PISA 2018 Results

EFFECTIVE POLICIES, SUCCESSFUL SCHOOLS

VOLUME V

Programme for International Student Assessment

OECD

PISA 2018 Results (Volume V)

EFFECTIVE POLICIES, SUCCESSFUL SCHOOLS

OECD

BETTER POLICIES FOR BETTER LIVES

Please cite this publication as:
OECD (2020), *PISA 2018 Results (Volume V): Effective Policies, Successful Schools*, PISA, OECD Publishing, Paris, *https://doi.org/10.1787/ca768d40-en*.

ISBN 978-92-64-40868-5 (print)
ISBN 978-92-64-37789-9 (pdf)

PISA
ISSN 1990-8539 (print)
ISSN 1996-3777 (online)

Photo credits: Cover
© LuminaStock/iStock
© Dean Mitchell/iStock
© bo1982/iStock
© karandaev/iStock
© IA98/Shutterstock
© Tupungato/Shutterstock.

Corrigenda to publications may be found on line at: *www.oecd.org/about/publishing/corrigenda.htm*.

Preface

Among its many findings, our PISA 2018 assessment shows that 15-year-old students in the four provinces of China that participated in the study – Beijing, Shanghai, Jiangsu and Zhejiang – outperformed by a large margin their peers from all of the other 78 participating education systems, in mathematics and science. Moreover, the 10% most disadvantaged students in these four provinces also showed better reading skills than those of the average student in OECD countries, as well as skills similar to the 10% most advantaged students in some of these countries. True, these four provinces in eastern China are far from representing China as a whole, but the size of each of them compares to that of a typical OECD country, and their combined populations amount to over 180 million. What makes their achievement even more remarkable is that the level of income of these four Chinese regions is well below the OECD average. The quality of their schools today will feed into the strength of their economies tomorrow.

In this context, and given the fact that expenditure per primary and secondary student rose by more than 15% across OECD countries over the past decade, it is disappointing that most OECD countries saw virtually no improvement in the performance of their students since PISA was first conducted in 2000. In fact, only seven of the 79 education systems analysed saw significant improvements in the reading, mathematics and science performance of their students throughout their participation in PISA, and only one of these, Portugal, is a member of the OECD.

During the same period, the demands placed on the reading skills of 15-year-olds have fundamentally changed. The smartphone has transformed the ways in which people read and exchange information; and digitalisation has resulted in the emergence of new forms of text, ranging from the concise, to the lengthy and unwieldy. In the past, students could find clear and singular answers to their questions in carefully curated and government-approved textbooks, and they could trust those answers to be true. Today, they will find hundreds of thousands of answers to their questions on line, and it is up to them to figure out what is true and what is false, what is right and what is wrong. Reading is no longer mainly about extracting information; it is about constructing knowledge, thinking critically and making well-founded judgements. Against this backdrop, the findings from this latest PISA round show that fewer than 1 in 10 students in OECD countries was able to distinguish between fact and opinion, based on implicit cues pertaining to the content or source of the information. In fact, only in the four provinces of China, as well as in Canada, Estonia, Finland, Singapore and the United States, did more than one in seven students demonstrate this level of reading proficiency.

There is another side to this. The kinds of things that are easy to teach are nowadays also easy to digitise and automate. In the age of artificial intelligence (AI) we need to think harder about how to develop first-class humans, and how we can pair the AI of computers with the cognitive, social and emotional skills, and values of people. AI will amplify good ideas and good practice in the same way as it amplifies bad ideas and bad practice – it is ethically neutral. However, AI is always in the hands of people who are not neutral. That is why education in the future is not just about teaching people, but also about helping them develop a reliable compass to navigate an increasingly complex, ambiguous and volatile world. Whether AI will destroy or create more jobs will very much depend on whether our imagination, our awareness, and our sense of responsibility will help us harness technology to shape the world for the better. These are issues that the OECD is currently exploring with our Education 2030 project.

PISA is also broadening the range of outcomes that it measures, including global competency in 2018, creative thinking in 2021, and learning in the digital world in 2024. The 2018 assessment asked students to express how they relate to others, what they think of their lives and their future, and whether they believe they have the capacity to grow and improve.

Measuring the well-being of 15-year-old students, the target PISA population, is particularly important, as students at this age are in a key transition phase of physical and emotional development. When it comes to those social and emotional outcomes, the top-performing Chinese provinces are among the education systems with most room for improvement.

Even across OECD countries, just about two in three students reported that they are satisfied with their lives, and that percentage shrank by five percentage points between 2015 and 2018. Some 6% of students reported always feeling sad. In almost every education system, girls expressed greater fear of failure than boys, even when they outperformed boys in reading by a large margin. Almost a quarter of students reported being bullied at least a few times a month. Perhaps most disturbingly, in one-third of countries and economies that participated in PISA 2018, including OECD countries such as Greece, Mexico and Poland, more than one in two students said that intelligence was something about them that they couldn't change very much. Those students are unlikely to make the investments in themselves that are necessary to succeed in school and in life. Importantly, having a growth mindset seems consistently associated with students' motivation to master tasks, general self-efficacy, setting learning goals and perceiving the value of school, and negatively associated with their fear of failure. Even if the well-being indicators examined by PISA do not refer specifically to the school context, students who sat the 2018 PISA test cited three main aspects of their lives that influence how they feel: life at school, their relationships with their parents, and how satisfied they are with the way they look.

It may be tempting to conclude that performing better in school will necessarily increase anxiety about schoolwork and undermine students' well-being. But countries such as Belgium, Estonia, Finland and Germany show that high performance and a strong sense of well-being can be achieved simultaneously; they set important examples for others.

Other countries show that equity and excellence can also be jointly achieved. In Australia, Canada, Denmark, Estonia, Finland, Hong Kong (China), Japan, Korea, Macao (China), Norway and the United Kingdom, for example, average performance was higher than the OECD average while the relationship between socio-economic status and reading performance was weaker than the OECD average. Moreover, one in ten disadvantaged students was able to score in the top quarter of reading performance in their country/economy, indicating that poverty is not destiny. The data also show that the world is no longer divided between rich and well-educated nations and poor and badly educated ones. The level of economic development explains just 28% of the variation in learning outcomes across countries if a linear relationship is assumed between the two.

However, it remains necessary for many countries to promote equity with much greater urgency. While students from well-off families will often find a path to success in life, those from disadvantaged families have generally only one single chance in life, and that is a great teacher and a good school. If they miss that boat, subsequent education opportunities will tend to reinforce, rather than mitigate, initial differences in learning outcomes. Against this background, it is disappointing that in many countries a student's or school's post code remains the strongest predictor of their achievement. In Argentina, Bulgaria, the Czech Republic, Hungary, Peru, the Slovak Republic and the United Arab Emirates, a typical disadvantaged student has less than a one-in-eight chance of attending the same school as high achievers.

Furthermore, in over half of the PISA-participating countries and economies, principals of disadvantaged schools were significantly more likely than those of advantaged schools to report that their school's capacity to provide instruction is hindered by a lack or inadequacy of educational material; and in 31 countries and economies, principals of disadvantaged schools were more likely than those of advantaged ones to report that a lack of teaching staff hinders instruction. In these systems, students face a double disadvantage: one that comes from their home background and another that is created by the school system. There can be numerous reasons why some students perform better than others, but those performance differences should never be related to the social background of students and schools.

Clearly, all countries have excellent students, but too few countries have enabled all of their students to excel and fulfill their potential to do so. Achieving greater equity in education is not only a social justice imperative, it is also a way to use resources more effectively, increase the supply of skills that fuel economic growth, and promote social cohesion. For those with the right knowledge and skills, digitalisation and globalisation have been liberating and exciting; for those who are insufficiently prepared, these trends can mean vulnerable and insecure work, and a life with few prospects. Our economies are linked together by global chains of information and goods, but they are also increasingly concentrated in hubs where comparative advantage can be built and renewed. This makes the distribution of knowledge and wealth crucial, and it can only be possible through the distribution of education opportunities.

Equipping citizens with the knowledge and skills necessary to achieve their full potential, to contribute to an increasingly interconnected world, and to convert better skills into better lives needs to become a more central preoccupation of policy makers around the world. Fairness, integrity and inclusiveness in public policy thus all hinge on the skills of citizens. In working to achieve these goals, more and more countries are looking beyond their own borders for evidence of the most successful and efficient education policies and practices.

PISA is not only the world's most comprehensive and reliable indicator of students' capabilities, it is also a powerful tool that countries and economies can use to fine-tune their education policies. That is why the OECD produces this triennial report on the state of education around the globe: to share evidence of the best policies and practices, and to offer our timely and targeted support to help countries provide the best education possible for all of their students.

Angel Gurría
OECD Secretary-General

Foreword

Up to the end of the 1990s, OECD comparisons of education outcomes were mainly based on measures of years of schooling, which is not a reliable indicator of what people actually know and can do. With the Programme for International Student Assessment, PISA, we tried to change this. The transformational idea behind PISA lay in testing the knowledge and skills of students directly, through a metric that was internationally agreed upon; linking that with data from students, teachers, schools and systems to understand performance differences; and then harnessing the power of collaboration to act on the data, both by creating shared points of reference and by leveraging peer pressure.

The aim with PISA was not to create another layer of top-down accountability, but to help schools and policy makers shift from looking upwards within the bureaucracy towards looking outwards to the next teacher, the next school, the next country. In essence, PISA counts what counts, and makes that information available to educators and policy makers so they can make more informed decisions.

The OECD countries that initiated PISA tried to make PISA different from traditional assessments in other ways too. In a world that rewards individuals increasingly not just for what they know, but for what they can do with what they know, PISA goes beyond assessing whether students can reproduce what they have learned in school. To do well in PISA, students have to be able to extrapolate from what they know, think across the boundaries of subject-matter disciplines, apply their knowledge creatively in novel situations and demonstrate effective learning strategies. If all we do is teach our children what we know, they might remember enough to follow in our footsteps; but if we teach them how to learn, they can go anywhere they want.

Some people argued that the PISA tests are unfair, because they confront students with problems they have not encountered in school. But life is unfair, because the real test in life is not whether we can remember what we learned at school yesterday, but whether we will be able to solve problems that we can't possibly anticipate today.

But the greatest strength of PISA lies in its working methods. Most assessments are centrally planned and then contracted to engineers who build them. That's how tests are created that are owned by a company – but not by the people who are needed to change education. PISA turned that on its head. The idea of PISA attracted the world's best thinkers and mobilised hundreds of experts, educators and scientists from the participating countries to build a global assessment. Today, we would call that crowdsourcing; but whatever we call it, it created the ownership that was critical for success.

In a nutshell, PISA owes its success to a collaborative effort between the participating countries, the national and international experts and institutions working within the framework of the PISA Consortium, and the OECD Secretariat. Subject-matter experts, practitioners and policy makers from the participating countries worked tirelessly to build agreement on which learning outcomes are important to measure and how to measure them best; to design and validate assessment tasks that can reflect those measures adequately and accurately across countries and cultures; and to find ways to compare the results meaningfully and reliably. The OECD Secretariat co-ordinated this effort and worked with countries to make sense of the results and compile this report.

Over the past two decades, PISA has become the world's premier yardstick for evaluating the quality, equity and efficiency of school systems, and an influential force for education reform. It has helped policy makers lower the cost of political action by backing difficult decisions with evidence – but it has also raised the political cost of inaction by exposing areas where policy and practice have been unsatisfactory. Today, PISA brings together more than 90 countries, representing 80% of the world economy, in a global conversation about education.

While measurement is the means, the purpose of PISA is to help countries look outwards and incorporate the results of that learning into policy and practice. That outward-looking perspective also seems to be a common trait of many high-performing education systems: they are open to the world and ready to learn from and with the world's education leaders; they do not feel threatened by alternative ways of thinking.

In the end, the laws of physics apply. If we stop pedalling, not only will we not move forward, our bicycles will stop moving at all and will fall over – and we will fall with them. Against strong headwinds, we need to push ourselves even harder. But in the face of challenges and opportunities as great as any that have gone before, human beings need not be passive or inert. We have agency, the ability to anticipate and the power to frame our actions with purpose. The best-performing PISA countries show us that high-quality and equitable education is an attainable goal, that it is within our means to deliver a future for millions of learners who currently do not have one, and that our task is not to make the impossible possible, but to make the possible attainable.

Andreas Schleicher
Director for Education and Skills
Special Advisor on Education Policy
to the Secretary-General

Acknowledgements

This report is the product of a collaborative effort between the countries and economies participating in PISA, the national and international experts and institutions working within the framework of the PISA Consortium, and the OECD Secretariat.

The development of this volume was guided by Andreas Schleicher and Yuri Belfali and managed by Miyako Ikeda. This volume was drafted by Daniel Salinas and edited by Marilyn Achiron. Statistical and analytical support was provided by Guillaume Bousquet, Rodrigo Castaneda Valle, Giannina Rech and Pablo Swedberg. Production was co-ordinated by Alison Burke. Fung Kwan Tam designed the publication and Jouve oversaw the layout of the publication. Juliet Evans provided communications support. Administrative support was provided by Thomas Marwood and Hanna Varkki. This volume also benefitted from the input and expertise of many more OECD staff members who worked on PISA 2018 at various stages of the project. Their names are listed in Annex C of this volume. Many reviewers provided feedback on earlier chapter drafts; their help in improving this volume is gratefully acknowledged.

To support the technical implementation of PISA, the OECD contracted an international consortium of institutions and experts, led by Irwin Kirsch at the Educational Testing Service (ETS). Overall co-ordination of the PISA 2018 assessment, the development of instruments, and scaling and analysis were managed by Claudia Tamassia at ETS. The development of the reading and questionnaire frameworks was facilitated by Pearson, led by John de Jong, Peter Foltz and Christine Rozunick. Sampling and weighting services were provided by Westat, led by Keith Rust. Linguistic quality control and the development of the French source version were under the responsibility of cApStAn, led by Steve Dept.

Jean-François Rouet chaired the expert group that guided the preparation of the reading assessment framework and instruments. This group included Paul van den Broek, Kevin Kien Hoa Chung, Dominique Lafontaine, John Sabatini, Sascha Schroeder and Sari Sulkunen. Fons J. R. van de Vijver chaired the expert group that guided the preparation of the questionnaire framework and instruments. This group included Dominique Lafontaine, David Kaplan, Sarah Howie, Andrew Elliot and Therese Hopfenbeck. Keith Rust chaired the Technical Advisory Group, whose members include Theo Eggen, John de Jong, Jean Dumais, Cees Glas, David Kaplan, Kit-Tai Hau, Irwin Kirsch, Oliver Lüdtke, Christian Monseur, Sophia Rabe-Hesketh, Thierry Rocher, Leslie A. Rutkowski, Matthias von Davier, Margaret Wu and Kentaro Yamamoto.

The development of the report was steered by the PISA Governing Board, chaired by Michele Bruniges (Australia), with Peggy Carr (United States), Sukit Limpijumnong (Thailand) and Carmen Tovar Sánchez (Spain) as vice chairs. Annex C of this volume lists the members of the various PISA bodies, including Governing Board members and National Project Managers in participating countries and economies, the PISA Consortium, and the individual experts and consultants who contributed to PISA 2018.

PISA

Table of contents

BOXES

FIGURES

TABLES

Executive Summary

Worldwide trends and global crises, such as technological change, growing inequality and pandemics, are posing new challenges to education systems and schools around the world. School-management policies and practices play a key role in determining how education systems respond to these challenges.

This volume of PISA 2018 Results describes the policies and practices used in the education systems of the 79 countries/economies that participated in PISA 2018. It examines how policies and practices related to grouping and selecting students, resources invested in education, the governance of education systems, and evaluations and assessments are associated with performance, equity in students' learning outcomes and student well-being. Trends in school organisation are analysed to understand how schools and school systems have changed during the past decade, and whether and how these changes are related to changes in performance and equity in students' learning outcomes.

EFFECTIVE POLICIES, SUCCESSFUL SCHOOLS: MAIN FINDINGS

On grouping and sorting students

- On average across OECD countries, 6% of students had not attended or had attended pre-primary education for less than one year. These students scored lower in reading at the age of 15 than students who had attended for between one and three years, before and after accounting for students' and schools' socio-economic profile.

- A socio-economically disadvantaged 15-year-old student was about three times more likely than an advantaged student, on average across OECD countries, to have repeated a grade at least once, even if both students scored the same in the PISA reading test. At the system level, across all participating countries and economies, those countries/economies with smaller shares of students who had repeated a grade showed higher mean reading performance and greater equity in reading performance, even after accounting for per capita GDP.

- Students in general (academic) programmes scored almost 30 points higher in reading than those in vocational programmes, on average across OECD countries, and after accounting for students' and schools' socio-economic profile. 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.

- On average across OECD countries, students in schools that group students by ability in their classes for all subjects scored eight points lower in reading than students in schools that do not group students in this way, after accounting for students' and schools' socio-economic profile.

On resources invested in education

- Some 27% of students were enrolled in schools whose principal reported that learning is hindered by a lack of teaching staff, and 33% were enrolled in schools whose principal reported that learning is hindered by a lack of assisting staff, on average across OECD countries. After accounting for students' and schools' socio-economic profile, in 17 countries/economies, students in schools with more staff shortages scored lower.

- Students attending schools whose principal reported fewer shortages of material resources scored higher in reading, on average across OECD countries and in 12 countries and economies, after accounting for students' and schools' socio-economic profile. At the system level, more shortages of educational materials were correlated with lower mean performance in reading, even after accounting for per capita GDP, across OECD countries, and across all participating countries and economies in PISA 2018.

- Around 54% of students attended a school where an effective online learning platform is available to them, on average across OECD countries. More students in advantaged schools (59% of students in advantaged schools) than in disadvantaged schools (49% of students in disadvantaged schools) had access to an effective online learning platform.

- 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.

- On average across OECD countries, performance in reading was positively associated with each additional hour of language-of-instruction lessons per week, up to 3 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.
- Education systems with larger shares of students in schools that offer a room(s) for homework tended to show better mean performance in reading, mathematics and science, even after accounting for per capita GDP.

On how education systems are governed

- After accounting for students' and schools' socio-economic profile, students in public schools scored higher in reading than students in private schools, on average across OECD countries (by 14 score points) and in 19 education systems (ranging from 13 score points higher in Indonesia to 117 points higher in Serbia).
- At the system level, across all countries and economies, school systems with larger shares of students in private-independent schools tended to show lower mean performance in reading, mathematics and science, after accounting for per capita GDP. This relationship was not observed across OECD countries.

On evaluations and assessments

- Countries and economies tended to show better equity in education when they: use student assessments to inform parents about their child's progress; use student assessments to identify aspects of instruction or the curriculum that could be improved; use written specifications for student performance on the school's initiative; seek feedback from students; and have regular consultations on school improvement at least every six months, based on district or national policies.

WHAT THE DATA IMPLY FOR POLICY

PISA 2018 results show considerable disparities between advantaged and disadvantaged schools related to shortages of education staff and material resources, including digital resources. Ensuring that all schools have adequate and high-quality material resources, and the appropriate support, is key if students from all backgrounds are to be given equal opportunities to learn and succeed at school.

PISA also finds that in high-performing countries/economies and in those with greater equity in education, a combination of school autonomy and more centralised accountability measures work in concert to support more effective teaching and better learning. For example, countries/economies with greater equity in education often have some mandatory accountability arrangements that are set at the district or national level, such as seeking written feedback from students or having regular consultations on school improvement at least every six months. At the same time, schools are responsible for ensuring their students' learning by, for example, developing and disseminating written standards of student performance.

Similarly, in high-performing countries/economies, implementation of a standardised policy for reading-related subjects taught at school (including a school curriculum with shared instructional materials, and staff development and training) tends to be mandatory and regulated at the district or national level, while schools encourage and make available teacher mentoring on their own initiative.

Table V.1 [1/4] Snapshot of stratification, governance and evaluations

(blue)	Countries/economies with values above the OECD average
(white)	Countries/economies with values not statistically different from the OECD average
(grey)	Countries/economies with values below the OECD average

		Percentage of students who had not attended pre-primary school or who had attended for less than a year	Percentage of students who had repeated a grade at least once in primary, lower secondary or upper secondary school	Percentage of students who are enrolled in a pre-vocational or vocational programme	Percentage of students in schools whose principal reported that their school groups students by ability in their classes for:	
					All subjects	Some subjects
		%	%	%	%	%
OECD	OECD average	6.2	11.4	13.8	5.2	48.7
	Australia	11.5	5.9	10.0	4.9	64.8
	Austria	2.6	14.4	65.8	2.1	29.2
	Belgium	1.6	30.8	42.5	5.6	41.9
	Canada	14.6	5.4	0.0	4.3	45.8
	Chile	4.5	23.2	1.8	5.3	38.0
	Colombia	7.7	40.8	19.5	11.5	19.4
	Czech Republic	2.8	4.6	33.9	0.9	55.8
	Denmark	1.2	3.2	0.1	11.0	63.4
	Estonia	4.1	2.9	0.1	3.2	55.5
	Finland	2.3	3.3	0.1	1.9	52.5
	France	1.5	16.6	19.1	6.7	36.4
	Germany	2.2	19.6	3.0	10.5	31.3
	Greece	2.7	4.0	12.9	2.3	17.3
	Hungary	0.6	8.5	16.1	0.7	77.4
	Iceland	1.6	0.9	0.0	0.1	47.8
	Ireland	10.3	6.1	0.7	5.3	47.1
	Israel	1.2	9.0	0.0	4.1	68.8
	Italy	3.3	13.2	49.3	23.2	26.7
	Japan	0.3	m	23.5	0.0	50.3
	Korea	3.6	4.5	16.5	3.3	54.6
	Latvia	5.1	3.7	1.1	1.5	44.4
	Lithuania	16.1	2.0	2.0	1.3	61.0
	Luxembourg	5.2	32.2	14.4	5.0	40.5
	Mexico	1.7	15.0	28.1	15.3	52.3
	Netherlands	2.4	17.3	25.8	4.6	75.3
	New Zealand	5.3	5.6	0.0	10.2	73.3
	Norway	3.7	m	0.0	7.6	40.2
	Poland	17.2	3.3	0.5	0.0	80.9
	Portugal	7.2	26.6	17.0	2.2	13.8
	Slovak Republic	4.5	5.5	5.0	1.5	58.7
	Slovenia	10.3	3.6	57.3	7.9	48.4
	Spain	2.3	28.7	1.2	11.1	30.5
	Sweden	4.2	3.5	0.0	1.9	23.1
	Switzerland	3.4	17.6	11.7	5.4	57.3
	Turkey	37.0	7.4	33.0	4.1	40.1
	United Kingdom	4.5	2.5	0.2	1.7	69.3
	United States	18.2	9.1	0.0	2.8	67.9

Notes: All data are based on students' reports, unless otherwise indicated.

1. Based on principals' reports about school management and the school's sources of funding.

Information on data for Cyprus: *https://oe.cd/cyprus-disclaimer*

Source: OECD PISA 2018 Database, Tables V.B1.2.2, V.B1.2.9, V.B1.3.1, V.B1.3.7, V.B1.7.1, V.B1.8.12

StatLink https://doi.org/10.1787/888934130474

Table V.1 [2/4] **Snapshot of stratification, governance and evaluations**

(shaded blue)	Countries/economies with values above the OECD average
(white)	Countries/economies with values not statistically different from the OECD average
(shaded grey)	Countries/economies with values below the OECD average

Partners	Percentage of students who had not attended pre-primary school or who had attended for less than a year	Percentage of students who had repeated a grade at least once in primary, lower secondary or upper secondary school	Percentage of students who are enrolled in a pre-vocational or vocational programme	Percentage of students in schools whose principal reported that their school groups students by ability in their classes for:	
				All subjects	Some subjects
	%	%	%	%	%
Albania	12.7	3.3	m	33.1	36.2
Argentina	3.0	29.2	15.3	7.9	47.2
Baku (Azerbaijan)	45.1	2.7	0.0	17.4	52.5
Belarus	4.5	1.4	14.1	4.0	35.6
Bosnia and Herzegovina	58.9	1.9	65.7	14.6	42.5
Brazil	9.9	34.1	9.0	10.5	8.6
Brunei Darussalam	22.5	12.0	5.5	17.1	61.7
B-S-J-Z (China)	1.3	8.3	18.1	31.7	56.2
Bulgaria	5.1	4.5	49.1	13.5	36.7
Costa Rica	9.9	28.1	12.5	58.8	21.3
Croatia	16.3	1.5	67.3	6.4	34.7
Cyprus	2.6	3.9	12.2	7.3	39.7
Dominican Republic	18.9	32.5	12.7	22.6	36.1
Georgia	19.7	3.3	0.0	3.0	20.9
Hong Kong (China)	0.9	15.7	0.0	4.0	75.2
Indonesia	20.4	15.5	19.8	15.3	26.3
Jordan	11.6	10.8	0.0	41.7	22.8
Kazakhstan	48.7	3.1	19.6	21.1	55.2
Kosovo	33.2	4.5	39.8	25.3	46.5
Lebanon	10.4	34.5	0.0	16.4	38.2
Macao (China)	0.9	30.1	1.0	5.1	62.4
Malaysia	3.7	m	10.2	23.6	45.9
Malta	2.1	5.5	0.0	2.8	68.0
Moldova	8.2	2.6	3.5	6.7	25.2
Montenegro	30.3	1.6	64.5	31.1	30.4
Morocco	27.0	49.3	0.0	19.4	6.1
North Macedonia	m	3.2	58.6	32.7	39.5
Panama	15.3	26.5	26.8	14.6	30.6
Peru	5.0	20.8	0.0	7.6	35.2
Philippines	11.4	21.1	0.0	21.1	49.8
Qatar	16.7	17.1	0.0	26.5	52.1
Romania	2.3	4.5	12.0	6.4	46.2
Russia	13.9	1.7	3.6	11.7	34.7
Saudi Arabia	51.7	11.4	0.0	52.9	24.5
Serbia	2.5	1.4	71.9	17.7	31.5
Singapore	1.7	4.8	0.0	9.2	70.1
Chinese Taipei	1.4	0.9	33.7	3.2	42.1
Thailand	1.2	6.8	22.9	14.4	55.5
Ukraine	18.5	1.6	28.0	14.9	46.8
United Arab Emirates	9.1	10.2	3.6	44.1	42.4
Uruguay	3.3	33.4	8.6	7.9	12.2
Viet Nam	3.4	4.9	0.0	19.8	56.9

Notes: All data are based on students' reports, unless otherwise indicated.
1. Based on principals' reports about school management and the school's sources of funding.
Information on data for Cyprus: *https://oe.cd/cyprus-disclaimer*
Source: OECD PISA 2018 Database, Tables V.B1.2.2, V.B1.2.9, V.B1.3.1, V.B1.3.7, V.B1.7.1, V.B1.8.12
StatLink https://doi.org/10.1787/888934130474

Table V.1 [3/4] **Snapshot of stratification, governance and evaluations**

(blue)	Countries/economies with values above the OECD average
(white)	Countries/economies with values not statistically different from the OECD average
(grey)	Countries/economies with values below the OECD average

	Percentage of students enrolled in:[1]			Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:		
	Government or public schools	Government-dependent private schools	Government-independent private schools	Written specification of student performance standards	Seeking written feedback from students	Teacher mentoring
	%	%	%	%	%	%
OECD						
OECD average	81.9	13.2	4.9	77.9	68.4	77.2
Australia	57.6	28.2	14.2	92.9	85.7	96.6
Austria	87.6	10.8	1.6	65.3	90.3	77.9
Belgium	m	m	m	59.0	51.7	88.2
Canada	91.8	3.4	4.8	83.2	58.8	85.4
Chile	34.0	56.2	9.8	83.1	72.8	54.2
Colombia	81.4	1.4	17.2	95.0	85.3	81.2
Czech Republic	93.6	5.8	0.6	86.8	62.0	96.4
Denmark	72.0	21.7	6.3	80.3	60.3	70.0
Estonia	96.1	2.3	1.6	65.7	85.4	95.0
Finland	95.9	4.1	0.0	64.6	72.6	70.0
France	80.0	11.7	8.3	46.9	17.9	73.9
Germany	96.1	3.4	0.6	68.2	53.0	27.9
Greece	94.9	1.4	3.7	45.9	41.2	79.4
Hungary	79.4	19.3	1.2	93.7	60.5	80.8
Iceland	99.2	0.8	0.0	91.5	38.0	36.2
Ireland	m	m	m	63.0	59.6	86.1
Israel	m	m	m	77.2	67.4	97.2
Italy	96.4	1.7	1.9	63.2	44.5	36.9
Japan	66.3	3.6	30.1	64.5	85.1	86.1
Korea	60.6	35.5	3.9	98.1	86.1	94.9
Latvia	98.5	0.8	0.7	84.7	90.1	82.2
Lithuania	95.8	3.0	1.2	82.9	74.7	57.5
Luxembourg	82.3	15.1	2.6	62.3	9.3	59.7
Mexico	87.9	4.2	7.9	91.6	75.3	64.2
Netherlands	36.5	63.4	0.1	70.1	87.9	93.9
New Zealand	94.2	0.0	5.8	91.0	97.1	96.9
Norway	w	w	w	88.5	66.2	89.0
Poland	95.5	3.6	0.9	76.3	77.6	93.7
Portugal	86.6	8.8	4.6	77.4	70.1	78.0
Slovak Republic	87.7	11.8	0.5	87.8	68.3	77.5
Slovenia	97.5	2.5	0.0	94.1	81.4	82.9
Spain	67.7	27.0	5.3	72.8	74.0	33.9
Sweden	80.7	19.2	0.1	97.2	79.9	89.8
Switzerland	95.5	0.7	3.8	53.1	70.4	79.1
Turkey	87.9	1.1	11.0	83.2	87.9	73.0
United Kingdom	34.0	59.8	6.2	90.4	81.2	96.9
United States	93.0	2.2	4.8	89.9	63.4	93.4

Notes: All data are based on students' reports, unless otherwise indicated.

1. Based on principals' reports about school management and the school's sources of funding.

Information on data for Cyprus: *https://oe.cd/cyprus-disclaimer*

Source: OECD PISA 2018 Database, Tables V.B1.2.2, V.B1.2.9, V.B1.3.1, V.B1.3.7, V.B1.7.1, V.B1.8.12

StatLink https://doi.org/10.1787/888934130474

Table V.1 [4/4] **Snapshot of stratification, governance and evaluations**

(shaded)	Countries/economies with values above the OECD average
(white)	Countries/economies with values not statistically different from the OECD average
(grey)	Countries/economies with values below the OECD average

		Percentage of students enrolled in:[1]			Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:		
		Government or public schools	Government-dependent private schools	Government-independent private schools	Written specification of student performance standards	Seeking written feedback from students	Teacher mentoring
		%	%	%	%	%	%
Partners	Albania	88.8	1.5	9.7	99.6	95.3	100.0
	Argentina	68.4	24.8	6.8	73.6	47.6	63.2
	Baku (Azerbaijan)	99.5	0.3	0.2	92.5	85.7	84.1
	Belarus	99.6	0.0	0.4	90.8	76.8	99.8
	Bosnia and Herzegovina	99.0	0.3	0.7	73.3	60.5	94.1
	Brazil	85.0	4.1	10.9	89.1	71.6	91.2
	Brunei Darussalam	84.3	3.5	12.1	94.2	86.3	98.6
	B-S-J-Z (China)	85.7	0.3	14.0	90.2	97.2	97.4
	Bulgaria	99.0	0.0	1.0	84.8	70.6	74.3
	Costa Rica	86.2	0.7	13.1	81.1	71.3	70.3
	Croatia	97.6	1.5	0.9	76.4	68.1	95.4
	Cyprus	83.3	0.0	16.7	82.6	45.8	94.6
	Dominican Republic	83.1	6.0	10.9	89.3	93.6	81.2
	Georgia	89.3	1.1	9.5	89.3	85.5	63.7
	Hong Kong (China)	8.6	91.1	0.3	83.5	81.6	83.3
	Indonesia	53.5	30.0	16.6	92.3	92.2	98.7
	Jordan	78.9	1.4	19.6	95.9	89.0	99.3
	Kazakhstan	91.7	2.3	6.0	99.1	93.5	99.3
	Kosovo	99.2	0.0	0.8	89.5	84.9	95.2
	Lebanon	48.4	31.2	20.4	89.0	63.8	85.6
	Macao (China)	5.7	85.3	9.0	98.0	79.3	95.6
	Malaysia	93.8	0.5	5.7	98.3	84.5	98.9
	Malta	54.9	31.4	13.7	73.2	62.2	89.6
	Moldova	99.3	0.0	0.7	91.4	90.5	96.8
	Montenegro	99.8	0.0	0.2	94.1	69.2	98.5
	Morocco	92.7	3.0	4.3	81.8	64.4	93.9
	North Macedonia	98.7	0.6	0.7	83.4	91.4	98.6
	Panama	81.9	7.2	10.8	91.3	88.7	97.7
	Peru	75.2	0.3	24.6	90.5	65.5	97.9
	Philippines	82.3	10.6	7.1	99.4	89.7	100.0
	Qatar	57.3	1.5	41.2	98.6	96.0	98.6
	Romania	98.0	1.4	0.7	91.7	92.6	88.0
	Russia	100.0	0.0	0.0	98.5	73.8	100.0
	Saudi Arabia	86.7	5.8	7.5	96.4	94.6	100.0
	Serbia	96.8	0.0	3.2	94.6	75.2	95.4
	Singapore	90.5	3.0	6.6	90.7	92.9	99.5
	Chinese Taipei	68.4	14.0	17.6	91.9	78.2	82.2
	Thailand	84.0	8.5	7.4	98.2	78.1	98.6
	Ukraine	99.2	0.4	0.4	94.0	61.0	95.4
	United Arab Emirates	38.0	23.8	38.2	99.3	90.0	96.2
	Uruguay	84.1	0.5	15.3	62.7	52.3	71.0
	Viet Nam	95.0	1.0	4.0	94.8	95.1	96.1

Notes: All data are based on students' reports, unless otherwise indicated.

1. Based on principals' reports about school management and the school's sources of funding.

Information on data for Cyprus: *https://oe.cd/cyprus-disclaimer*

Source: OECD PISA 2018 Database, Tables V.B1.2.2, V.B1.2.9, V.B1.3.1, V.B1.3.7, V.B1.7.1, V.B1.8.12

StatLink https://doi.org/10.1787/888934130474

Table V.2 [1/4] **Snapshot of educational resources**

(shaded blue)	Countries/economies with values above the OECD average
(white)	Countries/economies with values not statistically different from the OECD average
(shaded grey)	Countries/economies with values below the OECD average

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by the following factors:		Percentage of students in schools whose principal agreed or strongly agreed with the following statements:		Percentage of students in schools whose principal reported that their school has a specific programme to prepare students for responsible Internet behaviour
		A lack of teaching staff	A lack of assisting staff	The school's Internet bandwidth or speed is sufficient	An effective online learning support platform is available	
		%	%	%	%	%
OECD	OECD average	27.1	32.8	67.5	54.1	59.5
	Australia	17.0	12.4	72.4	75.9	78.3
	Austria	11.9	66.0	67.9	67.3	70.1
	Belgium	43.5	32.8	69.3	46.9	54.2
	Canada	19.4	27.9	81.4	65.1	48.9
	Chile	12.6	21.5	57.7	38.7	23.6
	Colombia	30.6	58.8	25.2	36.2	44.4
	Czech Republic	35.2	33.4	71.6	57.0	45.9
	Denmark	5.3	13.2	89.9	90.9	47.9
	Estonia	43.6	37.3	74.8	66.5	59.0
	Finland	7.3	38.0	72.9	80.0	50.5
	France	17.1	31.7	56.6	35.2	69.9
	Germany	56.9	48.8	31.7	32.7	74.1
	Greece	26.3	64.4	62.7	34.2	31.4
	Hungary	33.7	44.3	48.0	35.4	52.3
	Iceland	9.9	17.7	78.1	42.8	60.4
	Ireland	44.8	26.0	75.9	45.4	69.3
	Israel	37.6	35.9	45.6	68.2	76.7
	Italy	22.7	48.8	60.4	46.3	53.2
	Japan	52.8	31.7	45.2	24.0	54.2
	Korea	32.6	55.9	83.4	55.8	70.6
	Latvia	28.2	17.3	79.1	51.3	46.3
	Lithuania	7.2	6.7	91.3	66.8	30.6
	Luxembourg	75.3	55.0	78.8	23.9	79.9
	Mexico	25.3	35.2	31.7	33.8	37.4
	Netherlands	35.7	9.9	87.1	50.4	63.8
	New Zealand	37.2	19.4	87.9	76.5	75.6
	Norway	11.3	7.9	79.9	76.1	93.9
	Poland	2.6	8.7	58.9	34.7	82.6
	Portugal	31.8	67.7	32.0	34.9	62.2
	Slovak Republic	11.4	29.1	61.0	41.5	61.2
	Slovenia	22.8	25.5	90.0	77.4	60.6
	Spain	42.7	59.4	52.9	51.5	55.6
	Sweden	30.1	29.2	89.1	80.0	47.8
	Switzerland	11.0	11.5	73.8	48.5	63.7
	Turkey	14.7	35.6	76.6	65.5	57.1
	United Kingdom	28.1	21.5	75.2	65.9	95.1
	United States	25.8	26.8	82.4	77.1	54.5

Information on data for Cyprus: *https://oe.cd/cyprus-disclaimer*

Source: OECD PISA 2018 Database, Tables V.B1.4.2, V.B1.5.15, V.B1.5.18, V.B1.6.1

StatLink https://doi.org/10.1787/888934130493

Table V.2 [2/4] **Snapshot of educational resources**

(blue)	Countries/economies with values above the OECD average
(white)	Countries/economies with values not statistically different from the OECD average
(grey)	Countries/economies with values below the OECD average

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by the following factors:		Percentage of students in schools whose principal agreed or strongly agreed with the following statements:		Percentage of students in schools whose principal reported that their school has a specific programme to prepare students for responsible Internet behaviour
		A lack of teaching staff	A lack of assisting staff	The school's Internet bandwidth or speed is sufficient	An effective online learning support platform is available	
		%	%	%	%	%
Partners	Albania	3.9	13.6	66.5	32.2	73.0
	Argentina	25.9	35.6	21.7	18.9	30.7
	Baku (Azerbaijan)	42.8	28.5	52.3	41.3	44.0
	Belarus	9.6	8.8	79.8	27.4	68.0
	Bosnia and Herzegovina	4.6	15.3	49.7	33.6	27.3
	Brazil	17.6	34.1	26.0	35.0	16.3
	Brunei Darussalam	15.0	27.5	32.2	34.4	57.8
	B-S-J-Z (China)	41.4	26.3	95.8	94.6	91.7
	Bulgaria	8.0	4.3	79.4	40.4	72.4
	Costa Rica	39.9	47.5	34.3	20.0	27.2
	Croatia	18.3	45.1	69.9	48.6	42.2
	Cyprus	7.3	25.7	71.3	44.5	61.4
	Dominican Republic	27.6	31.7	44.4	46.7	58.5
	Georgia	4.6	29.4	72.2	60.4	54.3
	Hong Kong (China)	23.7	40.1	86.8	67.4	83.6
	Indonesia	42.4	41.7	79.6	59.1	58.6
	Jordan	40.9	50.4	52.0	43.4	60.8
	Kazakhstan	29.3	14.0	64.5	69.9	68.7
	Kosovo	19.1	29.1	28.7	22.0	25.3
	Lebanon	15.1	26.3	46.6	35.2	44.2
	Macao (China)	12.0	11.7	68.0	68.8	80.5
	Malaysia	7.5	12.7	36.0	68.2	82.5
	Malta	16.4	24.2	61.3	58.5	77.2
	Moldova	28.7	22.9	60.3	40.5	58.5
	Montenegro	1.7	7.5	75.2	49.3	33.8
	Morocco	36.9	74.1	25.8	27.8	20.5
	North Macedonia	3.6	31.0	31.6	24.5	23.2
	Panama	14.8	53.7	25.2	23.9	36.2
	Peru	16.5	41.7	26.9	24.0	34.2
	Philippines	19.5	24.1	41.2	54.3	59.1
	Qatar	11.4	11.7	78.9	80.4	86.3
	Romania	8.8	20.2	76.2	31.3	54.1
	Russia	43.1	22.8	76.7	42.8	54.8
	Saudi Arabia	49.5	47.6	43.8	48.6	66.4
	Serbia	2.3	20.8	61.0	40.0	54.5
	Singapore	5.3	7.2	90.3	95.8	95.4
	Chinese Taipei	19.6	12.9	82.0	76.7	75.0
	Thailand	37.7	33.6	69.3	76.8	90.2
	Ukraine	19.6	24.8	58.7	64.5	77.6
	United Arab Emirates	27.7	30.2	79.8	71.6	80.4
	Uruguay	28.6	53.2	32.8	47.4	27.9
	Viet Nam	23.8	30.9	79.7	43.4	62.9

Information on data for Cyprus: *https://oe.cd/cyprus-disclaimer*

Source: OECD PISA 2018 Database, Tables V.B1.4.2, V.B1.5.15, V.B1.5.18, V.B1.6.1

StatLink https://doi.org/10.1787/888934130493

Table V.2 [3/4] **Snapshot of educational resources**

(blue)	Countries/economies with values above the OECD average
(white)	Countries/economies with values not statistically different from the OECD average
(grey)	Countries/economies with values below the OECD average

		Learning time per week (as reported by students) in:			
		Regular language-of-instruction lessons	Regular mathematics lessons	Regular science lessons	Foreign language lessons
		Hours	Hours	Hours	Hours
OECD	**OECD average**	3.7	3.7	3.4	3.6
	Australia	3.9	3.9	3.5	1.2
	Austria	2.6	2.6	3.5	3.6
	Belgium	3.6	3.5	3.1	4.7
	Canada	5.4	5.2	5.1	2.9
	Chile	6.8	7.3	5.8	4.3
	Colombia	3.7	4.0	3.3	3.2
	Czech Republic	3.1	3.2	4.0	3.9
	Denmark	5.8	4.5	3.7	4.8
	Estonia	3.1	3.5	3.6	4.0
	Finland	2.5	2.8	2.5	3.8
	France	3.7	3.6	2.8	4.5
	Germany	3.3	3.4	3.7	4.4
	Greece	2.8	3.4	3.6	1.8
	Hungary	2.8	2.5	2.9	4.7
	Iceland	4.1	4.1	2.4	4.7
	Ireland	3.1	3.2	2.4	2.5
	Israel	3.3	4.2	3.4	3.8
	Italy	4.6	3.8	2.3	3.8
	Japan	3.6	4.1	2.9	4.0
	Korea	3.1	3.0	3.0	3.2
	Latvia	2.7	3.8	4.0	3.7
	Lithuania	3.5	3.0	4.4	3.7
	Luxembourg	3.5	3.5	3.2	6.2
	Mexico	3.9	4.0	3.9	2.9
	Netherlands	2.8	2.6	4.4	3.8
	New Zealand	4.1	4.0	4.1	1.2
	Norway	3.8	3.3	2.4	2.8
	Poland	3.8	3.6	2.9	3.6
	Portugal	4.1	4.5	3.5	3.8
	Slovak Republic	3.4	3.2	2.6	4.3
	Slovenia	3.0	2.8	3.3	3.0
	Spain	3.6	3.8	3.2	3.9
	Sweden	3.1	3.3	3.1	3.8
	Switzerland	3.3	3.4	2.5	4.2
	Turkey	3.5	3.9	3.4	3.2
	United Kingdom	4.3	4.2	5.1	1.7
	United States	4.2	4.1	4.1	2.9

Information on data for Cyprus: *https://oe.cd/cyprus-disclaimer*

Source: OECD PISA 2018 Database, Tables V.B1.4.2, V.B1.5.15, V.B1.5.18, V.B1.6.1

StatLink https://doi.org/10.1787/888934130493

Table V.2 [4/4] **Snapshot of educational resources**

(blue)	Countries/economies with values above the OECD average
(white)	Countries/economies with values not statistically different from the OECD average
(grey)	Countries/economies below the OECD average

		Learning time per week (as reported by students) in:			
		Regular language-of-instruction lessons	Regular mathematics lessons	Regular science lessons	Foreign language lessons
		Hours	Hours	Hours	Hours
Partners	Albania	2.9	3.2	4.9	3.3
	Argentina	3.0	3.2	3.4	2.4
	Baku (Azerbaijan)	3.4	4.7	5.7	3.3
	Belarus	2.3	3.3	3.7	2.6
	Bosnia and Herzegovina	2.6	2.6	2.8	2.6
	Brazil	3.8	3.8	2.9	1.8
	Brunei Darussalam	3.4	3.7	4.5	1.6
	B-S-J-Z (China)	4.6	5.0	5.5	4.6
	Bulgaria	2.9	2.7	4.9	4.2
	Costa Rica	4.0	4.3	4.7	5.4
	Croatia	2.9	2.6	3.4	2.6
	Cyprus	4.3	3.8	3.8	3.2
	Dominican Republic	4.4	4.4	4.1	3.7
	Georgia	4.0	3.9	3.0	2.7
	Hong Kong (China)	5.1	4.7	4.0	4.2
	Indonesia	4.0	4.2	3.7	3.5
	Jordan	4.4	3.8	4.2	3.5
	Kazakhstan	2.8	3.4	2.7	2.2
	Kosovo	2.9	2.5	3.0	2.3
	Lebanon	m	m	m	m
	Macao (China)	4.2	4.4	3.8	3.9
	Malaysia	4.3	4.0	4.4	1.7
	Malta	4.2	4.0	3.8	2.9
	Moldova	3.9	3.2	3.9	3.0
	Montenegro	2.8	2.6	1.7	2.7
	Morocco	3.9	5.8	3.7	4.9
	North Macedonia	m	m	m	m
	Panama	3.8	4.0	3.7	3.5
	Peru	5.4	6.6	4.6	2.9
	Philippines	5.2	5.2	5.2	2.4
	Qatar	4.5	4.8	5.3	3.7
	Romania	3.0	2.7	3.4	2.7
	Russia	2.6	4.0	4.4	2.5
	Saudi Arabia	3.9	3.6	3.5	3.3
	Serbia	2.7	2.6	3.5	2.3
	Singapore	4.4	5.2	5.4	4.6
	Chinese Taipei	4.2	3.9	3.1	3.9
	Thailand	2.9	3.8	4.3	3.9
	Ukraine	4.3	3.3	4.0	2.8
	United Arab Emirates	4.5	5.1	5.0	3.7
	Uruguay	2.6	2.8	2.8	2.2
	Viet Nam	3.1	3.3	5.4	2.7

Information on data for Cyprus: *https://oe.cd/cyprus-disclaimer*

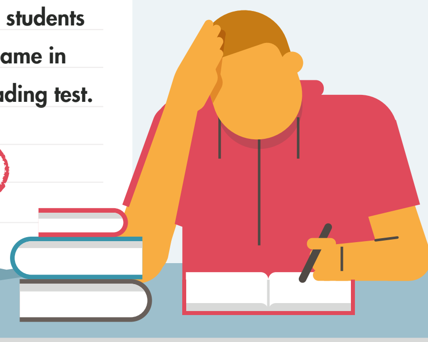
Source: OECD PISA 2018 Database, Tables V.B1.4.2, V.B1.5.15, V.B1.5.18, V.B1.6.1

StatLink https://doi.org/10.1787/888934130493

School policies, performance and equity

A disadvantaged student is more than **twice as likely** than an advantaged student to have **repeated a grade**

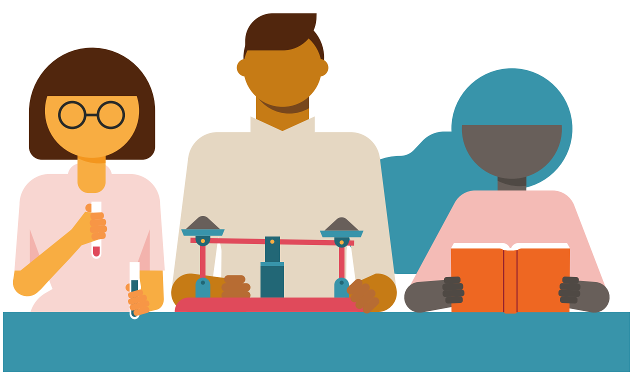
even if both students scored the same in the PISA reading test.

