learning using digital devices

- On average across OECD countries and in 12 countries and economies, students attending schools whose principal reported fewer shortages of material resources scored higher in reading. But in the United States, there was no performance difference between students in schools whose principal reported fewer shortages and those in schools whose principals reported more shortages, even after accounting for students' and schools' socio-economic profile (Table V.B1.5.2).
- 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 the United States, students scored above the OECD average in reading by 18 points, while differences in material resources between advantaged and disadvantaged schools, according to principals' reports, were not statistically significant (Figure V.5.11 and Table V.B1.5.2).
- In the United States, there was a widespread increase in the portable computer-student ratio between 2015 and 2018 (Table V.B1.5.8). In both advantaged and disadvantaged schools, at least 8 out of 10 computers were portable. The ability to provide remote education for all students depends crucially on the availability of digital devices at home. Data show that the distribution of computers for schoolwork at home is not equitable in most of countries and economies participated in PISA 2018. In the United States, 97% of students in advantaged schools reported to have a computer for school work at home, while 75% of students in disadvantaged schools reported so (Table V.B1.9.2). It would be particularly important to provide portable digital devices to students in disadvantaged schools.
- 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 the United States, a majority of students – more than 70% – in both advantaged and disadvantaged schools attended a school whose principal reported that the school has an effective online learning platform. This is significantly higher than the average across all countries and economies, with 58.8% of students in advantaged schools and 48.8% 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).
- However, even though advantaged and disadvantaged schools in the United States have access to an effective online learning platform, 93% of principals in advantaged schools reported having sufficient

Internet bandwidth or speed, compared to 74% of principals in disadvantaged schools who so reported. Furthermore, 84% of principals in advantaged schools reported that teachers have the necessary technical and pedagogical skills to integrate digital devices into instruction, compared to just 54% of principals in disadvantaged schools who so reported (Table V.B1.5.16).

In the United States, 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 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. In the United States, students who reported to spend more than four hours but five hours or less performed higher scores in reading than other students (Table V.B1.6.5).
- 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 the United States, advantaged students spent more time in regular school lessons than disadvantaged students

- 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 (Table V.B1.6.3). Equal access to foreign-language learning is related to greater equity across OECD countries (Figure V.6.15).
- In the United States, students' socio-economic disparities in learning time in regular school lessons were observed not only in foreign-language and science lessons, but also in reading and mathematics lessons (Table V.B1.6.3).
- Disadvantaged students in the United States reported spending 2.5 hours per week in foreign-language lessons, compared with 3.3 hours on average across OECD countries, while advantaged students reported spending 3.5 hours per week, compared with 4 hours on average across OECD countries. This means that, in the United States, advantaged students spent 60 minutes per week more than disadvantaged students in foreign-language lessons (Table V.B1.6.3). This may imply that advantaged students have more opportunities to learn foreign languages than disadvantaged students do, and that could lead to unequal job opportunities later on. It could also mean that certain groups of students will be unprepared for living with others from different backgrounds if exposure to other languages is related to students' ability to communicate across cultures.

Various 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 (Figure III.10.3).
- In the United States, 87% of students attended a school whose principal reported using student assessments to inform parents about their child's progress (95% on average across OECD countries),

and 85% were in a school whose principal reported using student assessments to identify aspects of instruction or the curriculum that could be improved (78% on average) (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 (Table V.B1.8.16).
- In the United States, some 28% of students were in schools whose principal reported having written specifications for student performance on the school's initiative (34% on average across OECD countries), and 24% were in schools whose principal reported seeking feedback from students based on district or national policies (12% on average). Some 38% of students attended a school whose principal reported having 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 the United States, 4 838 students completed the assessment, representing 3 559 045 15-year-old students (86% 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 and science 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.

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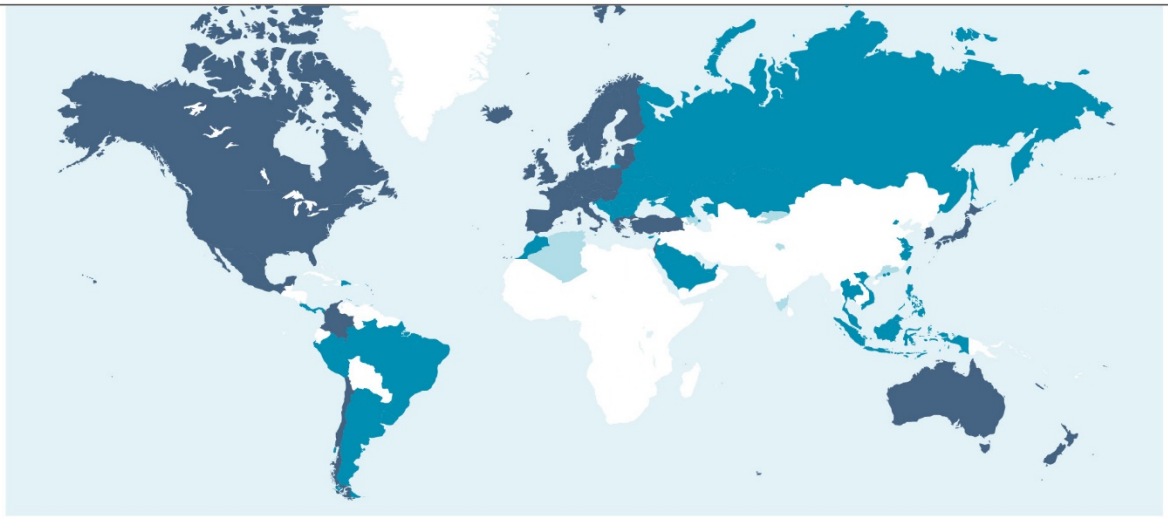
Map of PISA countries and economies



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, Cyprus[1], 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.

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/.

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