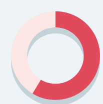


Countries/economies with **smaller shares of students who had repeated a grade** generally showed

- **higher mean reading performance and**
- **greater equity in reading performance.**

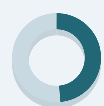
In **high performing** education systems, **differences in educational resources** between advantaged and disadvantaged schools were **small**.





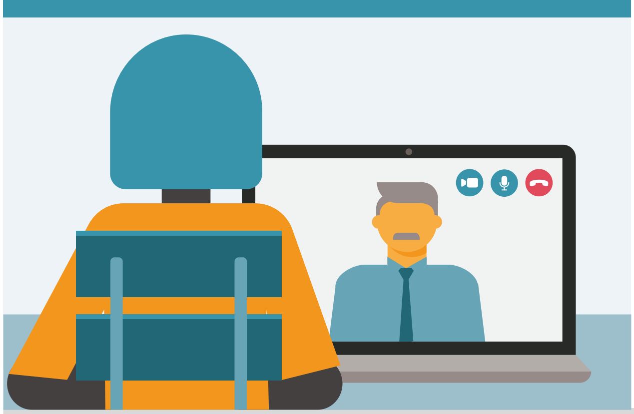
59% of students in **advantaged schools,**

but only



49% of students in **disadvantaged schools** have access to an **effective online learning platform.**

Teacher mentoring is **more prevalent in advantaged schools** than in disadvantaged schools.



More than **60% of students** attend schools that **provide teacher mentoring** on the school's initiative.

All data are OECD average, unless otherwise indicated, and were collected in 2018; PISA students are 15 years old

PISA

Reader's Guide

Data underlying the figures

The data referred to in this volume are presented in Annex B and, in greater detail, including additional tables, on the PISA website (www.oecd.org/pisa).

Five symbols are used to denote missing data:

a The category does not apply in the country concerned; data are therefore missing.

c There were too few observations to provide reliable estimates (i.e. there were fewer than 30 students or fewer than 5 schools with valid data).

m Data are not available. There was no observation in the sample; these data were not collected by the country; or these data were collected but subsequently removed from the publication for technical reasons.

w Results were withdrawn at the request of the country concerned.

x Data included in another category or column of the table, e.g. x(2) means that data are included in Column 2 of the table.

Country coverage

This publication features data on 79 countries and economies, including all OECD countries and more than 40 partner countries and economies (see map of PISA countries and economies in "What is PISA?").

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Two notes apply to the statistical data related to Cyprus:

- **Footnote 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".
- **Footnote 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.

B-S-J-Z (China) refers to the four provinces/municipalities in China that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang.

International averages

The OECD average corresponds to the arithmetic mean of the respective country estimates. It was calculated for most indicators presented in this report.

The OECD total takes the OECD countries as a single entity, to which each country contributes in proportion to the number of 15-year-olds enrolled in its schools. It can be used to assess how a country compares with the OECD area as a whole.

In order to facilitate analysis and comparisons over time, historical data for all OECD Members have been provided over as long a period as possible, often even before a country became a member of the Organisation. This is also the case for Colombia, which became a Member on 28 April 2020, and which has been included in the OECD averages. Information on the membership dates of all OECD Member countries can be found at OECD Ratification Dates.

In this publication, the OECD average is generally used when the focus is on comparing performance across education systems. In the case of some countries, data may not be available for specific indicators, or specific categories may not apply. Readers should, therefore, keep in mind that the terms "OECD average" and "OECD total" refer to the OECD countries included in the respective comparisons. In cases where data are not available or do not apply for all sub-categories of a given population or indicator, the «OECD average» is not necessarily computed on a consistent set of countries across all columns of a table.

In analyses involving data from multiple years, the OECD average is always reported on consistent sets of OECD countries, and several averages may be reported in the same table. For instance, the «OECD average-37» refers to the average across all 37 OECD countries (including Colombia), and is reported as missing if fewer than 37 OECD countries have comparable data; the "OECD average-30" includes only 30 OECD countries that have non-missing values across all the assessments for which this average itself is non-missing. This restriction allows for valid comparisons of the OECD average over time.

The number in the label used in figures and tables indicates the number of countries included in the average:

- **OECD average-37**: Arithmetic mean across all OECD countries (including Colombia).
- **OECD average-30**: Arithmetic mean across all OECD countries, excluding Estonia, Luxembourg, the Netherlands, the Slovak Republic, Slovenia, Turkey and the United Kingdom
- **OECD average-28**: Arithmetic mean across all OECD countries, excluding Colombia, Estonia, Lithuania, Luxembourg, the Netherlands, the Slovak Republic, Slovenia, Turkey and the United Kingdom.

Rounding figures

Because of rounding, some figures in tables may not add up exactly to the totals. Totals, differences and averages are always calculated on the basis of exact numbers and are rounded only after calculation.

All standard errors in this publication have been rounded to one or two decimal places. Where the value 0.0 or 0.00 is shown, this does not imply that the standard error is zero, but that it is smaller than 0.05 or 0.005, respectively.

Reporting student data

The report uses "15-year-olds" as shorthand for the PISA target population. PISA covers students who are aged between 15 years 3 months and 16 years 2 months at the time of assessment and who are enrolled in school and have completed at least 6 years of formal schooling, regardless of the type of institution in which they are enrolled, and whether they are in full-time or part-time education, whether they attend academic or vocational programmes, and whether they attend public or private schools or foreign schools within the country.

Reporting school data

The principals of the schools in which students were assessed provided information on their schools' characteristics by completing a school questionnaire. Where responses from school principals are presented in this publication, they are weighted so that they are proportionate to the number of 15-year-olds enrolled in the school.

Focusing on statistically significant differences

This volume discusses only statistically significant differences or changes. These are denoted in darker colours in figures and in bold font in tables. Unless otherwise specified, the significance level is set to 5%. See Annex A3 for further information.

Abbreviations used in this report

ESCS	PISA index of economic, social and cultural status
GDP	Gross domestic product
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
ICT	Information and communications technology
PPP	Purchasing power parity
S.D.	Standard deviation
S.E.	Standard error
STEM	Science, technology, engineering and mathematics
Score dif.	Score-point difference
% dif.	Percentage-point difference

Further documentation

For further information on the PISA assessment instruments and the methods used in PISA, see the *PISA 2018 Technical Report* (OECD, forthcoming).

StatLink

This report has *StatLinks* at the bottom of tables and graphs. To download the matching Excel® spreadsheet, just type the link into your Internet browser, starting with the *http://dx.doi.org prefix*, or click on the link from the e-book version.

PISA

What is PISA?

"What should citizens know and be able to do?" In response to that question and to the need for internationally comparable evidence on student performance, the Organisation for Economic Co-operation and Development (OECD) launched the Programme for International Student Assessment (PISA) in 2000.

PISA is a triennial survey of 15-year-old students around the world that assesses the extent to which they have acquired key knowledge and skills essential for full participation in social and economic life. PISA assessments include the core school subjects of reading, mathematics and science, and also innovative areas, such as creative problem solving (2012), collaborative problem solving (2015), global competence (2018) and creative thinking (2021). The assessments do not just ascertain whether students near the end of their compulsory education can reproduce what they have learned; they also examine how well students can extrapolate from what they have learned and apply their knowledge in unfamiliar settings, both in and outside of school. This approach reflects the fact that the modern world rewards individuals not just for what they know, but increasingly for what they can do with what they know.

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.

WHICH COUNTRIES AND ECONOMIES PARTICIPATE IN PISA?

PISA is used as an assessment tool in many regions around the world. It was implemented in 43 countries and economies in the first assessment (32 in 2000 and 11 in 2002), 41 in the second assessment (2003), 57 in the third assessment (2006), 75 in the fourth assessment (65 in 2009 and 10 in 2010), 65 in the fifth assessment (2012) and 72 in the sixth assessment (2015). In 2018, 79 countries and economies participated in PISA.

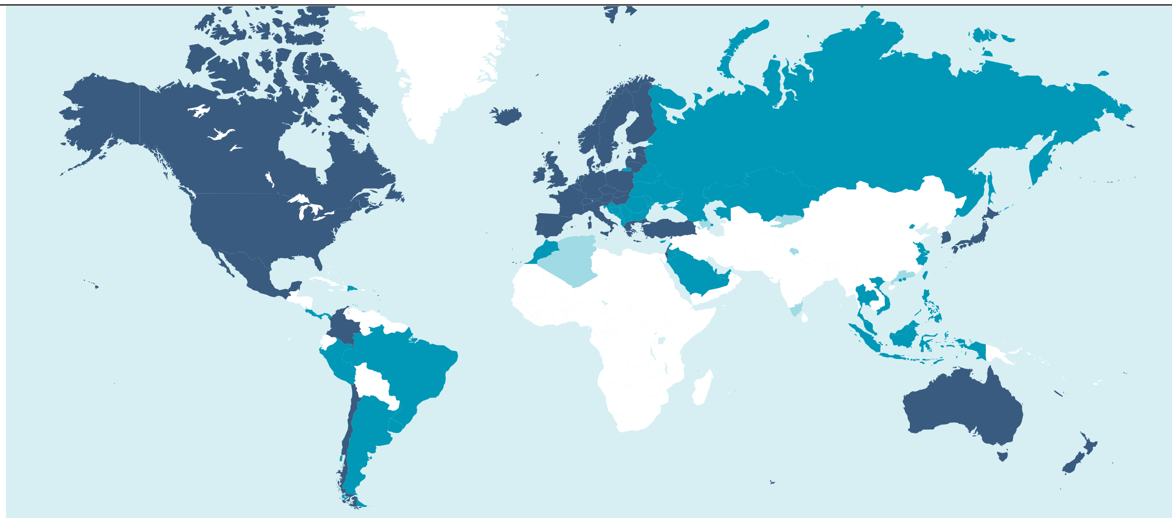
WHAT DOES THE TEST MEASURE?

In each round of PISA, one subject is tested in detail, taking up nearly half of the total testing time. The main subject in 2018 was reading, as it was in 2000 and 2009. Mathematics was the main subject in 2003 and 2012, while science was the main subject in 2006 and 2015. With this alternating schedule, a thorough analysis of achievement in each of the three core subjects is presented every nine years; an analysis of trends is offered every three years.

The *PISA 2018 Assessment and Analytical Framework* (OECD, 2019) presents definitions and more detailed descriptions of the subjects assessed in PISA 2018:

- Reading literacy is defined as students' capacity to understand, use, evaluate, reflect on and engage with texts in order to achieve one's goals, develop one's knowledge and potential, and participate in society.
- Mathematics literacy is defined as students' capacity to formulate, employ and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena.
- Science literacy is defined as the ability to engage with science-related issues, and with the ideas of science, as a reflective citizen. A scientifically literate person is willing to engage in reasoned discourse about science and technology, which requires the competencies to explain phenomena scientifically, evaluate and design scientific enquiry, and interpret data and evidence scientifically.

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
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.

Box A 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 and 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.

HOW IS THE ASSESSMENT CONDUCTED?

As was done in 2015, PISA 2018 delivered the assessment of all subjects via computer. Paper-based assessments were provided for countries that were not able to test their students by computer, but the paper-based assessment was limited to reading, mathematics and science trend items, which were originally developed for previous PISA assessments.[1] Since 2015, new items were developed for the computer-based assessment only.

The 2018 computer-based assessment was designed as a two-hour test. Each test form allocated to students comprised four 30-minute clusters of test material. For the main subject of reading, material equivalent to 15 30-minute clusters was developed. This material was organised into blocks instead of clusters, as the PISA 2018 reading assessment took a multi-stage adaptive approach. The reading assessment was composed of a core stage followed by stage 1 and stage 2. At the beginning of stages 1 and 2, students were assigned blocks of items of either greater or lesser difficulty, depending on their performance in earlier stages (see Chapter 1 in *PISA 2018 Results [Volume I]: What Students Know and Can Do*, for more detailed information on the multi-stage adaptive approach). To measure trends in the subjects of mathematics and science, six clusters were included in each subject. In addition, four clusters of global competence items were developed.[2] There were 72 different test forms.[3] Students spent one hour on the reading assessment plus one hour on one or two other subjects – mathematics, science or global competence.

Countries that used paper-based delivery for the main survey measured student performance with 30 pencil-and-paper forms containing trend items in the three core PISA subjects. The reading items in these paper-based forms were based on the 2009 reading literacy framework and did not include any items based on the new 2018 reading literacy framework.

The assessment of financial literacy was offered as an option in PISA 2018. It was based on the same framework as that developed for PISA 2012, which was also used in PISA 2015.[4] The financial literacy assessment lasted one hour (in addition to the regular

PISA assessment) and comprised two clusters distributed to a subsample of students in combination with the reading and mathematics assessments.

To gather contextual information, PISA 2018 asked students and the principal of their school to respond to questionnaires. The student questionnaire took about 35 minutes to complete; the questionnaire for principals took about 45 minutes to complete. The responses to the questionnaires were analysed with the assessment results to provide both a broader and more nuanced picture of student, school and system performance. The *PISA 2018 Assessment and Analytical Framework* (OECD, 2019) describes the genesis of the questionnaires in detail. The questionnaires from all assessments since PISA's inception are available on the PISA website: www.pisa.oecd.org.

The questionnaires seek information about:

- students and their family backgrounds, including their economic, social and cultural capital
- aspects of students' lives, such as their attitudes towards learning, their habits and life in and outside of school, and their family environment
- aspects of schools, such as the quality of the schools' human and material resources, public and private management and funding, decision-making processes, staffing practices, the school's curricular emphasis and the extracurricular activities it offers
- the context of instruction, including institutional structures and types, class size, classroom and school climate, and reading activities in class
- aspects of learning, including students' interest, motivation and engagement.

In PISA 2018, five additional questionnaires were offered as options:

- **computer familiarity questionnaire**, focusing on the availability and use of information and communications technologies (ICT), and on students' ability to carry out tasks on computers and their attitudes towards using computers
- **well-being questionnaire**, (new to PISA 2018) on students' perceptions of their health, life satisfaction, social connections and activities in and outside of school
- **educational career questionnaire**, which collects additional information on interruptions in schooling, preparation for students' future career, and support with language learning
- **parent questionnaire**, focusing on parents' perceptions of and involvement in their child's school, their support for learning at home, school choice, their child's career expectations, and their background (immigrant/non-immigrant)
- **teacher questionnaire**, which asks about teachers' initial training and professional development, their beliefs and attitudes, and their teaching practices. Separate questionnaires were developed for teachers of the test language and for other teachers in the school.

The contextual information collected through the student, school and optional questionnaires is complemented by system-level data. Indicators describing the general structure of each education system, such as expenditure on education, stratification, assessments and examinations, appraisals of teachers and school leaders, instruction time, teachers' salaries, actual teaching time and teacher training are routinely developed and analysed by the OECD. These data are extracted from the annual OECD publication, *Education at a Glance: OECD Indicators*, for the countries that participate in the annual OECD data collection administered through the OECD Indicators of Education Systems (INES) Network. For other countries and economies, a special system-level data collection was conducted in collaboration with PISA Governing Board members and National Project Managers.

WHO ARE THE PISA STUDENTS?

Differences between countries in the nature and extent of pre-primary education and care, the age at entry into formal schooling, the structure of the education system, and the prevalence of grade repetition mean that school grade levels are often not good indicators of where students are in their cognitive development. To better compare student performance internationally, PISA targets students of a specific age. PISA students are aged between 15 years 3 months and 16 years 2 months at the time of the assessment, and they have completed at least 6 years of formal schooling. They can be enrolled in any type of institution, participate in full-time or part-time education, in academic or vocational programmes, and attend public or private schools or foreign schools within the country. (For an operational definition of this target population, see Annex A2). Using this age across countries and over time allows PISA to consistently compare the knowledge and skills of individuals born in the same year who are still in school at age 15, despite the diversity of their education histories in and outside of school.

The population of PISA-participating students is defined by strict technical standards, as are the students who are excluded from participating (see Annex A2). The overall exclusion rate within a country is required to be below 5% to ensure that, under reasonable assumptions, any distortions in national mean scores would remain within plus or minus 5 score points, i.e. typically within the order of magnitude of 2 standard errors of sampling. Exclusion could take place either through the schools that participated or the students who participated within schools (see Annex A2).

There are several reasons why a school or a student could be excluded from PISA. Schools might be excluded because they are situated in remote regions and are inaccessible, because they are very small, or because of organisational or operational factors that precluded participation. Students might be excluded because of intellectual disability or limited proficiency in the language of the assessment. In 31 of the 79 countries and economies that participated in PISA 2018, the percentage of school-level exclusions amounted to less than 1%; it was 4% or less in all except five countries. When the exclusion of students who met the internationally established exclusion criteria is also taken into account, the exclusion rates increase slightly. However, in 2018, the overall exclusion rate remained below 2% in 28 participating countries and economies, below 5% in 63 participating countries and economies, and below 7% in all countries except Sweden (11.1%), Israel (10.2%), Luxembourg and Norway (both 7.9%). For more detailed information about school and student exclusion from PISA 2018, see Annex A2.

WHERE CAN YOU FIND THE RESULTS?

The initial PISA 2018 results are released in six volumes:

- ***Volume I: What Students Know and Can Do*** provides a detailed examination of student performance in reading, mathematics and science, and describes how performance has changed over time.
- ***Volume II: Where All Students Can Succeed*** examines gender differences in student performance, the link between students' socio-economic status and immigrant background, on the one hand, and their performance and other outcomes, on the other, and the relationship between all of these variables and students' well-being. Trends in these indicators over time are examined when comparable data are available.
- ***Volume III: What School Life Means for Students' Lives*** focuses on the physical and emotional health of students, the role of teachers and parents in shaping the school climate, and the social life at school. The volume also examines indicators of student well-being, and how these are related to school climate.
- ***Volume IV: Are Students Smart about Money?*** examines 15-year-old students' understanding about money matters in the 20 countries and economies that participated in this optional assessment. The volume explores how the financial literacy of 15-year-old students is associated with their competencies in reading, mathematics and science, with their socio-economic status, and with their previous experiences with money. It also offers an overview of financial education in schools in the participating countries and economies, and provides case studies.
- ***Volume V: Effective Policies, Successful Schools*** analyses schools and school systems and their relationship with education outcomes more generally. The volume covers school governance, selecting and grouping students, and the human, financial, educational and time resources allocated to teaching and learning. Trends in these indicators are examined when comparable data are available.
- ***Volume VI: Are Students Ready to Thrive in an Interconnected World?*** examines students' ability to consider local, global and intercultural issues, understand and appreciate different perspectives and world views, interact respectfully with others, and take responsible action towards sustainability and collective well-being. It does so through both an assessment completed by students and questionnaires completed by students and school principals.[5]

Volumes II and III are published at the same time as Volume I, in December 2019; Volumes IV, V and VI are published in 2020.

The frameworks for assessing reading, mathematics, science, financial literacy and global competence in 2018 are described in the *PISA 2018 Assessment and Analytical Framework* (OECD, 2019). They are also summarised in Volume I.

Technical annexes at the end of this volume describe how questionnaire indices were constructed and discuss. Many of the issues covered in the technical annexes are elaborated in greater detail in the *PISA 2018 Technical Report* (OECD, forthcoming).

A selection of key tables referred to in the analyses are included at the end of the respective volume in Annex B1, and a set of additional data tables is available on line (www.oecd.org/pisa). A Reader's Guide is also provided in each volume to aid in interpreting the tables and figures that accompany the report.

Notes

1. The paper-based form was used in nine countries/economies: Argentina, Jordan, Lebanon, the Republic of Moldova, the Republic of North Macedonia, Romania, Saudi Arabia, Ukraine and Viet Nam.
2. The global competence assessment was not available in the countries/economies that conducted the PISA 2018 assessment on paper. It was conducted in Albania, Brunei Darussalam, Canada, Chile, Colombia, Costa Rica, Croatia, Greece, Hong Kong (China), Indonesia, Israel, Kazakhstan, Korea, Latvia, Lithuania, Malta, Morocco, Panama, the Philippines, the Russian Federation, Serbia, Singapore, the Slovak Republic, Spain, Chinese Taipei, Thailand and Scotland (United Kingdom). However, the global competence module was included in the student questionnaire, which was distributed in 56 of the countries/economies that took part in PISA 2018.
3. Thirty-six test forms were prepared for countries that did not participate in the global competence assessment.
4. The financial literacy assessment was conducted in Australia, Brazil, Bulgaria, Canada, Chile, Estonia, Finland, Georgia, Indonesia, Italy, Latvia, Lithuania, the Netherlands, Peru, Poland, Portugal, the Russian Federation, Serbia, the Slovak Republic, Spain and the United States.
5. The global competence assessment was conducted in 27 countries and economies, while the global competence module was included in questionnaires distributed in 56 countries and economies.

References

OECD (forthcoming), *PISA 2018 Technical Report*, OECD Publishing, Paris.

OECD (2019), *PISA 2018 Assessment and Analytical Framework*, OECD Publishing, Paris, https://doi.org/10.1787/b25efab8-en.

PISA

1

How PISA examines effective policies and successful schools

This chapter defines the four areas of school organisation that are examined in Volume V of the PISA 2018 Results: grouping and selecting students; resources invested in education; governance of education systems; and evaluations and assessments. It also discusses how much of the variation in student performance is related to system-, school- and student-level factors, and how to interpret the data presented.

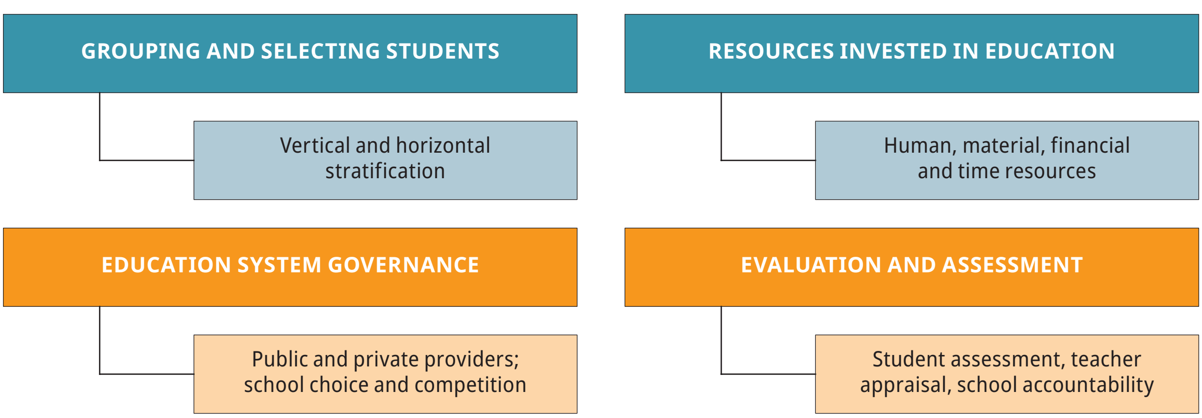
Worldwide trends such as globalisation, technological change and growing inequality are posing new challenges to education systems and schools around the world (OECD, 2019[1]). School-management policies and practices play a key role in determining how education systems can respond to these challenges.

This volume describes school organisation – the policies and practices that define how education systems and schools work and change over time (Bidwell, 2001[2]) – in the 79 countries/economies that participated in PISA 2018. It examines ways in which school organisation is related to performance, equity in students' learning outcomes and student well-being. The volume also analyses trends in school organisation to understand how schools and school systems have changed during the past decade, and how these changes are related to changes in performance and equity in students' learning outcomes.

Building on the experience of prior PISA reports (OECD, 2016[3]; OECD, 2013[4]; OECD, 2016[5]), this volume focuses on four policy-relevant areas of school organisation (Figure V.1.1):

- **Grouping and selecting students** – the structure of instructional grades and programmes that students must complete in order to graduate from schooling (i.e. vertical stratification), and how students are grouped and selected into different curricular programmes and ability groups (i.e. horizontal stratification)
- **Resources invested in education** – the amount and kind of human resources (i.e. teacher and support staff) and material resources (i.e. physical infrastructure and pedagogical materials, including computers and other digital devices) available for schools, and how these resources are allocated and used; the amount of financial resources invested in education (i.e. expenditure per student over the theoretical duration of studies); the amount of students' learning time that takes place during regular school hours for key subjects, such as language of instruction, mathematics and science; and the learning opportunities that schools offer to their students after regular school hours (e.g. additional lessons, support with homework, extracurricular activities)
- **Education system governance** – how public and private organisations are involved in the administration and funding of schools, and the degree of school choice and school competition
- **Evaluation and assessment** – the policies and practices through which education systems assess student learning and evaluate teacher practices and school outcomes (i.e. evaluation and assessment).

Figure V.1.1 **Dimensions of school organisation examined in this volume**



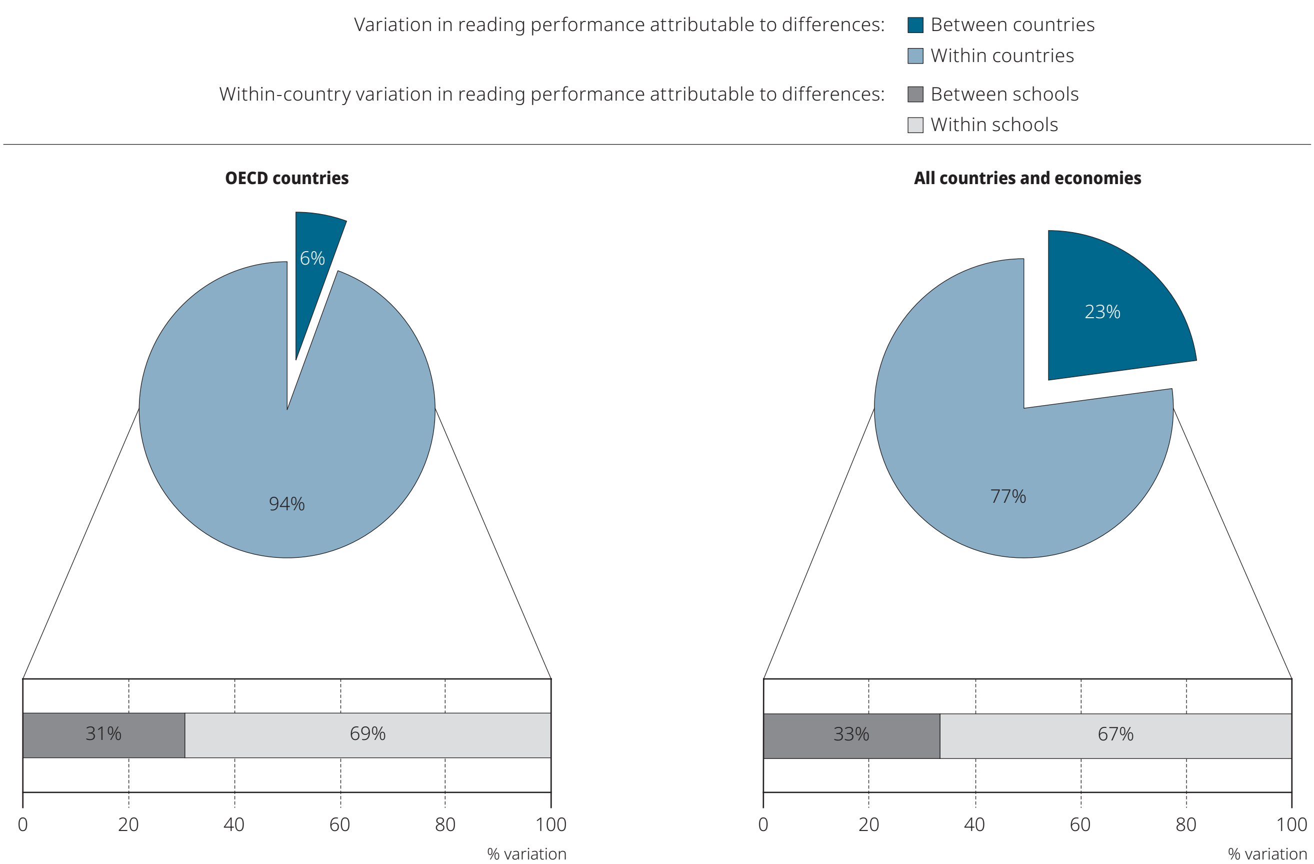
For each of these policy areas of school organisation, the report explores three main questions:

1. What are the main cross-country differences in school organisation policies and practices? And how does school organisation vary within countries according to school characteristics, such as the school's socio-economic profile, location and public or private ownership (according to PISA 2018 data)?
2. How are school-organisation policies and practices changing over time (across PISA cycles)?
3. What is the relationship between these school-organisation policies and practices, and student achievement and equity? What is the relationship between changes in policies and practices over time and changes in education outcomes (performance and equity)?

PERFORMANCE DIFFERENCES AMONGST SCHOOL SYSTEMS, SCHOOLS AND STUDENTS

As discussed in Volume I of PISA 2018 Results, academic performance amongst 15-year-old students varies widely, and that variation can be broken down into differences at the student, school and school system levels. In PISA 2018, across all countries and economies, about 23% of the variation in reading performance pertained to mean differences in student performance between the participating school systems (Figure V.1.2). Across OECD countries, 6% of the variation in reading performance lay between school systems. On average across all participating countries and economies, about 33% of the variation in reading performance within countries lay between schools and 67% lay within schools. Across OECD countries, 31% of the variation in reading performance within countries lay between schools and 69% lay within schools.

Figure V.1.2 **Variation in reading performance between systems, schools and students**



Source: OECD, PISA 2018 Database.

StatLink https://doi.org/10.1787/888934130512

This chapter relates school organisation to student performance within and between countries/economies. It also analyses differences between countries and economies in the relationships amongst school organisation, performance in reading, and the level of equity in a school system. The cross-national analyses provide an overview of how system-level attributes and key organisational arrangements are related to student performance, equity in school systems and student well-being. As always, such relationships require further study in order to determine causality; hence implications of causality are beyond the scope of this report (Box V.1.1).

This is the fifth of six volumes that present the results from PISA 2018. It begins, in this first chapter, by providing the rationale and analytical framework for the report. Chapters 2 and 3 explore policies and practices related to vertical and horizontal stratification. Chapter 4 discusses human resources and Chapter 5 examines material resources. Chapter 6 looks at student learning time. Chapter 7 discusses private schools and school competition. Chapter 8 analyses evaluation and assessment practices. The concluding chapter discusses the policy implications of the results.

Box V.1.1. **Interpreting the data from students and schools**

PISA 2018 asked students and school principals to answer questions about the organisation of schools, and the social and economic contexts in which learning takes place. Information based on their responses was weighted so that it reflects the number of 15-year-old students enrolled in grade 7 or above. These are reports provided by principals and students themselves rather than external observations, and thus may be influenced by cultural differences in how individuals respond.[1]

In addition to the general constraints of self-reported data, there are other limitations, particularly those concerning the information collected from principals or the interpretation of school-level results, that should be taken into account when interpreting the data.

- The learning environment examined by PISA may only partially reflect that which shaped students' experiences in education earlier in their school careers, particularly in school systems where students progress through different types of educational institutions at the pre-primary, primary, lower secondary and upper secondary levels. To the extent that students' current learning environment differs from that of their earlier school years, the contextual data collected by PISA are an imperfect proxy for students' cumulative learning environments, and the effects of those environments on learning outcomes is likely to be underestimated. In most cases, 15-year-old students have been in their current school for only two to three years. This means that much of their academic development took place earlier, in other schools, which may have little or no connection with the school in which they were enrolled when they sat the PISA test.
- In some countries and economies, the definition of the school in which students are taught is not straightforward because schools vary in the level and purpose of education. For example, in some countries and economies, subunits within schools (e.g. study programmes, shifts and campuses) were sampled instead of schools as administrative units (see Annex A2 for further information).
- Although principals can provide information about their schools, generalising from a single source of information for each school and then matching that information with students' reports is not straightforward. Also, principals' perceptions may not be the most accurate source for some information related to teachers, such as teachers' morale and commitment.
- The age-based sampling followed in PISA means that, in some education systems, students are not always representative of their schools. Interpreting differences between schools appropriately therefore requires specific knowledge about how school systems are structured.

Despite these caveats, information from the school questionnaire provides unique insights into the ways in which national and subnational authorities seek to realise their education objectives.

Schooling and school effects

In using results from non-experimental data on school performance, such as the PISA database, it is important to bear in mind the distinction between school effects and the effects of schooling, particularly when interpreting the modest association between factors such as school resources, policies and institutional characteristics, on the one hand, and student performance, on the other. School effects are education researchers' shorthand for the effect on academic performance of attending one school or another, usually schools that differ in resources or policies and institutional characteristics. Where schools and school systems do not vary in fundamental ways, the school effect can be modest. Nevertheless, modest school effects should not be confused with a lack of an effect of schooling (the influence on performance of not being schooled compared with being schooled).

Interpreting correlations and changes over time

A correlation indicates the strength and direction of a linear relationship, either positive or negative, between two variables. A correlation is a simple statistic that measures the degree to which two variables are associated with each other, but does not prove causality between the two.

Comparisons of results between resources, policies and practices, and reading performance across time (trends analyses) should also be interpreted with caution. Changes in the strength of the relationship between policies and practices, and reading performance cannot be considered causal because they can occur for two key reasons. First, a particular set of resources, policies and practices might have been chosen by higher-performing students (or higher-performing schools or high-performing systems) while that set of resources, policies and practices might not have existed in lower-performing students/schools/systems. Under this interpretation, the relationship between reading performance, and resources, policies and practices is stronger because they are available to higher-performing students/schools/systems. Second, a particular set of resources, policies and practices may have been used more extensively in 2018 than earlier, and may have promoted student learning more in 2018 than before. PISA trend data indicate where changes have occurred. However, in order to understand the nature of the change, further analysis is needed.

...

Interpreting results before and after accounting for socio-economic status

When examining the relationship between education outcomes and resources, policies and practices within school systems, this volume takes into account socio-economic differences amongst students, schools and systems. The advantage of doing this lies in comparing similar entities, namely students, schools and systems with similar socio-economic profiles. At the same time, there is a risk that such adjusted comparisons underestimate the strength of the relationship between student performance and resources, policies and practices, since most of the differences in performance are often attributable to both policies and socio-economic status.

Conversely, analyses that do not take socio-economic status into account can overstate the relationship between student performance and resources, policies and practices, as the level of resources and the kinds of policies adopted may also be related to the socio-economic profile of students, schools and systems. At the same time, analyses without adjustments may paint a more realistic picture of the schools that parents choose for their children. They may also provide more information for other stakeholders who are interested in the overall performance of students, schools and systems, including any effects that may be related to the socio-economic profile of schools and systems. For example, parents may be primarily interested in a school's absolute performance standards, even if that school's higher achievement record stems partially from the fact that the school has a larger proportion of advantaged students.

For the system-level analyses, in order to account for the extent to which the observed relationships are influenced by the level of economic development of countries and economies, correlations are examined before and after accounting for per capita GDP.

Interpreting the results by school characteristics

When presenting results by the socio-economic profile of schools, the location of schools, the type of school or the education level, the number of students and schools in each subsample has to meet the PISA reporting requirements of at least 30 students and 5 schools. Even when these reporting requirements are met, the reader should interpret the results cautiously when the number of students or schools is just above the threshold. Tables in Annex A5, available on line, show the unweighted number of students and schools, by school characteristics, in the PISA sample so that the reader can interpret the results appropriately.

Note

1. While PISA aims to maximise the cross-national and cross-cultural comparability of complex constructs, it must do so while keeping the questionnaires relatively short and minimising the perceived intrusiveness of the questions. Despite the extensive investments PISA makes in monitoring the process of translation, standardising the administration of the assessment, selecting questions and analysing the quality of the data, full comparability across countries and subpopulations cannot always be guaranteed.

References

Bidwell, C. (2001), "Analyzing Schools as Organizations: Long-Term Permanence and Short-Term Change", *Sociology of Education*, Vol. 74, pp. 100-114, http://dx.doi.org/10.2307/2673256. [2]

OECD (2019), *Trends Shaping Education 2019*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2019-en. [1]

OECD (2016), *Low-Performing Students: Why They Fall Behind and How To Help Them Succeed*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264250246-en. [5]

OECD (2016), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264267510-en. [3]

OECD (2013), *PISA 2012 Results: What Makes Schools Successful (Volume IV): Resources, Policies and Practices*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264201156-en. [4]

2

How students progress through schooling

This chapter examines how students progress through schooling, based on government regulations, family decisions and students' own performance and interests. It discusses such issues as the length and duration of schooling, pre-primary education, and grade repetition, and examines the relationships between these factors, on the one hand, and student performance and equity in education, on the other.

The vertical structure of an education system refers to the sequence of grades and levels of instruction that students must progress through in order to complete their schooling.[1] National laws and regulations formally define this sequence by establishing the age at which students are expected to enter pre-primary, primary, and lower and upper secondary school; the duration of these levels of education; and the requirements for students' entry and graduation.

The formal structures of national education systems define the way those systems are supposed to work; but in practice, schools, which have been described as "loosely coupled" organisations, often deviate from formal institutional requirements in order to solve everyday problems (Weick, 1976[1]; Aurini, 2012[2]; Meyer and Rowan, 2006[3]). For example, as documented in this chapter, many students enter pre-primary or primary school at an age that is different from the "theoretical" age at entry established in national legislation. School-entry laws and students' actual age at entry into school can have long-term consequences on their performance and educational attainment (Bedard and Dhuey, 2006[4]; Datar, 2006[5]; Dobkin and Ferreira, 2010[6]). Similarly, some students stay in primary or secondary school longer than others do, often because of grade repetition, while some drop out of school without completing their programme. System-level policies, school characteristics and practices, students' family background and other outside-of-school experiences are associated with the odds of successfully progressing from one instructional grade or level to the next, and of entering higher education (Shavit and Blossfeld, 1993[7]; Pallas, 2003[8]).

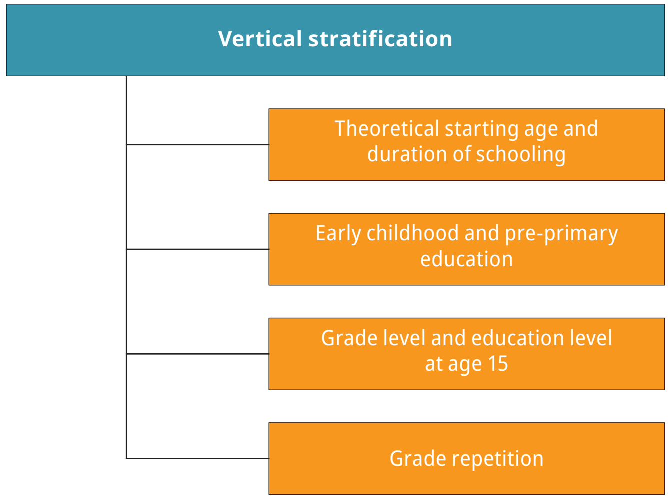
What the data tell us

- Across countries and economies that participated in PISA 2018, the most common vertical structure of the education system is that students enter pre-primary education at age 3, enter primary education at age 6, enter lower secondary education at age 12, enter upper secondary education at age 15 and attend this level for 3 years.
- On average across OECD countries, 6% of students had not attended or had attended pre-primary education for less than one year. These students scored lower in reading at the age of 15 than students who had attended for one year, two years or three years, before and after accounting for students' and schools' socio-economic profile.
- On average across OECD countries, a socio-economically disadvantaged 15-year-old student was about three times more likely than an advantaged student to have repeated a grade at least once, even if both students scored the same in the PISA reading test. At the system level, across all participating countries and economies, countries/economies with smaller shares of students who had repeated a grade generally showed higher mean reading performance and greater equity in reading performance, even after accounting for per capita GDP.
- Countries/economies with more students in the modal grade showed greater equity in student performance. Across all participating countries and economies, the correlation between the percentage of students in the modal grade and equity in reading performance was statistically significant, even after accounting for per capita GDP.

This chapter starts by describing the length and duration of schooling in each PISA-participating country and economy. It then considers pre-primary education, which has become a normal – and often compulsory – part of students' trajectory through education. The chapter examines the amount of time that students spend in pre-primary education and how that is related to students' academic achievement at age 15.

The third section of the chapter considers the variation in grade and education levels amongst 15-year-old students in PISA-participating countries/economies. The final section examines grade repetition.

Figure V.2.1 **Vertical stratification as covered in PISA 2018**



THE DURATION AND ORGANISATION OF SCHOOLING

Through its system-level questionnaire, PISA 2018 asked countries to report the age, established by law and regulation, at which students enter pre-primary, primary, lower secondary and upper secondary education (the theoretical starting age). The system-level questionnaire also asked how many years of schooling a student is expected to complete before graduating from each of these levels (the theoretical duration or length). Figure V.2.2 summarises this information. Data collected through the system-level questionnaire is different from the PISA 2018 data collected from students and parents (see Annex B3). The theoretical structure of education systems does not necessarily reflect national legislation on "compulsory schooling" (i.e. compulsory schooling might include only some of the education levels or years of schooling represented in Figure V.2.2).

Students' expected trajectories through schooling vary considerably across countries. While in some countries the typical duration of schooling is 13 years from entry into pre-primary to the end of upper secondary education (this is the case in Costa Rica, Malaysia, the Philippines and Singapore), in the majority of countries it is either 15 or 16 years. In Iceland, regulations establish that students complete as many as 17 years of schooling, from their entry into pre-primary education, before they can graduate from high school.

The International Standard Classification of Education (ISCED) is a framework for organising information on education. ISCED facilitates the transformation of national education frameworks, concepts and definitions, into aggregate categories that can be compared and interpreted internationally. Across the 77 countries and economies that participated in PISA 2018 for which data are available, the most common or typical mapping of national concepts into the ISCED adhered to the following vertical structure of the education system:

- enter pre-primary education at age 3 and attend this level for 3 years
- enter primary education at age 6 and attend this level for 6 years
- enter lower secondary education at age 12 and attend this level for 3 years
- enter upper secondary education at age 15 and attend this level for 3 years.

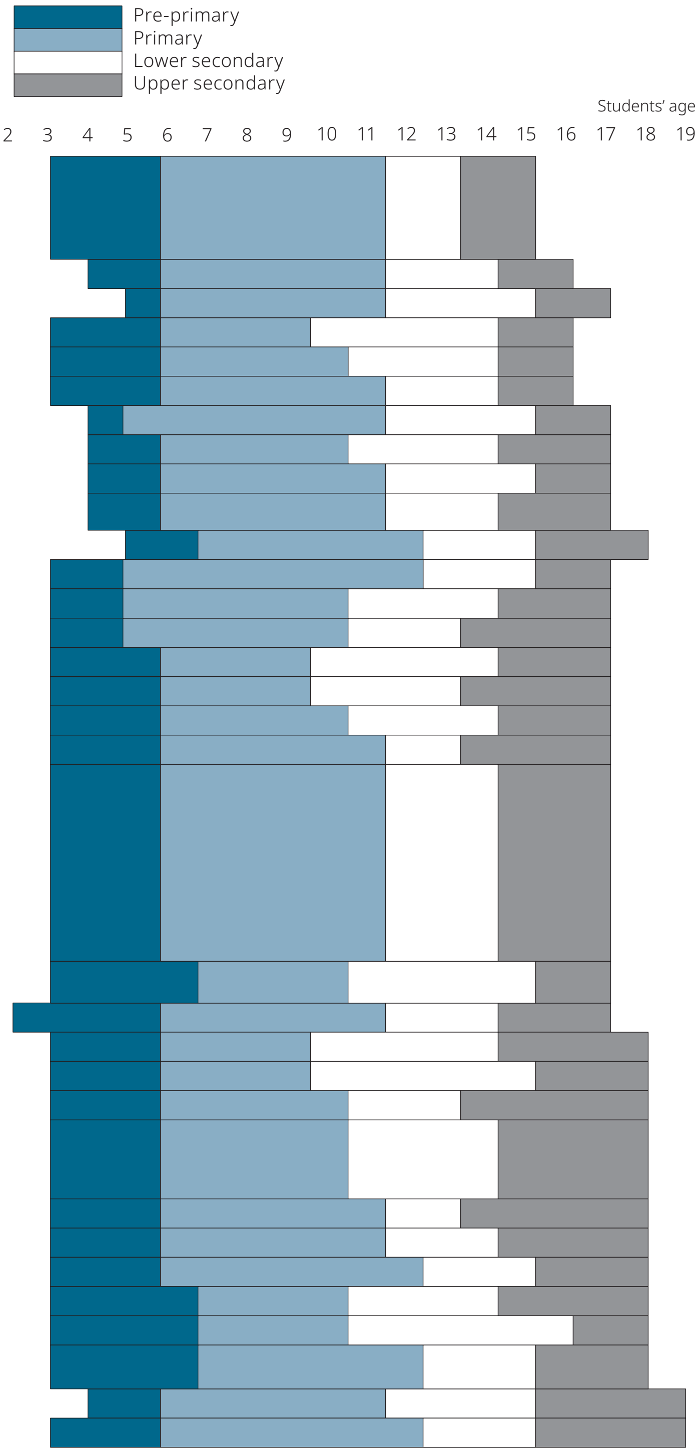
In this structure, students are expected to complete 15 years of education (if only primary and secondary levels are considered, not including pre-primary, students are expected to complete 12 years of education). The education systems of 19 countries and economies, namely Argentina, Georgia, Greece, Hong Kong (China), Israel, Japan, Korea, Lebanon, Macao (China), Mexico, the Netherlands, Panama, Portugal, Qatar, Saudi Arabia, Spain, Thailand, the United States and Uruguay, are structured this way.

In most education systems, children are expected to enter pre-primary education at age three, but in Chinese Taipei regulations mandate that children enter at age two, while in nine other countries the theoretical starting age for pre-primary education is four; in Indonesia and the Philippines, children are expected to enter pre-primary education at age five. Pre-primary education lasts for 3 years in most systems, but in 14 countries and economies it lasts for 4 years while in Australia and the Philippines it lasts for only 1 year.

Figure V.2.2 **The vertical structure of education systems**

Theoretical starting age and theoretical duration of pre-primary, primary and secondary education

Total number of years of schooling from entry into pre-primary to the end of upper secondary (Total duration)	Education systems with the same starting age and duration at each education level
13	Singapore
	Costa Rica, Malaysia[1]
	Philippines
14	Belarus, Ukraine
	Colombia
	Peru
	Australia
	Brazil, United Arab Emirates
	Jordan
	Canada, Morocco
	Indonesia
15	Ireland[1]
	New Zealand
	Malta, United Kingdom
	Azerbaijan
	Austria, Turkey
	Albania, France, Viet Nam
	Belgium, Chile, Dominican Republic
	Argentina, Georgia, Greece, Hong Kong (China), Israel, Japan, Korea, Lebanon, Macao (China), Mexico, Netherlands, Panama, Portugal, Qatar, Saudi Arabia, Spain, Thailand[1], United States, Uruguay
	Kazakhstan, Moldova, Russia
16	Chinese Taipei
	Slovak Republic
	Germany
	Italy
	Bosnia and Herzegovina, Czech Republic, Montenegro, North Macedonia, Romania
	Brunei Darussalam
	Luxembourg, Slovenia
	Denmark, Norway
	Bulgaria, Croatia, Hungary, Serbia
	Lithuania
	Estonia, Finland, Latvia, Poland, Sweden
	Switzerland[1]
17	Iceland



1. For these countries, the theoretical duration (in years) of each education cycle was derived based on data on theoretical starting age.

Note: Theoretical starting age is the age at which students are expected to enter an education level according to national law or regulation. The theoretical duration is the number of years of schooling a students is expected to complete before graduating from an education level according to law or regulation.

Countries are shown in ascending order of the total number of years of schooling from entry into pre-primary to the end of upper secondary. Amongst education systems with the same total duration, countries are shown in ascending order of the age at entry into pre-primary education, followed by the age at entry into primary education, lower secondary and upper secondary education.

Source: OECD, PISA 2018 Database, Table B3.3.1.

StatLink https://doi.org/10.1787/888934130531

The theoretical age at entry into primary school is 6 in most countries and economies, but in 14 countries/economies it is 7, and in Australia, Ireland, Malta, New Zealand and the United Kingdom it is 5. Countries where the duration of primary education is the longest are Ireland (eight years) and Australia, Denmark, Iceland and Norway (seven years each). By contrast, in Austria, Azerbaijan, Belarus, Bulgaria, Croatia, Germany, Hungary, Kazakhstan, Lithuania, the Republic of Moldova, the Russian Federation, Serbia, the Slovak Republic, Turkey and Ukraine, primary schooling lasts four years. In 12 countries, namely Albania, Bosnia and Herzegovina, Brazil, Colombia, the Czech Republic, France, Italy, Montenegro, the Republic of North Macedonia (hereafter "North Macedonia"), Romania, the United Arab Emirates and Viet Nam, the theoretical duration of primary education is five years, and in another 45 countries and economies, the duration of primary education is six years.

In the northern European countries of Denmark, Estonia, Finland, Iceland, Norway and Sweden, and also in Ireland, Latvia and Poland, the combined duration of pre-primary and primary education is 10 years – one year longer than in most education systems. In these countries, and in Indonesia, students are expected to enter lower secondary education at age 13. By contrast, in Austria, Azerbaijan, Belarus, Germany, the Slovak Republic, Turkey and Ukraine, students are expected to enter lower secondary education at age 10. In most countries and economies, the theoretical age at entry into lower secondary education is 12.

In most countries/economies, secondary education (lower and upper secondary combined) lasts six years, but in Germany and the Slovak Republic, where the theoretical age at entry is youngest, secondary education lasts nine years. By contrast, in Singapore, lower and upper secondary education lasts only four years. Singapore's education system is unique in that completing the education cycle from the first grade of primary school through the last grade of upper secondary school takes only ten years – less than in any other country. This is because, in Singapore, the duration of lower secondary (two years) and upper secondary (two years) is brief by international standards. By contrast, the duration of pre-primary and primary education in Singapore is the same as the typical vertical structure in PISA-participating countries and economies.

PRE-PRIMARY EDUCATION

Evidence about the importance of high-quality pre-primary education is growing (OECD, 2018[9]; Heckman, 2006[10]). In parallel, over the past few decades, enrolment in pre-primary education has become more prevalent across countries around the world (UNESCO Institute for Statistics, 2012[11]; OECD, 2018[12]). Research suggests that a variety of outcomes can be boosted by high-quality pre-primary education, including children's cognitive development and well-being, later academic achievement and even adult earnings (Duncan et al., 2007[13]; Nordic Council of Ministers, 2012[14]). Attendance at pre-primary school has been shown to improve students' behaviour, attention, effort and class participation in primary school (Berlinski, Galiani and Gertler, 2009[15]). In addition, early education programmes are cost-effective interventions with substantial economic returns to investment (Heckman et al., 2010[16]).

The benefits of attendance at pre-primary education tend to be greater for socio-economically disadvantaged children (Suziedelyte and Zhu, 2015[17]). However, the benefits also depend on the quality of the early childhood education and care, as defined by positive staff-child interactions and more exposure to developmental activities, amongst other factors (Melhuish et al., 2015[18]).

Data from PISA 2018 show that most 15-year-old students had attended pre-primary education for three years or more[2] (56% of students), two years (24%), or one year (14%), on average across OECD countries (Table V.B1.2.1).[3] In 59 countries and economies, at least 85% of students had attended for at least one year. In Belgium, Beijing, Shanghai, Jiangsu and Zhejiang (China), Denmark, France, Hong Kong (China), Hungary, Iceland, Israel, Japan, Macao (China), Mexico, Singapore, Chinese Taipei and Thailand, attending pre-primary education for at least one year is virtually universal (more than 98% of students had done so).

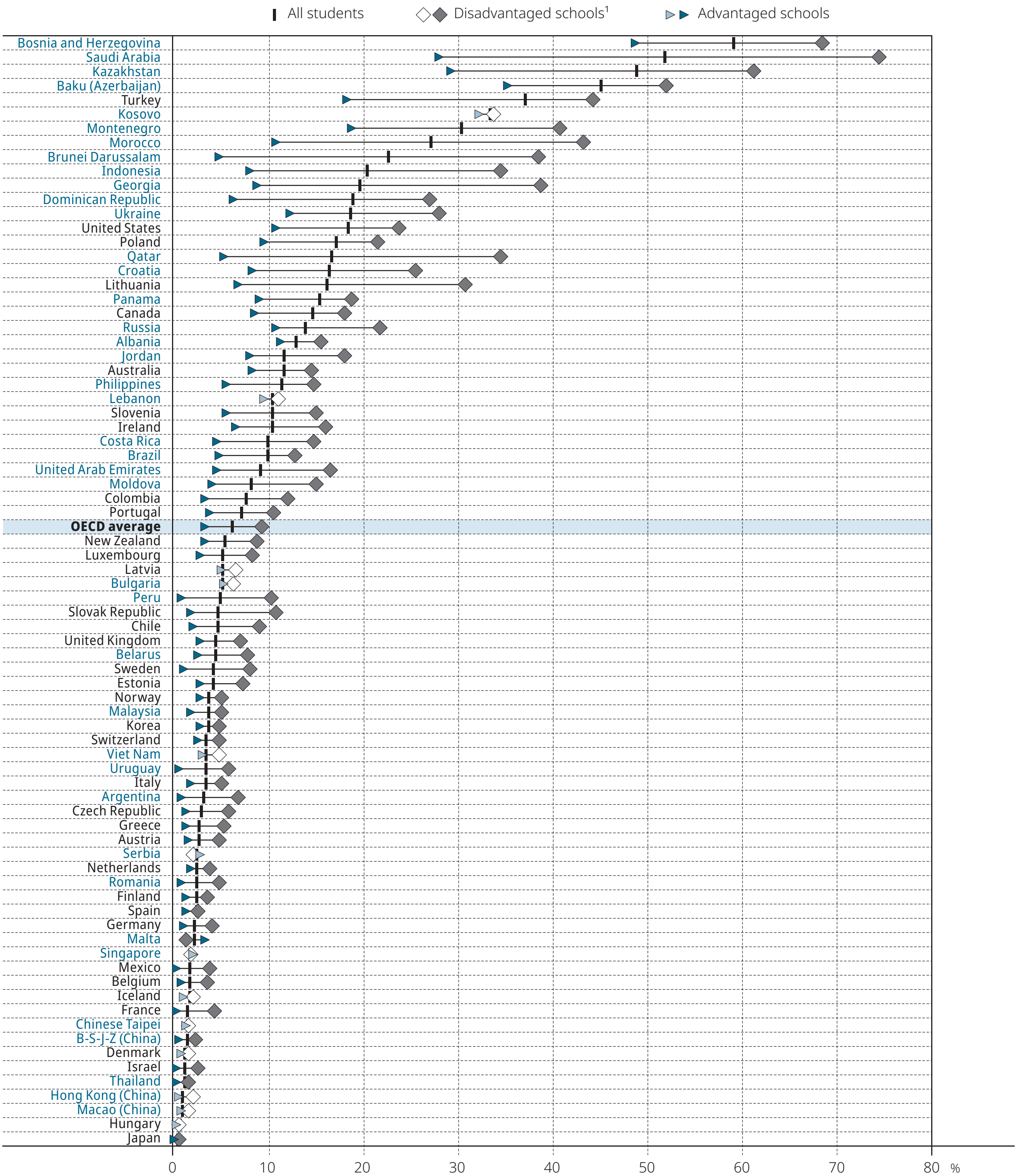
Cross-national variations in attendance at pre-primary education may be related to several factors. For example, some countries may have lower rates of pre-primary attendance due to longer parental leave, or because there is a culture where infants are cared for in the home. Other countries may offer earlier access to primary education and therefore there is less time between birth and primary school for attendance at pre-primary education. Differences in the age at entry into primary education across countries result in disparities in the number of years students could have attended pre-primary education.

The number of years students spend in pre-primary education has increased over time in many countries. Between PISA 2015 and PISA 2018, in 41 of 54 countries and economies with available data, the share of students who had attended pre-primary education for three years or more increased. In 17 countries and economies, the share of students who had not attended or had attended pre-primary education for less than one year decreased during the same period; and in 22 countries/economies, the share of students who had attended pre-primary education for one year decreased between 2015 and 2018.

Despite this expansion in enrolment in pre-primary education, about 6% of students in PISA 2018 reported that they had not attended or that they had attended pre-primary education for less than one year, on average across OECD countries (Figure V.2.3). More than 30% of students in Baku (Azerbaijan), Bosnia and Herzegovina, Kazakhstan, Kosovo, Montenegro, Saudi Arabia and Turkey had attended pre-primary school for less than one year or had not attended at all.

Figure V.2.3 **Students who had not attended pre-primary education, by schools' socio-economic profile**

Percentage of students who had not attended pre-primary education or had attended for less than a year



1. 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 index of ESCS in the relevant country/economy.

Note: Statistically significant differences between advantaged and disadvantaged schools are marked in a darker tone (see Annex A3).

Countries and economies are ranked in descending order of the percentage of students who had not attended pre-primary education or had attended for less than a year.

Source: OECD, PISA 2018 Database, Table V.B1.2.2.

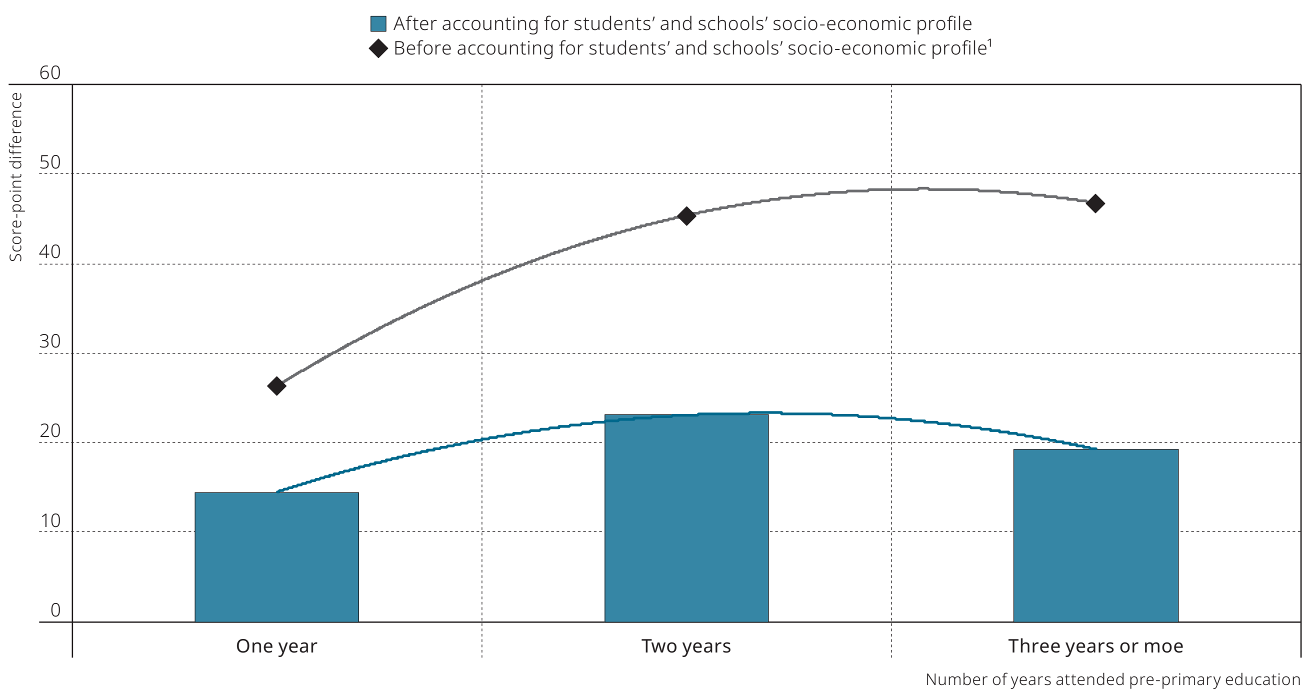
StatLink https://doi.org/10.1787/888934130550

In 67 out of 78 countries and economies for which there are comparable data, students who had not attended pre-primary education were more likely to be those enrolled in socio-economically disadvantaged schools (Figure V.2.3). On average across OECD countries in 2018, 10% of socio-economically disadvantaged students but 3% of advantaged students had not attended or had attended pre-primary education for less than one year.

Students who had attended pre-primary education for longer scored better in reading than students who had not attended (Figure V.2.4).[4] On average across OECD countries, the mean reading score of students who had attended pre-primary education for one year (471 points), two years (491 points) or three years or more (493 points) was higher than the score of students who had not attended or had attended for less than one year (444 points) (Table V.B1.2.4). There was a positive relationship between attendance at pre-primary education and student achievement at age 15 when the student had attended pre-primary school for up to 2 years. But no performance difference was observed between students who had attended pre-primary education for two years and those who had attended for three years or more, both before and after accounting for students' and schools' socio-economic profile.

Figure V.2.4 **Number of years in pre-primary education and reading performance**

Score-point difference in reading relative to students who had not attended pre-primary school or had attended for less than a year, OECD average



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Note: Statistically significant values are shown in darker tone (see Annex A3). The lines in the figure are included for illustrative purposes only.

Source: OECD, PISA 2018 Database, Table V.B1.2.5.

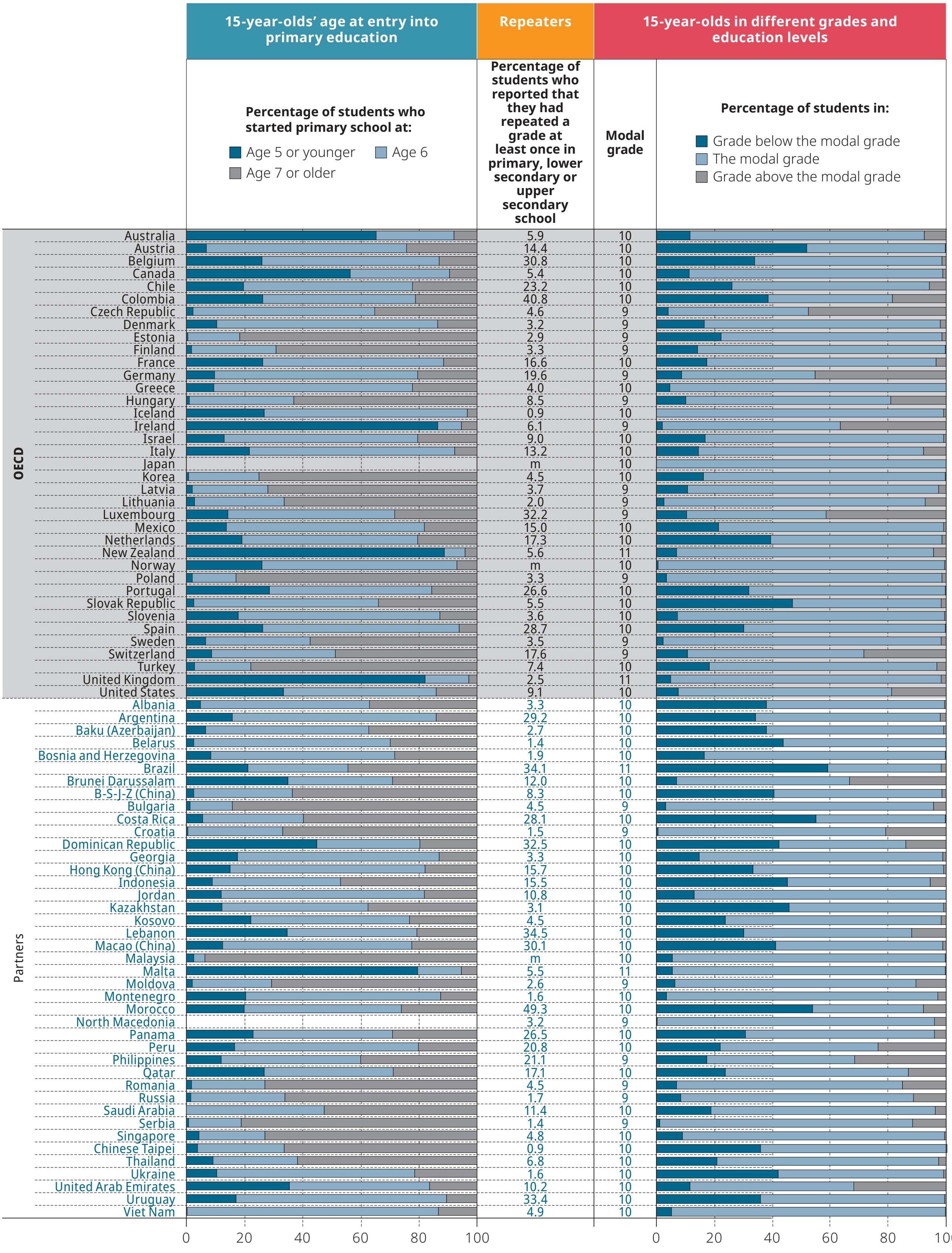
StatLink https://doi.org/10.1787/888934130569

ENTRY INTO PRIMARY EDUCATION AND GRADE LEVEL AT AGE 15

PISA 2018 asked students about their age at entry into primary education. These data reflect the actual age at entry into primary school as reported by students, not the theoretical age at entry into this level of education as defined by law and regulations, which was discussed in a previous section of this chapter. On average across OECD countries, 48% of the students who participated in PISA 2018 reported that they had started primary school at age 6, while another 26% started at age 7, and 22% started before they were 6 (Table V.B1.2.6).

Some variation in the typical age at entry into primary education was observed across countries. In Australia, Ireland, Malta, New Zealand and the United Kingdom, at least six out of ten students had started primary school at age five or earlier (Figure V.2.5). As shown in Figure V.2.2, in these five countries, the theoretical age at entry into primary education is 5 years old. In 38 PISA-participating countries/economies, at least half of students had started primary school when they were 6 years old. In 20 countries/economies, a majority of students had started primary education when they were 7 years old, while in Bulgaria, Estonia, Malaysia, Poland, Serbia and Singapore, at least seven out of ten students had started primary education when they were seven or older.

Figure V.2.5 **Age at entry into primary school, grade repetition and grade level**



Source: OECD, PISA 2018 Database, Table V.B1.2.6, Table V.B1.2.7 and Table V.B1.2.9.

StatLink https://doi.org/10.1787/888934130588

In many countries, 15-year-old students in 2018 had started primary school later than their counterparts in 2015 had. In 39 countries and economies, the share of students who reported that they had started primary school at age 4 or younger shrank between 2015 and 2018, and by more than 5 percentage points in 9 countries (Canada, the Dominican Republic, Lebanon, Malta, the Netherlands, Qatar, Spain, the United Arab Emirates and the United Kingdom) (Table V.B1.2.6). By contrast, the share of students who had started primary school at age 5 increased in 21 countries and economies (this share decreased in 6 countries and economies), and the share of students who had started primary school at age 7 increased in 25 countries and economies (this share decreased in 8 countries/economies).

In 54 countries and economies, the modal grade of enrolment of 15-year-olds was grade 10, whereas in another 21 countries and economies the modal grade was grade 9. The only exceptions were Brazil, Malta, New Zealand and the United Kingdom, where the modal grade was grade 11. The modal grade of a school system is the result or consequence of other vertical stratification policies and practices, such as the age at which children start school. The modal grade is also partly a result of PISA's specific sampling design (i.e. how PISA defines its target population and how individual countries determined their testing windows[5]).

On average across OECD countries, in PISA 2018, 76% of students were enrolled in the modal grade in their respective country or economy, 16% were enrolled below that modal grade and 8% of students were enrolled above that modal grade. In Greece, Iceland, Japan, North Macedonia, Norway, Poland, Sweden and Viet Nam, at least 95% of students were enrolled in the modal grade. In these eights countries, grade repetition is rare and thus most students move up through schooling at the same pace.

The share of students in grades below the modal grade decreased by five percentage points between 2003 and 2018 on average across OECD countries. This share decreased in 17 countries and economies, and by 25 percentage points or more in the Czech Republic, Mexico and the United Kingdom. It increased in ten countries and economies, and by ten percentage points or more in Brazil, Indonesia, Korea and Turkey.

GRADE REPETITION

Grade repetition is the practice of requiring students to remain in the same grade level for an additional year, instead of promoting them to the next grade along with their peers of the same age. Students are typically required to repeat a grade when they do not perform well academically. The intended purpose of grade repetition is to give students a "second chance" to master the knowledge and skills appropriate for their grade level. However, evidence of the benefits of grade repetition is mixed (Allen et al., 2009[19]). Short-term gains in test scores tend to disappear a few years after repetition (Alet, 2014[20]). Students who had repeated a grade tend to perform less well in school and hold more negative attitudes towards school at age 15 than students who had not repeated a grade in primary or in secondary education (Ikeda and García, 2014[21]; Jimerson, Anderson and Whipple, 2002[22]). In addition, students who had repeated a grade are more likely to drop out of high school (Manacorda, 2008[23]; Jimerson, Anderson and Whipple, 2002[22]; Stearns et al., 2007[24]).

On average across OECD countries in 2018, 11% of students reported that they had repeated a grade at least once in either primary or secondary school. In 34 countries and economies, 5% of students or less had repeated a grade. In 14 countries, more than 25% of students had repeated a grade; in Colombia, about 40% of students had repeated a grade, and in Morocco, around 50% of students had done so.

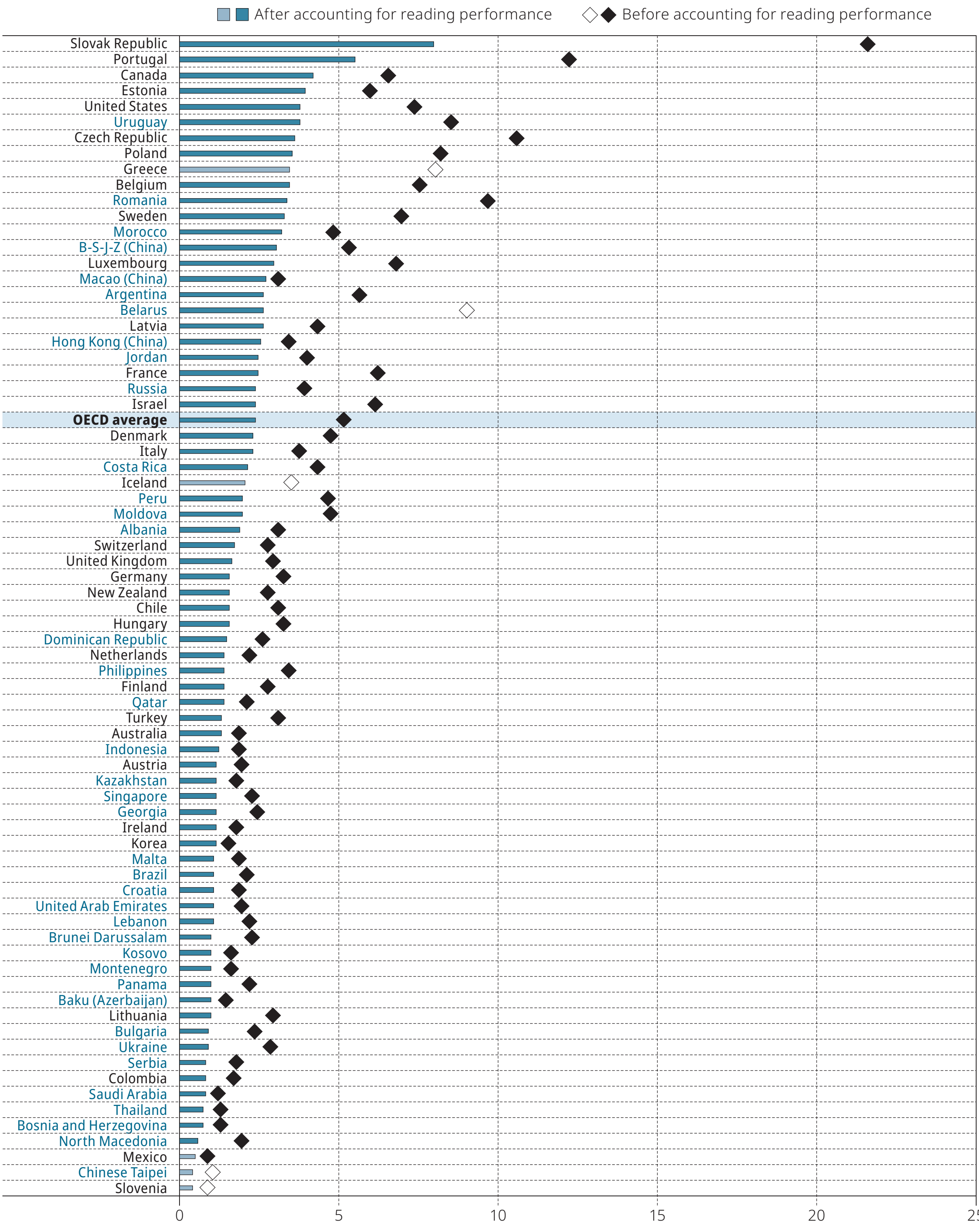
The incidence of grade repetition decreased between 2003 and 2018 in 14 out of 36 countries and economies for which there are comparable data. On average across OECD countries, the percentage of students who reported that they had repeated a grade at least once decreased by three percentage points during the period; it decreased by more than 10 percentage points in France, Macao (China), Mexico, the Netherlands and Turkey. By contrast, the incidence of grade repetition increased between 2003 and 2018 in Austria, the Czech Republic, Iceland, Korea, New Zealand, the Slovak Republic and Thailand.

The incidence of grade repetition also decreased between 2015 and 2018 in 15 out of 65 countries and economies for which there are comparable data. It increased in six countries and economies, most noticeably in Lebanon, where the share of students who had repeated a grade increased by eight percentage points. The incidence of grade repetition did not change by a statistically significant magnitude in 44 countries and economies between 2015 and 2018.

In almost all countries and economies that participated in PISA 2018, students in socio-economically disadvantaged schools were more likely to have repeated a grade than students in advantaged schools. The only exceptions were Baku (Azerbaijan), New Zealand, Chinese Taipei and Viet Nam, where no disparities in grade repetition related to schools' socio-economic profile were observed. On average across OECD countries, 20% of students in disadvantaged schools had repeated a grade at least once, compared to only 5% of students in advantaged schools (Table V.B1.2.10). In Argentina, Belgium, France, Lebanon, Morocco and Uruguay, the share of students in disadvantaged schools who had repeated a grade was at least 40 percentage points larger than the share of students in advantaged schools who had done so.

Figure V.2.6 **Grade repetition, socio-economic status and reading performance**

Increased likelihood of having repeated a grade amongst disadvantaged students, relative to advantaged students, before and after accounting for reading performance



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Note: Statistically significant odds ratios are shown in darker tones (see Annex A3).

Countries and economies are ranked in descending order of the increased likelihood of having repeated a grade amongst disadvantaged students, after accounting for reading performance.

Source: OECD, PISA 2018 Database, Table V.B1.2.11.

StatLink https://doi.org/10.1787/888934130607

Furthermore, in 38 countries and economies, disadvantaged students were more likely than advantaged students to have repeated a grade, even when the two groups scored similarly in reading (Figure V.2.6). On average across OECD countries, a disadvantaged student was more than twice as likely as an advantaged student to have repeated a grade at least once, even if the students scored similarly in the PISA reading test (Table V.B1.2.11).[6] This suggests that factors other than academic performance (e.g. student well-being, misbehaviour, illness, attendance, etc.) are considered when teachers assign marks or when schools make decisions about whether a student should repeat a grade.

On average across OECD countries, students who had repeated a grade at least once in primary or secondary school scored around 93 points lower than students who had not repeated a grade (Table V.B1.2.10). After accounting for students' and schools' socio-economic profile, students who had repeated a grade scored around 67 points lower than students who had not repeated a grade.

HOW VERTICAL STRATIFICATION IS RELATED TO DIFFERENCES IN PERFORMANCE AND EQUITY IN EDUCATION ACROSS COUNTRIES/ECONOMIES (SYSTEM-LEVEL ANALYSIS)

This section examines whether measures of vertical stratification are related to education outcomes at the system level. Two education outcomes are considered: mean performance in reading and equity in reading performance. As in previous PISA reports, equity in reading performance is measured by the percentage of variation in reading performance accounted for by differences in students' socio-economic status; the smaller the variation in performance explained by socio-economic status, the greater the equity in performance (OECD, 2019[25]; OECD, 2018[26]).

Figure V.2.7 shows system-level correlation coefficients between measures of vertical stratification on the one hand, and reading performance and equity in reading performance on the other. Correlational analyses were conducted separately for OECD countries and for all countries and economies that participated in PISA 2018. In addition, correlations were computed before and after accounting for per capita GDP, to account for the level of economic development of a country/economy.

At the system level, grade repetition was negatively related to reading performance. This is consistent with findings at the student level. Countries and economies with smaller shares of students who had repeated a grade generally showed higher mean performance in PISA. As shown in Figure V.2.7, the percentage of students who had repeated a grade at least once was negatively correlated with mean performance in reading, even after accounting for per capita GDP, across OECD countries, and across all countries and economies. Differences in grade repetition accounted for about 24% of the variation in mean reading performance across OECD countries and for about 10% of the variation across all countries and economies. (Figure V.2.8).[7]

In addition, countries and economies with smaller shares of students who had repeated a grade generally showed greater equity in education. As shown in Figure V.2.7, the percentage of students who had repeated a grade at least once was negatively correlated with equity in reading performance, even after accounting for per capita GDP, across OECD countries, and across all countries and economies. Differences in grade repetition accounted for about 26% of the variation in equity in reading performance across OECD countries, and for about 7% of the variation across all countries and economies (Figure V.2.9).[8,9]

At the system level, across all participating countries and economies, education systems where more students had attended pre-primary education for three years or more showed higher mean performance in reading, even after accounting for per capita GDP (Figure V.2.7). Differences in the percentage of students who had attended pre-primary education for three years or more accounted for about 23% of the variation in mean reading performance across all countries and economies (Figure V.2.10). However, PISA 2018 results also showed that in countries and economies where more students had attended pre-primary education for three years or more, average performance was higher but students' socio-economic profile was more strongly related to their performance at the age of 15. These relationships were observed across all countries and economies, but not across OECD countries.

Changes between PISA 2015 and 2018 in the percentage of students who had attended pre-primary school for two years were positively correlated with changes in mean reading performance over the same period, across OECD countries, and across all countries and economies (Figure V.2.11). Changes in the percentage of students who had attended pre-primary school for two years accounted for 22% of the variation in changes of mean reading performance across all countries and economies.

Countries/economies with a larger share of students in the modal grade also showed greater equity in student performance. The system-level correlations between the percentage of students in the modal grade and equity in reading performance were statistically significant, after accounting for per capita GDP, across OECD countries, and across all countries and economies[10,11] (Figure V.2.5). As shown in Figure V.2.12, almost 40% of the differences in equity in reading performance across OECD countries could be accounted for by differences in the percentage of students in the modal grade.

Figure V.2.7 [1/2] **Selected measures of vertical stratification, student performance and equity**

		OECD countries			
		Mean reading score		Equity in reading[1]	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Pre-primary education	Had not attended pre-primary or attended less than a year				
	Had attended pre-primary at least 1 year but less than 2				
	Had attended pre-primary at least 2 years but less than 3				
	Had attended pre-primary 3 years or more				
Primary education	4 years old or younger when started ISCED 1	*0.29*			
	5 years old when started ISCED 1				
	6 years old when started ISCED 1	-0.48	-0.54	-0.33	*-0.33*
	7 years old when started ISCED 1				
	8 years old when started ISCED 1				
	9 years old or older when started ISCED 1				
	Age when started ISCED 1				
Grade repetition	Never repeated a grade at ISCED 1	0.40	0.51	0.50	0.49
	Repeated a grade once at ISCED 1	*-0.38*	-0.53	-0.53	-0.52
	Repeated a grade twice or more at ISCED 1	-0.39	-0.35		
	Never repeated a grade at ISCED 2	0.48	0.53	0.44	0.44
	Repeated a grade once at ISCED 2	-0.45	-0.54	-0.49	-0.49
	Repeated a grade twice or more at ISCED 2	-0.51	-0.44		
	Never repeated a grade at ISCED 3				
	Repeated a grade once at ISCED 3				
	Repeated a grade twice or more at ISCED 3				
	Repeated a grade at least once at ISCED 1, ISCED 2 or ISCED 3	-0.49	-0.57	-0.51	-0.51
Grade level	Grade below the modal grade	-0.38	*-0.32*	*-0.28*	*-0.29*
	At modal grade	*0.33*	0.42	0.63	0.63
	Grade above the modal grade			-0.50	-0.54
	Percentage of students enrolled in ISCED level 3				

1. The percentage of variance in student performance explained by PISA index of economic, social and cultural status was used as measure of inequity in performance. In a first step, the correlation coefficients between measures of vertical stratification and inequity were computed. In a second step, the sign of the correlation coefficients was reversed (i.e. multiplied by -1) to simplify reporting (i.e. report correlation with equity instead of with inequity).

Notes: Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level (p < 0.10) are in italics. All other values are statistically significant at the 5% level (p < 0.05).

Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Source: OECD, PISA 2018 Database, Table V.B1.2.14.

StatLink https://doi.org/10.1787/888934130626

Figure V.2.7 [2/2] **Selected measures of vertical stratification, student performance and equity**

		All countries and economies			
		Mean reading score		Equity in reading[1]	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Pre-primary education	Had not attended pre-primary or attended less than a year	-0.47	-0.40	0.33	0.32
	Had attended pre-primary at least 1 year but less than 2	-0.37	-0.28		
	Had attended pre-primary at least 2 years but less than 3		*-0.23*		
	Had attended pre-primary 3 years or more	0.48	0.46		
Primary education	4 years old or younger when started ISCED 1				
	5 years old when started ISCED 1				
	6 years old when started ISCED 1				
	7 years old when started ISCED 1				
	8 years old when started ISCED 1	*0.21*			
	9 years old or older when started ISCED 1	-0.37	-0.38		
	Age when started ISCED 1				
Grade repetition	Never repeated a grade at ISCED 1	0.36	0.45	0.27	0.26
	Repeated a grade once at ISCED 1	-0.32	-0.43	-0.30	-0.29
	Repeated a grade twice or more at ISCED 1	-0.45	-0.44		
	Never repeated a grade at ISCED 2	0.38	0.42		
	Repeated a grade once at ISCED 2	-0.35	-0.40		
	Repeated a grade twice or more at ISCED 2	-0.44	-0.41		
	Never repeated a grade at ISCED 3		*0.22*		
	Repeated a grade once at ISCED 3				
	Repeated a grade twice or more at ISCED 3	-0.33	-0.37		
	Repeated a grade at least once at ISCED 1, ISCED 2 or ISCED 3	-0.32	-0.40	-0.26	-0.25
Grade level	Grade below the modal grade	-0.27	-0.24		
	At modal grade	0.29	0.36	0.30	0.32
	Grade above the modal grade		*-0.21*	-0.37	-0.42
	Percentage of students enrolled in ISCED level 3				

1. The percentage of variance in student performance explained by PISA index of economic, social and cultural status was used as measure of inequity in performance. In a first step, the correlation coefficients between measures of vertical stratification and inequity were computed. In a second step, the sign of the correlation coefficients was reversed (i.e. multiplied by -1) to simplify reporting (i.e. report correlation with equity instead of with inequity).

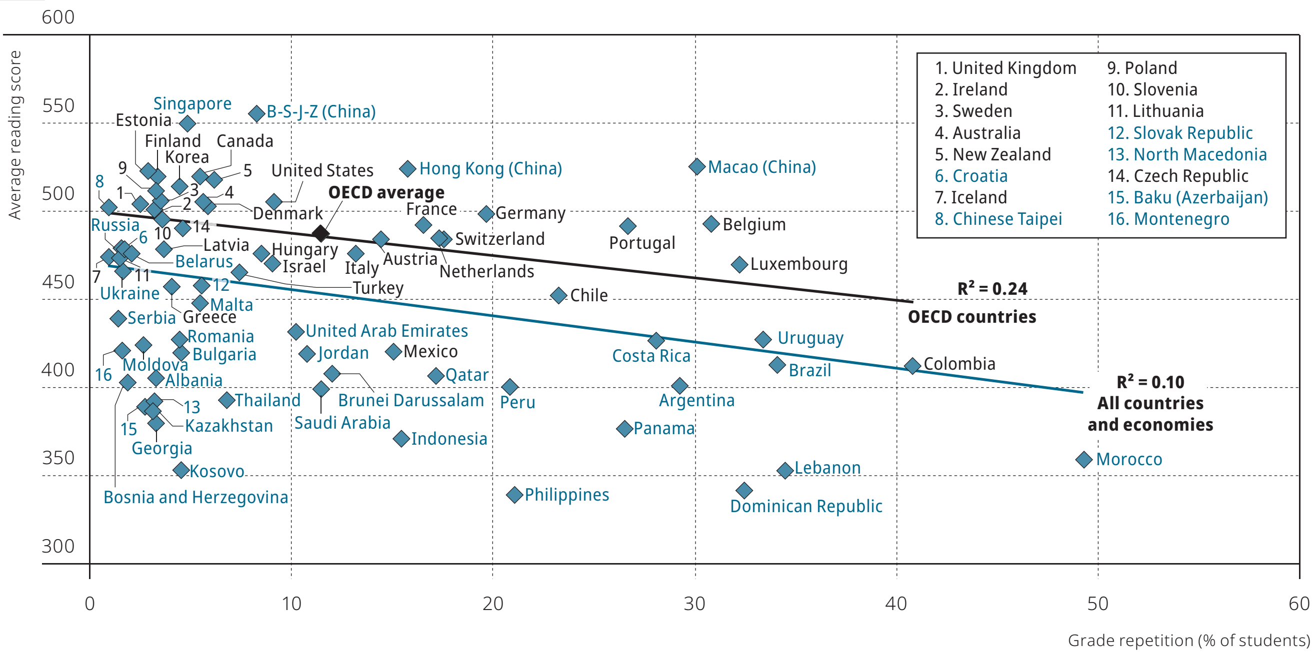
Notes: Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Source: OECD, PISA 2018 Database, Table V.B1.2.14.

StatLink https://doi.org/10.1787/888934130626

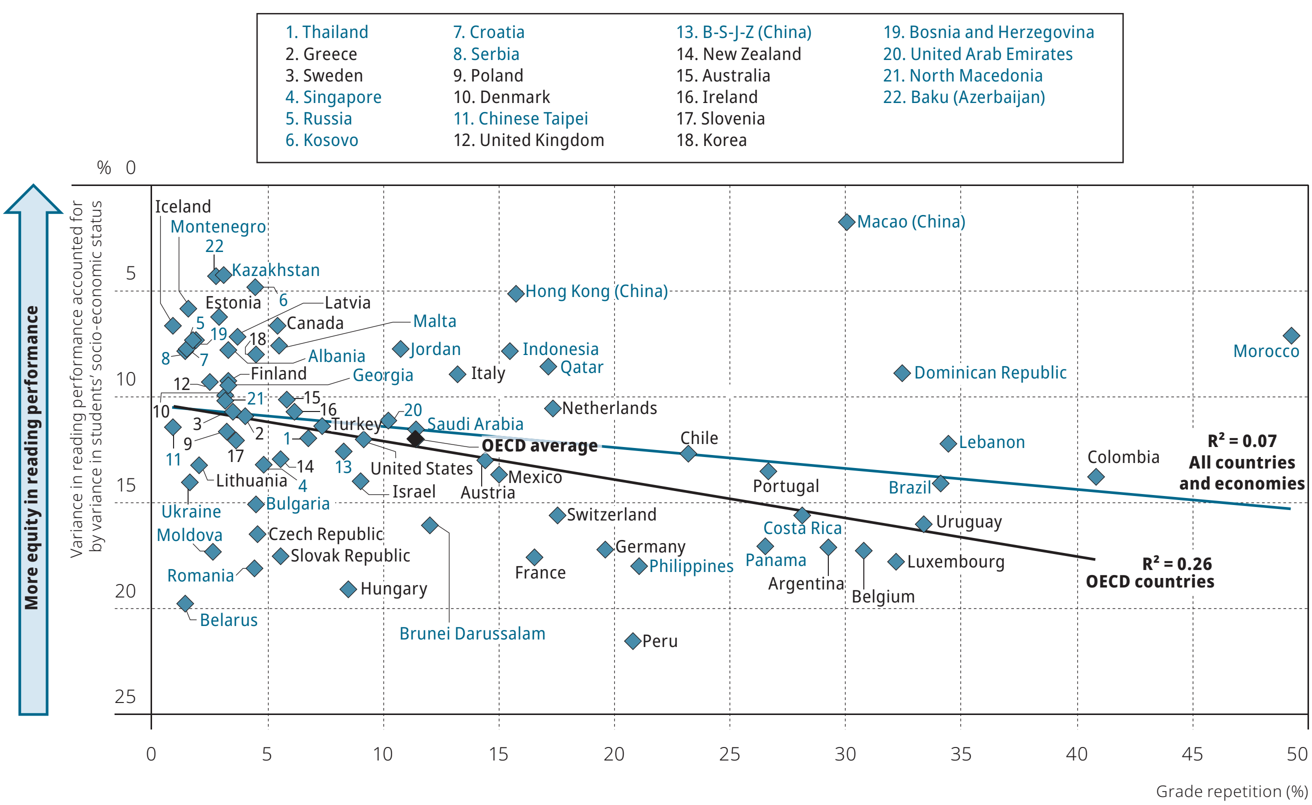
Figure V.2.8 **Grade repetition and reading performance**



Source: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.2.10.

StatLink https://doi.org/10.1787/888934130645

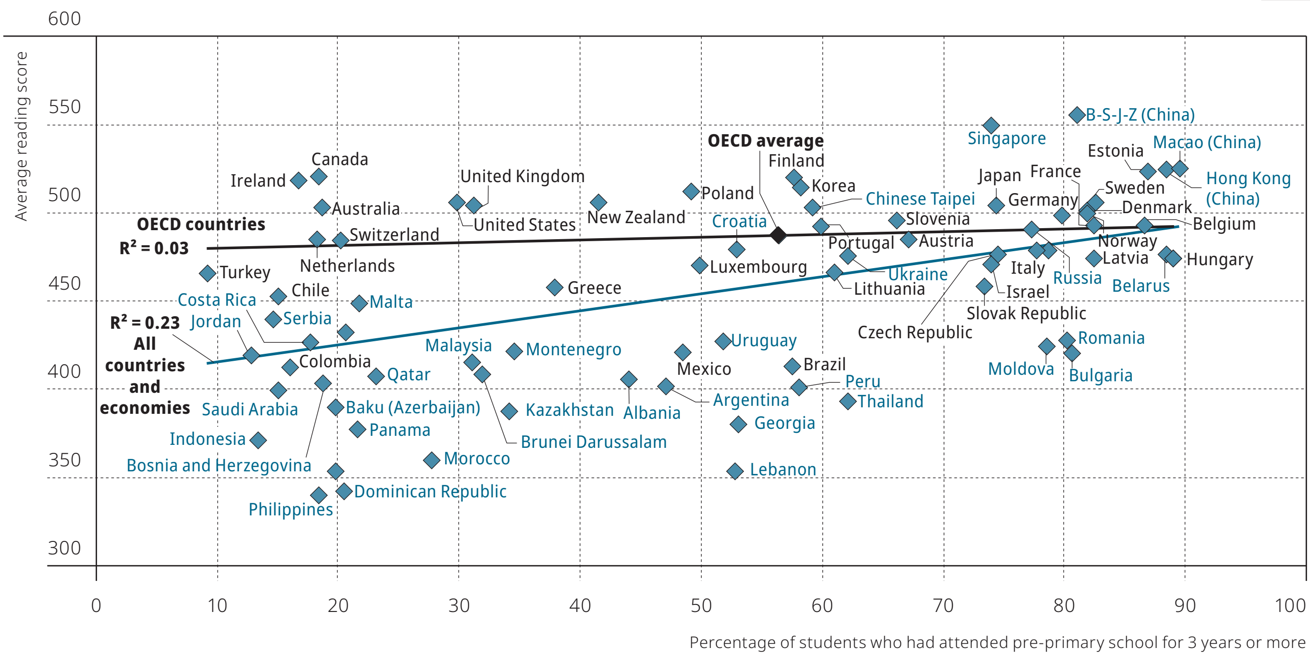
Figure V.2.9 **Grade repetition and equity in reading performance**



Source: OECD, PISA 2018 Database, Tables II.B1.2.3 and V.B1.2.10.

StatLink https://doi.org/10.1787/888934130664

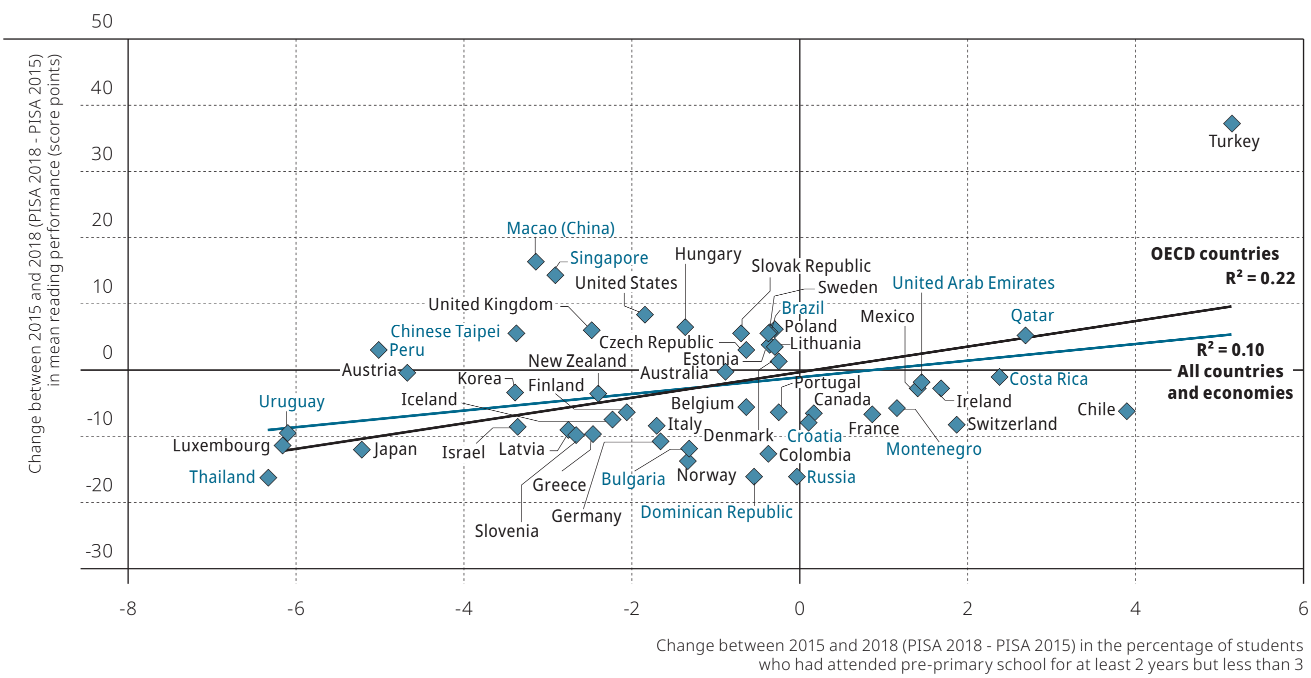
Figure V.2.10 **Pre-primary education and student performance**



Source: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.2.1.

StatLink https://doi.org/10.1787/888934130683

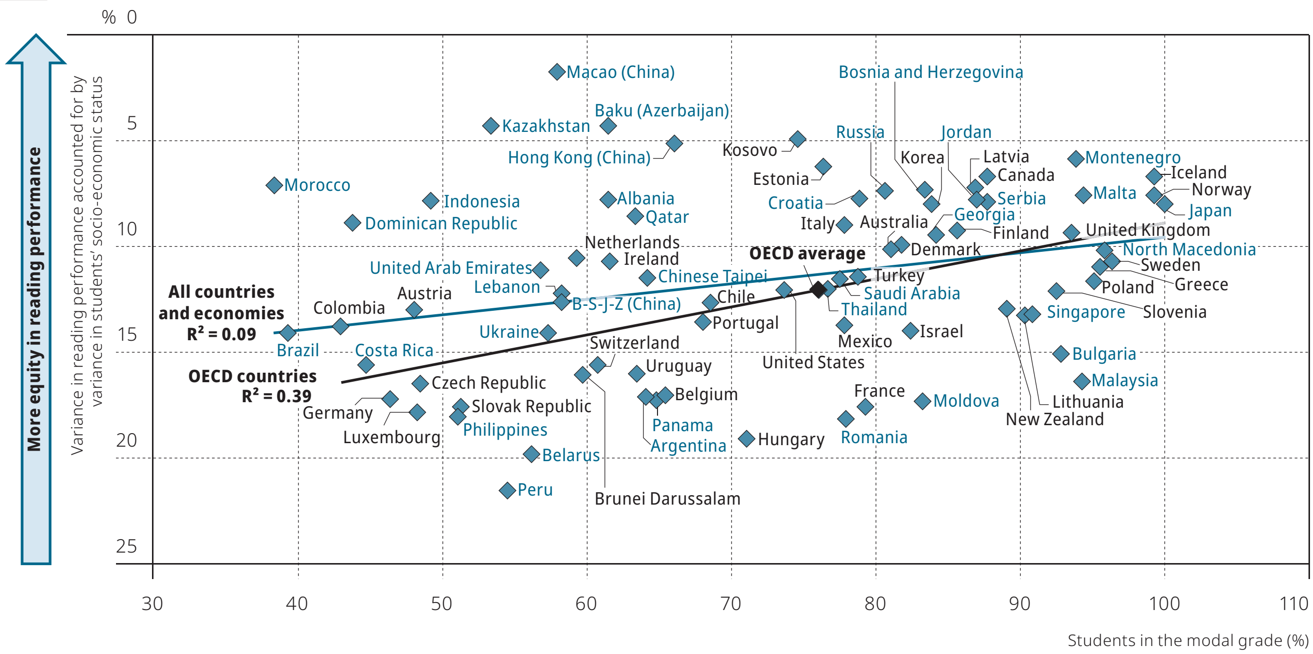
Figure V.2.11 **Changes between 2015 and 2018 in pre-primary education and reading performance**



Source: OECD, PISA 2018 Database, Tables I.B1.10 and V.B1.2.1.

StatLink https://doi.org/10.1787/888934130702

Figure V.2.12 **Share of students in the modal grade and equity in student performance**



Source: OECD, PISA 2018 Database, Tables II.B1.2.3 and V.B1.2.7.

StatLink https://doi.org/10.1787/888934130721

Box V.2.1. **Stratification policies, growth mindset and equity in education**

Students who believe that their intelligence is something they can change (i.e. who endorse a growth mindset) scored higher in reading than students who do not believe so (OECD, 2019[27]). However, socio-economically advantaged students are more likely than disadvantaged students to endorse a growth mindset. As a result, a growth mindset can be a factor that reinforces socio-economic disparities in student achievement. How can schools and teachers encourage all students, including disadvantaged students, to endorse a growth mindset? Certain stratification policies that are related to growth mindset and to inequities in education, such as grade repetition and early tracking, can have an impact.

Growth mindset, socio-economic status and reading performance

A growth mindset, or incremental theory of intelligence, is the belief that someone's ability and intelligence can develop over time. By contrast, a fixed mindset is the belief that someone is born with a certain degree of ability and intelligence that is nearly unaltered by experience (Caniëls, Semeijn and Renders, 2018[28]; Dweck, 2006[29]).

For the first time in 2018, PISA measured growth mindset by asking students if they agreed or disagreed with the statement, "Your intelligence is something about you that you can't change very much". On average across OECD countries, some 60% of students disagreed or strongly disagreed with the statement, this is, they endorsed a growth mindset. However, the percentage of students who endorsed a growth mindset varied widely across countries.

PISA 2018 Results (Volume III) (OECD, 2019[27]) examines the relationship between holding a growth mindset, a student's socio-economic status and reading performance. Amongst the key findings:

- Socio-economically advantaged students were more likely than disadvantaged students to hold a growth mindset. On average across OECD countries, the percentage of students who hold a growth mindset was 12 percentage points higher amongst advantaged students than amongst disadvantaged student.

...

- Students who endorse a growth mindset scored better in reading, on average, than students who do not endorse a growth mindset. On average across OECD countries, students who hold a growth mindset scored 32 points higher in reading than students who do not hold a growth mindset, after accounting for the socio-economic profile of students and schools.
- The relationship between endorsing a growth mindset and reading performance was generally stronger amongst socio-economically disadvantaged students than amongst advantaged students.
- Holding a growth mindset was positively associated with students' motivation to master tasks, general self-efficacy, learning goals and perceiving the value of schooling; it was negatively associated with their fear of failure.

These results suggest that a growth mindset is an attitude that contributes to student learning, especially amongst disadvantaged students. However, because it is more prevalent amongst advantaged students, a growth mindset may be a factor that reinforces socio-economic disparities in student achievement. Schools and teachers might help enhance equity in education if they find ways to encourage all students, not just advantaged and high-performing students, to believe that they can develop their intelligence over time. Stratification policies could be adapted to this end.

Stratification policies and practices, growth mindset and equity in education

Grade repetition – a key vertical stratification policy – is negatively related to growth mindset. In 46 out of 76 countries and economies, students who had not repeated a grade in primary or secondary school were more likely than students who had repeated a grade to hold a growth mindset (in 3 countries/economies, they were less likely to hold a growth mindset) (Figure V.2.13). After accounting for students' and schools' socio-economic profile, in 38 countries and economies students who had not repeated a grade were more likely to endorse a growth mindset (in 4 countries/economies, those students were less likely to endorse a growth mindset). On average across OECD countries, students who had not repeated a grade were almost 50% more likely to endorse a growth mindset than students who had repeated a grade (odds ratio = 1.49), after accounting for students' and schools' socio-economic profile.

Similarly, tracking between schools and programmes of general and vocational orientation – a key measure of horizontal stratification policies – is related to holding a growth mindset. In 28 out of 51 countries/economies with valid data, students enrolled in a general/academic school or programme at age 15 were more likely than students in vocational schools or programmes to endorse a growth mindset (in 4 countries/economies, those students were less likely to endorse a growth mindset). After accounting for students' and schools' socio-economic profile, in 15 countries and economies, students enrolled in a general/academic school or programme were more likely than students in vocational schools/programmes to endorse a growth mindset (in 5 countries/economies, they were less likely to endorse a growth mindset). On average across OECD countries, students enrolled in a general/academic school or programme were about 12% more likely to endorse a growth mindset than students in vocational schools/programmes (odds ratio = 1.12), after accounting for students' and schools' socio-economic profile.

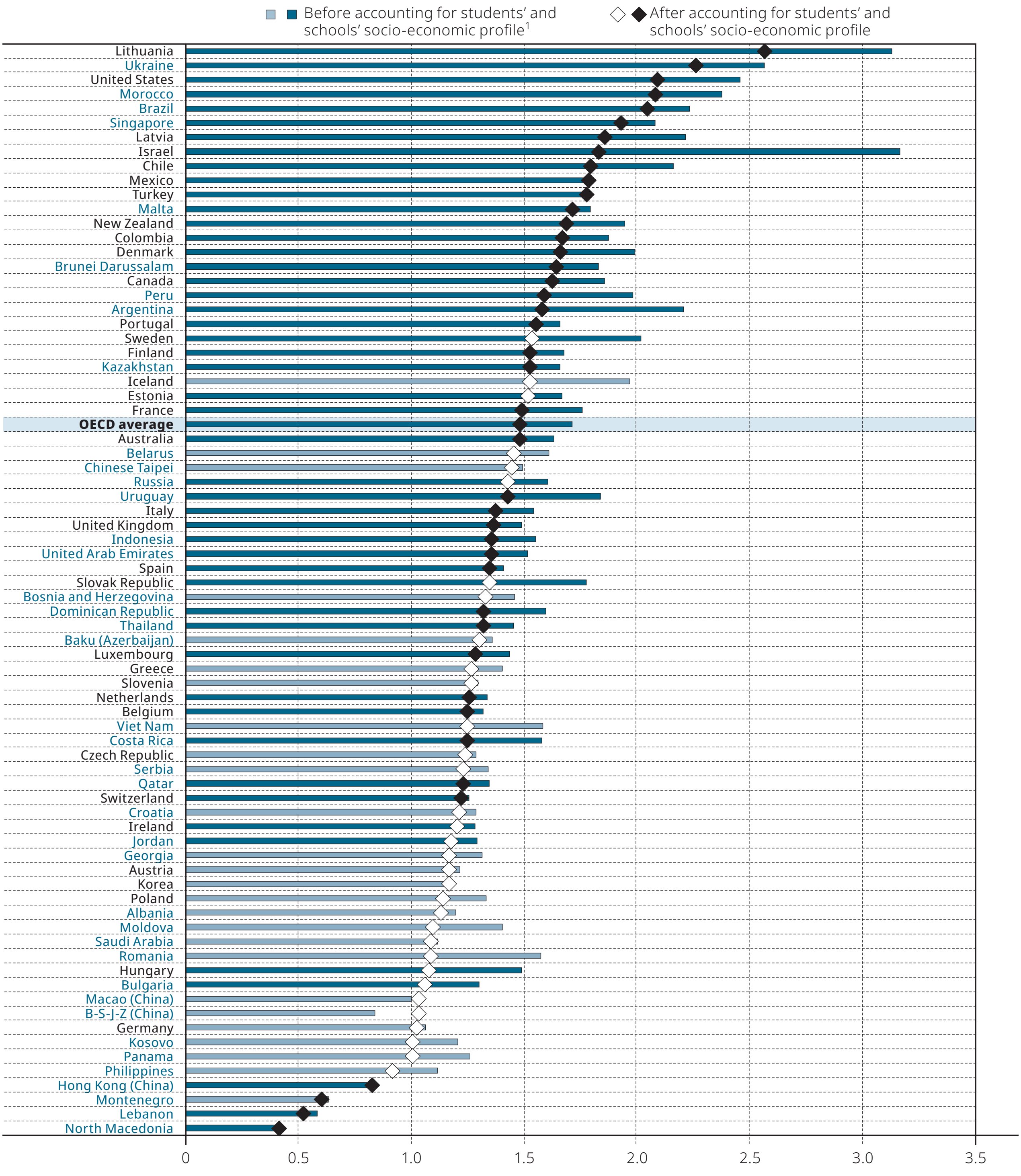
At the system level, grade repetition and tracking were related to equity in reading performance in PISA 2018. Even after accounting for per capita GDP, equity in reading performance was generally greater in countries and economies with a lower percentage of students who had repeated a grade (Figure V.2.9), and with a higher percentage of students enrolled in general programmes (Figure V.3.9).

These findings suggest that encouraging students who had repeated a grade, and students who are enrolled in vocational schools and programmes, to believe that they can develop their intelligence over time has the potential to reduce socio-economic disparities in student achievement. At the same time, reducing rates of grade repetition and delaying tracking between schools might result in more students adopting a growth mindset and greater equity in student performance.

...

Figure V.2.13 **Growth mindset and grade repetition**

Increased likelihood of disagreeing or strongly disagreeing that "your intelligence is something about you that you can't change very much", amongst students who had not repeated a grade in primary or secondary school (reference: students who had repeated a grade at least once).



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Note: Statistically significant odds ratio are shown in darker tones (see Annex A3).

Countries and economies are ranked in descending order of the increased likelihood of disagreeing or strongly disagreeing that "your intelligence is something about you that you can't change very much", after accounting for students' and schools' socio-economic profile.

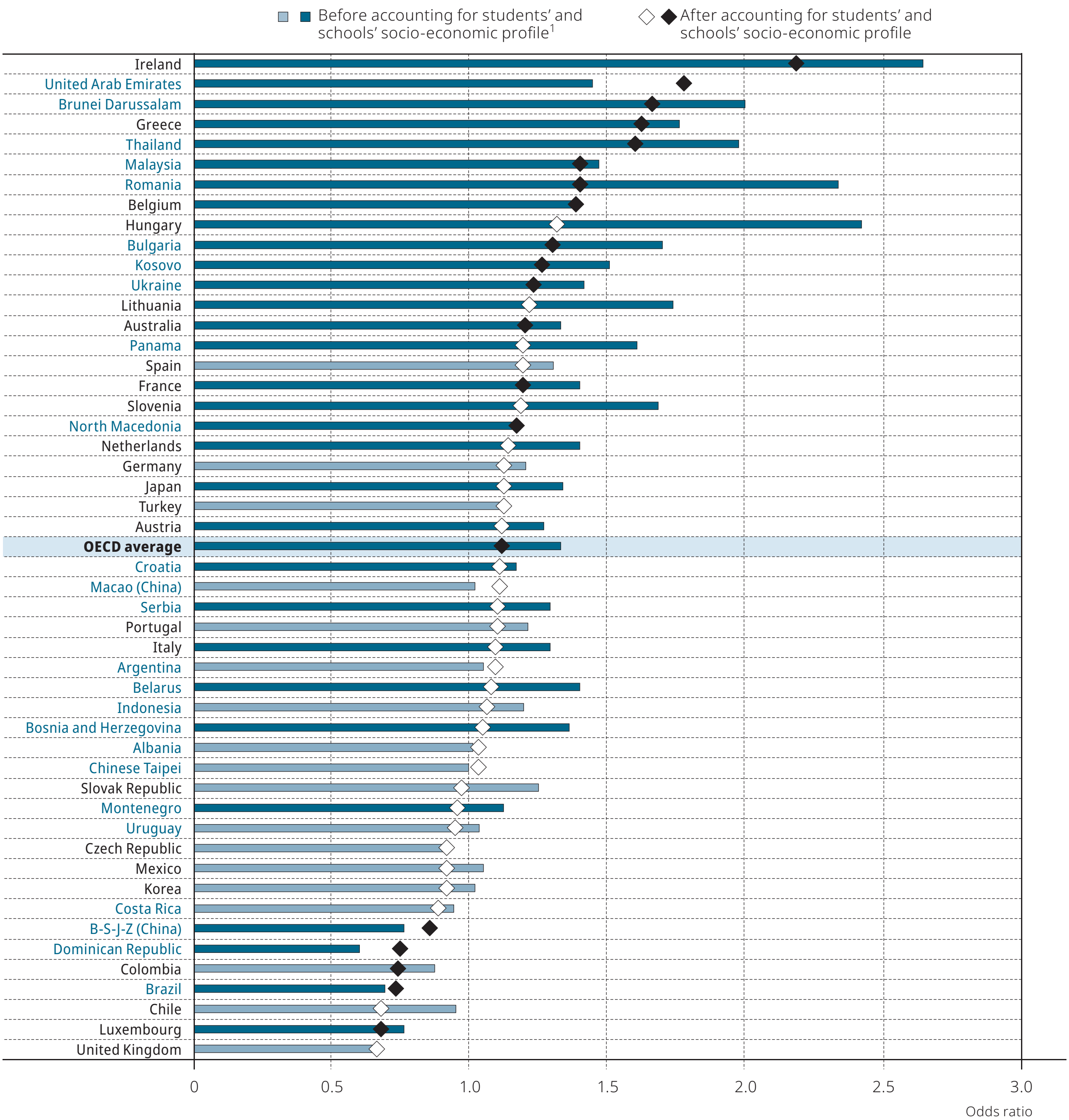
Source: OECD, PISA 2018 Database, Table V.B1.2.17.

StatLink https://doi.org/10.1787/888934130740

...

Figure V.2.14 **Growth mindset and programme orientation**

Increased likelihood of disagreeing or strongly disagreeing that "your intelligence is something about you that you can't change very much", amongst students who were enrolled in a general programme (reference: students enrolled in a vocational or pre-vocational programme).



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Note: Statistically significant odds ratio are shown in darker tones (see Annex A3).

Countries and economies are ranked in descending order of the increased likelihood of disagreeing or strongly disagreeing that "your intelligence is something about you that you can't change very much", after accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2018 Database, Table V.B1.2.17.

StatLink https://doi.org/10.1787/888934130759

Notes

1. In this chapter, the term "schooling" is used to refer to the following four levels of education together: ISCED level 0 (early childhood education), ISCED level 1 (primary education), ISCED level 2 (lower secondary education) and ISCED 3 (upper secondary education).

2. In this chapter, a student who "had not attended" pre-primary education is a student who had not attended pre-primary education at all or had attended pre-primary education for less than one year. Attending for "one year" means that the student had attended pre-primary education for at least one year, but less than two; attending for "two years" means the student had attended for at least two years, but less than three. Attending for "three years" means the student had attended pre-primary education for at least three years.

3. In this chapter, the term "pre-primary education" is used to refer generically to education level ISCED 0, which includes early childhood education programmes that typically target children aged 0 to 5. However, in some countries, the national version of the PISA student questionnaire translated question ST125, which asked about the age at entry into pre-primary education, as referring only to programmes that typically target children aged 3 to 5 (e.g. kindergarten). This was, for example, the case in Denmark.

4. For the sake of comparability between countries, all school-level analyses of student performance in this chapter (and in following chapters) were restricted to schools with the modal ISCED level for 15-year-old students. The "modal ISCED level" is defined here as the level attended by at least one-third of the PISA sample. As PISA students are sampled to represent all 15-year-old students, whatever type of schools they are enrolled in, they may not be representative of their schools. Restricting the sampling to schools with the modal ISCED level for 15-year-old students ensured that the characteristics of students sampled for PISA represent the profile of the typical student attending the school. In Albania, Argentina, Baku (Azerbaijan), Belarus, Beijing, Shanghai, Jiangsu and Zhejiang (China), Colombia, Costa Rica, the Czech Republic, the Dominican Republic, Indonesia, Ireland, Kazakhstan, Luxembourg, Macao (China), Morocco, the Slovak Republic, Chinese Taipei and Uruguay, both lower secondary (ISCED level 2) and upper secondary (ISCED level 3) schools met this definition. In all other countries, analyses were restricted to either lower secondary or upper secondary schools. In several countries, lower and upper secondary education is provided in the same school. As the restriction was made at the school level, some students from a grade other than the modal grade in the country may also have been used in the analysis. Table V.B1.2.13 shows differences in key characteristics between students in the modal grade and those not in the modal grade in each country.

5. In some countries that participated in PISA 2018, the choice of a particular testing date for PISA resulted in the PISA cohort encompassing two distinct age-at-starting-school cohorts, as determined by the school start date and the cut-off date for determining age eligibility. Such a situation was observed in around half of the 25 OECD countries with available data on school entry regulations, namely Austria, Chile, the Czech Republic, Estonia, Finland, Germany, Hungary, Ireland, Korea, Luxembourg, Portugal, the Slovak Republic and Turkey. By contrast, in Denmark, France, Iceland, Italy, Japan, Mexico, the Netherlands, Norway, Poland, Spain, Sweden and the United Kingdom, the PISA sample was composed of only one grade cohort. Students enrolled in a higher grade may have learned more complex notions than students in lower grades, and thus attained higher performance in PISA (Givord, 2020[44]).

6. Caution is advised in interpreting the results. Students were 15 years old when they sat the PISA reading assessment, thus results may not perfectly reflect the performance of a student who had repeated a grade.

7. The correlation between grade repetition and mean reading performance was partly driven by Colombia and Morocco, two countries with a high percentage of students who had repeated a grade and comparatively low mean reading performance. After excluding these two outliers with the highest incidence of grade repetition (i.e. percentages equal to or higher than 40%), the correlation weakened but remained statistically significant across OECD countries (r coefficient = -0.30; partial r after accounting for per capita GDP = -0.43), and across all countries and economies (r coefficient = -0.25; partial r after accounting for per capita GDP = -0.38).

8. The correlation between grade repetition and equity in reading performance was not driven by outliers. After excluding the two countries (Colombia and Morocco) with the highest incidence of grade repetition (i.e. percentages equal to or higher than 40%), the negative correlation between grade repetition and equity in reading performance became even stronger across OECD countries (r coefficient = -0.56; partial r after accounting for per capita GDP = -0.55), and across all countries and economies (r coefficient = -0.34; partial r after accounting for per capita GDP = -0.34).

9. After excluding low-performing countries/economies (i.e. mean performance in reading lower than 413 score points), the strength of the association between grade repetition and equity in reading performance strengthened slightly across OECD countries (after exclusion, R^2 = 0.31), whereas across all countries/economies, the association remained unaltered (after exclusion, R^2 = 0.07).

10. After excluding countries where less than 45% of students were in the modal grade (i.e. Brazil, Colombia, the Dominican Republic and Morocco), the correlation between the percentage of students in the modal grade and equity in reading performance did not change across OECD countries (r coefficient = 0.64; partial r after accounting for per capita GDP = 0.65), but it became somewhat stronger across all countries and economies (r coefficient = 0.34; partial r after accounting for per capita GDP = -0.40).

11. After excluding low-performing countries/economies (i.e. mean scores in reading lower than 413 points), the strength of the association between the percentage of students in the modal grade and equity in reading performance weakened slightly but remained statistically significant across OECD countries (after exclusion, R^2 = 0.31), whereas across all countries/economies, the association remained unaltered (after exclusion, R^2 = 0.07).

References

Alet, E. (2014), "Repetition: Medicine for a Short-Run Remission", *Annales d'Économie et de Statistique*, Vol. 111-112, pp. 227–250. [20]

Alexander, K., D. Entwisle and **N. Kabbani** (2001), "The dropout process in life course perspective: Early risk factors at home and school.", *Teachers College Record*, Vol. 103/5, pp. 760-822, http://dx.doi.org/10.1111/0161-4681.00134. [32]

Allen, C. et al. (2009), "Quality of Research Design Moderates Effects of Grade Retention on Achievement: A Meta-Analytic, Multilevel Analysis", *Educational Evaluation and Policy Analysis*, doi: 10.3102/0162373709352239, pp. 480-499, http://dx.doi.org/10.3102/0162373709352239. [19]

Aurini, J. (2012), "Patterns of Tight and Loose Coupling in a Competitive Marketplace: The Case of Learning Center Franchises", *Sociology of Education*, doi: 10.1177/0038040712441375, pp. 373-387, http://dx.doi.org/10.1177/0038040712441375. [2]

Bedard, K. and **E. Dhuey** (2006), "The Persistence of Early Childhood Maturity: International Evidence of Long-Run Age Effects*", *The Quarterly Journal of Economics*, Vol. 121/4, pp. 1437-1472, http://dx.doi.org/10.1093/qje/121.4.1437. [4]

Berlinski, S., S. Galiani and **P. Gertler** (2009), "The effect of pre-primary education on primary school performance", *Journal of Public Economics*, Vol. 93/1-2, pp. 219-234, http://dx.doi.org/10.1016/j.jpubeco.2008.09.002. [15]

Bettinger, E. et al. (2012), "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block Fafsa Experiment*", *The Quarterly Journal of Economics*, Vol. 127/3, pp. 1205-1242, http://dx.doi.org/10.1093/qje/qjs017. [42]

Bol, T. et al. (2019), "School-to-Work Linkages, Educational Mismatches, and Labor Market Outcomes", *American Sociological Review*, doi: 10.1177/0003122419836081, p. 0003122419836081, http://dx.doi.org/10.1177/0003122419836081. [30]

Campbell, C. (2015), "High School Dropouts After They Exit School: Challenges and Directions for Sociological Research", *Sociology Compass*, Vol. 9/7, pp. 619-629, http://dx.doi.org/10.1111/soc4.12279. [36]

Caniëls, M., J. Semeijn and **I. Renders** (2018), "Mind the mindset! The interaction of proactive personality, transformational leadership and growth mindset for engagement at work", *Career Development International*, Vol. 23/1, pp. 48-66, http://dx.doi.org/10.1108/CDI-11-2016-0194. [28]

Christle, C., K. Jolivette and **C. Nelson** (2007), "School Characteristics Related to High School Dropout Rates", *Remedial and Special Education*, doi: 10.1177/07419325070280060201, pp. 325-339, http://dx.doi.org/10.1177/07419325070280060201. [37]

Datar, A. (2006), "Does delaying kindergarten entrance give children a head start?", *Economics of Education Review*, Vol. 25/1, pp. 43-62, https://EconPapers.repec.org/RePEc:eee:ecoedu:v:25:y:2006:i:1:p:43-62. [5]

Dobkin, C. and **F. Ferreira** (2010), "Do school entry laws affect educational attainment and labor market outcomes?", *Economics of Education Review*, Vol. 29/1, pp. 40-54, https://doi.org/10.1016/j.econedurev.2009.04.003. [6]

Duncan, G. et al. (2007), "School readiness and later achievement", *Developmental psychology*, Vol. 43/6, p. 1428. [13]

Dweck, C. (2006), *Mindset*, Random House, New York, NY. [29]

Eble, A. and **F. Hu** (2019), "Does primary school duration matter? Evaluating the consequences of a large Chinese policy experiment", *Economics of Education Review*, Vol. 70, pp. 61-74, http://dx.doi.org/10.1016/j.econedurev.2019.03.006. [38]

Fall, A. and **G. Roberts** (2012), "High school dropouts: Interactions between social context, self-perceptions, school engagement, and student dropout", *Journal of Adolescence*, Vol. 35/4, pp. 787-798, http://dx.doi.org/10.1016/j.adolescence.2011.11.004. [34]

Giustinelli, P. and **N. Pavoni** (2017), "The evolution of awareness and belief ambiguity in the process of high school track choice", *Review of Economic Dynamics*, Vol. 25, pp. 93-120, https://doi.org/10.1016/j.red.2017.01.002. [40]

Givord, P. (2020), "How a student's month of birth is linked to performance at school: New evidence from PISA", *OECD Education Working Papers*, OECD Publishing, Paris. [44]

Heckman, J. (2006), "Skill formation and the economics of investing in disadvantaged children", *Science*, Vol. 312/5782, pp. 1900--1902. [10]

Heckman, J. et al. (2010), "The rate of return to the HighScope Perry Preschool Program", *Journal of Public Economics*, Vol. 94/1-2, pp. 114-128, http://dx.doi.org/10.1016/j.jpubeco.2009.11.001. [16]

Hoxby, C. and **S. Turner** (2015), *What high achieving low income students know about college*, American Economic Association, http://dx.doi.org/10.1257/aer.p20151027. [41]

Ikeda, M. and **E. García** (2014), "Grade repetition A comparative study of academic and non-academic consequences", *OECD Journal: Economic Studies*, Vol. 2013/1, http://dx.doi.org/10.1787/19952856. [21]

Jimerson, S., G. Anderson and **A. Whipple** (2002), "Winning the battle and losing the war: Examining the relation between grade retention and dropping out of high school", *Psychology in the Schools*, Vol. 39/4, pp. 441-457, http://dx.doi.org/10.1002/pits.10046. [22]

Lareau, A., S. Adia Evans and **A. Yee** (2016), "The Rules of the Game and the Uncertain Transmission of Advantage: Middle-class Parents' Search for an Urban Kindergarten", *Sociology of Education*, doi: 10.1177/0038040716669568, pp. 279-299, http://dx.doi.org/10.1177/0038040716669568. [31]

Manacorda, M. (2008), "The Cost of Grade Retention", *Review of Economics and Statistics*, Vol. 94, http://dx.doi.org/10.1162/REST_a_00165. [23]

Melhuish, E. et al. (2015), "A review of research on the effects of early childhood Education and Care (ECEC) upon child development. CARE project", *Curriculum Quality Analysis and Impact Review of European Early Childhood Education and Care (ECEC)*. [18]

Meyer, H. and **B. Rowan** (2006), *The New Institutionalism in Education*, State University of New York Press. [3]

Nordic Council of Ministers (2012), *Long-term effects of early childhood care and education*, Nordic Council of Ministers, Copenhagen, https://doi.org/10.6027/9789289329873-2-en. [14]

OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/b5fd1b8f-en. [25]

OECD (2019), *PISA 2018 Results (Volume III): What School Life Means for Students' Lives*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/acd78851-en. [27]

OECD (2018), *Education at a Glance 2018: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eag-2018-en. [12]

OECD (2018), *Engaging Young Children: Lessons from Research about Quality in Early Childhood Education and Care*, Starting Strong, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264085145-en. [9]

OECD (2018), *Equity in Education: Breaking Down Barriers to Social Mobility*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264073234-en. [26]

OECD (2013), *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, OECD Reviews of Evaluation and Assessment in Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264190658-en. [43]

Pallas, A. (2003), "Educational Transitions, Trajectories, and Pathways", in Mortimer Jeylan T. and Shanahan, M. (ed.), *Handbook of the Life Course*, Springer US, Boston, MA, http://dx.doi.org/10.1007/978-0-306-48247-2_8. [8]

Rosa, L., M. Martins and **M. Carnoy** (2019), "Achievement gains from reconfiguring early schooling: The case of Brazil's primary education reform", *Economics of Education Review*, Vol. 68, pp. 1-12, http://dx.doi.org/10.1016/j.econedurev.2018.10.010. [39]

Sabates, R. et al. (2011), *Background paper prepared for the Education for All Global Monitoring Report 2011 School Drop out: Patterns, Causes, Changes and Policies School Drop out: Patterns, Causes, Changes and Policies*, http://www.create-rpc.org. [33]

Shavit, Y. and **H. Blossfeld** (1993), *Persistent inequality : changing educational attainment in thirteen countries*, Westview Press, https://eric.ed.gov/?id=ED366667 (accessed on 15 January 2018). [7]

Stearns, E. et al. (2007), "Staying Back and Dropping out: The Relationship between Grade Retention and School Dropout", *Sociology of Education*, Vol. 80/3, pp. 210-240, http://www.jstor.org/stable/20452707. [35]

Stearns, E. et al. (2007), "Staying Back and Dropping Out: The Relationship Between Grade Retention and School Dropout", *Sociology of Education*, doi: 10.1177/003804070708000302, pp. 210-240, http://dx.doi.org/10.1177/003804070708000302. [24]

Suziedelyte, A. and **A. Zhu** (2015), "Does early schooling narrow outcome gaps for advantaged and disadvantaged children?", *Economics of Education Review*, Vol. 45, pp. 76-88, http://dx.doi.org/10.1016/J.ECONEDUREV.2015.02.001. [17]

UNESCO Institute for Statistics (2012), *International Standard Classification of Education ISCED 2011*, http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf. [11]

Weick, K. (1976), "Educational Organizations as Loosely Coupled Systems", *Administrative Science Quarterly*, Vol. 21/1, pp. 1-19, http://dx.doi.org/10.2307/2391875. [1]

PISA

3

Sorting and selecting students between and within schools

This chapter describes how students are selected and sorted into different programmes or tracks, both between and within schools. It discusses the age at which students are first tracked and the types of programmes into which they are tracked (general or vocational). Grouping students by ability, both between and within classes, is also examined. These policies are then related to student performance and equity in the education system.

Horizontal stratification refers to the policies and practices used to select and sort students who are enrolled in the same grade or education level into different instructional programmes, schools or ability groups. As with the vertical stratification practices examined in Chapter 2, horizontal stratification policies aim to manage students' heterogeneity in their interests and academic performance, allowing teachers and schools to work with students who have similar levels of knowledge or paces of learning. However, research warns that horizontal stratification can have unintended consequences, especially for socio-economically disadvantaged students, because sorting and grouping processes tend to be socio-economically, not just academically, selective (Dupriez, Dumay and Vause, 2008[1]; Gamoran and Berends, 1987[2]; Gerber and Cheung, 2008[3]; Gibbons and Telhaj, 2007[4]; Glaesser and Cooper, 2010[5]).

As examined in this chapter, there are two main types of horizontal stratification: that which occurs between schools or instructional programmes and that which occurs within schools (Figure V.3.1).

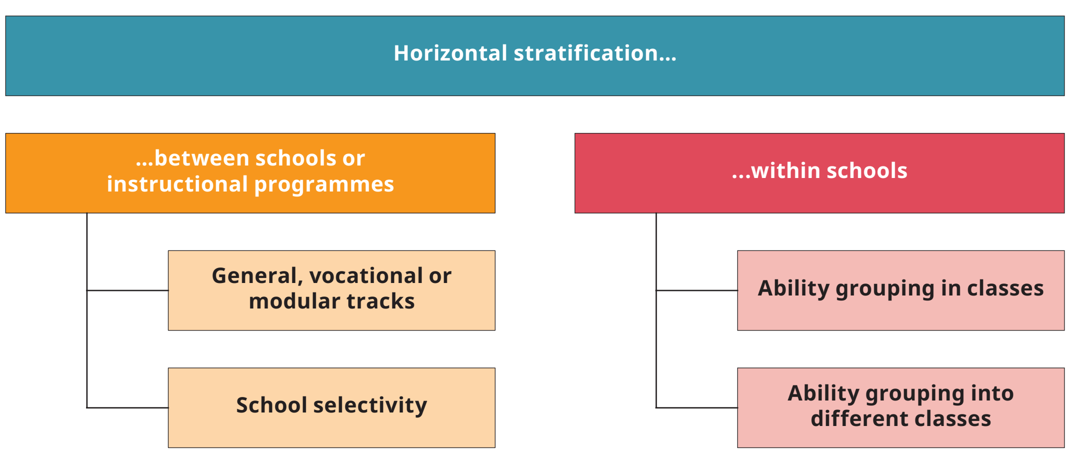
In secondary education, the most common form of horizontal stratification between schools, typically known as tracking, consists of sorting students into different instructional programmes. In education systems that use instructional tracking, some students choose or are selected into academically more demanding programmes, which focus on the general skills required for post-secondary education, while other students choose or are selected for vocational or technical programmes, which focus on the practical skills useful in the labour market (LeTendre, Hofer and Shimizu, 2003[6]; Oakes, 1985[7]; Perry and Southwell, 2014[8]). The age at which students are first tracked and the number of different instructional programmes available to students are amongst the features of tracking policies that have been shown to relate to students' learning outcomes (Van de Werfhorst and Mijs, 2010[9]; Oakes Jeanne, 1990[10]; Hanushek and Wossmann, 2006[11]; OECD, 2016[12]).

School selectivity, whereby schools consider academic or non-academic factors when admitting students, is another way of allocating students to schools discussed in this chapter.

In addition, the chapter examines grouping students according to their academic ability within schools, which might occur in two ways: grouping students into different classes or grouping them in the same class.

In some school systems, the distinction between public and private schools is also considered to be a form of horizontal stratification (Marteleto et al., 2012[13]; Torche, 2005[14]). This volume examines issues regarding private schools and school-choice policies in Chapter 7.

Figure V.3.1 **Horizontal stratification as covered in PISA 2018**



What the data tell us

- 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.
- On average across OECD countries, students in general programmes scored almost 30 points higher in reading than those in vocational programmes, after accounting for students' and schools' socio-economic profile. 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.
- Students in academically selective schools scored about five points higher in reading than students in non-selective schools, on average across OECD countries, after accounting for students' and schools' socio-economic profile. At the system level, across OECD countries, the prevalence of academic selectivity was correlated with less equity in reading performance, even after accounting for per capita GDP. In addition, between PISA 2009 and PISA 2018, equity in education tended to improve in OECD countries where the prevalence of academic selectivity decreased.
- On average across OECD countries, students in schools that group students by ability in their classes for all or some classes scored three points lower in reading than students in schools that do not group students in this way, after accounting for students' and schools' socio-economic profile.

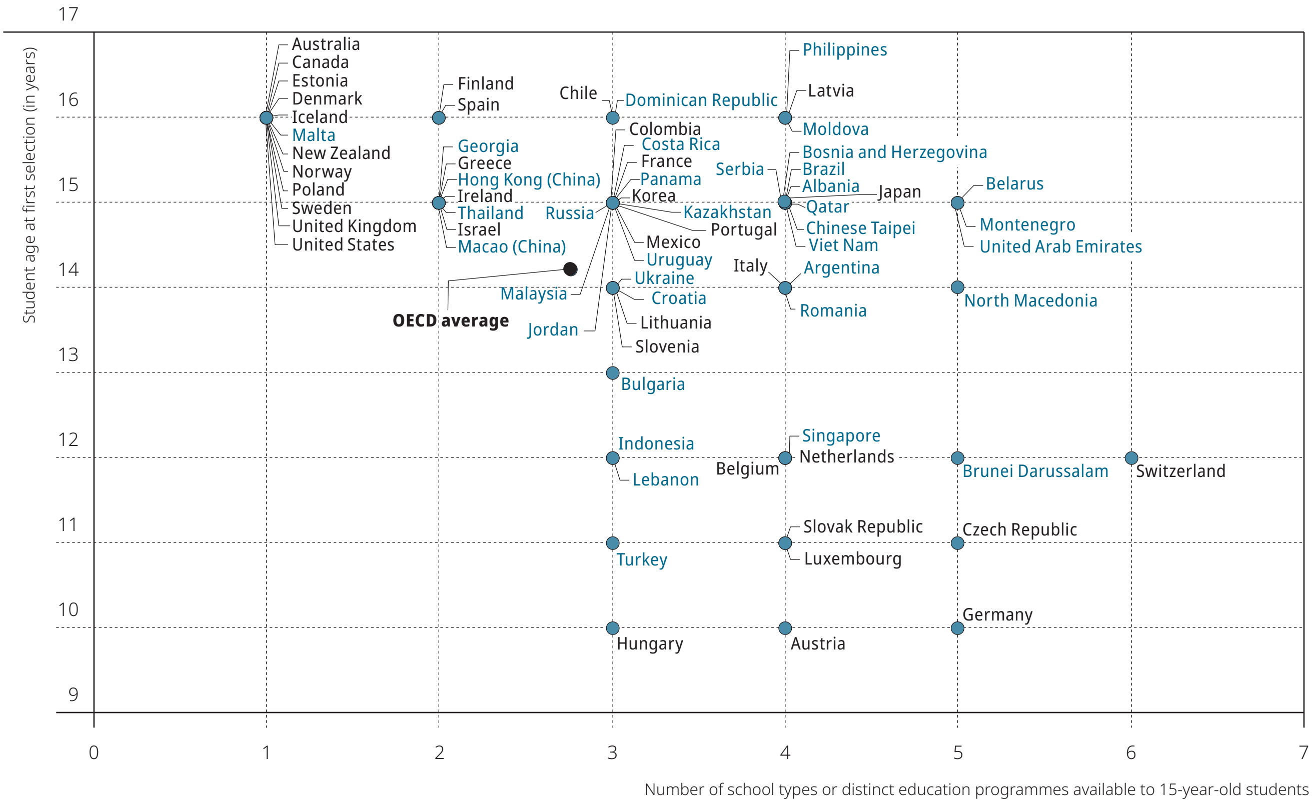
INSTRUCTIONAL PROGRAMMES AVAILABLE TO 15-YEAR-OLDS AND AGE AT FIRST SELECTION

Through its system-level questionnaire, PISA 2018 asked countries to provide a list of the school types or distinct education programmes available to 15-year-old students. Across countries and economies that participated in PISA 2018, the number of distinct education programmes available to 15-year-old students in 2018 ranged from a single (one) programme (in 13 education systems) to six different programmes (in Switzerland and Peru) (Figure V.3.2 and Table B3.3.3). Most frequently, education systems offered three (23 countries and economies) or four (20 countries and economies) instructional programmes to their 15-year-old students.

In 31 education systems, students are first selected into these programmes when they are 15 years old. In 19 education systems, the age at first selection is 16 years; in 8 education systems, it is 14 years; and in 15 systems, the age at first selection is 13 years. Countries that select students at the youngest age are Austria, Germany and Hungary (10 years), and the Czech Republic, the Slovak Republic and Turkey (11 years) (Tables II.B1.2.3 and B3.3.3).

Figure V.3.2 shows that countries with fewer academic programmes available to 15-year-olds tend to select students into different programmes at an older age. All countries that participated in PISA 2018 that offer only one academic programme to 15-year-olds (Australia, Canada, Denmark, Estonia, Iceland, Malta, New Zealand, Norway, Poland, Sweden, the United Kingdom and the United States) select students into programmes at the age of 16 or later. Similarly, all countries that offer two academic programmes select students into programmes at the age of 15 or later. By contrast, countries with more academic programmes available to 15-year-olds tend to track students at an earlier age. The extreme case is Switzerland, which offers six academic programmes and sorts students into these programmes as early as age 12. (Some cantons of Switzerland have implemented reforms since 2006 to delay the age at first selection from 10 or 11 to 12 years.[1]) Brunei Darussalam, the Czech Republic and Germany all offer five academic programmes; the age at first selection in Brunei Darussalam is 12 years, in the Czech Republic it is 11 years, and in Germany, 10 years. Other countries, such as Belarus, Montenegro and the United Arab Emirates, which also offer five academic programmes to 15-year-olds, do not select their students until age 15, or until age 14 in the Republic of North Macedonia (hereafter "North Macedonia") (Tables II.B1.2.3 and B3.3.3).

Figure V.3.2 **Education programmes available to 15-year-olds and students' age at first selection**



Source: OECD, PISA 2018 Database, Table B3.3.3.

StatLink https://doi.org/10.1787/888934130778

VOCATIONAL PROGRAMMES OR SCHOOLS

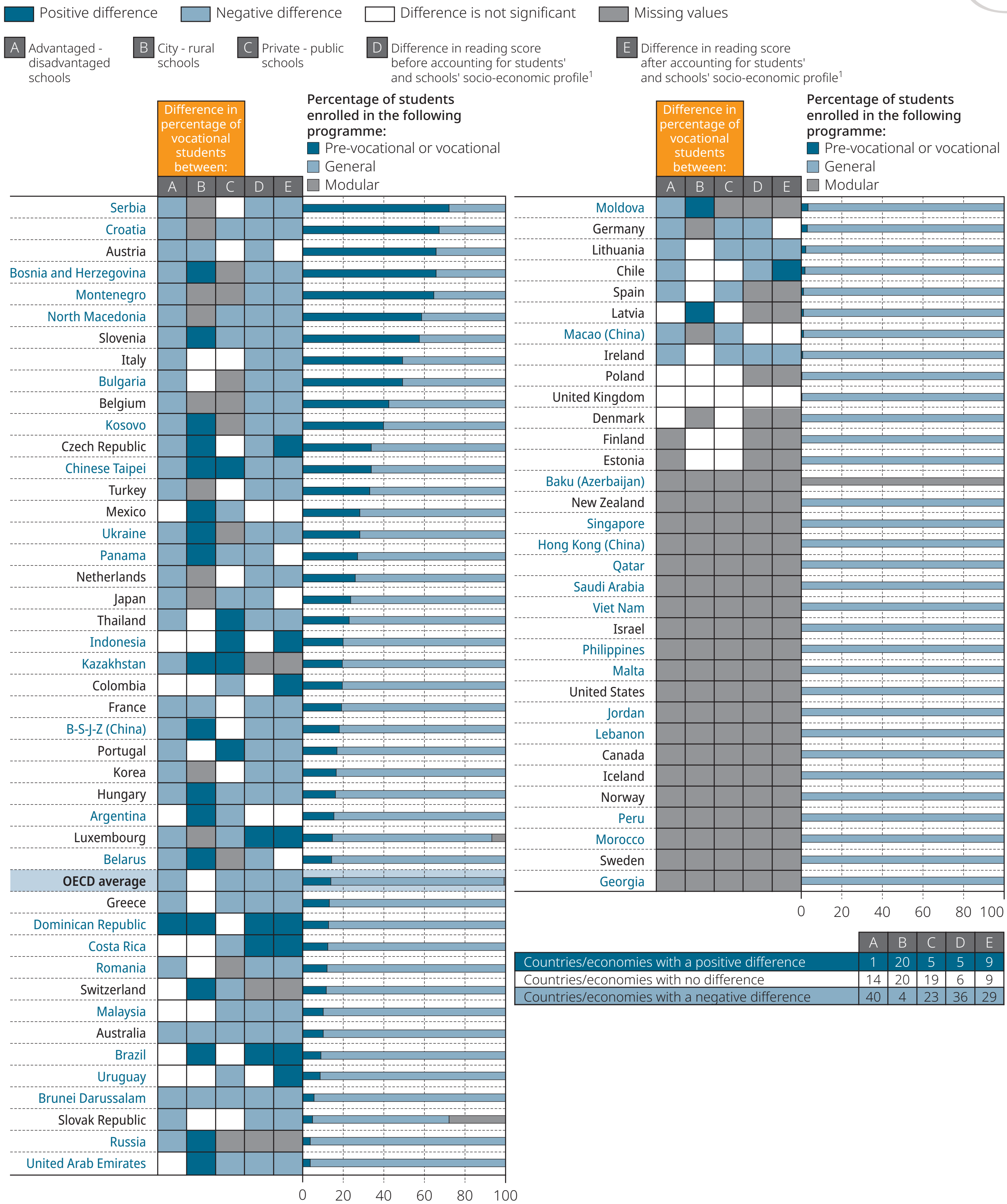
On average across OECD countries, 14% of 15-year-old students were enrolled in a vocational (including pre-vocational) programme or school in 2018. In 18 countries and economies, more than one in four students were enrolled in a vocational programme, and in 7 countries (Austria, Bosnia and Herzegovina, Croatia, Montenegro, North Macedonia, Serbia and Slovenia), more than one in two students were enrolled in a vocational programme. By contrast, in 35 countries and economies, fewer than 1 in 20 students attended a vocational programme, and in 20 countries and economies no student was enrolled in a vocational programme (Figure V.3.3).

A smaller share of students attended a vocational programme in 2018 than in 2009, when 15% of students were enrolled in a vocational programme, on average across OECD countries (Table V.B1.3.1). The share of students enrolled in a vocational programme decreased between 2009 and 2018 in 12 countries and economies. The largest decreases were observed in the Slovak Republic (by 36 percentage points), Romania (by 10 percentage points), and Turkey and Korea (by 8 percentage points in both countries). However, in 15 countries and economies the share of students enrolled in a vocational programme increased during this period. The largest increases in vocational enrolment were observed in Panama (by 27 percentage points), Brazil, Bulgaria, France and Kazakhstan (by around 10 percentage points in these four countries).

Students enrolled in vocational programmes were markedly more likely to attend a socio-economically disadvantaged school. On average across OECD countries, 22% of students in disadvantaged schools were enrolled in a vocational programme, whereas only 2% of students in advantaged schools were. The same pattern was observed in most countries and economies, except the Dominican Republic, where the percentage of students enrolled in a vocational track was greater in advantaged schools than in disadvantaged schools (Table V.B1.3.2).

The proportion of 15-year-old students enrolled in a vocational programme is larger amongst those attending upper secondary school than amongst those in lower secondary school. On average across OECD countries in 2018, 24% of 15-year-old students attending upper secondary school, and 4% of students in lower secondary school, were enrolled in a vocational programme (Table V.B1.3.3). In Austria, Bosnia and Herzegovina, the Czech Republic and Serbia, over 70% of 15-year-old students attending upper secondary school were enrolled in a vocational programme.

Figure V.3.3 **Enrolment in instructional programmes, school characteristics and reading performance**



	A	B	C	D	E
Countries/economies with a positive difference	1	20	5	5	9
Countries/economies with no difference	14	20	19	6	9
Countries/economies with a negative difference	40	4	23	36	29

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that students are enrolled in a pre-vocational or vocational programme.

Sources: OECD, PISA 2018 Database, Table V.B1.3.1 and Table V.B1.3.2.

StatLink https://doi.org/10.1787/888934130797

There were large differences in reading performance between students in vocational and those in academic programmes (Figure V.3.3). On average across OECD countries, students in academic programmes scored almost 70 points higher in reading than those in vocational programmes, before accounting for socio-economic factors, and almost 30 points higher after accounting for students' and schools' socio-economic profile (Table V.B1.3.2). The difference in reading performance between students in vocational and general programmes, after accounting for socio-economic factors, was around 70 score points or more in Brunei Darussalam, France, Greece, Ireland,[2] the Netherlands and the United Arab Emirates. In 10 countries/economies, students in vocational programmes scored higher in reading than those in general programmes, after accounting for students' and schools' socio-economic profile.

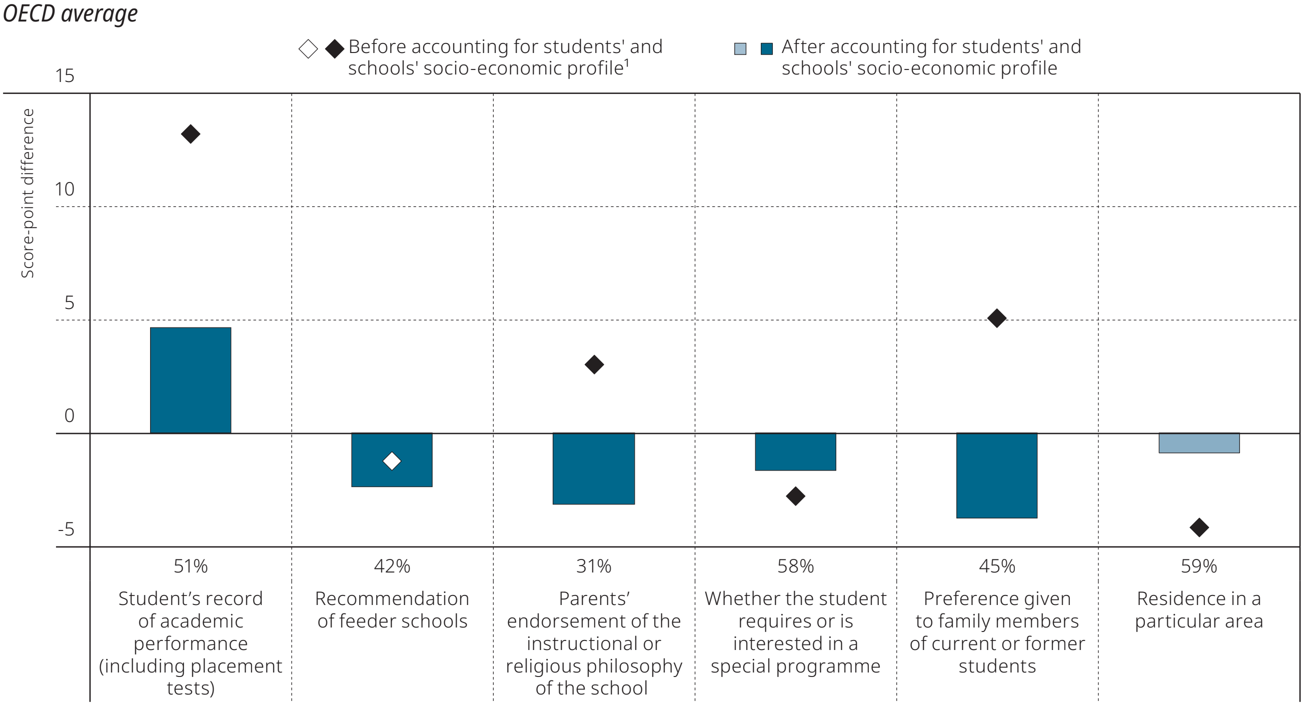
SCHOOL SELECTIVITY

In 2018, PISA asked school principals whether they consider a range of factors when admitting students to their school. The factors cited were: the student's record of academic performance (including placement tests); recommendation of feeder schools; parents' endorsement of the instructional or religious philosophy of the school; whether the student requires or is interested in a special programme; whether preference is given to family members of current or former students; and residence in a particular area.

On average across OECD countries, the most common forms of school selectivity were admitting students based on their area of residence, and admitting students based on students' need or interest in a special programme offered by the school (almost 60% of students attended schools that consider such factors) (Figure V.3.4). By contrast, granting admission to school based on parents' endorsement of the instructional or religious philosophy of the school was the least common (31% of students attended schools that consider this factor), on average across OECD countries (Table V.B1.3.4).

Figure V.3.4 **School selectivity and reading performance**

Change in reading score when the principal reported that the factors are "sometimes" or "always" considered for admission to school; OECD average



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.

Notes: Statistically significant differences are marked in a darker tone (see Annex A3).

The percentage of students in schools where the factors are "sometimes" or "always" considered for admission to school is indicated above each factor.

Sources: OECD, PISA 2018 Database, Table V.B1.3.4 and Table V.B1.3.6.

StatLink https://doi.org/10.1787/888934130816

Some 51% of students were enrolled in schools that always (33%) or sometimes (19%) consider students' record of academic performance when admitting students, on average across OECD countries. Using academic performance as a criterion for school admission (i.e. academic selectivity) was universal or almost universal in Bulgaria, Croatia, Hong Kong (China), Japan, Kosovo, Macao (China), Singapore, Thailand and Viet Nam. By contrast, only around 20% of students or less in Chile, Finland, Greece, Iceland, Norway, Portugal, Spain and Sweden attended academically selective schools (Table V.B1.3.4).

Students in upper secondary schools were more likely to be enrolled in academically selective schools than students in lower secondary schools. On average across OECD countries, 66% of students in upper secondary schools were enrolled in academically selective schools, while 38% of students in lower secondary schools were enrolled in such schools (Table V.B1.3.5). Amongst the countries and economies that participated in PISA 2018, there were no education systems where more students in academically selective schools were enrolled in lower secondary school than in upper secondary school, and in 26 countries/economies the difference was not statistically significant.

A larger share of students in 2018 than in 2009 were enrolled in schools that, when admitting students, always consider records of academic performance (a three percentage-point increase over the period) and always give preference to family members of current or former students (a four percentage-point increase), on average across OECD countries (Table V.B1.3.4). Using recommendations from feeder schools as a criterion for admission was less prevalent in 2018 than in 2009, on average across OECD countries.

Most admissions criteria were not associated with higher student performance, especially after accounting for socio-economic factors – with the single exception of academic selectivity (Figure V.3.4). On average across OECD countries, students in academically selective schools scored about 13 points higher in reading than students in non-selective schools. However, after accounting for students' and schools' socio-economic profile, the average difference between students in academically selective and those in non-selective schools was five score points. Students in academically selective schools in Austria, Hong Kong (China), Kosovo, Lebanon, Macao (China) and Turkey outperformed their peers in non-selective schools by the widest margin (more than 20 points), after accounting for socio-economic factors (Table V.B1.3.6).

ABILITY GROUPING IN SCHOOL

Ability grouping in school involves placing students into different classrooms or in small instructional groups in a class based on their initial achievement or skill levels (Steenbergen-Hu, Makel and Olszewski-Kubilius, 2016[15]). Some research has shown that ability grouping has a positive impact on the mathematics achievement of elementary school pupils (Matthews, Ritchotte and McBee, 2013[16]). Other evidence suggests that ability grouping might not be as beneficial for struggling students if instruction time is not put to good use (Hong et al., 2012[17]) or if those students are less likely to learn from and develop social networks with their higher-performing peers when they are not sitting in the same classroom (Lucas, 2001[18]).

Ability grouping within classes

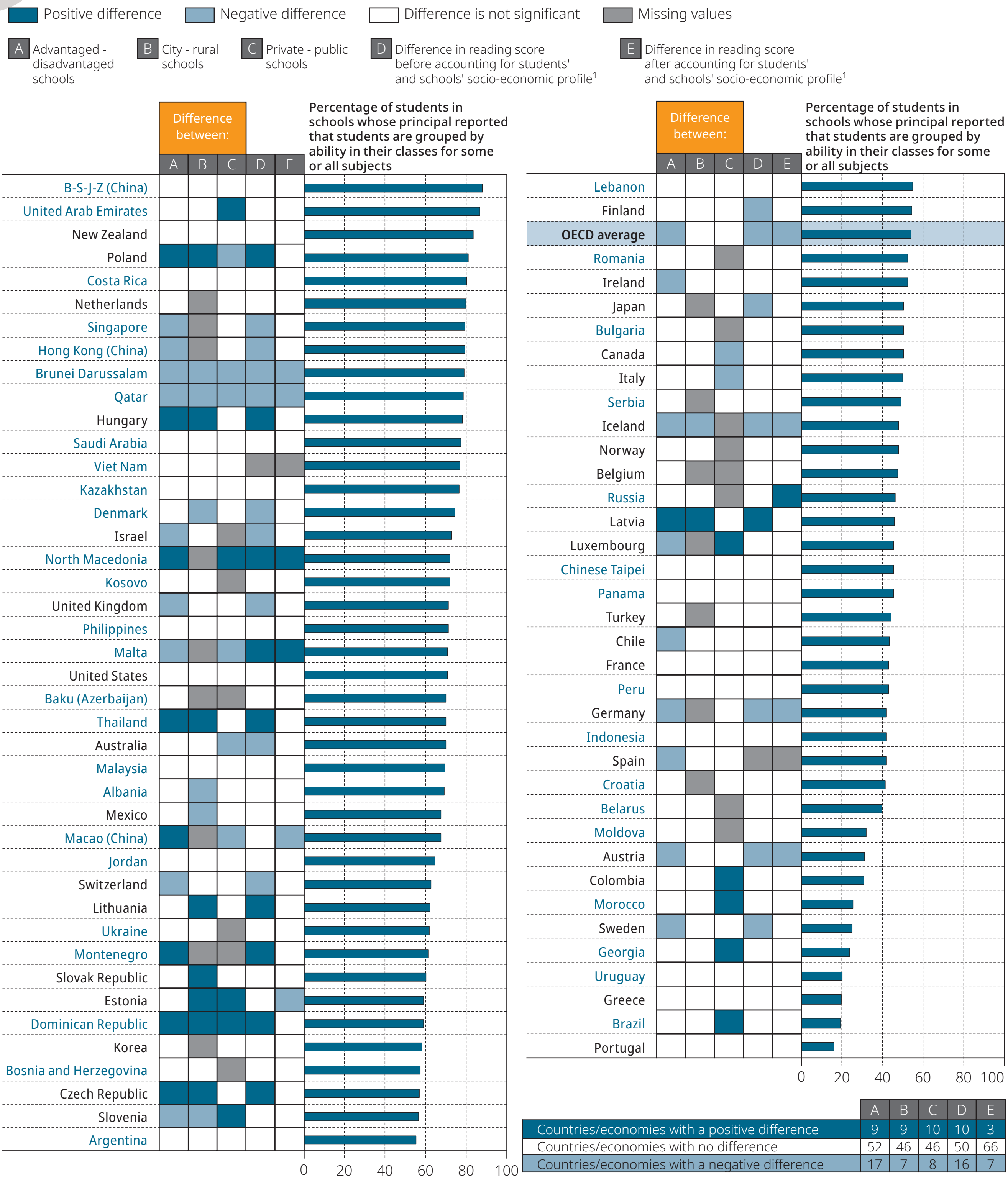
Grouping students by ability in their classes is the most prevalent form of horizontal stratification within schools. On average across OECD countries in 2018, 54% of students were in schools that group students by ability in their classes for some subjects (49%) or for all subjects (5%) (Figure V.3.5). At least 80% of students in Beijing, Shanghai, Jiangsu and Zhejiang (China), Costa Rica, Hong Kong (China), the Netherlands, New Zealand, Poland, Singapore and the United Arab Emirates attended schools that group students by ability in classes. By contrast, about 25% of students or less in Brazil, Georgia, Greece, Morocco, Portugal, Sweden and Uruguay attended such schools (Table V.B1.3.7).

Ability grouping in classes is somewhat more common in socio-economically disadvantaged than in advantaged schools. On average across OECD countries in 2018, 57% of students in disadvantaged schools were grouped by ability in their classes, compared to 50% of students in advantaged schools. In 18 countries and economies, the incidence of ability grouping in classes was greater in disadvantaged schools than in advantaged schools. For example, in the United Kingdom, 96% of students in disadvantaged schools were grouped by ability in their classes while 45% of students in advantaged schools were – a 51 percentage-point difference. But in nine countries and economies, advantaged schools grouped students in classes more often. For example, in Macao (China), 93% of students in advantaged schools were grouped by ability in their classes while 40% of students in disadvantaged schools were (a 52 percentage-point difference) (Table V.B1.3.9).

Students in schools that group students by ability in their classes (for some or all subjects) scored six points lower in reading than students in schools that do not group students in this way, on average across OECD countries (Figure V.3.5). Half of this difference in performance can be accounted for by students' and schools' socio-economic profile. When holding these factors constant, students in schools that group students by ability in their classes scored three points lower in reading, on average across OECD countries. In seven countries and economies, ability grouping in classes was associated with lower reading scores after accounting for socio-economic factors, but the opposite was observed in three countries.

The negative difference in reading scores was larger when schools group students in their classes for all subjects. On average across OECD countries, students in schools that group students by ability in their classes for all subjects scored 20 points lower in reading, and 8 points lower after accounting for students' and schools' socio-economic profile (Table V.B1.3.11).

Figure V.3.5 **Ability grouping in classes, school characteristics and reading performance**



	A	B	C	D	E
Countries/economies with a positive difference	9	9	10	10	3
Countries/economies with no difference	52	46	46	50	66
Countries/economies with a negative difference	17	7	8	16	7

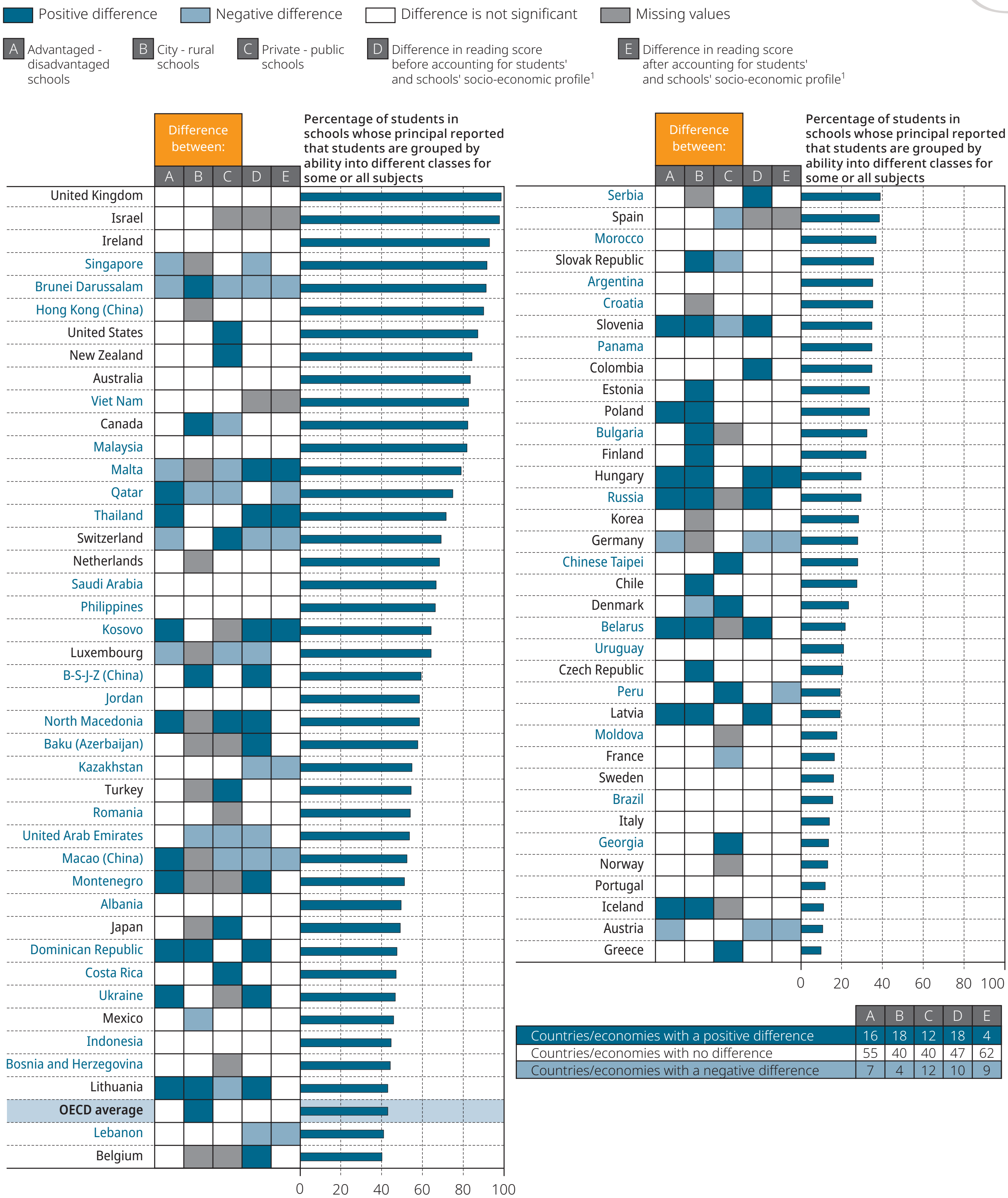
1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that students are grouped by ability in their classes for some or all subjects.

Source: OECD, PISA 2018 Database, Table V.B1.3.9.

StatLink https://doi.org/10.1787/888934130835

Figure V.3.6 **Ability grouping into different classes, school characteristics and reading performance**



	A	B	C	D	E
Countries/economies with a positive difference	16	18	12	18	4
Countries/economies with no difference	55	40	40	47	62
Countries/economies with a negative difference	7	4	12	10	9

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that students are grouped by ability into different classes for some or all subjects.

Source: OECD, PISA 2018 Database, Table V.B1.3.10.

StatLink https://doi.org/10.1787/888934130854

Ability grouping into different classes

Another way schools handle student heterogeneity is by grouping students by ability into different classes.

On average across OECD countries in 2018, 43% of students attended schools where students are grouped by ability into different classes for all subjects (8%) or some subjects (35%). The greatest incidence of this kind of grouping was observed in Brunei Darussalam, Hong Kong (China), Ireland, Israel, Singapore and United Kingdom. In these countries and economies, at least 9 in 10 students attended a school that groups students for all or some subjects. By contrast, in Austria, Greece, Iceland, Norway and Portugal, only 1 in 10 students attended a school that groups students, by ability, into different classes (Table V.B1.3.7).

The incidence of ability grouping into different classes was not associated with schools' socio-economic profile, on average across OECD countries. However, in 16 countries and economies there was more ability grouping into different classes in advantaged schools, and in 8 countries and economies the incidence was greater in disadvantaged schools (Table V.B1.3.10).

In addition, ability grouping into different classes was more frequently observed in urban than in rural schools, on average across OECD countries, but it was practiced similarly across public and private schools, and across lower and upper secondary schools (Table V.B1.3.10).

Differences in performance between students who attended schools that practice and those that do not practice ability grouping into different classes (for some or all subjects) tended to be small (Figure V.3.6). In most countries, and on average across OECD countries, such ability grouping was not associated with differences in students' reading scores. However, in nine countries and economies, students in schools that group students by ability into different classes scored lower than students in schools that do not practice this type of ability grouping, while in six other countries they scored higher, after accounting for other factors.

The negative difference in reading scores was larger when schools group students into different classes for all subjects, as opposed to some subjects. On average across OECD countries, students in schools that group students by ability into different classes for all subjects scored nine points lower in reading, and five points lower after accounting for students' and schools' socio-economic profile (Table V.B1.3.11).

HOW HORIZONTAL STRATIFICATION IS RELATED TO DIFFERENCES IN PERFORMANCE AND EQUITY IN EDUCATION ACROSS COUNTRIES/ECONOMIES (SYSTEM-LEVEL ANALYSIS)

This section examines whether measures of horizontal stratification are related to education outcomes at the system level. Two education outcomes are considered: mean performance in reading and equity in reading performance. As in previous PISA reports, equity in reading performance is measured by the percentage of variation in reading performance accounted for by differences in students' socio-economic status; the smaller the variation in performance explained by socio-economic status, the greater the equity in performance (OECD, 2019[19]; OECD, 2018[20]).

Figure V.3.7 shows system-level correlation coefficients between measures of horizontal stratification on the one hand, and reading performance and equity in reading performance on the other. Correlational analyses were conducted separately for OECD countries, and for all countries and economies that participated in PISA 2018. In addition, correlations were computed before and after accounting for per capita GDP, to account for the level of economic development of a country/economy.

Countries with fewer programmes available to 15-year-olds generally showed higher average performance in reading in PISA 2018 across OECD countries. There was a negative correlation between the number of education programmes and mean performance in reading, even after accounting for per capita GDP, across OECD countries, and across all countries and economies (Figure V.3.7). As shown in Figure V.3.8, 12% of the variation in mean reading performance across OECD countries could be accounted for by variations in the number of academic programmes available to 15-year-olds.

Of the 15 countries and economies with mean scores in reading higher than 500 points, 9 countries (Australia, Canada, Denmark, Estonia, New Zealand, Poland, Sweden, the United Kingdom and the United States) offer only one instructional programme to 15-year-olds;[3] 4 countries/economies (Finland,[4] Hong Kong [China], Ireland and Macao [China]) offer only two instructional programmes. The exceptions to this finding were Korea, with three programmes, and Japan and Singapore, each of which offer four programmes.

However, the countries with the lowest mean scores in reading are heterogeneous in terms of the intensity of their tracking system. Two of the lowest-performing countries in PISA 2018 offer six (Peru) or five (North Macedonia) instructional tracks, but some offer only one (Baku [Azerbaijan]) or two (Georgia and Thailand), and many offer three (the Dominican Republic, Indonesia, Kazakhstan, Lebanon and Panama) or four instructional tracks (Albania, Argentina, Bosnia and Herzegovina, the Philippines and Qatar).

Figure V.3.7 [1/2] **Horizontal stratification, student performance and equity**

		OECD countries			
		Mean reading score		Equity in reading[1]	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Tracking between schools or education programmes	Number of distinct education programmes available to 15-year-old students	-0.35	-0.37	-0.53	-0.53
	Age at first selection in the education system		*0.33*	0.68	0.68
	General programme	*0.30*		*0.32*	*0.32*
	Vocational programme				
Ability grouping in schools	Ability grouping into different classes (in some or all subjects)				
	Ability grouping into different classes in all subjects		*-0.44*		
	Ability grouping into different classes in some subjects	*0.30*			
	No ability grouping into different classes for any subject				
	Ability grouping in classes (in some or all subjects)				
	Ability grouping in classes in all subjects	*-0.30*	*-0.30*		
	Ability grouping in classes in some subjects	*0.29*	*0.29*		
	No ability grouping in classes for any subject				
School selectivity	Admission is never based on student's record of academic performance			0.35	0.36
	Admission is always based on student's record of academic performance			*-0.32*	*-0.33*
	Admission is never based on recommendation of feeder school				
	Admission is always based on recommendation of feeder school				
	Admission is never based on parents' endorsement				
	Admission is always based on parents' endorsement				
	Admission is never based on whether the student requires or is interested in a special programme				
	Admission is always based on whether the student requires or is interested in a special programme				
	Admission is never based on whether the student is a family member of current or former students				
	Admission is always based on whether the student is a family member of current or former students				
	Admission is never based on residence	-0.35			
	Admission is always based on residence	0.43	0.35		

1. The percentage of variance in student performance explained by the PISA index of economic, social and cultural status was used as measure of inequity in performance. In a first step, the correlation coefficients between measures of horizontal stratification and inequity were computed. In a second step, the sign of the correlation coefficients were reversed (i.e. multiplied by -1) to simplify reporting (i.e. report correlation with equity instead of with inequity).

Notes : Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level (p < 0.10) are in italics. All other values are statistically significant at the 5% level (p < 0.05).

Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Source: OECD, PISA 2018 Database, Table V.B1.3.12.

StatLink https://doi.org/10.1787/888934130873

Figure V.3.7 [2/2] **Horizontal stratification, student performance and equity**

		All countries and economies			
		Mean reading score		Equity in reading[1]	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Tracking between schools or education programmes	Number of distinct education programmes available to 15-year-old students	-0.29	-0.32	-0.43	-0.43
	Age at first selection in the education system			0.42	0.45
	General programme				
	Vocational programme				
Ability grouping in schools	Ability grouping into different classes (in some or all subjects)				
	Ability grouping into different classes in all subjects	-0.47	-0.54		
	Ability grouping into different classes in some subjects	0.29			
	No ability grouping into different classes for any subject				
	Ability grouping in classes (in some or all subjects)				
	Ability grouping in classes in all subjects	-0.48	-0.55		
	Ability grouping in classes in some subjects	0.42	0.28		
	No ability grouping in classes for any subject				
School selectivity	Admission is never based on student's record of academic performance	*0.22*	0.27		
	Admission is always based on student's record of academic performance		-0.25		
	Admission is never based on recommendation of feeder school	0.30	0.45		
	Admission is always based on recommendation of feeder school	-0.37	-0.42		
	Admission is never based on parents' endorsement	*0.20*	0.28	*-0.22*	
	Admission is always based on parents' endorsement	-0.25	-0.30		
	Admission is never based on whether the student requires or is interested in a special programme				
	Admission is always based on whether the student requires or is interested in a special programme	-0.26			
	Admission is never based on whether the student is a family member of current or former students		0.26		
	Admission is always based on whether the student is a family member of current or former students		-0.32		
	Admission is never based on residence				
	Admission is always based on residence				

1. The percentage of variance in student performance explained by the PISA index of economic, social and cultural status was used as measure of inequity in performance. In a first step, the correlation coefficients between measures of horizontal stratification and inequity were computed. In a second step, the sign of the correlation coefficients were reversed (i.e. multiplied by -1) to simplify reporting (i.e. report correlation with equity instead of with inequity).

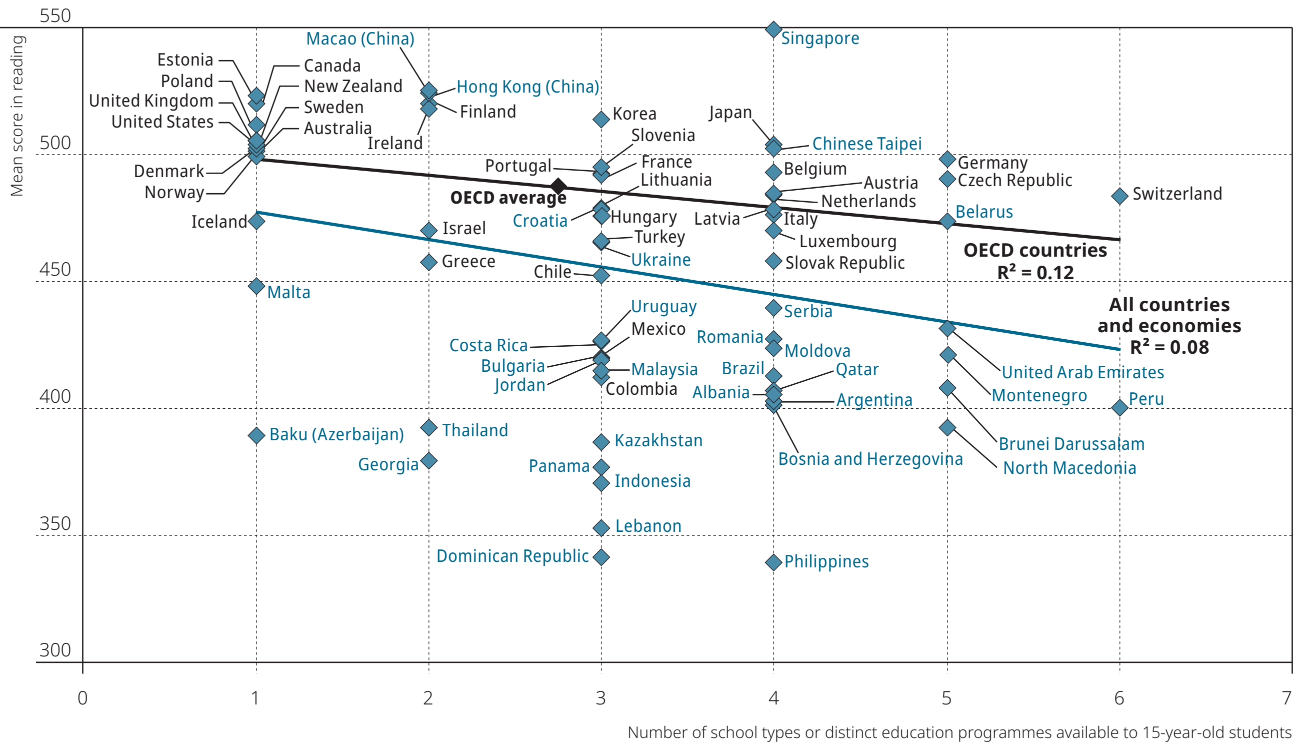
Notes : Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Source: OECD, PISA 2018 Database, Table V.B1.3.12.

StatLink https://doi.org/10.1787/888934130873

Figure V.3.8 **Academic programmes available to 15-year-olds and mean score in reading**



Source: OECD, PISA 2018 Database, Tables I.B1.4 and B3.3.3.
StatLink https://doi.org/10.1787/888934130892

Offering fewer instructional tracks was correlated not only with student performance but also, and more strongly, with greater equity in performance, as shown in Figure V.3.7. After accounting for per capita GDP, a correlation was observed between the number of instructional tracks and equity in performance in reading, mathematics and science (Table V.B1.3.12).

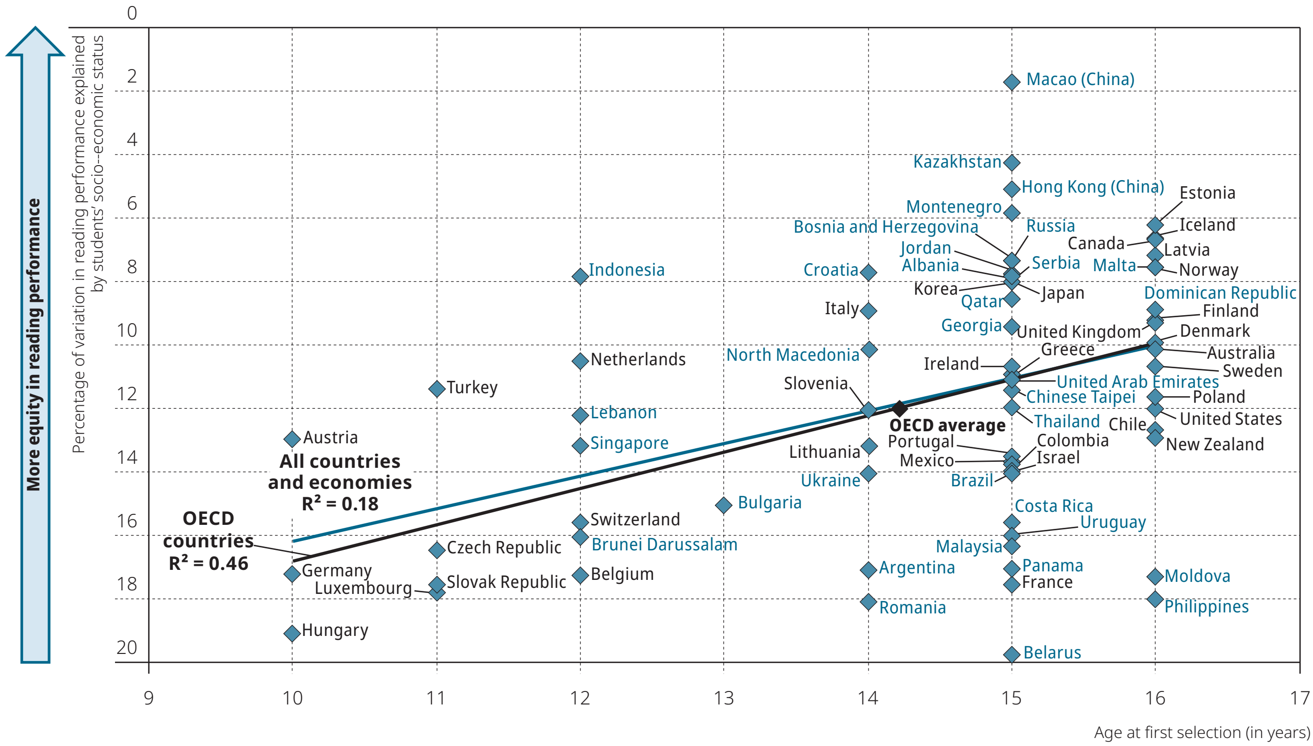
Students' age at first selection into different programmes was not consistently correlated to mean reading performance. However, selecting students into different programmes at an earlier age was correlated with less equity in reading performance, even after accounting for per capita GDP, across OECD countries, and across all countries/economies (Figure V.3.9). As shown in Figure V.3.9, differences in the age at first selection accounted for 46% of the differences in equity in reading performance across OECD countries, and for almost 20% of the differences in equity in reading performance across all countries and economies.[5]

In PISA 2018, the system-level correlation between ability grouping within class and mean reading performance had a different sign depending on whether this kind of ability grouping was implemented for some subjects or for all subjects. On the one hand, the percentage of students in schools that group students by ability in class for some subjects was positively correlated with mean performance in reading, before and after accounting for per capita GDP, across OECD countries, and across all participating countries and economies (Figure V.3.7). As shown in Figure V.3.10, 18% of differences in mean reading performance across all countries/economies can be explained by cross-national differences in ability grouping in class for some subjects.[6]

On the other hand, the percentage of students in schools that group students by ability in class for all subjects was negatively correlated with mean performance in reading, before and after accounting for per capita GDP, across OECD countries, and across all participating countries and economies (Figure V.3.7). Figure V.3.11 shows that some 23% of differences in mean reading performance across all countries/economies can be explained by cross-national differences in ability grouping in class for all subjects.[7] These findings suggest that the relationship between ability grouping in class and performance may be associated with the way ability grouping is implemented.

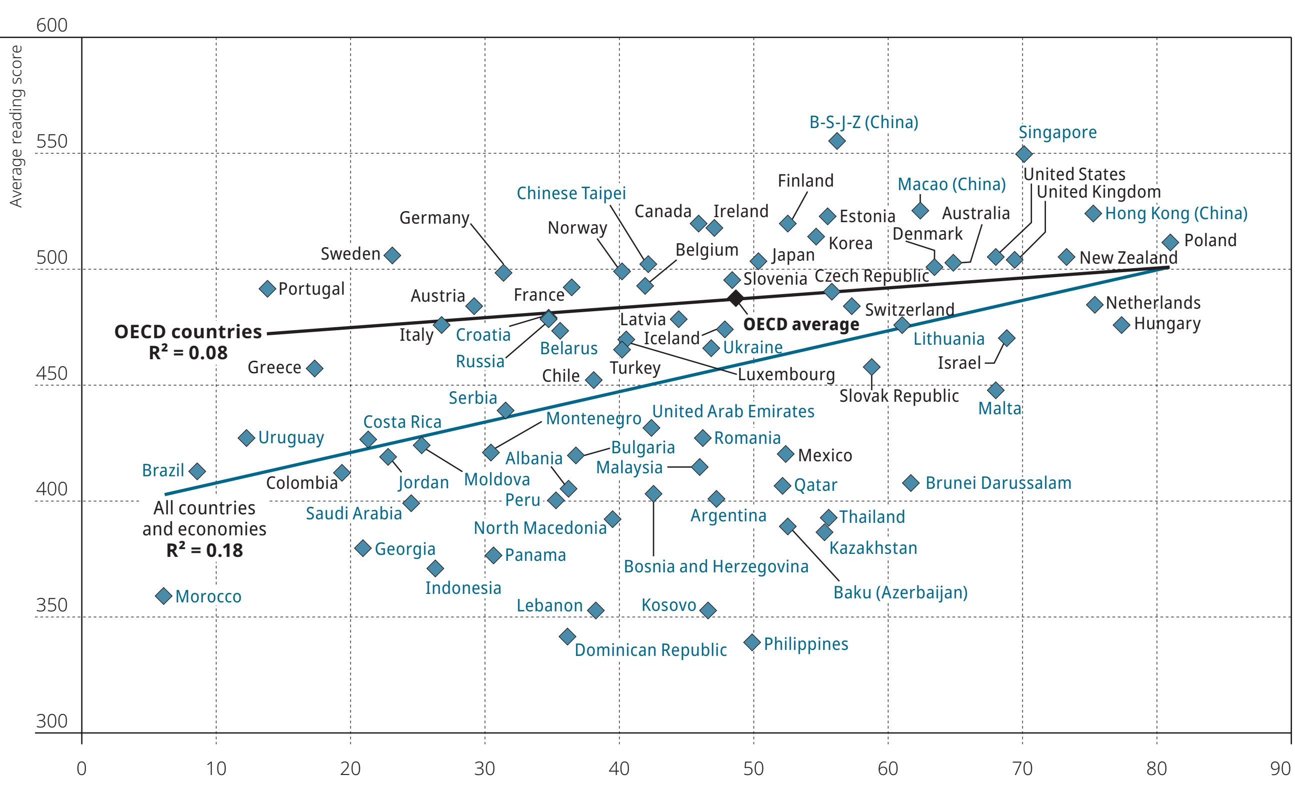
The percentage of students enrolled in general or vocational programmes was not consistently correlated with higher mean reading performance (Figure V.3.7). However, OECD countries with a larger share of students in general programmes tended to show greater equity in reading performance. Across OECD countries, there was a positive correlation between the share of students enrolled in a general programme and equity in performance, even after accounting for per capita GDP[8] (Figure V.3.7). The correlation was not statistically significant across all countries and economies.

Figure V.3.9 **Age at first selection and equity in reading performance**



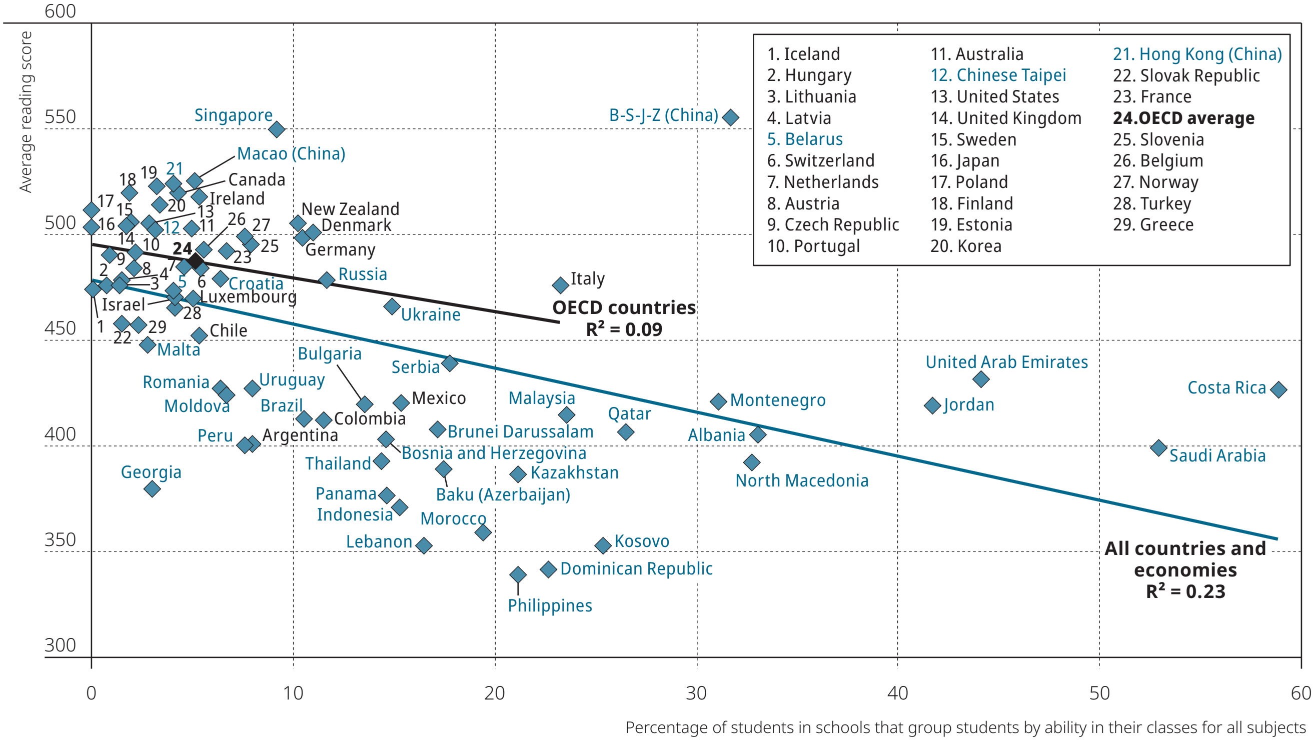
Source: OECD, PISA 2018 Database, Tables II.B1.2.3 and B3.3.3.
StatLink https://doi.org/10.1787/888934130911

Figure V.3.10 **Ability grouping in classes for some subjects and reading performance**



Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.3.7.
StatLink https://doi.org/10.1787/888934130930

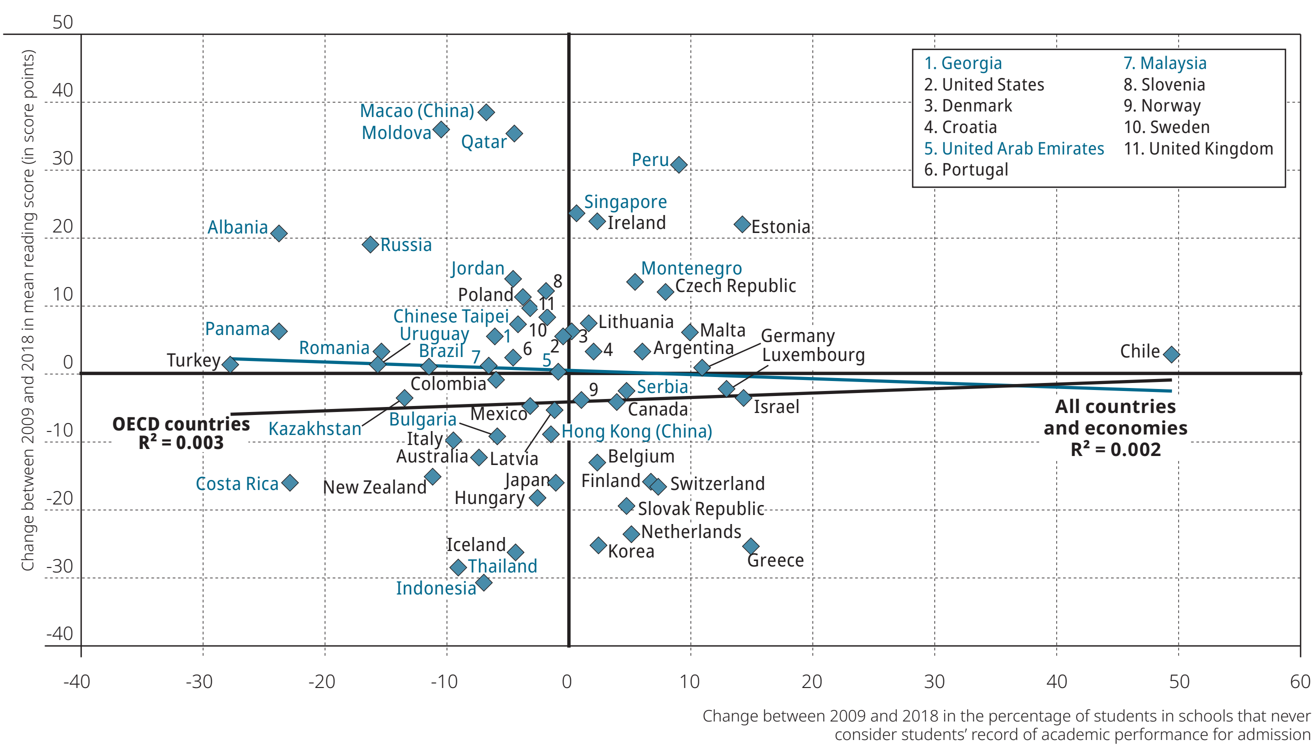
Figure V.3.11 **Ability grouping in classes for all subjects and reading performance**



Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.3.7.

StatLink https://doi.org/10.1787/888934130949

Figure V.3.12 **Change between 2009 and 2018 in academic selectivity and equity in reading performance**



Sources: OECD, PISA 2018 Database, Tables V.B1.3.4 and I.B1.10.

StatLink https://doi.org/10.1787/888934130968

Similarly, academic selectivity was not consistently correlated with mean student performance. However, in 2018, OECD countries with fewer academically selective schools generally showed greater equity in student performance. Across OECD countries, the percentage of students in schools that never consider students' record of academic performance for admission was positively correlated with equity in reading performance, before and after accounting for per capita GDP[9] (Figure V.3.7). The correlation across all countries and economies was not statistically significant. Furthermore, across OECD countries, changes between 2009 and 2018 in the percentage of students attending a school where admission is never based on the student's record of academic performance were positively correlated with changes in equity in reading.[10] This means that equity in education tended to improve in countries where the prevalence of academic selectivity decreased (Table V.B1.3.13).

Notes

1. Source: Switzerland's PISA system-level data-collection questionnaire.
2. In Ireland, only 1% of students in PISA 2018 were enrolled in vocational programmes.
3. The correlation between the number of academic programmes and mean reading performance is influenced by these nine countries with a single track and comparatively high performance. If countries with a single academic programme are excluded from the analysis, the correlation is not statistically significant across OECD countries, nor across all countries/economies.
4. In Finland, most 15-year-old students attend grade 9, the final grade of lower secondary education (ISCED 2). There is only one programme offered at this education level. Students who are above the modal grade in upper secondary education (ISCED 3) have access to two programmes of different orientation.
5. The correlation between the age at selection into different academic programmes and equity in reading performance is not influenced by extreme cases. After countries/economies whose age at selection is 16 years are excluded from the analysis, the correlation is still statistically significant across OECD countries and across all countries/economies. Similarly, after countries/economies whose age at selection is 10 years are excluded from the analysis, the correlation is still statistically significant across OECD countries and across all countries/economies.
6. The correlation between the percentage of students in schools that group students by ability in their classes for some subjects and mean reading performance is not influenced by extreme cases. After excluding countries/economies where less than 15% of students are enrolled in schools that group students by ability in their classes for some subjects (i.e. Costa Rica, Jordan, Saudi Arabia and the United Arab Emirates), the strength of the relationship does not change much across OECD countries ($R^2 = 0.10$) nor across all countries/economies ($R^2 = 0.17$).
7. The correlation between the percentage of students in schools that group students by ability in their classes for all subjects and mean reading performance is not influenced by extreme cases. After excluding countries/economies where more than 40% of students are enrolled in schools that group students by ability in their classes for all subjects (i.e. Brazil, Morocco, Portugal and Uruguay), the strength of the relationship does not change across OECD countries ($R^2 = 0.10$) and increases across all countries/economies ($R^2 = 0.30$).
8. After excluding low-performing countries/economies (i.e. those whose mean reading score was lower than 413 points), across OECD countries, the strength of the correlation between the percentage of students enrolled in a general programme and equity in reading performance remained unaltered (after exclusion, correlation coefficient = 0.31; partial correlation coefficient after accounting for per capita GDP = 0.32). Across all countries/economies, the association remained not statistically significant after excluding low-performing countries/economies.
9. After excluding low-performing countries/economies (i.e. those whose mean reading score was lower than 413 points), across OECD countries, the strength of the correlation between the percentage of students in schools that never consider a student's record of academic performance for admission and equity in reading performance remained unaltered (after exclusion, correlation coefficient = 0.35; partial correlation coefficient after accounting for per capita GDP = 0.35). Across all countries/economies, the association remained not statistically significant after excluding low-performing countries/economies.
10. The correlation between the change between 2009 and 2018 in academic selectivity and the change in equity in reading performance is not influenced by extreme cases. In Chile, the change in the percentage of students in schools that never consider students' record of academic performance for admission was noticeably greater than in other countries (it decreased by 49 percentage points). This change might be due to the adoption, in 2015, of Chile's School Inclusion Law, which forbade public schools and private government-dependent schools from using any form of selection criteria when enrolling students (OECD, 2018[21]) (Santiago et al., 2017[22]). After excluding Chile from the analysis, the correlation across OECD countries strengthened (after exclusion, correlation coefficient = 0.56). Across all countries/economies, the association remained not statistically significant after excluding Chile.

References

Dupriez, V., X. Dumay and **A. Vause** (2008), "How Do School Systems Manage Pupils' Heterogeneity?", *Comparative Education Review*, Vol. 52/2, pp. 245-273, http://dx.doi.org/10.1086/528764. [1]

Gamoran, A. and **M. Berends** (1987), "The Effects of Stratification in Secondary Schools: Synthesis of Survey and Ethnographic Research", *Review of Educational Research*, Vol. 57/4, pp. 415-435, http://dx.doi.org/10.3102/00346543057004415. [2]

Gerber, T. and **S. Cheung** (2008), "Horizontal Stratification in Postsecondary Education: Forms, Explanations, and Implications", *Annual Review of Sociology*, Vol. 34/1, pp. 299-318, http://dx.doi.org/10.1146/annurev.soc.34.040507.134604. [3]

Gibbons, S. and **S. Telhaj** (2007), "Are Schools Drifting Apart? Intake Stratification in English Secondary Schools", *Urban Studies*, doi: 10.1080/00420980701302346, pp. 1281-1305, http://dx.doi.org/10.1080/00420980701302346. [4]

Glaesser, J. and **B. Cooper** (2010), "Selectivity and Flexibility in the German Secondary School System: A Configurational Analysis of Recent Data from the German Socio-Economic Panel", *European Sociological Review*, Vol. 27/5, pp. 570-585, http://dx.doi.org/10.1093/esr/jcq026. [5]

Hanushek, E. and **L. Wossmann** (2006), "Does Educational Tracking Affect Performance and Inequality? Differences- in-Differences Evidence Across Countries*", *The Economic Journal*, Vol. 116/510, pp. C63-C76, http://dx.doi.org/10.1111/j.1468-0297.2006.01076.x. [11]

Hong, G. et al. (2012), "Differential Effects of Literacy Instruction Time and Homogeneous Ability Grouping in Kindergarten Classrooms", *Educational Evaluation and Policy Analysis*, Vol. 34/1, pp. 69-88, http://dx.doi.org/10.3102/0162373711424206. [17]

LeTendre, G., B. Hofer and **H. Shimizu** (2003), "What Is Tracking? Cultural Expectations in the United States, Germany, and Japan", *American Educational Research Journal*, Vol. 40/1, pp. 43-89, http://dx.doi.org/10.3102/00028312040001043. [6]

Lucas, S. (2001), "Effectively Maintained Inequality: Education Transitions, Track Mobility, and Social Background Effects", *American Journal of Sociology*, Vol. 106/6, pp. 1642-1690, http://dx.doi.org/10.1086/321300. [18]

Marteleto, L. et al. (2012), "Educational Inequalities among Latin American Adolescents: Continuities and Changes over the 1980s, 1990s and 2000s", *Research in Social Stratification and Mobility*, Vol. 30/3, pp. 352-375, http://dx.doi.org/10.1016/J.RSSM.2011.12.003. [13]

Matthews, M., J. Ritchotte and **M. McBee** (2013), "Effects of schoolwide cluster grouping and within-class ability grouping on elementary school students' academic achievement growth", *High Ability Studies*, Vol. 24/2, pp. 81-97, http://dx.doi.org/10.1080/13598139.2013.846251. [16]

Oakes Jeanne (1990), "Multiplying Inequalities: The Effects of Race, Social Class, and Tracking on Opportunities to Learn Mathematics and Science", *ERIC*. [10]

Oakes, J. (1985), *Keeping Track: How Schools Structure Inequality*, Yale University Press, New Haven. [7]

OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/b5fd1b8f-en. [19]

OECD (2018), *Education Policy Outlook 2018: Putting Student Learning at the Centre*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264301528-en. [21]

OECD (2018), *Equity in Education: Breaking Down Barriers to Social Mobility*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264073234-en. [20]

OECD (2016), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264267510-en. [12]

Perry, L. and **L. Southwell** (2014), "Access to academic curriculum in Australian secondary schools: A case study of a highly marketised education system", *Journal of Education Policy*, Vol. 29/4, pp. 467-485, http://dx.doi.org/10.1080/02680939.2013.846414. [8]

Santiago, P. et al. (2017), *OECD Reviews of School Resources: Chile 2017*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264285637-en. [22]

Steenbergen-Hu, S., M. Makel and **P. Olszewski-Kubilius** (2016), "What One Hundred Years of Research Says About the Effects of Ability Grouping and Acceleration on K–12 Students' Academic Achievement: Findings of Two Second-Order Meta-Analyses", *Review of Educational Research*, doi: 10.3102/0034654316675417, pp. 849-899, http://dx.doi.org/10.3102/0034654316675417. [15]

Torche, F. (2005), "Privatization Reform and Inequality of Educational Opportunity: The Case of Chile", *Sociology of Education*, Vol. 78/4, pp. 316-343, http://dx.doi.org/10.1177/003804070507800403. [14]

Van de Werfhorst, H. and **J. Mijs** (2010), "Achievement Inequality and the Institutional Structure of Educational Systems: A Comparative Perspective", *Annual Review of Sociology*, Vol. 36/1, pp. 407-428, http://dx.doi.org/10.1146/annurev.soc.012809.102538. [9]

PISA

4

Teachers and support staff

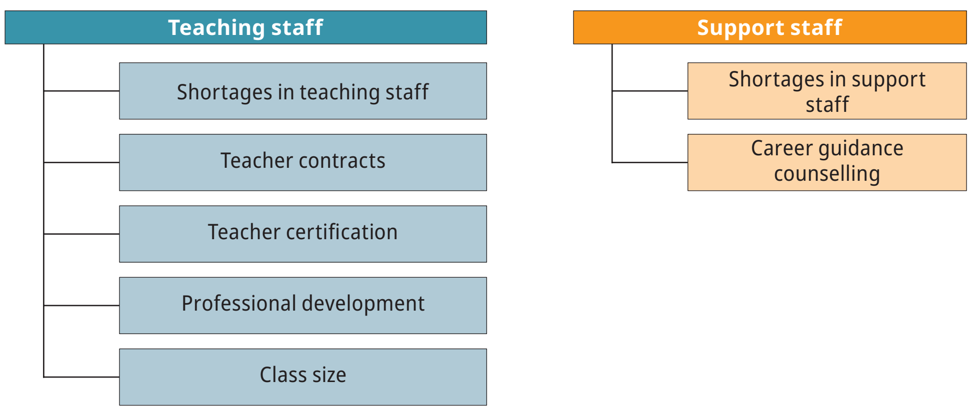
This chapter focuses on teachers: whether schools have an adequate number of them, whether they are sufficiently qualified, their working conditions. It also examines the availability of support staff to provide career guidance at school. Each of these factors is then related to student performance and equity in the education system.

Out of all the school resources that are needed to boost students' learning and well-being, teachers are perhaps the most important. If schools do not have a sufficient number of teachers, or if teachers are not adequately qualified and able to support their students' needs, improving the quality and equity of education is unlikely. By contrast, effective teacher policies can be the foundation on which to build successful education systems (OECD, 2005[1]; OECD, 2010[2]; OECD, 2019[3]).

Research has identified teacher-related factors that have a measurable impact on students' academic achievement or on students' social and emotional well-being. These include teachers' initial education and certification, teachers' working conditions, opportunities for professional development, teacher collaboration and peer-mentoring, and quality systems of teacher appraisal (Rockoff, 2004[3]; Nye, Konstantopoulos and Hedges, 2004[4]; Clotfelter, Ladd and Vigdor, 2006[5]; Jennings and DiPrete, 2010[6]; OECD, 2013[7]). In addition, teacher enthusiasm and support are positively correlated to student learning and attitudes (OECD, 2019[8]).

In addition to teachers, a range of other professionals and human resources plays an important role in school life (OECD, 2019[9]). Schools' support staff, as considered in this chapter, includes career guidance counsellors, psychologists and social workers; special educators and educational therapists; doctors and nurses; teaching and classroom assistants; and supervisors and school guards, amongst others.

Figure V.4.1 **Human resources as covered in PISA 2018**



What the data tell us

- In 43 countries and economies, students attending schools whose principal reported greater shortages of teaching and support staff scored lower in reading. After accounting for students' and schools' socio-economic profile, in 17 countries and economies, students in schools with more staff shortages scored lower, while in the Republic of Moldova, students in such schools scored higher.
- On average across OECD countries, 27% of students were enrolled in schools whose principal reported that learning is hindered by a lack of teaching staff, and 33% were enrolled in schools whose principal reported that learning is hindered by a lack of assisting staff.
- On average across OECD countries, and in 17 countries/economies, students in schools with a greater share of full-time teachers scored higher in reading, after accounting for students' and schools' socio-economic profile; in 20 countries and economies, students in such schools scored lower.
- On average across OECD countries, and in 12 countries/economies, students in schools with a greater share of fully certified teachers scored higher in reading, after accounting for students' and schools' socio-economic profile, while in 6 countries and economies, students in such schools scored lower.
- After accounting for students' and schools' socio-economic profile, in five countries, students in schools whose principal reported that career guidance is offered at school scored higher in reading, but in six countries, students in such schools scored lower. In addition, in five countries, students in such schools were more likely to expect to complete tertiary education; but in ten countries they were less likely to expect to do so. Similarly, in five countries, students in schools whose principal reported that career guidance is offered at school were more likely to expect to work in a high-skilled occupation, while in six countries, students in such schools were less likely to expect so.

SHORTAGES OF TEACHING AND SUPPORT STAFF

PISA 2018 asked school principals whether providing instruction at their school is hindered by a lack of teaching and support staff or by an inadequacy or poor qualifications of teaching and support staff. This information refers to both the availability and quantity of staff, and to the quality of available staff. Both types of information were combined into a single standardised measure, the PISA index of shortage of education staff (for technical details, see Annex A3). Higher values in the index indicate more shortages of quality education staff in school. For interpretation purposes, it is important to keep in mind that the index measures the perception of school principals, rather than an objective measure of staff shortage. School principals in different countries may have different perceptions of what constitutes a shortage in teaching or support staff in their school.

In PISA 2018, the index of shortage of education staff was 0.9 in Japan, Morocco and Portugal, a value that indicates more shortages of education staff, as perceived by school principals (Figure V.4.2). In Bulgaria, Montenegro and Poland, the index was -0.9 or lower, a value that indicates fewer perceived shortages of education staff.

In 42 countries and economies, students attending socio-economically disadvantaged schools were exposed to more shortages of education staff than their peers in advantaged schools. The largest disparities in education staff in favour of advantaged schools were found in Hong Kong (China), Peru, the United Arab Emirates and Uruguay (Table V.B1.4.1). Only in three education systems, namely Kosovo, Lithuania and the Republic of North Macedonia (hereafter "North Macedonia"), were shortages of education staff more prevalent in advantaged schools.

In another 42 countries and economies, shortages of education staff were more prevalent in public schools than in private schools. The largest disparities in shortages of education staff, in favour of private schools, were observed in Colombia, Greece, Portugal and Uruguay (Table V.B1.4.1). In Lithuania, public schools suffered fewer shortages of education staff than private schools.

On average across OECD countries and in 11 countries and economies, shortages of education staff were more prevalent in rural schools than in urban schools (Figure V.4.2). In five countries/economies, shortages of education staff were more prevalent in urban schools than in rural schools.

When the components of the index of shortage of education staff were examined separately, it became evident that in most countries a lack of education staff was more prevalent, according to school principals, than an inadequacy or poor qualifications of staff (Figure V.4.3). On average across OECD countries, about 27% of students attended schools whose principal reported that a lack of teaching staff hinders learning, whereas only 15% of students were enrolled in schools where inadequate or poorly qualified teaching staff hinders learning. Similarly, 33% of students attended schools whose principal reported that a lack of assisting staff hinders learning, but only 17% were in schools in which inadequate or poorly qualified assisting staff hinders learning, on average across OECD countries.

In only three countries/economies, namely Georgia, Macao [China] and Montenegro, was the incidence of inadequate or poorly qualified teaching staff more prevalent than a lack of teaching staff. Only in Macao (China) was the incidence of inadequate or poorly qualified assisting staff greater than a lack of assisting staff (Table V.B1.4.3).

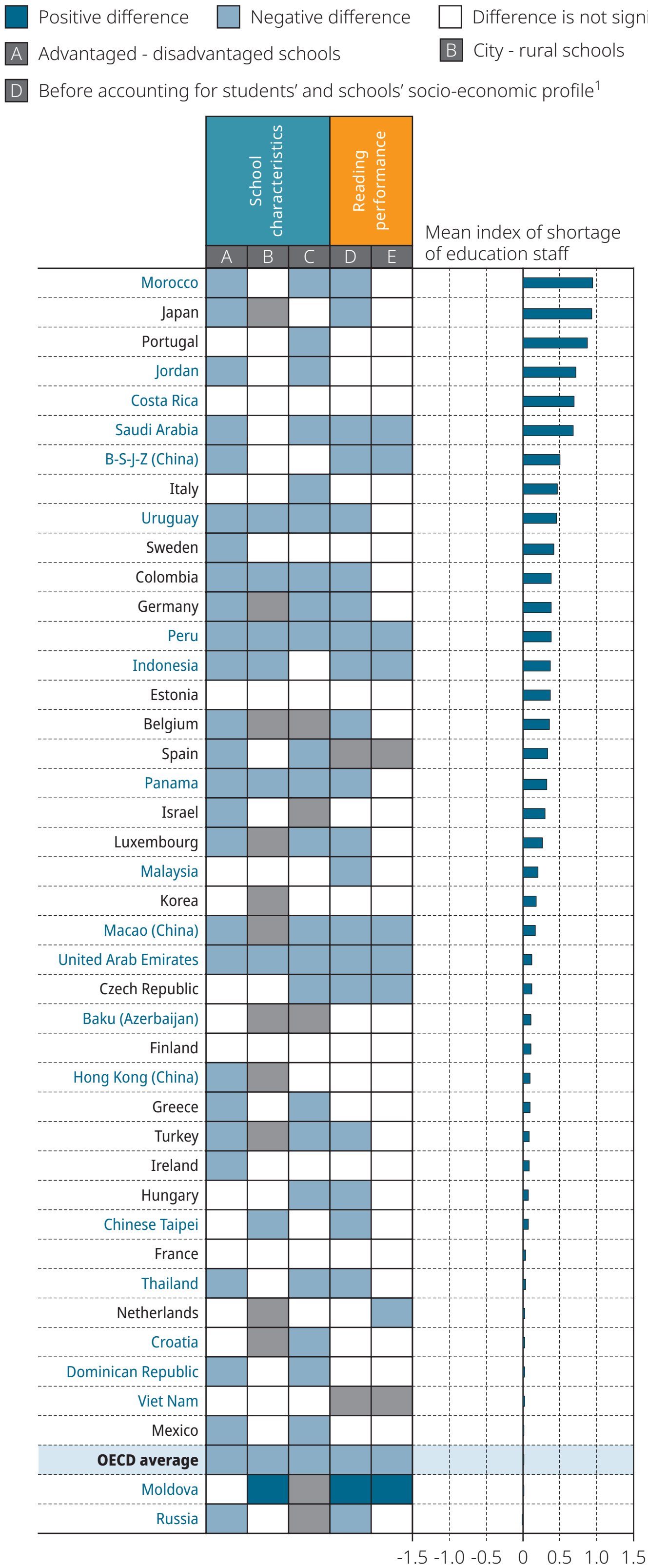
Figure V.4.3 also shows that some countries suffer more from a lack of teaching staff whereas others suffer more from a lack of assisting staff, according to school principals. In Germany, Japan, Luxembourg and Saudi Arabia, at least 50% of students were in schools whose principals reported that a lack of teaching staff hinders learning. In Austria, Colombia, Greece, Jordan, Korea, Luxembourg, Morocco, Panama, Portugal, Spain and Uruguay, at least 50% of students attended schools whose principal reported that instruction is hindered by a lack of assisting staff.

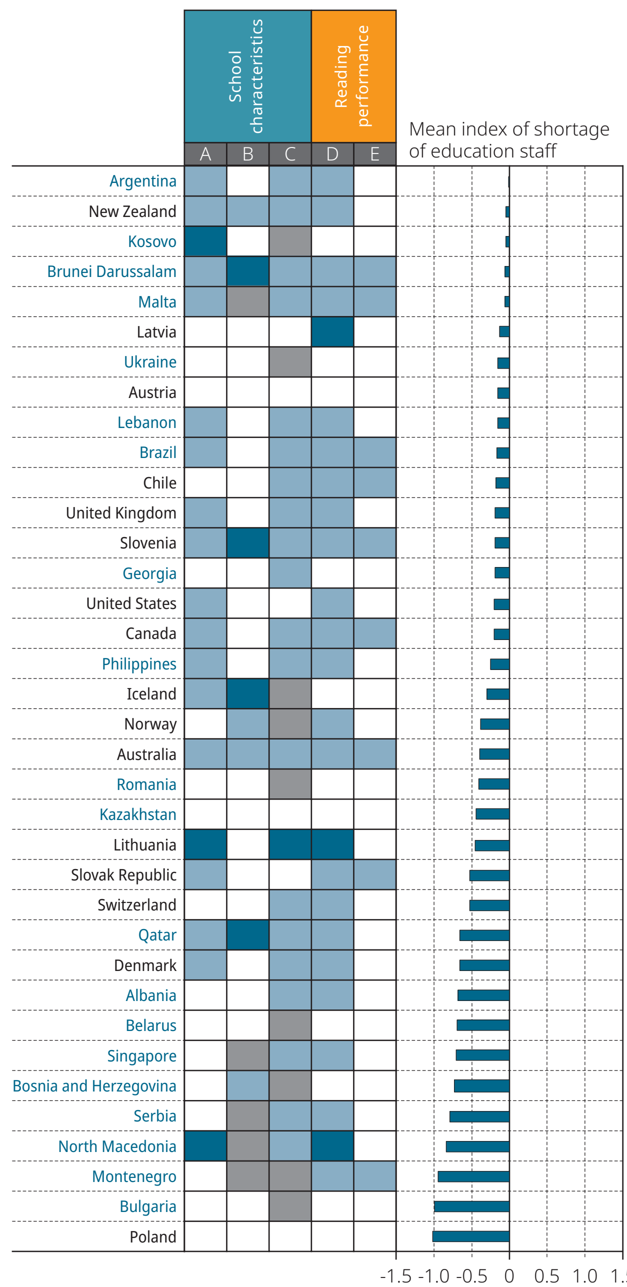
Shortages in teaching and support staff were less prevalent in 2018 than in 2015, on average across OECD countries (Table V.B1.4.2). For example, the share of students in schools whose principal reported that instruction is hindered by a lack of teaching staff decreased in 25 countries since PISA 2015, and by more than 15 percentage points in France, Greece, Macao (China), Chinese Taipei and Uruguay. Similarly, the share of students in schools whose principal reported that instruction is hindered by a lack of assisting staff decreased in 25 countries, and by the widest margins in Albania, Korea, Malta, Chinese Taipei and Turkey.

Perceived shortages of education staff, as measured by the combined index of shortage of education staff, were negatively related to student achievement in reading (Figure V.4.2). In 43 countries and economies, students attending schools with greater shortages scored lower in reading than students in schools with fewer shortages of staff (Table V.B1.4.1). In 29 countries and economies, no statistically significant differences in reading scores were found between students in schools with more or fewer shortages of education staff. In four countries, students attending schools with more shortages scored higher in reading than students in schools with fewer shortages of staff.

Figure V.4.2 **Shortage of education staff, school characteristics and reading performance**

Based on principals' reports





	A	B	C	D	E
Countries/economies with a positive difference	3	5	1	4	1
Countries/economies with no difference	33	46	21	29	58
Countries/economies with a negative difference	42	11	42	43	17

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Note: Higher values in the index indicate more shortages of teaching and supporting staff in school.

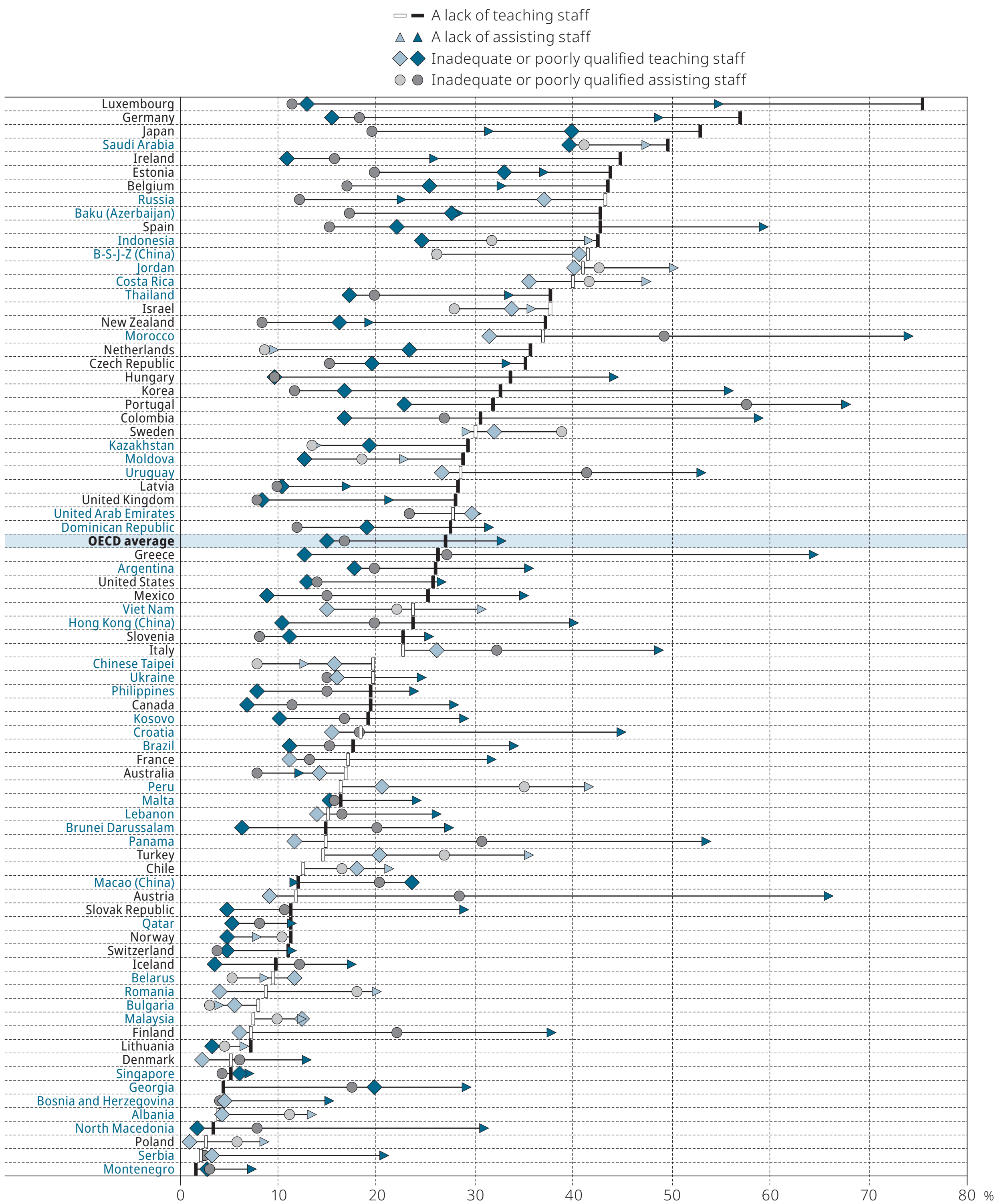
Countries and economies are ranked in descending order of the index of shortage of education staff.

Source: OECD, PISA 2018 Database, Table V.B1.4.1.

StatLink https://doi.org/10.1787/888934130987

Figure V.4.3 **Shortage of teaching and assisting staff**

Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by the following factors



Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered by a lack of teaching staff.

Note: Significant differences between "a lack of teaching staff" ("a lack of assisting staff") and "inadequate or poorly qualified teaching staff" ("inadequate or poorly qualified assisting staff") are shown in a darker tone (see Annex A3).

Sources: OECD, PISA 2018 Database, Tables V.B1.4.2 and V.B1.4.3.

StatLink https://doi.org/10.1787/888934131006

After accounting for students' and schools' socio-economic profile, in 17 countries and economies, students enrolled in schools with more shortages scored lower in reading (Figure V.4.2). In 58 countries/economies, no statistically significant differences in reading scores were found between students in schools with more or fewer shortages of education staff, after accounting for students' and schools' socio-economic profile. In the Republic of Moldova (hereafter "Moldova"), students attending schools with more shortages scored higher in reading than students in schools with fewer shortages of staff.

TEACHING STAFF: CONTRACT, CERTIFICATION AND PROFESSIONAL DEVELOPMENT

Teacher contracts

Teacher contracts, as examined here, refer to the type of work schedule teachers have, i.e. whether they work part time or full time in a school. Different working conditions between full-time and part-time teachers might influence not only their job satisfaction but also their role within the school and the quality of their teaching. Full-time teachers tend to enjoy greater professional recognition in schools and better salaries, receive more support from school managers, and have more access to professional development and teacher collaboration, compared to their part-time colleagues (Jameson and Hillier, 2008[10]). At the same time, however, some studies suggest that, in order to compensate for these disadvantages, part-time teachers often display greater professionalism, better time-management skills, and a high level of commitment to their students (Atherton and Kingdon, 2010[11]).

PISA asked school principals how many of the teachers in their school are employed full time and part time. A full-time teacher, as defined in PISA, is employed at least 90% of the time as a teacher for the full school year; all other teachers are considered to be part time.

About 87% of the teachers working in schools attended by 15-year-olds worked full time and 13% worked part time, on average across OECD countries in 2018 (Figure V.4.4). In 43 countries and economies, 90% or more of teachers worked full time. In every PISA-participating country/economy except Argentina, Brazil, Indonesia, Mexico, the Netherlands, Switzerland and Uruguay, more than 75% of teachers worked full time. In Argentina, Brazil and Uruguay, less than half of teachers in the schools attended by 15-year-olds worked full time (Table V.B1.4.4).

On average across OECD countries, and in 20 countries and economies, the percentage of teachers working full time was greater in disadvantaged schools than in advantaged schools, but only in 5 countries (Israel, the Netherlands, Panama, Switzerland and Uruguay) was the difference greater than 5 percentage points. In 15 other countries and economies, advantaged schools had a larger share of full-time teachers than disadvantaged schools.

In 20 countries and economies, and on average across OECD countries, students in schools with a larger share of full-time teachers scored lower in reading, but they scored higher in another 17 countries and economies (Figure V.4.4). In 38 countries and economies, the prevalence of full-time teachers in a school was not associated with students' reading performance.

After accounting for students' and schools' socio-economic profile, in 13 countries/economies there was a positive association between the share of full-time teachers and reading performance; in 7 other countries/economies, there was a negative association; and in 55 countries/economies there was no association (Figure V.4.4).

Teacher certification

Certified teachers are those licensed to teach in a school based on the standards defined by national or local institutions. The goal of teacher certification is to guarantee that schools are staffed with quality teachers; but critics argue that certification might be ineffective or impose burdensome requirements (Darling-Hammond, 2010[12]; Akiba et al., 2010[13]). In general, research finds a positive association between teacher certification and student achievement (Clotfelter, Ladd and Vigdor, 2006[5]; Goldhaber and Brewer, 2000[14]). It is less clear whether teacher certification improves the quality of teaching directly or if more able, persistent and motivated candidates are more likely to be certified (Boyd et al., 2007[15]).

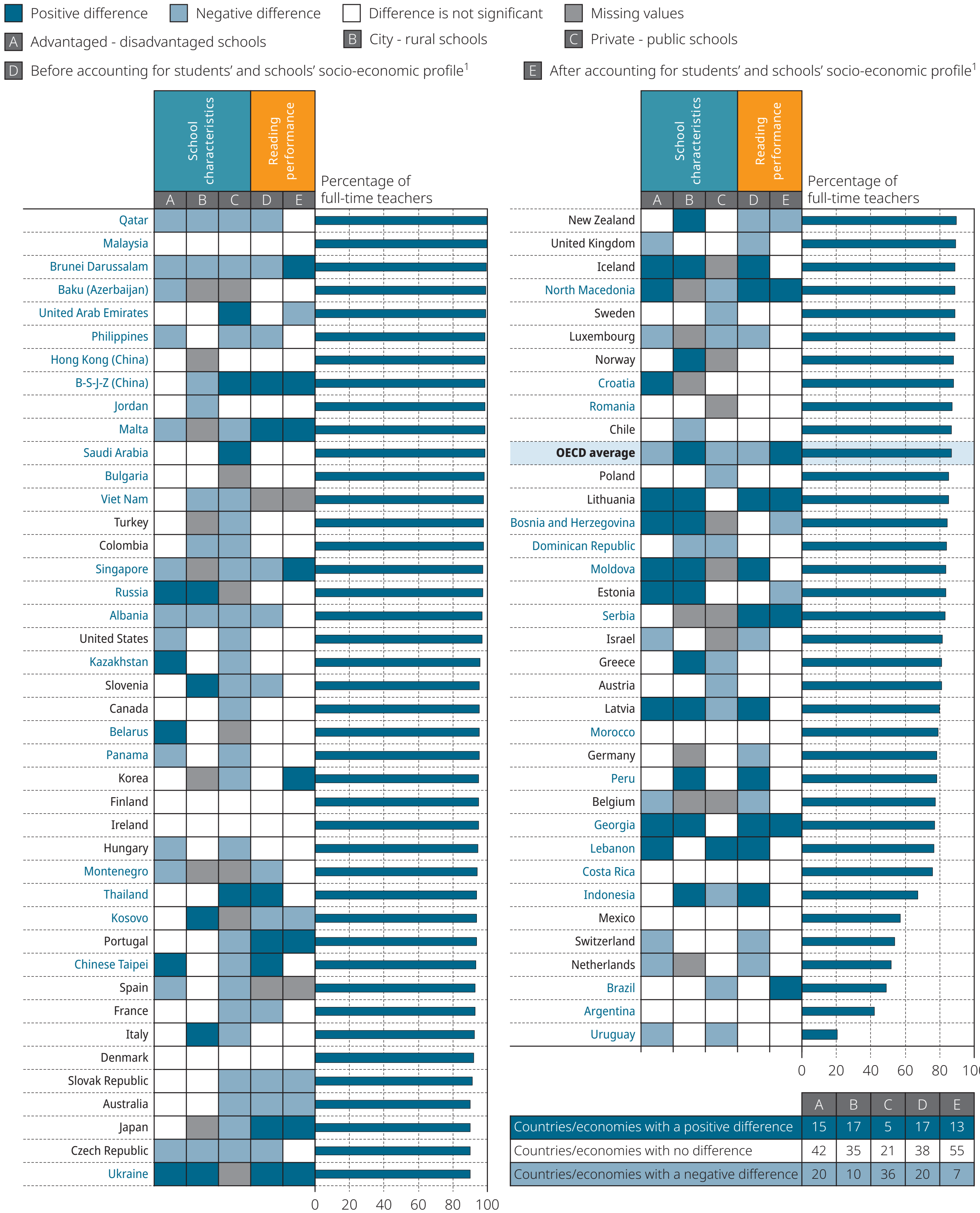
PISA asked school principals how many of the teachers in their school were fully certified by an appropriate authority. In most PISA-participating countries and economies, most teachers were fully certified. On average across OECD countries, 82% of teachers working in schools attended by 15-year-olds were fully certified by the appropriate national or local authority. In 53 countries and economies at least 80% of teachers were fully certified, whereas in 23 countries less than 80% of teachers were fully certified (Table V.B1.4.6). In Colombia, Georgia, Mexico and the United Arab Emirates, less than half of teachers in schools attended by 15-year-olds were fully certified.

In 16 countries and economies in 2018, the share of fully certified teachers was larger in advantaged than in disadvantaged schools, but in 12 countries and economies the opposite was observed (Table V.B1.4.6). On average across OECD countries, 80% of teachers in disadvantaged schools and 83% of teachers in advantaged schools were fully certified.[1]

In 16 countries and economies, and on average across OECD countries, students in schools with a larger share of fully certified teachers scored higher in reading, but in 8 countries and economies they scored lower (Figure V.4.5).

Figure V.4.4 **Full-time teachers at school, school characteristics and reading performance**

Based on principals' reports



	A	B	C	D	E
Countries/economies with a positive difference	15	17	5	17	13
Countries/economies with no difference	42	35	21	38	55
Countries/economies with a negative difference	20	10	36	20	7

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

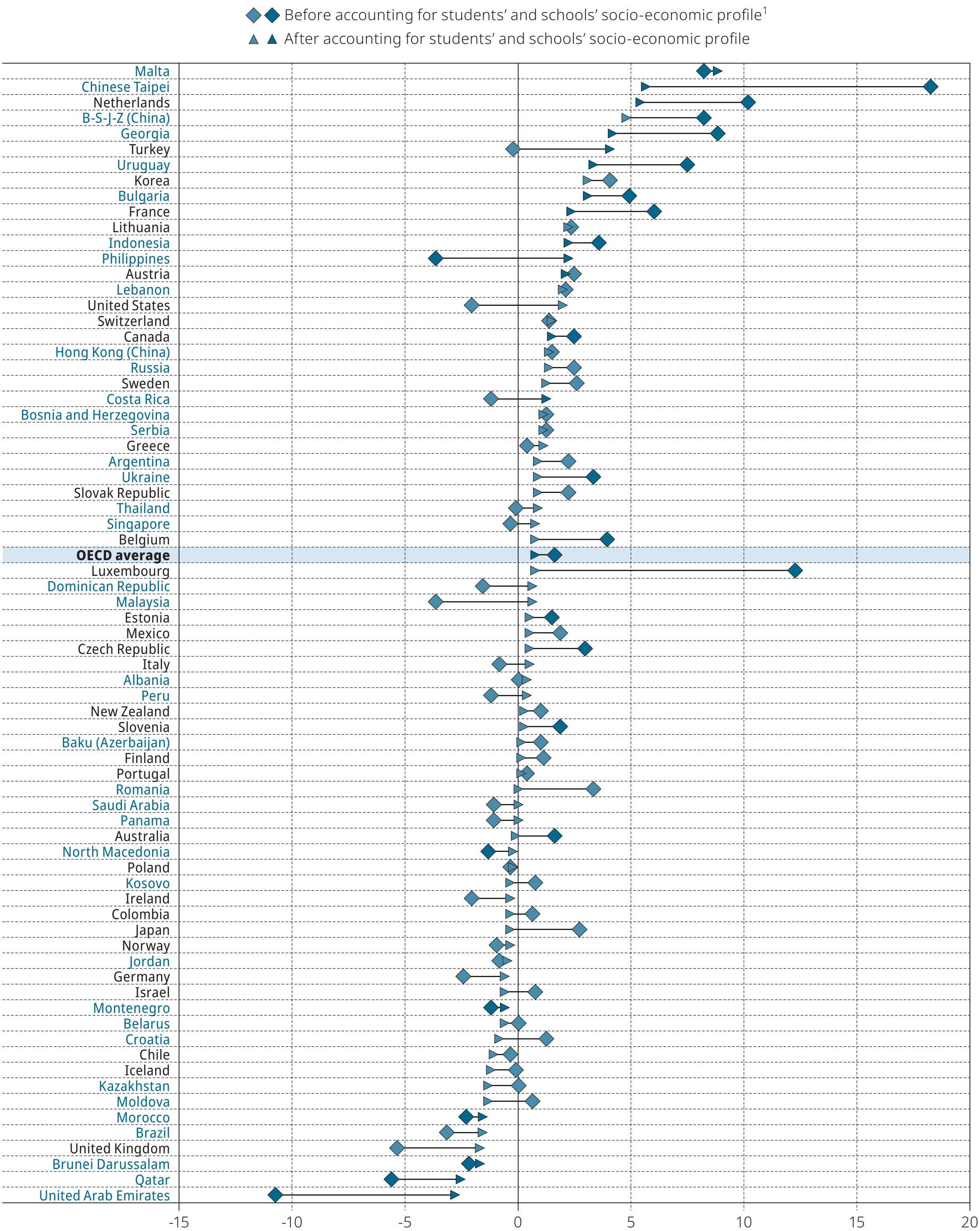
Countries and economies are ranked in descending order of the percentage of full-time teachers.

Source: OECD, PISA 2018 Database, Table V.B1.4.5.

StatLink https://doi.org/10.1787/888934131025

Figure V.4.5 **Certified teachers at school and reading performance**

Change in reading performance per 10-unit increase in the percentage of teachers at school fully certified by the appropriate authority



1. 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 index of ESCS in the relevant country/economy.

Notes: Significant differences in the change in reading performance are shown in a darker tone (see Annex A3).

This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Countries and economies are ranked in descending order of the change in reading performance per 10-unit increase in the percentage of teachers at school fully certified by the appropriate authority.

Source: OECD, PISA 2018 Database, Table V.B1.4.8.

StatLink https://doi.org/10.1787/888934131044

After accounting for students' and schools' socio-economic profile, in 12 countries/economies and on average across OECD countries, students in schools with a larger share of fully certified teachers scored higher in reading while in 6 countries and economies they scored lower (Figure V.4.5).

Teacher professional development

Together with autonomy and participation in peer networks, teacher professional development is one of the pillars of teacher professionalism (OECD, 2016[16]). Professional development programmes aim to develop the skills, knowledge and dispositions of individual teachers, but in addition they can enhance schools' capacity for organisational change and improvement (OECD, 2016[16]; OECD, 2009[17]; Borko, Jacobs and Koellner, 2010[18]; Borko, Elliot and Uchiyama, 2000[19]). Research suggests that professional development is more effective when it focuses on student learning, actively engages teachers in designing instructional strategies, supports collaboration amongst peers, uses models of effective practice, and provides coaching, feedback and enough time for teachers to implement and sustain changes (Darling-Hammond, Hyler and Gardner, 2017[20]; Lumpe et al., 2012[21]).

A programme of professional development, as defined in PISA, is a formal programme of at least one day designed to enhance teaching skills or pedagogical practices, and that may or may not lead to a recognised qualification. PISA asked school principals to report the percentage of all teaching staff in their school who had attended a programme of professional development in the three months prior to the PISA test.

Across OECD countries in 2018, the average 15-year-old student attended a school whose principal reported that 53% of teachers had participated in a programme of professional development in the three months prior to the PISA test (Figure V.4.6). The share was at least 80% in Australia, Singapore, Sweden, Thailand, the United Arab Emirates and the United States, and greater than 50% in 38 countries and economies. By contrast, fewer than one in four teachers in Belarus, Hungary, Kosovo, North Macedonia, Norway, Ukraine and Uruguay had attended a programme of professional development during that period.

The percentage of teachers who had attended a programme of professional development increased by two percentage points between PISA 2015 and PISA 2018, on average across OECD countries (Table V.B1.4.7). In 19 countries and economies the share of teachers who had attended such a programme was greater in PISA 2018 than in PISA 2015; the increase was greater than 20 percentage points in Ireland, Luxembourg, Malta and Mexico. By contrast, in 14 countries/economies, the share was smaller in 2018 than in 2015, and the reduction was greater than 20 percentage points only in Romania.

In 32 countries and economies in 2018, the share of teachers who had attended a programme of professional development was larger in disadvantaged than in advantaged schools (Figure V.4.6). On average across OECD countries, 55% of teachers in disadvantaged schools and 52% of teachers in advantaged schools had attended a programme of professional development in the 3 months prior to the PISA test. In PISA 2015, no such difference was observed, on average across OECD countries.

The relationship between teachers' participation in professional development activities and students' performance in reading is weak in most PISA-participating countries and economies (Table V.B1.4.8). After accounting for the socio-economic profile of students and schools, in nine education systems, students scored higher in reading when more teachers in their school had participated in professional development activities; in ten other systems, students scored lower in reading when their teachers had participated in such activities.

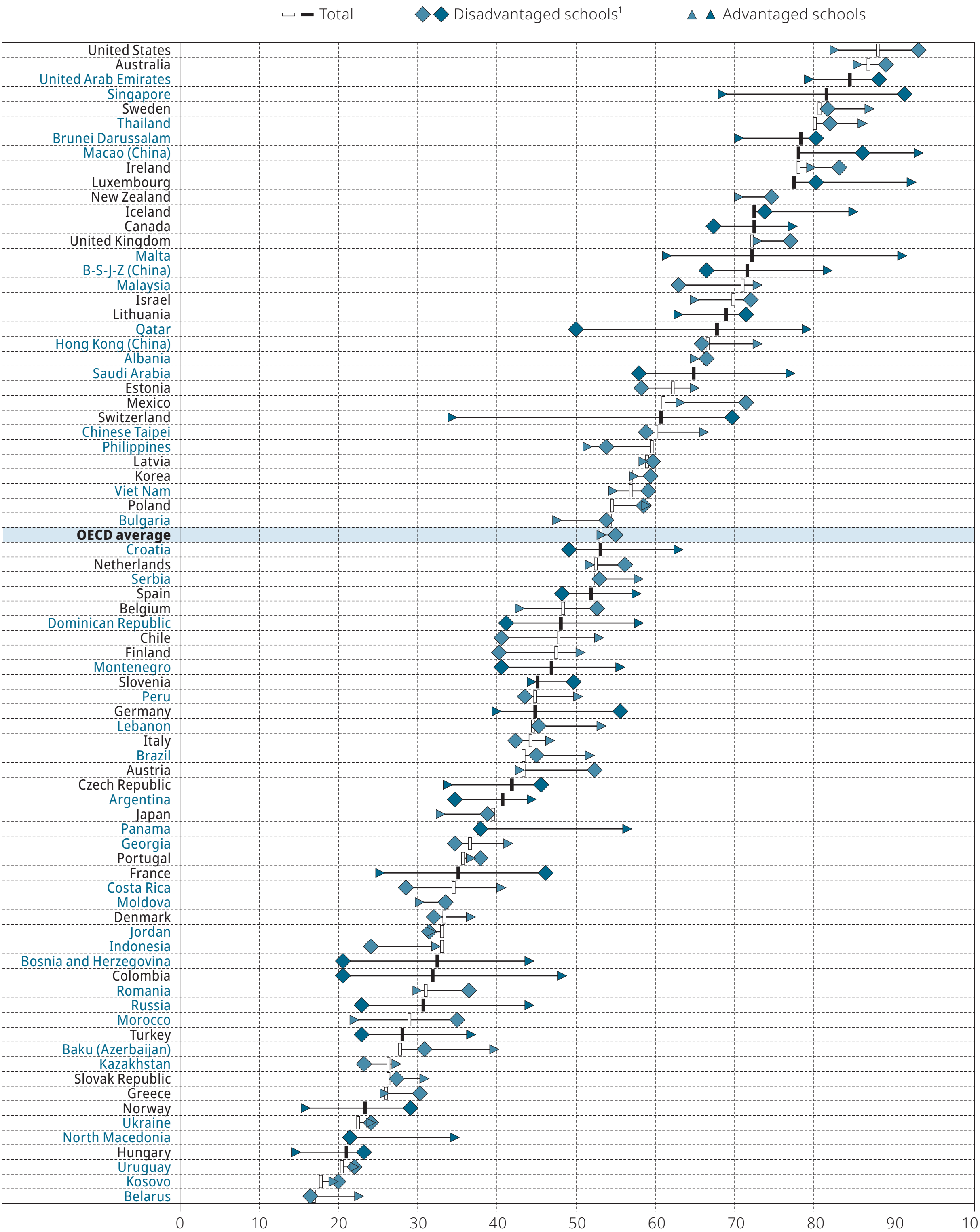
Class size

There are number of ways in which smaller classes are, in theory, good for instruction and learning. In classes with fewer students, teachers might be able to allocate more time, attention and support to each student. By contrast, in larger classes, at least some students might be disengaged from instruction (Finn, Pannozzo and Achilles, 2003[23]). Moreover, students attending remedial lessons are more likely to be in smaller classes than students who do not attend such lessons. However, research provides mixed evidence about whether smaller classes improve student outcomes (Dynarski, Hyman and Schanzenbach, 2013[24]; Fredriksson, Öckert and Oosterbeek, 2013[25]; Woessmann and West, 2005[26]; Blatchford and Russell, 2019[27]; Finn and Achilles, 1999[28]; De Giorgi, Pellizzari and Woolston, 2012[29]). Previous PISA reports have pointed out that some top-performing education systems have large classes, and suggest that investments in teacher quality are more effective than investing in smaller classes (OECD, 2014[30]).

PISA 2018 asked school principals to report the average size of language-of-instruction classes in the national modal grade for 15-year-olds. According to school principals, on average across OECD countries in 2018, there were 26 students per language-of-instruction class. While in Beijing, Shanghai, Jiangsu and Zhejiang (China) (hereafter "B-S-J-Z [China]"), Mexico, the Philippines, Turkey and Viet Nam there were 40 or more students per class, in Belgium, Finland, Iceland, Malta and Switzerland there were 20 or fewer students per class.

Figure V.4.6 **Teacher professional development, by school's socio-economic profile**

Percentage of teachers who attended a programme of professional development in the previous three months



1. 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 index of ESCS in the relevant country/economy.

Note: Significant differences between advantaged and disadvantaged schools are shown in a darker tone (see Annex A3).

Countries and economies are ranked in descending order of the percentage of teachers who attended a programme of professional development in the previous three months.

Source: OECD, PISA 2018 Database, Table V.B1.4.7.

StatLink https://doi.org/10.1787/888934131063

In PISA 2015, there were also 26 students per language-of-instruction class, on average across OECD countries (Table V.B1.4.12). However, since 2015, the average size of these classes shrank in 20 countries/economies (by 5 or more students in Georgia, Korea, Macao [China] and Turkey), while it grew in 9 countries/economies (by 2 or 3 students in Mexico, Moldova, Qatar and Spain). In 37 countries/economies, class size did not change between 2015 and 2018.

Box V.4.1. **Financial resources in education, teachers' salaries and reading performance**

Policy makers must constantly balance expenditure on education with expenditure for many other public services. Yet despite the competing demands for resources, expenditure on education has increased over the past few years. Between 2010 and 2016, expenditure per primary, secondary and post-secondary non-tertiary student increased by 5%, on average across OECD countries with data available for both 2010 and 2016 (OECD, 2019[22]).

Financial resources can be allocated to salaries paid to teachers, administrators and support staff; maintenance or construction costs of buildings and infrastructure; and operational costs, such as transportation and meals for students.

School systems with greater total expenditure on education tend to be those with higher levels of per capita GDP. Spending on education and per capita GDP are highly correlated (r = 0.9 across OECD countries and r = 0.91 across all participating countries and economies in PISA 2018) (Tables B3.1.1 and B3.1.4).

In 2018, total expenditure by educational institution per student from the age of 6 to 15 exceeded USD 100 000 (PPP-corrected dollars) in Austria, Belgium, Brunei Darussalam, Finland, Iceland, Korea, Luxembourg, Macao (China), the Netherlands, Norway, Qatar, Singapore, Sweden, Chinese Taipei, the United Kingdom and the United States. In Qatar, cumulative expenditure per student exceeded USD 325 000. In contrast, in the Dominican Republic, Georgia, Indonesia, Jordan, Kazakhstan, Moldova, Montenegro, Panama, Peru, the Philippines, Romania and Serbia, cumulative expenditure per student over this age period amounted to less than USD 25 000 (Table B3.1.1).

Amongst the countries and economies whose cumulative expenditure per student was under USD 50 000 (the level of spending in 24 countries/economies), higher expenditure on education was significantly associated with higher scores in the PISA reading test. But this was not the case amongst countries and economies whose cumulative expenditure was greater than USD 50 000, which include most OECD countries (Figure II.6.2). It seems that for this latter group of countries and economies, factors other than the level of investment in education are better predictors of student performance.

Teachers' salaries

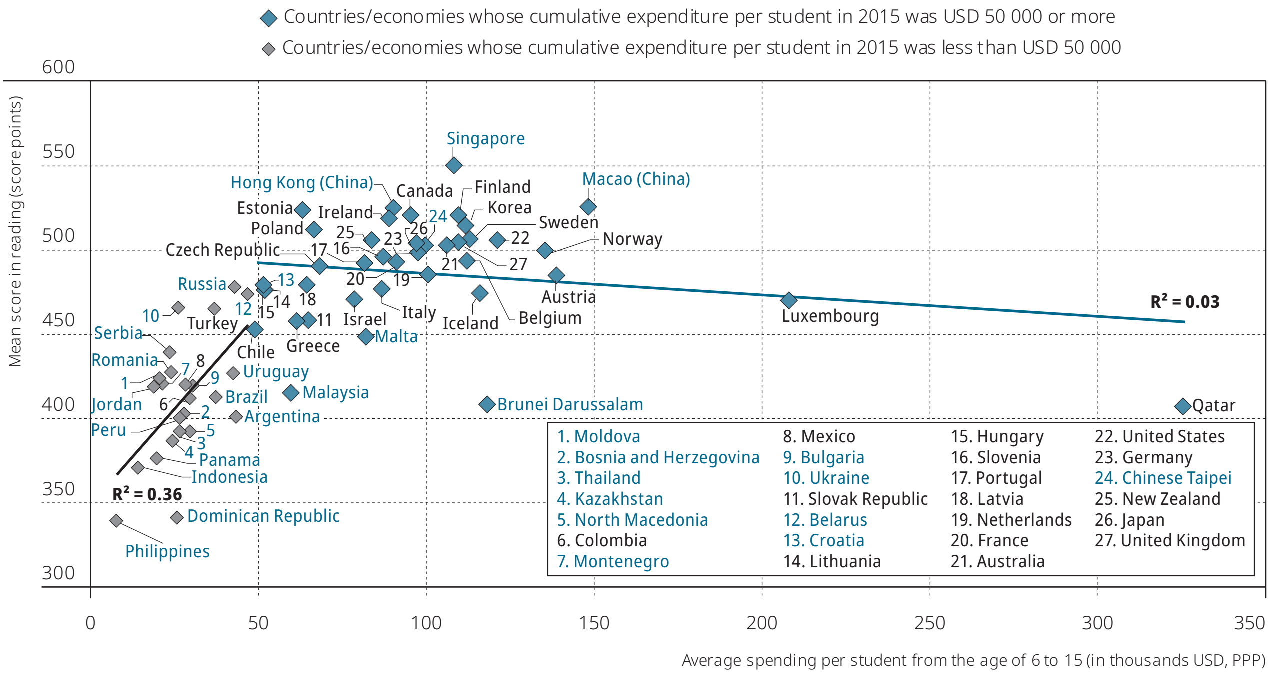
Staff compensation comprises the largest share of current expenditure at all levels of education. In primary, secondary and post-secondary non-tertiary education, four-fifths of staff compensation goes to teachers, with the remainder going to other staff (OECD, 2019[22]).

Higher salaries can help school systems attract the best candidates to the teaching profession, and signal that teachers are regarded and treated as professionals. But paying teachers well is only part of the equation. The relationship between reading performance and teachers' salaries relative to per capita national income was statistically significant across OECD countries and across PISA-participating countries and economies in 2018 (Figure V.4.8). However, the correlation was entirely driven by Mexico and Lebanon, two countries where teachers' PPP-corrected per capita salaries are higher than those in other countries/economies. After excluding these outliers, the relationship was not statistically significant.

This finding suggests that other factors, such as the quality of teaching, may be more closely associated with students' performance at the system level. Intervening factors, such as the different criteria used by school systems for identifying and compensating their best teachers and the level of teachers' pay in relation to the system's resources, may also be at play here. For example, if countries do not have enough resources to invest in education, paying relatively high salaries might attract good teachers, but it also might limit the number of teachers the system can afford, thus contributing to shortages of teaching staff.

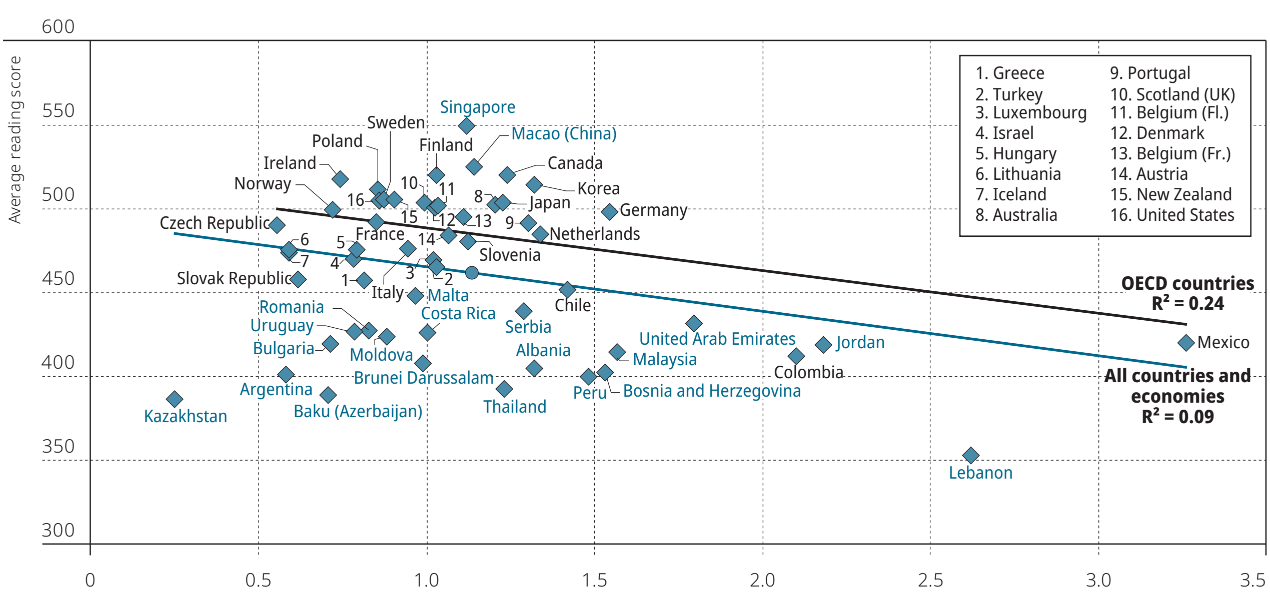
...

Figure V.4.7 **Spending per student from the age of 6 to 15 and reading performance**



Note: Only countries and economies with available data are shown.
Sources: OECD, PISA 2018 Database, Tables B3.1.1 and I.B1.4.
StatLink https://doi.org/10.1787/888934131082

Figure V.4.8 **Teachers' salaries and reading performance**



Sources: OECD, PISA 2018 Database, Tables I.B1.4 and B3.1.2.
StatLink https://doi.org/10.1787/888934131101

On average across OECD countries, smaller language-of-instruction classes were more frequently observed in socio-economically disadvantaged schools than in advantaged schools (four fewer students per class), in rural than in urban schools (five fewer students per class), in lower secondary than in upper secondary schools (two fewer students per class), in schools that offer a vocational rather than a general curriculum (two fewer students per class), and in public schools than in private schools (one fewer student per class) (Table V.B1.4.11).

In 45 countries and economies, the average language-of-instruction class was larger in advantaged schools than in disadvantaged schools. In Hungary, Latvia, Moldova and Thailand, language-of-instruction classes in advantaged schools were larger by about 10 students than those in disadvantaged schools. By contrast, in seven countries and economies, namely B-S-J-Z (China), Macao (China), the Philippines, Qatar, Singapore, the United Arab Emirates and the United Kingdom, language-of-instruction classes were smaller in advantaged schools.

On average across OECD countries, attending a language-of-instruction class with one more student was associated with a three-point improvement in reading scores; but after accounting for the socio-economic profile of students and schools, the gain in reading performance amounted to only one score point (Table V.B1.4.11). In 39 countries and economies, students in larger classes performed better than students in smaller classes, after accounting for students' and schools' socio-economic profile; but in no country/economy was the difference larger than 5 score points, and in 28 of them the difference amounted to only 2 points or less.

SUPPORT STAFF: CAREER GUIDANCE COUNSELLING

Availability and organisation of career guidance at school

Career guidance is intended to help people, whether students or adults out of school, make choices about their education and occupation, and help them manage their career (OECD, 2004[31]). Career guidance counsellors in the schools that 15-year-olds attend focus mostly on students' academic pathways and prospects in the labour market; sometimes they also concentrate on students' social and emotional well-being (Lazarus and Ihuoma, 2011[32]; Hooley, Tristram; Dodd, 2015[33]). Providing career guidance in school may be one way to help all teenagers, whatever their talents and aptitudes, to develop ambitious and realistic expectations about their future (OECD, 2019[34]). Students who receive career counselling focus more on their studies (Rupani, Haughey and Cooper, 2012[35]). Low-achieving and low-income students tend to benefit the most from career counsellors, mainly because these students are most likely to lack other sources of information and assistance (OECD, 2004[31]; Mulhern, 2019[36]). Career guidance could assist in countering gender imbalances in education choices (e.g. which courses students choose to pursue) and future careers (Taranu, Calineci and Taranu, 2014[37]). Regular teachers can also play an important role in career guidance, as students can feel more encouraged and supported by their teachers than by guidance counsellors (Alexitch and Page, 1997[38]).

PISA 2018 asked school principals whether career guidance counselling for 15-year-old students is available at their school and, if so, who had the main responsibility for providing it.

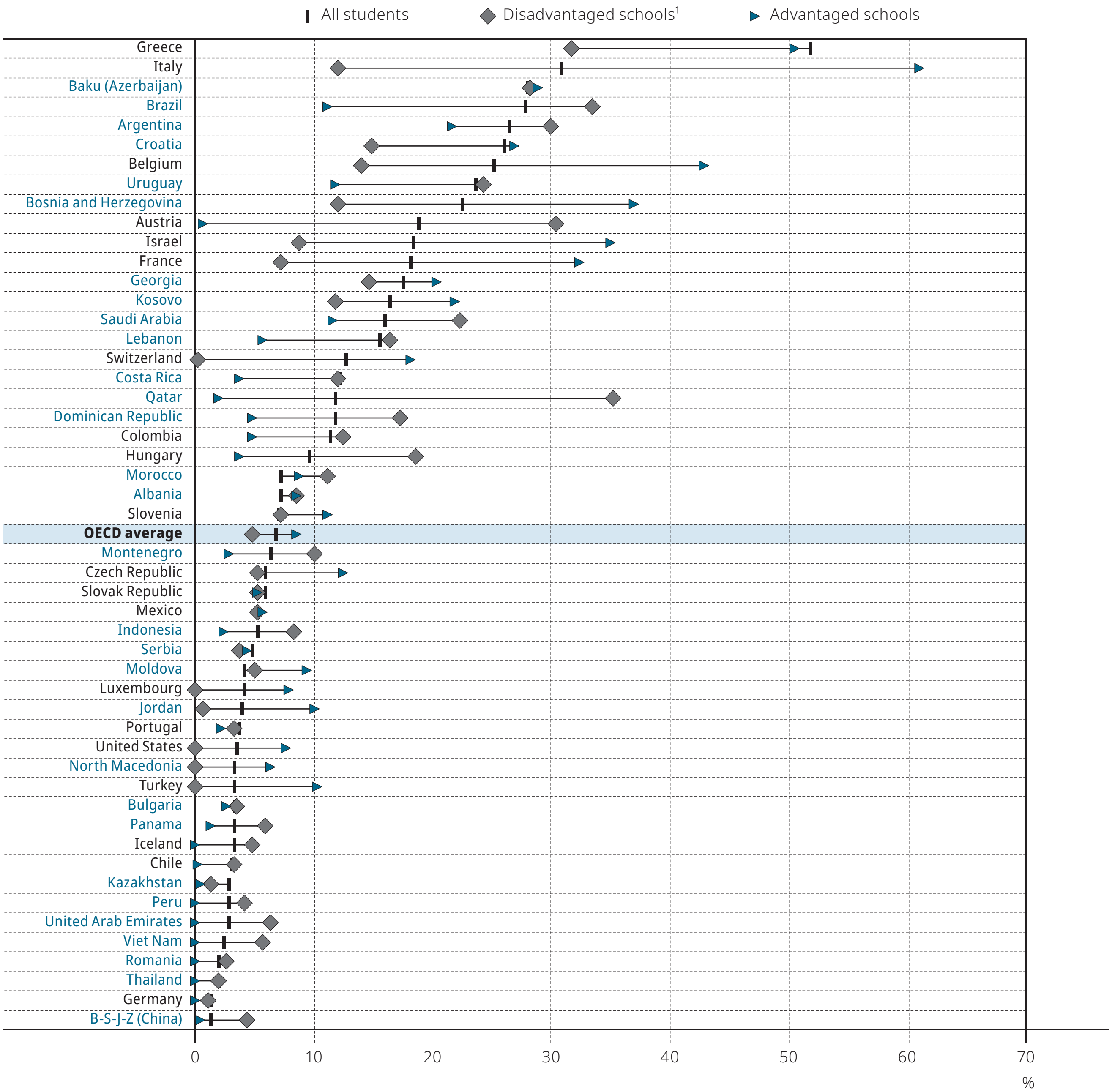
In all countries and economies that participated in PISA 2018, career guidance counselling was available for the majority of 15-year-old students. The only exception was Greece, where about half of students were enrolled in schools whose principal reported that career guidance is not available at their school (Table V.B1.4.13). In 50 countries and economies, career guidance counselling was available for at least 95% of students.

Only about 7% of students were in schools that do not offer career guidance, on average across OECD countries in 2018 (Table V.B1.4.14). However, the share was larger in some countries. In Argentina, Baku (Azerbaijan), Belgium, Brazil, Croatia and Italy, between 25% and 30% of students were in schools that do not offer career guidance, while in Austria, Bosnia and Herzegovina, France, Georgia, Israel, Kosovo, Saudi Arabia and Uruguay, between 16% and 24% of students did not have access to career guidance in school.

The percentage of students in schools whose principal reported that career guidance for 15-year-old students is not available at their school decreased in 13 countries and economies between 2006 and 2018, and increased in 5 countries (Colombia, Croatia, the Czech Republic, Greece and Slovenia). In Macao (China), Qatar, Chinese Taipei and Uruguay, the percentage of students in schools whose principal reported that career guidance is not available decreased by more than 20 percentage points during the period.

Figure V.4.9 **Unavailability of career guidance at school, by school's socio-economic profile**

Percentage of students in schools whose principal reported that career guidance for 15-year-olds is not available



1. 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 index of ESCS in the relevant country/economy.
Note: Only countries and economies where the share of students in schools where career guidance is not available is at least 1% are shown.
Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that career guidance for 15-year-olds is not available at their school.
Source: OECD, PISA 2018 Database, Table V.B1.4.14.
StatLink https://doi.org/10.1787/888934131120

Students in advantaged schools were more likely than those in disadvantaged schools to be in a school where career guidance is unavailable, on average across OECD countries and also in 13 countries and economies. Belgium, Bosnia and Herzegovina, France, Greece, Israel, Italy and Switzerland were amongst the countries with the largest socio-economic disparities in access to career guidance in school. By contrast, in 10 countries and economies, students in advantaged schools had greater access to career guidance than those in disadvantaged schools.

On average across OECD countries, students in lower secondary schools (ISCED 2) had greater access to career guidance than students in upper secondary schools (ISCED 3) (Table V.B1.4.15). No differences were observed between students in general and vocational programmes, on average across OECD countries (Table V.B1.4.15).

The most common way to organise career guidance is to have one or more specific career guidance counsellors employed at school. On average across OECD countries, 47% of students attended a school that provides career guidance in this way (Table V.B1.4.13). In Finland, Ireland and Norway, almost all students attended a school with career guidance counsellors employed at school. However, in 43 countries and economies, fewer than one in three students attended a school with career guidance counsellors employed at school.

Assigning the main responsibility for career guidance to specific teachers (OECD average: 39%) or sharing the responsibility for career guidance amongst all teachers in a school (OECD average: 30%) were also common ways to deliver this service. In the Czech Republic, Germany, Hong Kong (China), Japan, Chinese Taipei and Thailand, at least 70% of schools assign the main responsibility for career guidance to specific teachers. Somewhat less common was to have one or more specific career guidance counsellors who regularly visit the school (OECD average: 18%), but this was the main way in which career guidance is provided in Denmark, Estonia and Morocco.

In most countries, career guidance is formally scheduled into students' time at school, rather than sought voluntarily by students (Table V.B1.4.16). On average across OECD countries, around two in three students in schools that offer career guidance attended a school whose principal reported that career guidance is formally scheduled into students' time at school; the remaining one-third of students seek career guidance voluntarily in their school, according to the school principal. In 57 education systems, more students were enrolled in schools where career guidance is formally scheduled into students' time than in schools were it is sought voluntarily. In 21 education systems, more students were in schools where career guidance is sought voluntarily than in schools were it is formally scheduled into students' time.

The share of students in schools where career guidance is formally scheduled into students' time increased by 8 percentage points between 2006 and 2018, on average across OECD countries, and in 22 countries and economies; but this share decreased in 4 countries (Bulgaria, Canada, Greece and the Russian Federation) (Table V.B1.4.16).

Career guidance and student outcomes

This section explores how the availability of career guidance at school is related to three different student outcomes: reading performance, education expectations and career expectations. For a more comprehensive analysis of the education and career expectations of 15-year-old students, see *PISA 2018 Results (Volume II): Where All Students Can Succeed* (OECD, 2019[34]).

Within countries, the relationship between the availability of career guidance at school and student outcomes, such as reading performance or expected levels of educational and occupational attainment, is heterogeneous, depending on the country or economy (Figure V.4.10).

In 12 countries and economies, career guidance and reading performance were positively associated; in 9 countries, they were negatively associated (Table V.B1.4.17). After accounting for students' and schools' socio-economic profile, in Costa Rica, Croatia, the Dominican Republic, Portugal and the United Arab Emirates, students in schools that offer career guidance scored higher in reading, on average, while in Belgium, the Czech Republic, France, Greece, Montenegro and Switzerland, they scored lower. But in most countries/economies the association was not statistically significant.

In 11 countries, students in schools that offer career guidance were more likely to expect to complete tertiary education than students in schools that do not offer career guidance; but in 8 countries, the opposite was observed (Table V.B1.4.17). After accounting for students' and schools' socio-economic profile, in Albania, Chile, Montenegro, Serbia and the United Arab Emirates, students in schools that offer career guidance were more likely to expect to complete tertiary education. In another ten countries (Belgium, Bulgaria, the Czech Republic, France, Greece, Italy, Kazakhstan, Mexico, Peru and Switzerland) students in schools that do not offer career guidance were more likely to expect to complete tertiary education.

Similarly, in six countries, students in schools that offer career guidance were more likely to expect to work in a high-skilled occupation (ISCO groups 1-3), but in eight countries, they were less likely to expect to do so. After accounting for students' and schools' socio-economic profile, in five countries students in schools that offer career guidance were more likely to expect to work in a high-skilled occupation, while in six countries, they were less likely to expect to do so.

Figure V.4.10 **Career guidance at school, reading performance and students' expectations**

Based on principals' reports

■ Positive difference ■ Negative difference □ Difference is not significant ■ Missing values

A Before accounting for students' and schools' socio- economic profile2

B After accounting for students' and schools' socio-economic profile

C Before accounting for students' and schools' socio-economic profile

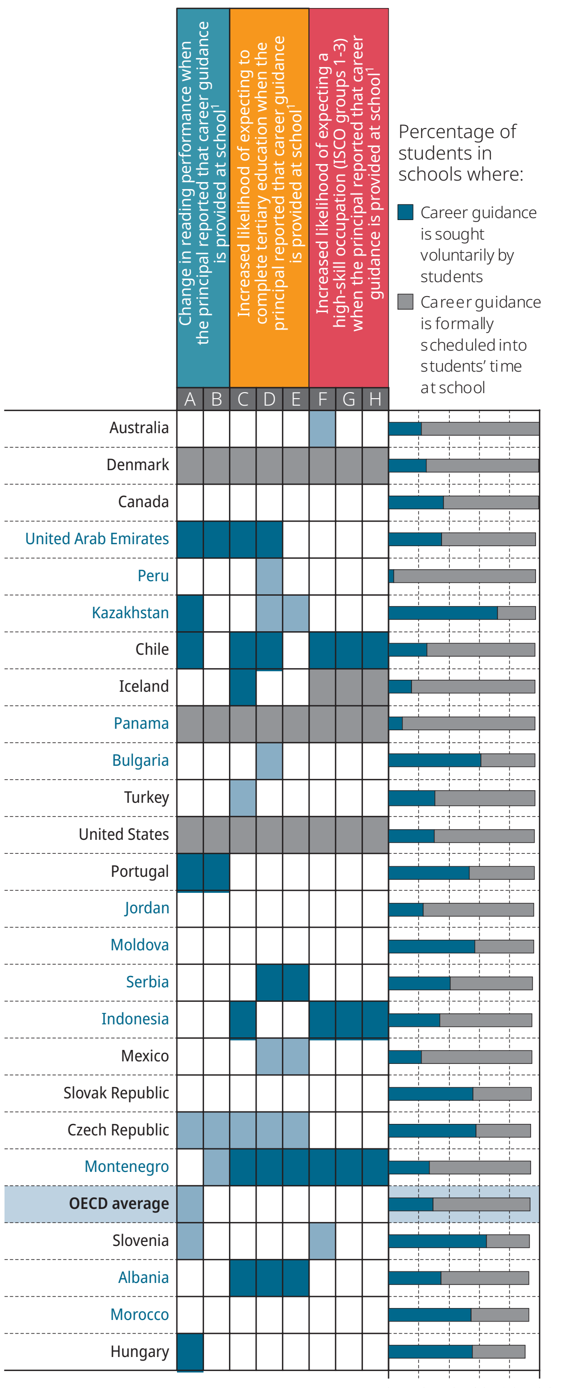
D After accounting for students' and schools' socio-economic profile

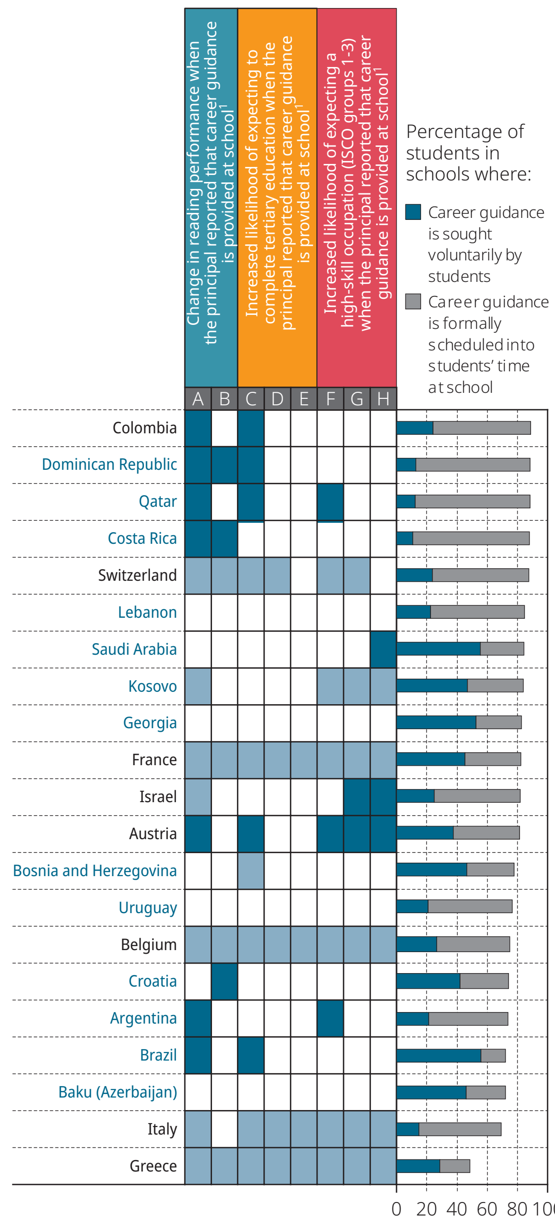
E After accounting for students' and schools' socio- economic profile and student reading performance

F Before accounting for students' and schools' socio-economic profile

G After accounting for students' and schools' socio-economic profile

H After accounting for students' and schools' socio-economic profile and student reading performance





	A	B	C	D	E	F	G	H
Countries/economies with a positive difference	12	5	11	5	3	6	5	6
Countries/economies with no difference	22	32	24	28	33	28	31	31
Countries/economies with a negative difference	9	6	8	10	7	8	6	5

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
2. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).
Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that career guidance of 15-year-old students is sought voluntarily by students.

Source: OECD, PISA 2018 Database, Table V.B1.4.13 and Table V.B1.4.17.

StatLink https://doi.org/10.1787/888934131139

SYSTEM-LEVEL ANALYSIS: HOW POLICIES ON HUMAN RESOURCES ARE RELATED TO PERFORMANCE AND EQUITY IN EDUCATION

This section examines whether measures of human resources are related to education outcomes at the system level. Two education outcomes are considered: mean performance in reading and the level of equity in reading performance. As in previous PISA reports, equity in reading performance is measured by the percentage of variation in reading performance accounted for by the variation in students' socio-economic status; the smaller the variation in performance explained by socio-economic status, the greater the equity in performance (OECD, 2018[39]; OECD, 2019[34]).

Figure V.4.11 shows system-level correlation coefficients between human resources, reading performance and equity in reading performance. Correlational analyses were conducted separately for OECD countries, and for all countries and economies that participated in PISA 2018. In addition, correlations were computed before and after accounting for per capita GDP, to account for the level of economic development of a country/economy.

Figure V.4.11 [1/2] **Measures of human resources, student performance and equity**

Correlation coefficients between two relevant measures

		OECD countries			
		Mean reading score		Equity in reading[1]	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Shortage of education staff	Index of shortage of education staff				
	Instruction hindered by a lack of teaching staff				
	Instruction hindered by Inadequate or poorly qualified teaching staff				
	Instruction hindered by a lack of assisting staff				
	Instruction hindered by Inadequate or poorly qualified assisting staff				
Teaching staff	Percentage of full-time teachers		*0.29*		
	Percentage of part-time teachers		*-0.29*		
	Percentage of fully certified teachers	0.73	0.68		
	Percentage of teachers who attended a professional development programme	*0.32*			
	Student-teacher ratio	-0.54	-0.48		
	Class size	-0.51	-0.40		
Career guidance	Career guidance is not available	-0.36	*-0.32*		
	All teachers share the responsibility for career guidance				
	Specific teachers have the main responsibility for career guidance			*-0.31*	*-0.31*
	Career guidance counsellors employed at school			0.37	0.38
	Career guidance counsellors regularly visit the school				
	Career guidance is formally scheduled in students time				

1. The percentage of variance in student performance explained by PISA index of economic, social and cultural status was used as measure of inequity in performance. In a first step, the correlation coefficients between measures of vertical stratification and inequity were computed. In a second step, the sign of the correlation coefficients was reversed (i.e. multiplied by -1) to simplify reporting (i.e. report correlation with equity instead of with inequity).

Notes : Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Source: OECD, PISA 2018 Database, Table V.B1.4.18.

StatLink https://doi.org/10.1787/888934131158

Figure V.4.11 [2/2] **Measures of human resources, student performance and equity**

Correlation coefficients between two relevant measures

		All countries and economies			
		Mean reading score		Equity in reading[1]	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Shortage of education staff	Index of shortage of education staff				
	Instruction hindered by a lack of teaching staff				
	Instruction hindered by Inadequate or poorly qualified teaching staff				
	Instruction hindered by a lack of assisting staff				
	Instruction hindered by Inadequate or poorly qualified assisting staff				
Teaching staff	Percentage of full-time teachers			*0.21*	*0.20*
	Percentage of part-time teachers			*-0.21*	*-0.20*
	Percentage of fully certified teachers	0.37	0.25		
	Percentage of teachers who attended a professional development programme	0.33			
	Student-teacher ratio	-0.39	-0.28		
	Class size	-0.34	-0.39		
Career guidance	Career guidance is not available	-0.27			
	All teachers share the responsibility for career guidance	-0.24			
	Specific teachers have the main responsibility for career guidance				
	Career guidance counsellors employed at school	0.26			
	Career guidance counsellors regularly visit the school				
	Career guidance is formally scheduled in students time				

1. The percentage of variance in student performance explained by PISA index of economic, social and cultural status was used as measure of inequity in performance. In a first step, the correlation coefficients between measures of vertical stratification and inequity were computed. In a second step, the sign of the correlation coefficients was reversed (i.e. multiplied by -1) to simplify reporting (i.e. report correlation with equity instead of with inequity).

Notes : Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

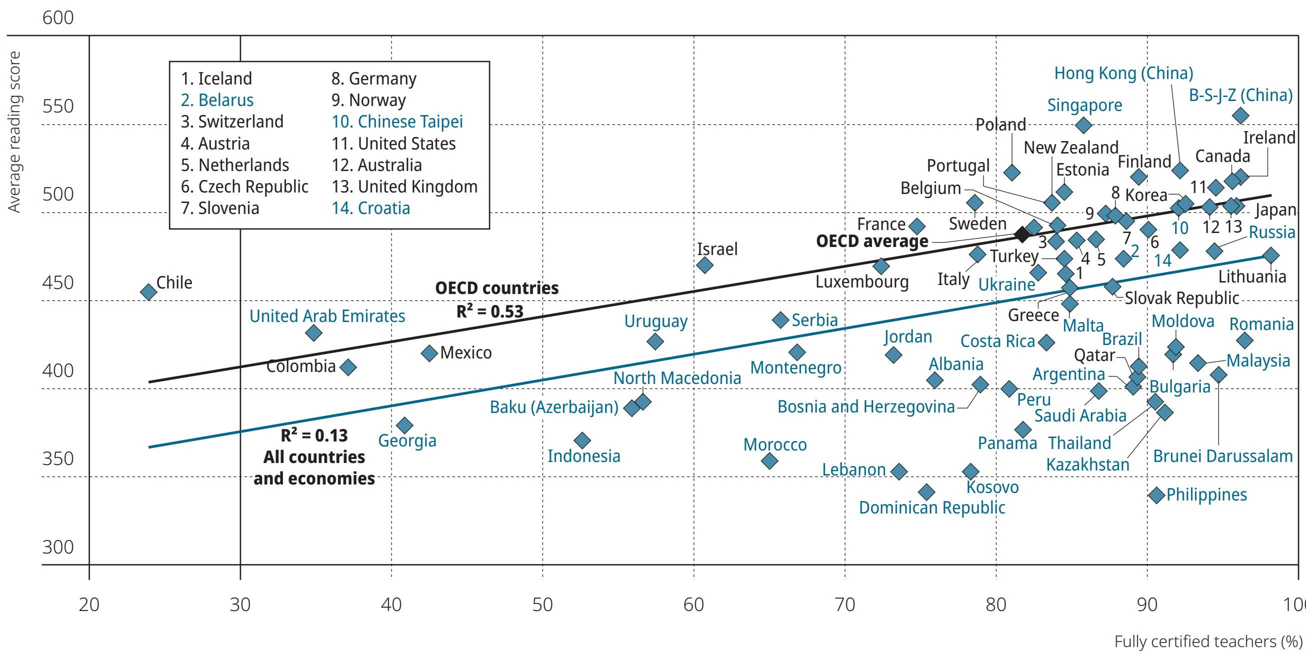
Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Source: OECD, PISA 2018 Database, Table V.B1.4.18.

StatLink https://doi.org/10.1787/888934131158

Teacher certification is related to reading performance at the system level. The percentage of teachers fully certified by an appropriate authority was positively correlated with mean performance in reading, even after accounting for per capita GDP, across OECD countries and across all countries (Figure V.4.11). As shown in Figure V.4.12, differences in teacher certification accounted for about 13% of the differences in mean reading performance across all countries and economies.[2] This finding is consistent with the school-level analyses that showed a positive association between teacher certification and student achievement, after accounting for students' and schools' socio-economic profile, in 12 countries/economies and on average across OECD countries. In six countries/economies, the relationship was negative, and for the remaining countries/economies it was not statistically significant (Table V.B1.4.8).

Figure V.4.12 **Certified teachers and average reading performance**



Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.4.6.

StatLink https://doi.org/10.1787/888934131177

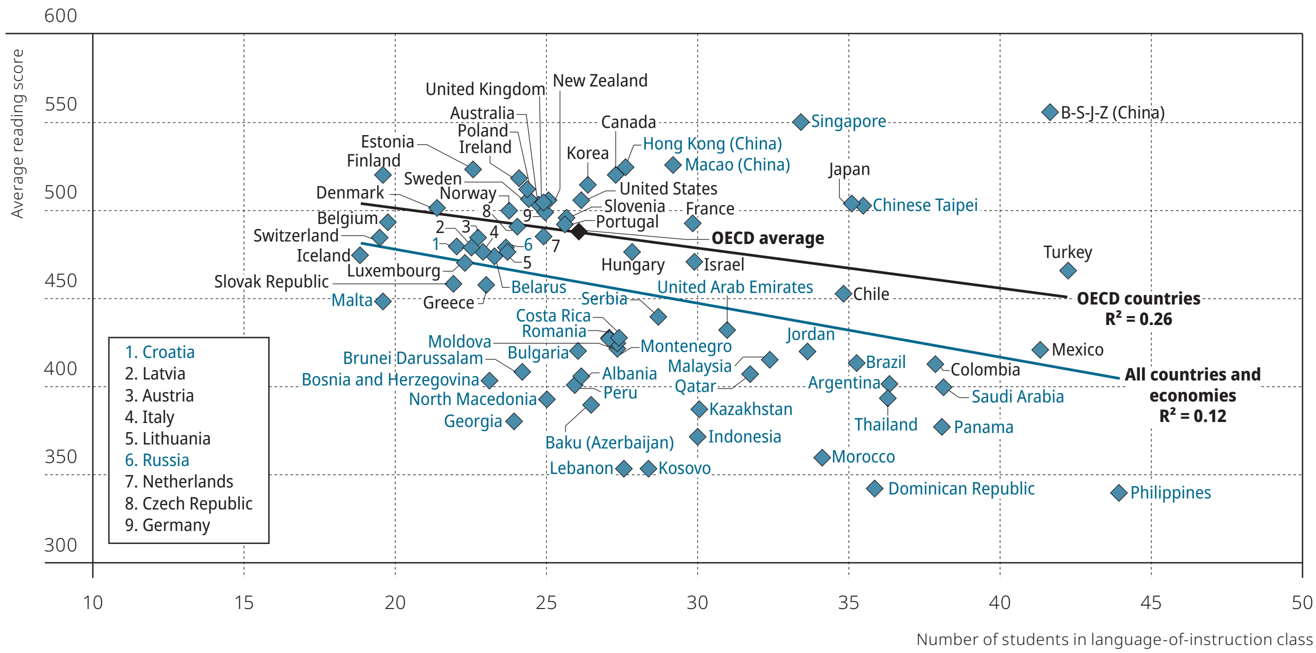
Education systems with smaller language-of-instruction classes generally showed higher mean reading performance than systems with larger classes. There was a negative correlation between larger classes and mean performance in reading, even after accounting for GDP, across OECD countries and across all countries (Figure V.4.11). As shown in Figure V.4.13, differences in class size accounted for about 12% of the differences in mean reading performance across all countries and economies, and 26% of the differences across OECD countries.[3,4]

However, caution is advised when interpreting this finding. As shown in Figure V.4.13, amongst countries and economies whose mean reading score was higher than 500 points (high performers), a dichotomy was observed between Western countries (i.e. European countries, Australia and Canada) and East Asian countries and economies with regard to class size. While amongst the 11 highest-performing Western countries the size of language-of-instruction classes ranges between 20 students (in Finland) and 27 students per class (in Canada), amongst the seven highest-performing East Asian countries and economies, it ranges between 26 students (in Korea) and 42 students per class in B-S-J-Z (China). Research continues to explore differences in classroom processes and educational context between East Asian and Western countries (Jeynes, 2008[40]; Jerrim, 2015[41]).

Furthermore, system-level findings on class size are in contrast with student-level analysis. As shown earlier in this chapter, in 39 countries/economies and on average across OECD countries, students attending larger language-of-instruction classes scored higher in reading, after accounting for students' and schools' socio-economic profile. In 3 countries/economies the relationship was negative, and in 33 countries/economies it was not statistically significant (Table V.B1.4.12). These mixed findings regarding class size suggest that there are important differences in the way class size is implemented in various countries. Further research is required to better understand the relationship between class size and student performance.

At the system level, countries that offer career guidance to a larger share of students generally performed better in PISA. Across OECD countries, even after accounting for per capita GDP, there was a negative correlation between the share of students in schools whose principal reported that career guidance for 15-year-old students is not available at school and mean performance in reading (partial r = -0.32) (Figure V.4.11). Across all PISA-participating countries and economies, the correlation with mean reading performance was statistically significant before accounting for per capita GDP, but not after; yet for mean mathematics performance and mean science performance, it was statistically significant even after accounting for per capita GDP (Table V.B1.4.18).[5] However, student-level analyses showed that students in schools that offer career guidance scored higher in reading in only five countries, scored lower in six countries, and in most countries/economies the association was not statistically significant. Thus, further research is required to better understand the relationship between career guidance and student performance.

Figure V.4.13 **Class size and mean reading performance**



Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.4.11.

StatLink https://doi.org/10.1787/888934131196

Notes

1. According to school principals in France in 2018, 84% of teachers in advantaged schools were certified while only 70% of teachers in disadvantaged schools were. This discrepancy could partly be explained by the fact that vocational schools are over-represented amongst socially disadvantaged schools. The teachers in these schools should hold a specific diploma (CAPLP). In considering level of education, the proportions of teachers with at least a master's degree are similar in advantaged and disadvantaged schools: around two teachers in five have at least such a level of qualification.

2. The correlation coefficient between the share of fully certified teachers and mean reading performance was higher across OECD countries (r = 0.73; partial r after accounting for per capita GDP = .0.68) than across all countries (r = 0.37; partial r = 0.25) (Figure V.4.11). However, across OECD countries the correlation was highly influenced by only three cases (Chile, Colombia and Mexico) with a comparatively small share of fully certified teachers. To ensure that these outliers were not driving the findings, the correlation was conducted again without including countries where less than 45% of teachers were fully certified, namely Chile, Colombia, Georgia, Mexico and the United Arab Emirates. For OECD countries, the correlation without outliers weakened but remained statistically significant and similar in strength to the correlation across all countries (r = 0.40; partial r = 0.41). For all countries and economies, the correlation without outliers did not change much with respect to the correlation with all countries/economies (r = 0.40; partial r = 0.25). Source: OECD, PISA 2018 Database, Tables V.B1.4.6, I.B1.4 and II.B1.2.3.

3. The negative correlation between the size of language-of-instruction class and mean reading performance was stronger or as strong across OECD countries (r= -0.51; partial r after accounting for per capita GDP = -0.40) as across all countries (r = -0.34; partial r = -0.39) (Figure V.4.11). However, across OECD countries the correlation was influenced by two countries (Mexico and Turkey) that have comparatively large classes. To ensure that these outliers were not driving the findings, the correlation was conducted again without including countries/economies where classes were larger than 40 students, namely B-S-J-Z (China), Mexico, the Philippines and Turkey. For OECD countries, the correlation without outliers weakened but remained statistically significant before accounting for per capita GDP (r = -0.35); however, the partial correlation after accounting for per capita GDP was not statistically significant (partial r = -0.25; p = 0.14). For all countries and economies, the correlation without outliers was stronger than or similar to the correlation with all countries/economies (r = -0.40; partial r = -0.40). Source: OECD, PISA 2018 Database, Tables V.B1.4.11, I.B1.4 and II.B1.2.3.

4. The negative correlation between the size of language-of-instruction class and mean reading performance was not influenced by enrolment in upper secondary education. After accounting for the percentage of students enrolled in upper secondary education, the partial correlation coefficient remained statistically significant across OECD countries (partial r = -0.46), and across all countries/economies (partial r = -0.32).

5. Changes between 2006 and 2018 in the unavailability of career guidance were significantly correlated with changes in mean reading performance, across all countries and economies (Table V.B1.4.19). However, the association was entirely driven by only 4 countries/economies where the percentage of students in schools whose principal reported that career guidance for 15-year-old students is not available at school increased or decreased by 30 percentage points or more (Table V.B1.4.14). After dropping these cases, the association was not statistically significant.

References

Akiba, M. et al. (2010), "Preparing Teachers for Diversity: Examination of Teacher Certification and Program Accreditation Standards in the 50 States and Washington, DC", *Equity & Excellence in Education*, Vol. 43/4, pp. 446-462, http://dx.doi.org/10.1080/10665684.2010.510048. [13]

Alexitch, L. and **S. Page** (1997), "Evaluation of Academic and Career Counselling Information and Its Relation to Students' Educational Orientation", *Canadian Journal of Counselling*, Vol. 31/3, p. 205. [38]

Atherton, P. and **G. Kingdon** (2010), *The relative effectiveness and costs of contract and regular teachers in India*. [11]

Blatchford, P. and **A. Russell** (2019), "New ways of thinking about research on class size: an international perspective. Introduction to the special section", *International Journal of Educational Research*, Vol. 96, pp. 120-124, http://dx.doi.org/10.1016/j.ijer.2018.09.011. [27]

Borko, H., R. Elliot and **K. Uchiyama** (2000), "Professional development:a key to Kentucky's educational reform effort", *Teaching and Teacher Education*, pp. 969-987. [19]

Borko, H., J. Jacobs and **K. Koellner** (2010), "Contemporary approaches to teacher professional development", in *International Encyclopedia of Education*, Elsevier Ltd, http://dx.doi.org/10.1016/B978-0-08-044894-7.00654-0. [18]

Boyd, D. et al. (2007), *The Effect of Certification and Preparation on Teacher Quality*. [15]

Clotfelter, C., H. Ladd and **J. Vigdor** (2006), "Teacher-student matching and the assessment of teacher effectiveness", *Journal of Human Resources*, Vol. 41/4, pp. 778-820, http://dx.doi.org/10.3368/jhr.xli.4.778. [5]

Darling-Hammond, L. (2010), "Teacher education and the American future", *Journal of Teacher Education*, Vol. 61/1-2, pp. 35-47, http://dx.doi.org/10.1177/0022487109348024. [12]

Darling-Hammond, L., M. Hyler and **M. Gardner** (2017), *Effective Teacher Professional Development*. [20]

De Giorgi, G., M. Pellizzari and **W. Woolston** (2012), "Class size and class heterogeneity", *Journal of the European Economic Association*, Vol. 10/4, pp. 795-830, http://dx.doi.org/10.1111/j.1542-4774.2012.01073.x. [29]

Dynarski, S., J. Hyman and **D. Schanzenbach** (2013), "Experimental Evidence on the Effect of Childhood Investments on Postsecondary Attainment and Degree Completion", *Journal of Policy Analysis and Management*, Vol. 32/4, pp. 692-717, http://dx.doi.org/10.1002/pam.21715. [24]

Finn, J. and **C. Achilles** (1999), "Tennessee's Class Size Study: Findings, Implications, Misconceptions", *Educational Evaluation and Policy Analysis*, Vol. 21/2, p. 97, http://dx.doi.org/10.2307/1164294. [28]

Finn, J., G. Pannozzo and **C. Achilles** (2003), *The "Why's" of Class Size: Student Behavior in Small Classes*. [23]

Fredriksson, P., B. Öckert and **H. Oosterbeek** (2013), "Long-Term effects of class size", *Quarterly Journal of Economics*, Vol. 128/1, pp. 249-285, http://dx.doi.org/10.1093/qje/qjs048. [25]

Goldhaber, D. and **D. Brewer** (2000), "Does Teacher Certification Matter? High School Teacher Certification Status and Student Achievement", *Educational Evaluation and Policy Analysis*, doi: 10.3102/01623737022002129, pp. 129-145, http://dx.doi.org/10.3102/01623737022002129. [14]

Hooley, Tristram; Dodd, V. (2015), "The economic benefits of career guidance", *Careers England*, http://hdl.handle.net/10545/559030. [33]

Jameson, J. and **Y. Hillier** (2008), "'Nothing will prevent me from doing a good job'. the professionalisation of part-time teaching staff in further and adult education", *Research in Post-Compulsory Education*, Vol. 13/1, pp. 39-53, http://dx.doi.org/10.1080/13596740801903521. [10]

Jennings, J. and **T. DiPrete** (2010), "Teacher Effects on Social and Behavioral Skills in Early Elementary School", *Sociology of Education*, Vol. 83/2, pp. 135-159, http://dx.doi.org/10.1177/0038040710368011. [6]

Jerrim, J. (2015), "Why do East Asian children perform so well in PISA? An investigation of Western-born children of East Asian descent", *Oxford Review of Education*, Vol. 41/3, pp. 310-333, http://dx.doi.org/10.1080/03054985.2015.1028525. [41]

Jeynes, W. (2008), "What We Should and Should Not Learn From the Japanese and Other East Asian Education Systems", http://dx.doi.org/10.1177/0895904807310042. [40]

Lazarus, K. and **C. Ihuoma** (2011), "The Role Of Guidance Counsellors In The Career Development Of Adolescents And Young Adults With Special Needs", *British Journal of Arts and Social Sciences*, Vol. 2/1, pp. 2046-9578, http://www.bjournal.co.uk/BJASS.aspx. [32]

Lumpe, A. et al. (2012), "Beliefs about Teaching Science: The relationship between elementary teachers' participation in professional development and student achievement", *International Journal of Science Education*, Vol. 34/2, pp. 153-166, http://dx.doi.org/10.1080/09500693.2010.551222. [21]

Mulhern, C. (2019), "Beyond Teachers: Estimating Individual Guidance Counselor's Effects on Educational Attainment", Harvard University, https://www.schoolcounselor.org/asca/media/asca/. [36]

Nye, B., S. Konstantopoulos and **L. Hedges** (2004), "How Large Are Teacher Effects?", *Educational Evaluation and Policy Analysis Fall*, Vol. 26/3, pp. 237-257. [4]

OECD (2019), *Education at a Glance 2019: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/f8d7880d-en. [22]

OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/b5fd1b8f-en. [34]

OECD (2019), *PISA 2018 Results (Volume III): What School Life Means for Students' Lives*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/acd78851-en. [8]

OECD (2019), *Working and Learning Together: Rethinking Human Resource Policies for Schools*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/b7aaf050-en. [9]

OECD (2018), *Equity in Education: Breaking Down Barriers to Social Mobility*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264073234-en. [39]

OECD (2016), *Supporting Teacher Professionalism: Insights from TALIS 2013*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264248601-en. [16]

OECD (2014), *PISA 2012 Results: Students and Money (Volume VI): Financial Literacy Skills for the 21st Century*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264208094-en. [30]

OECD (2013), *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, OECD Reviews of Evaluation and Assessment in Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264190658-en. [7]

OECD (2010), "Effective teachers and trainers", in *Learning for Jobs*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264087460-6-en. [2]

OECD (2009), *Creating Effective Teaching and Learning Environments: First Results from TALIS*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264068780-en. [17]

OECD (2005), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, Education and Training Policy, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264018044-en. [1]

OECD (2004), *Career guidance and public policy : bridging the gap.*, Organisation for Economic Co-operation and Development. [31]

Rockoff, J. (2004), "The Impact of Individual Teachers on Student Achievement: Evidence from Panel Data", *The American Economic Review*, Vol. 94/2, pp. 247-252, http://www.jstor.org/stable/3592891. [3]

Rupani, P., N. Haughey and **M. Cooper** (2012), "The impact of school-based counselling on young people's capacity to study and learn", *British Journal of Guidance and Counselling*, Vol. 40/5, pp. 499-514, http://dx.doi.org/10.1080/03069885.2012.718733. [35]

Taranu, A., M. Calineci and **A. Taranu** (2014), "Diversity Management, Gender Approaches to Guidance and Counselling", *Journal of Research in Gender Studies*, Vol. 4, https://heinonline.org/HOL/Page?handle=hein.journals/jogenst4&id=1080&div=&collection= (accessed on 2 March 2020). [37]

Woessmann, L. and **M. West** (2005), "Class-Size Effects in School Systems Around the World: Evidence from Between-Grade Variation in TIMSS", *SSRN Electronic Journal*, http://dx.doi.org/10.2139/ssrn.308559. [26]

PISA

5

Material resources available at school

This chapter explores how material resources - including the physical infrastructure of a school and the educational materials available in the school - are related to student performance and equity in education. The chapter highlights the availability and quality of computers and Internet access at school, and whether teachers are adequately prepared to use these digital tools effectively in their lessons.

The physical infrastructure of a school and the educational materials available to teachers and students – which are referred to here collectively as "material resources" – are important components of a high-quality education. Teachers need educational materials, such as textbooks, computers, library materials or laboratories, in order to provide instruction that is up-to-date, and that is challenging and responsive to students' needs (Oakes and Saunders, 2004[1]; Murillo and Román, 2011[2]). In addition, a school environment that is conducive to teaching and learning requires adequate physical infrastructure and facilities, such as buildings, grounds, heating and cooling systems, and lighting and acoustic systems (Conlin and Thompson, 2017[3]; Gunter and Shao, 2016[4]; Neilson and Zimmerman, 2014[5]).

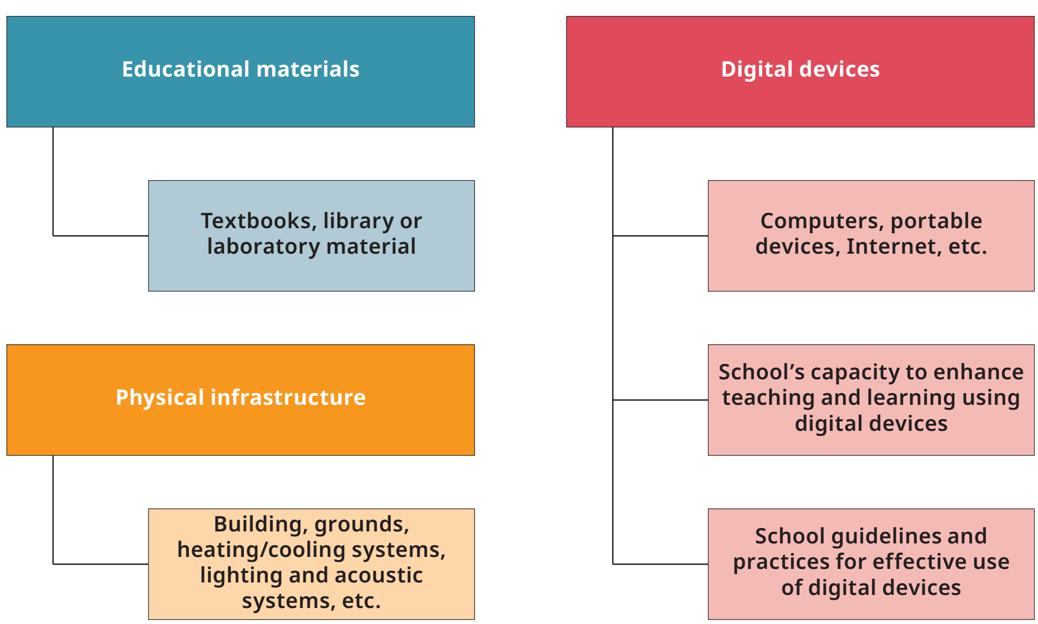
Yet the relationship between material resources and student outcomes is complex. As shown throughout this chapter, in order to make a difference in student learning, school infrastructure and educational materials need to meet at least three conditions.

First, material resources need to be available where they are most needed and in sufficient quantity. This chapter examines the levels of material resources by various school types (e.g. socio-economically disadvantaged and advantaged schools, rural and urban schools, public and private schools), and the relationship between material resources and student performance in PISA 2018.

Second, available material resources need to be of an appropriate quality and type to meet students' needs. For example, if textbooks are not updated to include recent advances in scientific knowledge or curricular reforms in learning standards, or if computers' connection to the Internet is too slow, then the pedagogical value of these materials is limited.

Finally, material resources need to be used effectively. The availability and quality of instructional materials, in themselves, do not guarantee better learning; schools and teachers must be able to use these resources to enhance learning and teaching. This is particularly clear with regard to information and communication technology (ICT) in education. Research shows that the impact of computers and digital devices on student learning has remained limited, partly because the rapid adoption of ICT technology by schools has not been accompanied by the development of teachers' capacity to integrate digital devices in their practice (OECD, 2015[6]; Tamim et al., 2011[7]). This chapter explores whether schools provide guidelines and rules to guarantee that instructional materials and digital devices are used effectively. It also explores whether teachers have the technical and pedagogical skills, and the support they need, to integrate digital devices into instruction practices.

Figure V.5.1 **Material resources in schools as covered in PISA 2018**



What the data tell us

- Students attending schools whose principal reported fewer shortages of material resources scored higher in reading, on average across OECD countries and in 12 countries and economies, after accounting for students' and schools' socio-economic profile. At the system level, more shortages of educational materials were correlated with lower mean performance in reading, even after accounting for per capita GDP, across OECD countries, and across all participating countries and economies in PISA 2018.
- 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.
- While more digital devices, such as computers and portable computers, were available in schools in 2018 than in 2015, the availability of these devices was not associated with student performance, on average across OECD countries, and in most countries and economies that participated in PISA 2018.
- After accounting for students' and schools' socio-economic profile, in 11 countries/economies, students in schools where a larger share of the computers available to students for educational purposes is connected to the Internet scored higher in reading; but in 7 countries/economies students in such schools scored lower.
- On average across OECD countries in 2018, 36% of students attended a school that has a specific programme to promote teacher collaboration on the use of digital devices, and less than 44% of students attended a school that has a scheduled time for teachers to meet to share, evaluate or develop instructional materials and approaches that incorporate digital devices.

EDUCATIONAL MATERIALS AND PHYSICAL INFRASTRUCTURE

PISA measures the availability and quality of material resources in schools by asking school principals if their school's capacity to provide instruction is hindered by: a lack of educational materials (i.e. textbooks, ICT equipment, library or laboratory material); inadequate or poor quality educational materials; a lack of physical infrastructure (i.e. building, grounds, heating/cooling systems, lighting and acoustic systems); or inadequate or poor quality physical infrastructure. Principals' answers to these questions were combined in a single index, the index of shortage of material resources, which was standardised to have a value of 0 equal to the average value in the index across OECD countries (for technical details, see Annex A3). Positive values in this index indicate more shortages of quality material resources than on average across OECD countries; negative values in the index indicate greater availability and quality of material resources than on average across OECD countries (Figure V.5.2). For interpretation purposes, it is important to keep in mind that the index measures the perception of school principals, rather than an objective measure of shortage. School principals in different countries may have different perceptions of what constitutes a shortage of educational materials and physical infrastructure in their school.

In PISA 2018, the index of shortage of material resources was 0.8 or higher in Bosnia and Herzegovina, Colombia, Costa Rica, Croatia, Indonesia, Kosovo and Morocco, a value that indicates comparatively more shortages of material resources, as perceived by school principals (Figure V.5.2). In these countries, between 50% of students (in Costa Rica) and 80% of students (in Kosovo) were in schools whose principal reported that the school's capacity to provide instruction is hindered by inadequate or poor quality educational materials (Table V.B1.5.1).

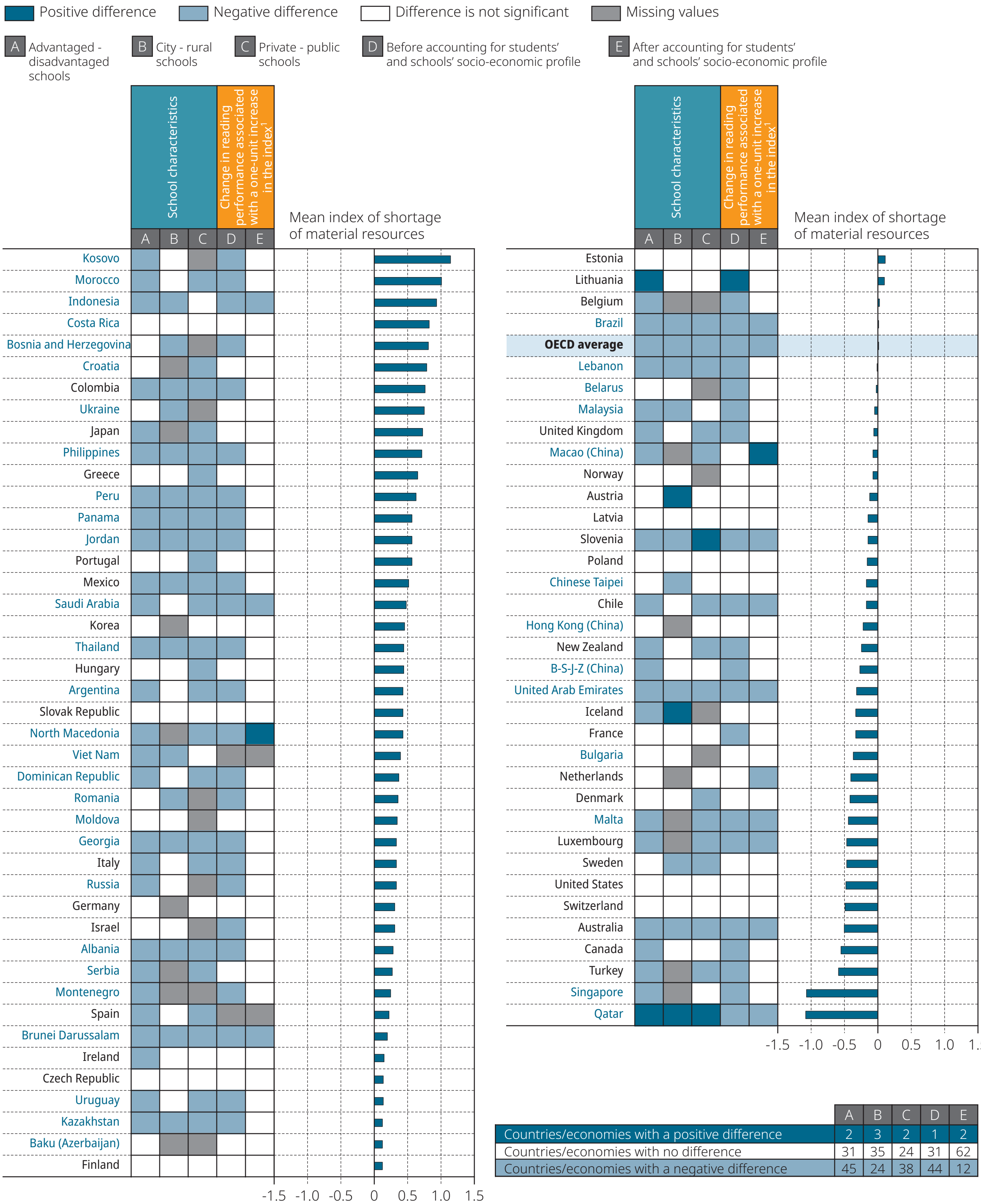
In Canada, Qatar, Singapore and Turkey, the index of shortage of material resources was -0.6 or lower, a value that indicates comparatively fewer shortages of material resources, as perceived by school principals (Figure V.5.2). In Singapore and Qatar, less than 10% of students were in schools whose principal reported shortages of physical infrastructure, and less than 3% of students were in schools whose principal reported shortages of educational materials (Table V.B1.5.1).

Socio-economically disadvantaged schools were more likely than advantaged schools to experience shortages of material resources, on average across OECD countries and in 47 education systems. Disparities in material resources related to schools' socio-economic profile were comparatively large in six Latin American countries (Argentina, Brazil, Colombia, Mexico, Panama and Peru) and three Southeast Asian countries (Indonesia, the Philippines and Thailand) (Table V.B1.5.2).

Disparities in shortages of material resources were also observed between rural and urban schools (in 25 education systems, rural schools suffered from more shortages) and between public and private schools (in 39 education systems, public schools suffered from more shortages; Figure V.5.2) (Table V.B1.5.2).

Figure V.5.2 Shortage of material resources, school characteristics and reading performance

Based on principals' reports



	A	B	C	D	E
Countries/economies with a positive difference	2	3	2	1	2
Countries/economies with no difference	31	35	24	31	62
Countries/economies with a negative difference	45	24	38	44	12

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Note: Higher values in the index indicate greater shortages of material resources.

Countries and economies are ranked in descending order of the index of shortage of material resources.

Source: OECD, PISA 2018 Database, Table V.B1.5.2.

StatLink https://doi.org/10.1787/888934131215

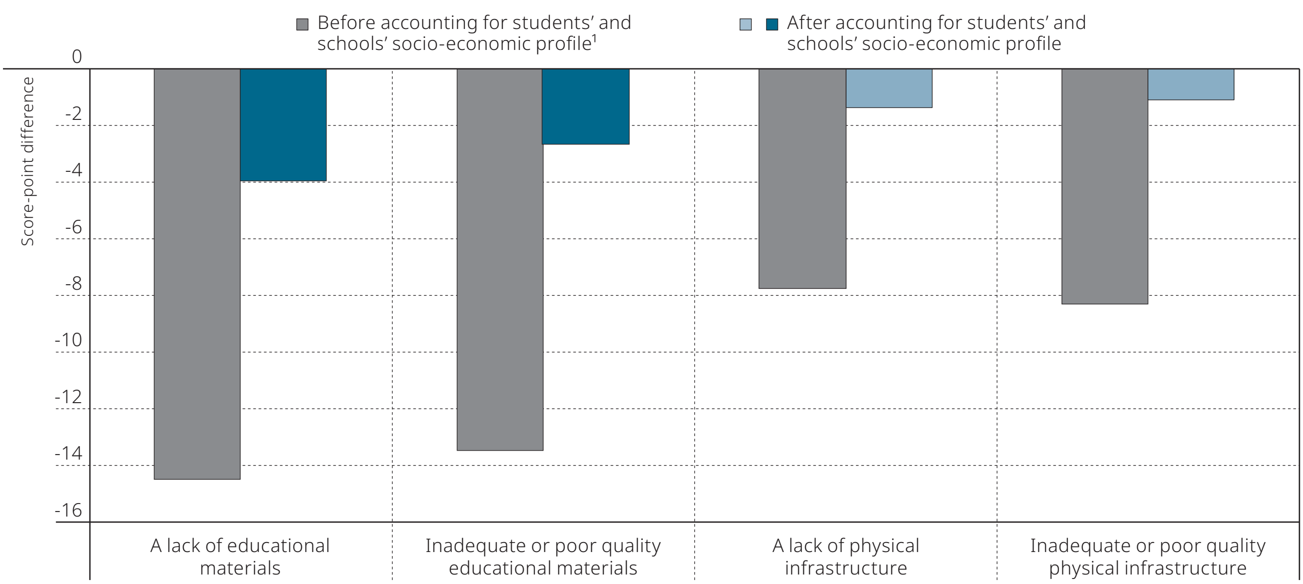
Students attending schools with fewer shortages of material resources performed better in reading, on average across OECD countries and in 44 countries and economies. In 31 countries and economies, shortages of material resources were unrelated to student performance.

After accounting for students' and schools' socio-economic profile, in 12 countries and economies, students in schools with fewer shortages scored higher in reading (Table V.B1.5.3). In Macao (China) and the Republic of North Macedonia students in such schools scored lower. In 62 countries and economies material resources and reading scores were unrelated, after accounting for students' and schools' socio-economic profile.

On average across OECD countries, shortages of educational materials were more strongly associated with lower reading performance than shortages of physical infrastructure (Figure V.5.3). Before accounting for other factors, shortages of educational materials, as well as shortages of physical infrastructure, were both associated with lower student performance in reading, on average across OECD countries. However, after accounting for students' and schools' socio-economic profile, while the association between students' reading scores and schools' physical infrastructure became statistically insignificant, the association with schools' educational materials remained negative and statistically significant (Table V.B1.5.3).

Figure V.5.3 **Reading performance and shortage of material resources**

Change in reading performance associated with principals reporting that the school's capacity to provide instruction is hindered to some extent or a lot by the following; OECD average



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.

Notes: Statistically significant values are shown in a darker tone. All values are statistically significant before accounting for students' and schools' socio-economic profile (see Annex A3).

Educational materials include textbooks, ICT equipment, library, laboratory material, etc. Physical infrastructure includes school building, grounds, heating/cooling systems, lighting and acoustic systems, etc.

This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Source: OECD, PISA 2018 Database, Table V.B1.5.3.

StatLink https://doi.org/10.1787/888934131234

DIGITAL DEVICES AND ICT EQUIPMENT IN SCHOOLS

As new generations of students are familiar with information technology from an early age, many countries are making efforts to bring a broader array of computers and ICT equipment into their schools and classrooms (OECD, 2019[8]). Computers and other digital devices, such as laptops, tablets, interactive whiteboards or computer-assisted learning programmes, are deemed important for the educational process; they are being developed to serve as pedagogical tools and help prepare students for today's digital economy (Barrow, Markman and Rouse, 2009[9]; Lee, 2010[10]). Yet the impact of education technology on student learning has proven more difficult to discern than initially expected (OECD, 2015[6]). Also, the "digital divide" in education (i.e. unequal access and more advanced and effective use of ICT in schools) remains a concern for researchers and policy makers (Dolan, 2016[11]). Schools still need to improve their practices in using these devices, which are increasingly integrated throughout the home and work place. Support from principals, collaboration amongst teachers, and adapting software to students' needs can all help (Means, 2010[12]; McKnight et al., 2016[13]).

Computers

On average across OECD countries in 2018, there was almost one computer available at school for educational purposes for every 15-year-old student (computer-student ratio equal to 0.8) (Figure V.5.4). In Austria, Iceland, Luxembourg, Macao (China), New Zealand, the United Kingdom and the United States, the computer-student ratio was 1.25 or more, while in Albania, Brazil, Greece, Kosovo, Montenegro, Morocco, Turkey and Viet Nam, there was only one computer available for every 4 students (ratio = 0.25) or less (Table V.B1.5.7).

Contrary to what might be expected, socio-economically disadvantaged schools tended to have more computers per student (ratio = 0.89) than advantaged schools (ratio = 0.76), on average across OECD countries. In 16 countries and economies, the computer-student ratio was greater in disadvantaged schools than in advantaged schools. The disparity in computers-per-student in favour of disadvantaged schools was the largest in Iceland, Korea, Latvia, Lithuania and Chinese Taipei (Table V.B1.5.6). However, in 17 countries and economies, the number of computers available per student was greater in advantaged schools than in disadvantaged schools.

Differences in the availability of computers were observed according to school type (i.e. public/private) and school location. On average across OECD countries, more computers per student were available in private schools (ratio = 0.97) than in public schools (ratio = 0.80). In 21 countries and economies, more computers per student were available in private schools, but in 5 countries and economies the opposite was true (i.e. more computers per students in public schools) (Table V.B1.5.6). On average across OECD countries, more computers per student were available in rural schools (ratio = 1.04) than in urban schools (ratio = 0.80). In 22 countries and economies, more computers per student were available in rural schools, but in 5 countries more computers per student were available in urban schools.

There was a widespread increase in the computer-student ratio between 2009 and 2018. The computer-per-student ratio increased in 47 out of the 63 countries and economies for which data for this period are available. The largest increases in the average number of computers per 15-year-old student were observed in Estonia, Iceland, Lithuania, Luxembourg, Sweden, the United Kingdom and the United States. On average across OECD countries, there was one additional computer available per every four students in 2018 than was available in 2009 (0.26 of an additional computer per student) (Table V.B1.5.7).

Consistent with previous PISA analyses, data from PISA 2018 show that students attending schools with more computers per student scored lower in the assessment than their peers in schools with fewer computers per student (Figure V.5.6). On average across OECD countries, one additional computer per student in a school was associated with a 12-point drop in reading scores before accounting for other factors, and with a 6-point decline after accounting for students' and schools' socio-economic profile (Table V.B1.5.6). This negative association between computers-per-student and students' scores in reading was significant in 14 countries and economies, after accounting for socio-economic factors. The relationship was strongest (-15 points or more) in Beijing, Shanghai, Jiangsu and Zhejiang (China), Greece, Korea, Kosovo, Mexico, Portugal, the Slovak Republic, Turkey and Uruguay (Table V.B1.5.6). By contrast, in Belarus, Brazil, Brunei Darussalam, Estonia, Kazakhstan, Malaysia, Malta, Montenegro, New Zealand and Ukraine, students in schools with more computers per student scored higher in reading.

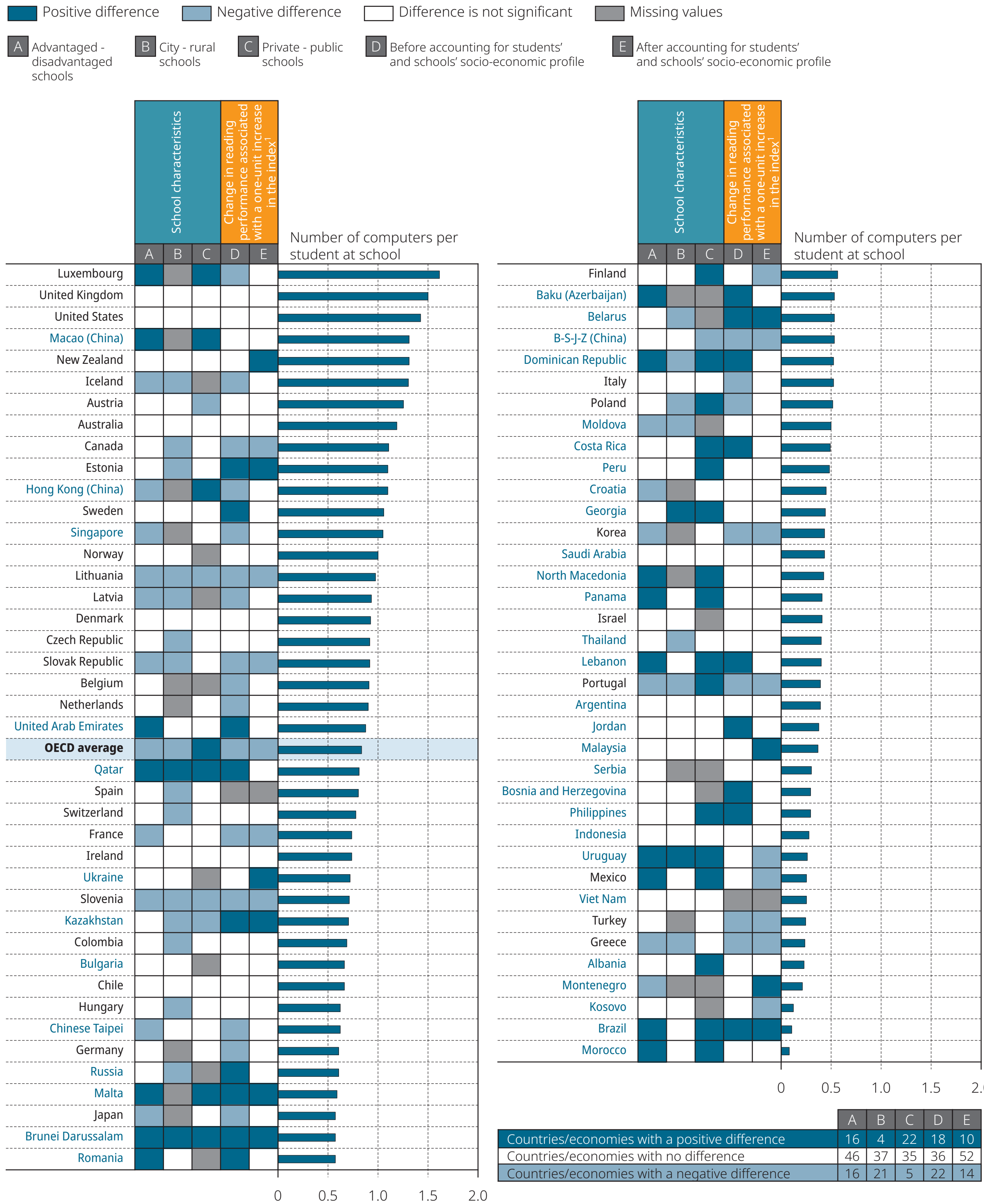
Portable computers

Up to this point, the discussion about computers available to 15-year-olds in school has not distinguished between desktop and portable computers, the latter of which are more likely to be used in the classroom, as opposed to in a computer lab. To differentiate between these two kinds of computers, PISA 2018 asked school principals how many of all of the computers available to 15-year-olds in school are portable. According to some studies, portable computers lead to improved learning by facilitating the development of constructivist approaches to teaching (i.e. placing the students at the centre of classroom process) (Jaillet, 2004[14]). However, laptop computers in the classroom can also introduce distractions (Fried, 2008[15]; Sana, Weston and Cepeda, 2013[16]), and seem to be less effective as tools for taking notes than pen and paper (Mueller and Oppenheimer, 2014[17]).

Portable computers, such as laptops and tablets, represented about 40% of all computers available to 15-year-olds in school, on average across OECD countries in 2018 (Table V.B1.5.8). In a few high-income countries, most computers available at school were portable: in Denmark, Norway, Singapore and Sweden, 9 out of 10 computers were portable; in the United States, 8 out of 10 computers were portable. Across OECD countries, countries with greater equity in student performance tended to have larger shares of portable computers available to students at school.[1] By contrast, in 50 countries and economies, only 30%, at most, of all computers available at school were portable. In Georgia, Jordan, Malta, Morocco, the Philippines and Thailand, only 1 in 10 computers, at most, available to 15-year-olds at school were portable (Table V.B1.5.8).

Figure V.5.4 **School computers per student, school characteristics and reading performance**

Results based on principals' reports



	A	B	C	D	E
Countries/economies with a positive difference	16	4	22	18	10
Countries/economies with no difference	46	37	35	36	52
Countries/economies with a negative difference	16	21	5	22	14

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Countries and economies are ranked in descending order of the ratio of computers available at school for educational purposes per 15-year-old student.

Source: OECD, PISA 2018 Database, Table V.B1.5.6.

StatLink https://doi.org/10.1787/888934131253

The share of portable computers available to 15-year-olds at school was larger in 2018 than in 2015, on average across OECD countries (by nine percentage points) and in 44 countries and economies (Figure V.5.5). Increases in the share of portable computers were generally larger in higher-performing countries. Across all countries and economies in PISA 2018, there was a strong positive correlation between mean reading performance and the share of portable computers, even after accounting for per capita GDP (partial correlation coefficient = 0.29). In Canada, Estonia, Finland, Hong Kong (China), Iceland and the Netherlands, the share of portable computers at school grew 20 percentage points or more during the period (Table V.B1.5.9).

Portable computers were more frequently available in socio-economically advantaged than in disadvantaged schools, on average across OECD countries and in 21 education systems that participated in PISA 2018. This was not the case in PISA 2015 (Table V.B1.5.9). On average across OECD countries between 2015 and 2018, the proportion of portable computers in disadvantaged schools grew by 8 percentage points (from 30% to 38%) while the proportion of portable computers in advantaged schools grew by 11 percentage points (from 29% to 41%) (Figure V.5.5).

In 2018, in 47 out of 77 PISA-participating countries/economies, the proportion of portable computers in school was unrelated to students' reading scores. After accounting for students' and schools' socio-economic profile, in 5 countries/economies, a 10 percentage-point increase in the share of portable computers in school was associated with higher student performance, while in 7 countries/economies such an increase was associated with lower performance (Table V.B1.5.8).

Internet connection at school

Access to the Internet is virtually universal in most education systems that participated in PISA 2018. In 55 out of 79 countries and economies, 9 out of 10 computers available to 15-year-olds for educational purposes at school were connected to the Internet (Figure V.5.6). Although in OECD countries connection to the Internet was already widespread a decade ago, there is a clear trend of increasing Internet connectivity at school. In 29 countries and economies, the percentage of computers connected to the Internet increased between 2009 and 2018. In 11 of these countries and economies, the share increased by more than 10 percentage points, and in Albania, Georgia, Indonesia, Kazakhstan and the Republic of Moldova, it increased by 30 percentage points or more (Table V.B1.5.14). However, in Kosovo, Morocco and the Philippines, only half of the computers, at most, available to 15-year-old students at school were connected to the Internet in 2018 (Table V.B1.5.14).

Furthermore, socio-economically advantaged schools tended to have a larger share of computers connected to the Internet compared with disadvantaged schools, on average across OECD countries and in 23 education systems. In Argentina, Colombia, Lebanon, Mexico, Peru and the Philippines, the share of computers connected to the Internet was more than 40 percentage points larger in advantaged schools than in disadvantaged schools (Table V.B1.5.14).

On average across OECD countries, having more computers at school that are connected to the Internet was positively associated with reading performance, but after accounting for students' and schools' socio-economic profile, this average association disappeared. In 11 countries and economies, there was a positive association between students' access to computers connected to the Internet and students' reading scores, after accounting for students' and schools' socio-economic profile; in 7 countries and economies the association was negative (Table V.B1.5.13).

Schools' capacity to enhance teaching and learning using digital devices

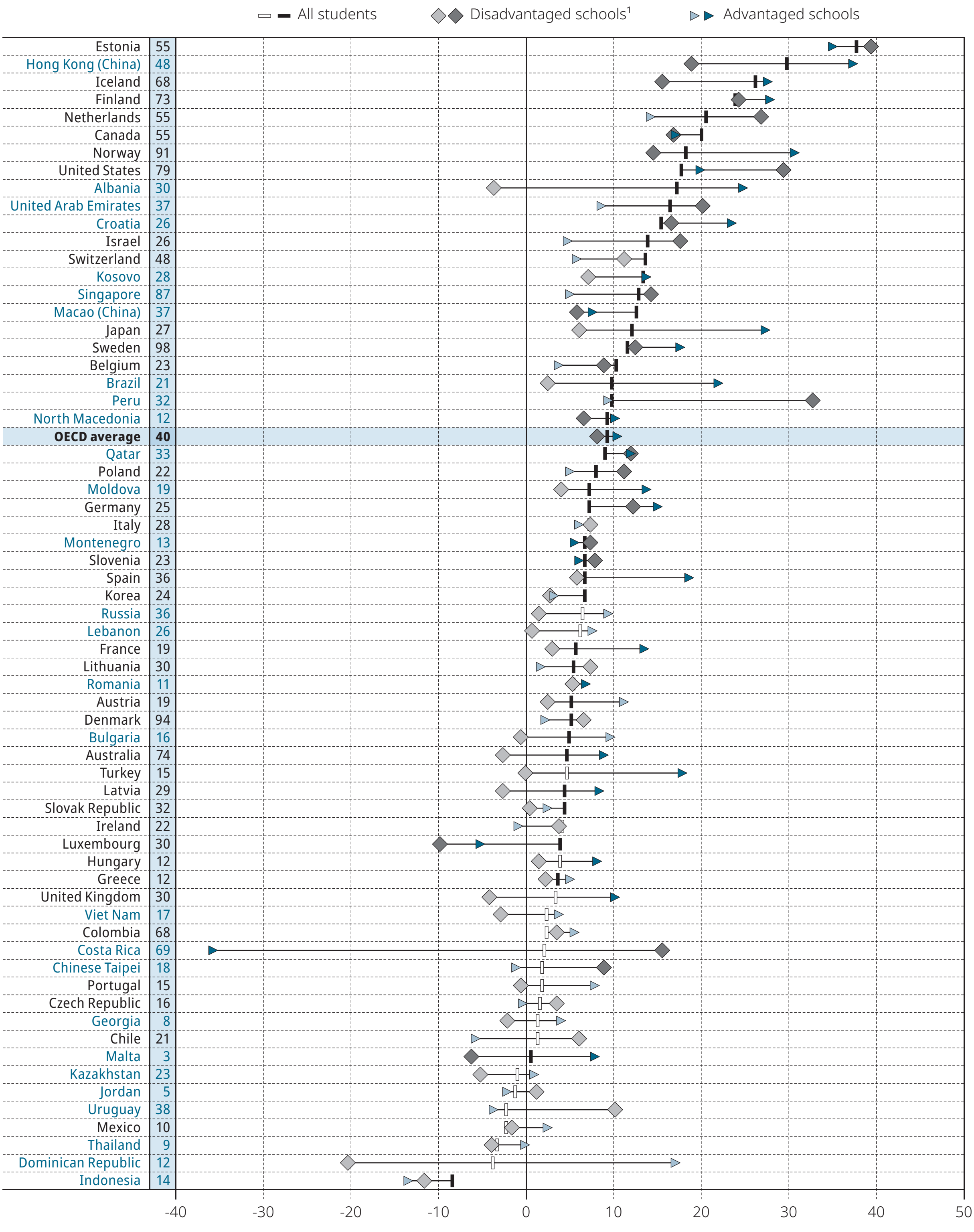
PISA 2018 asked school principals about different aspects of their school's capacity to enhance teaching and learning using digital devices (Figure V.5.7). Some of these aspects referred to the availability or quality of ICT infrastructure (e.g. computing capacity, software, Internet speed, etc.), while others referred to teachers' and the school's capacity to integrate digital devices in instruction (e.g. digital skills, technical support, incentives, etc.).

According to principals' reports, schools' capacity to use digital devices effectively was greater when it involved ICT infrastructure. On average across OECD countries, more than 65% of students attended a school whose principal reported that the school's capacity to enhance learning and teaching using digital devices is sufficient in terms of the adequacy of software available, the computing capacity of digital devices, the Internet bandwidth or speed, and the number of digital devices connected to the Internet. Around 55% of students attended a school where an effective online learning platform is available to them, on average across OECD countries (Table V.B1.5.15).

Aspects related to teachers' capacity and motivation to integrate digital devices in instruction were somewhat weaker. On average across OECD countries, about 55% of students were in schools where teachers are provided with incentives to integrate digital devices into their teaching or have sufficiently qualified technical assistant staff, and about 60% were in schools where teachers have sufficient time to prepare lessons integrating digital devices (Table V.B1.5.15).

Figure V.5.5 **Change between 2015 and 2018 in availability of portable computers at school, by schools' socio-economic profile**

PISA 2018 - PISA 2015



1. 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 index in the relevant country/economy.

Notes: Statistically significant values are shown in darker tones (see Annex A3).

The percentage of portable computers available to students in 2018 is indicated next to the country/economy name.

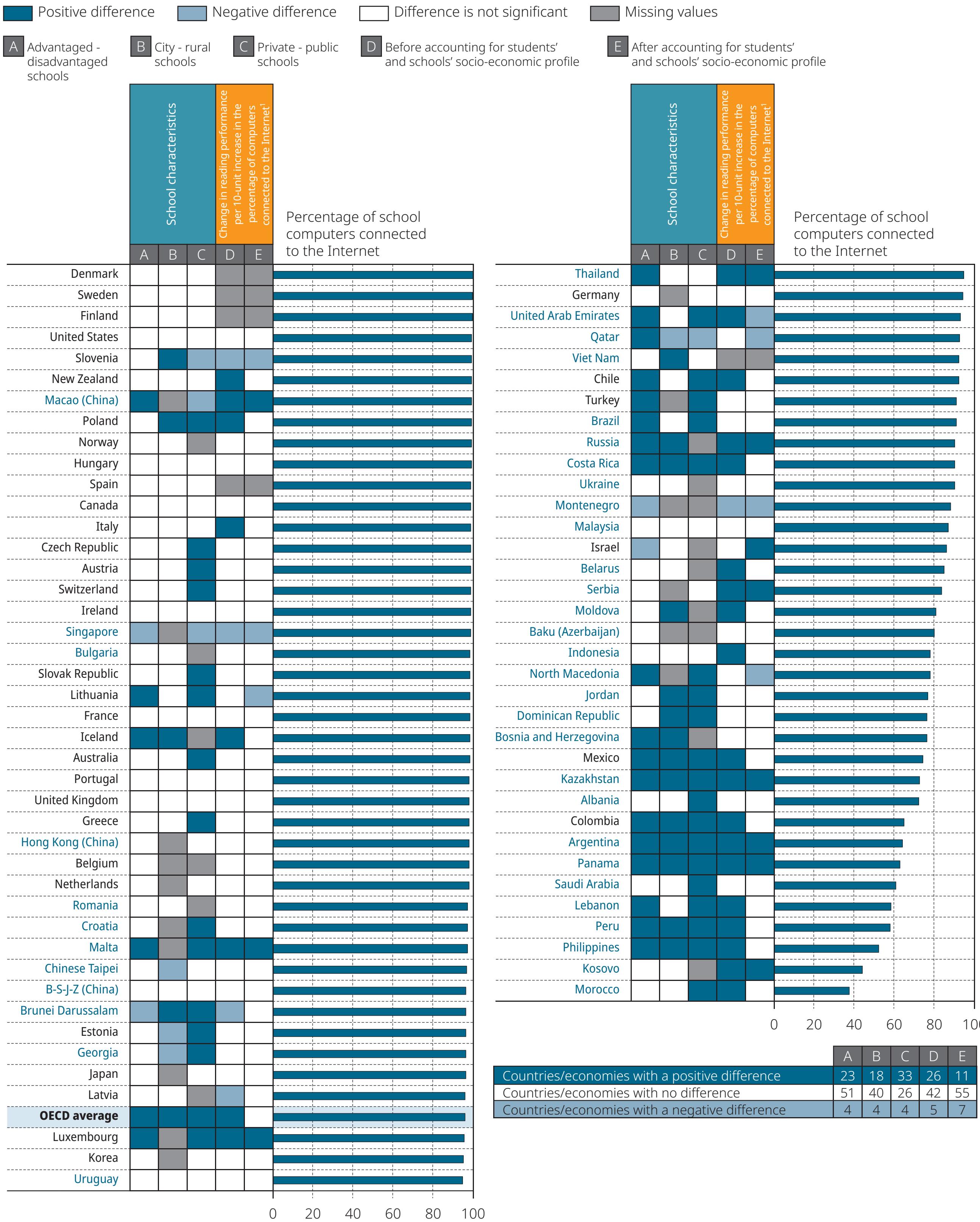
Countries and economies are ranked in descending order of the change between PISA 2015 and PISA 2018 for all students.

Sources: OECD, PISA 2018 Database, Table V.B1.5.8 and Table V.B1.5.9.

StatLink https://doi.org/10.1787/888934131272

Figure V.5.6 School computers connected to the Internet, school characteristics and reading performance

School computers available to students; results based on principals' reports



	A	B	C	D	E
Countries/economies with a positive difference	23	18	33	26	11
Countries/economies with no difference	51	40	26	42	55
Countries/economies with a negative difference	4	4	4	5	7

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

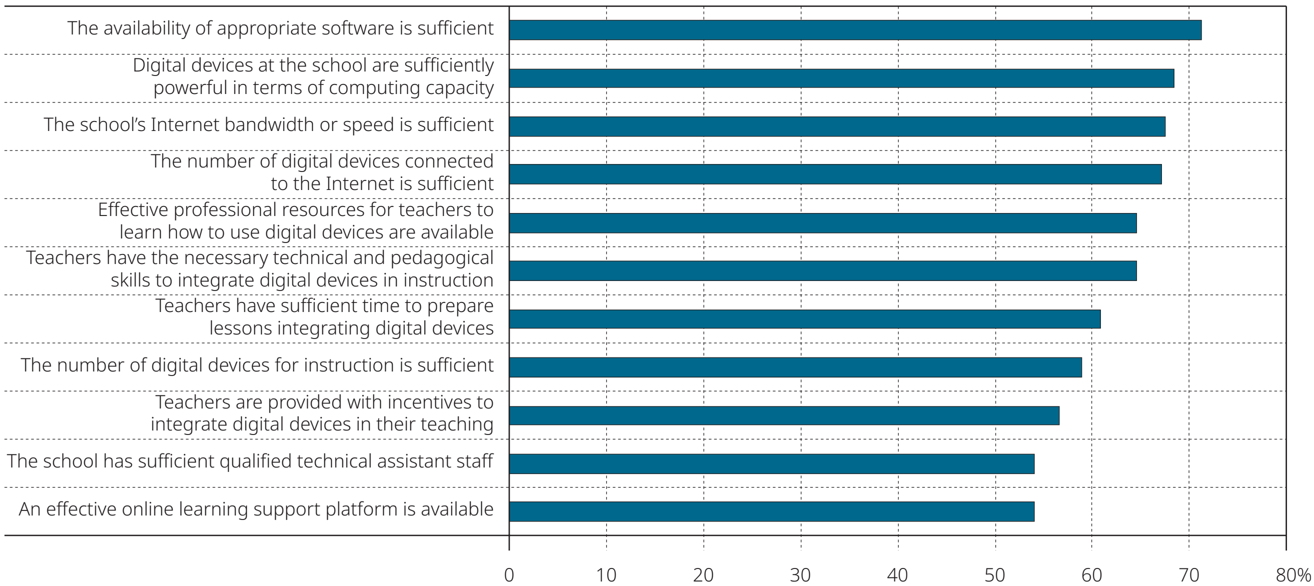
Countries and economies are ranked in descending order of the percentage of computers that are connected to the Internet amongst all school computers available to 15-year olds for educational purposes.

Source: OECD, PISA 2018 Database, Table V.B1.5.13.

StatLink https://doi.org/10.1787/888934131291

Figure V.5.7 **Schools' capacity to enhance teaching and learning using digital devices**

Percentage of students in schools whose principal agreed or strongly agreed with the following statements; OECD average



Source: OECD, PISA 2018 Database, Table V.B1.5.15.

StatLink https://doi.org/10.1787/888934131310

School capacity to enhance teaching and learning using digital devices is greater in socio-economically advantaged schools than disadvantaged schools. On average across OECD countries, in 10 out of the 11 indicators included in Figure V.5.7, students in advantaged schools were more likely to attend a school whose principal agreed that the school's capacity to use digital devices is sufficient (Table V.B1.5.16). The only indicator where no socio-economic disparities were observed was whether teachers have sufficient time to prepare lessons integrating digital devices.

Students attending schools with a greater capacity to enhance teaching and learning using digital devices scored higher in reading, on average across OECD countries. For example, students in schools whose principal reported that the school's Internet bandwidth or speed is sufficient scored 10 score points higher in reading, on average across OECD countries, while students in schools where teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction scored 5 points higher (Table V.B1.5.17).

However, after accounting for students' and schools' socio-economic profile, differences in reading scores turned out to be not statistically significant for 9 out of the 11 indicators included in Figure V.5.7, on average across OECD countries. Students in schools where teachers are provided with incentives to integrate digital devices into their teaching scored lower than those in schools where such incentives where not provided, on average across OECD countries; but in 63 countries/economies, the association was not significant (Table V.B1.5.17). Similarly, students in schools that have sufficient numbers of qualified technical assistant staff scored lower than those in schools that do not have sufficient numbers of qualified technical staff, on average across OECD countries; but in 60 countries/economies, the association was not significant.

School practices for using digital devices effectively

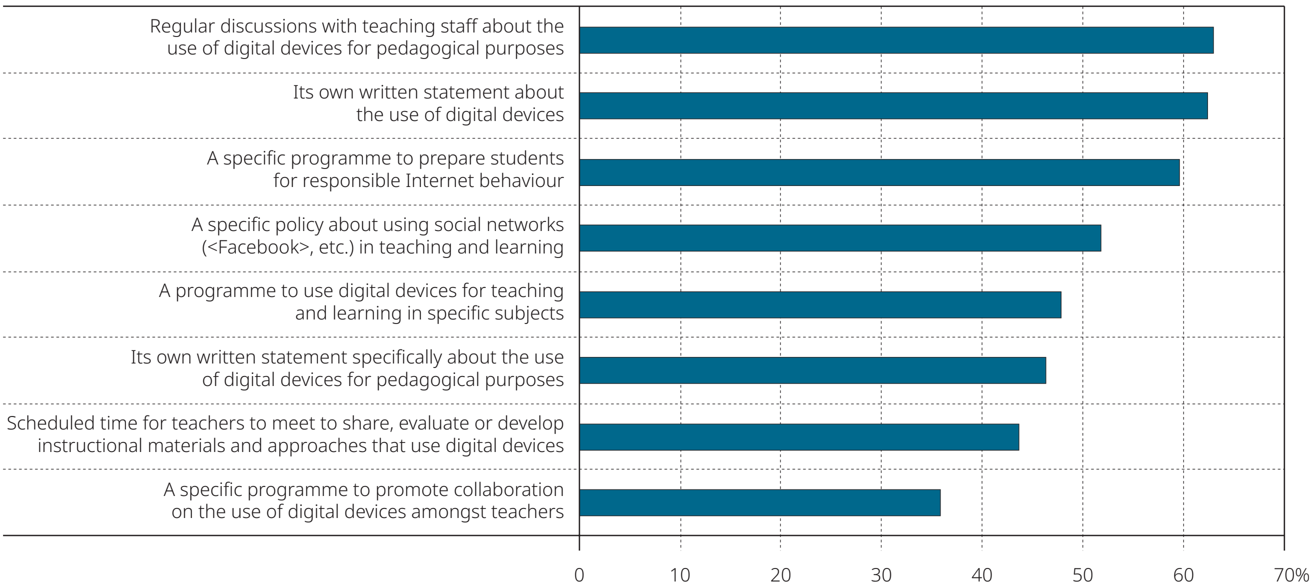
Using digital devices and ICT effectively, to enhance teaching and learning, may also depend on schools' policies and practices. PISA 2018 asked school principals whether they had formal guidelines (e.g. written statements, programmes or policies) or specific practices (e.g. regularly scheduled meetings) that focus on how to use digital devices effectively in the classroom.

On average across OECD countries, the most common school practices intended to improve learning through the use of digital devices were: having regular discussions between principals and teachers about the use of digital devices for pedagogical purposes (63% of students attended schools that practice this); having written school statements about the use of digital devices (62% of students); and having a specific programme to prepare students for responsible Internet behaviour (60% of students) (Figure V.5.8).

By contrast, on average across OECD countries, the least common practices were: having a specific programme to promote collaboration amongst teachers on the use of digital devices (36% of students attended schools that have such a programme); having a scheduled time for teachers to meet to share, evaluate or develop instructional materials and approaches that use digital devices (44% of students); and having a written statement specifically about the use of digital devices for pedagogical purposes at school (46% of students) (Figure V.5.8).

Figure V.5.8 **School guidelines and practices for the use of digital devices**

Percentage of students in schools whose principal reported the school has the following; OECD average



Source: OECD, PISA 2018 Database, Table V.B1.5.18.

StatLink https://doi.org/10.1787/888934131329

School guidelines and practices to enhance teaching and learning using digital devices are more likely to be found in socio-economically advantaged schools than in disadvantaged schools. On average across OECD countries, for seven of the eight indicators included in Figure V.5.8, students in advantaged schools were more likely to attend a school whose principal agreed that the school has guidelines and practices for using digital devices (Table V.B1.5.19). Only when it came to scheduling time for teachers to meet to share, evaluate or develop instructional materials and approaches that use digital devices, were no socio-economic disparities observed, on average across OECD countries.

Four of the eight indicators of school practices for effectively using digital devices were associated with higher reading scores, on average across OECD countries (Table V.B1.5.20). For example, students in schools whose principal reported that the school had a specific programme to prepare students for responsible Internet behaviour scored eight points higher in reading, on average across OECD countries. Students in schools whose principal reported that the school had a specific programme to promote collaboration on the use of digital devices amongst teachers scored four points higher in reading, on average across OECD countries.

However, after accounting for students' and schools' socio-economic profile, none of the indicators of school practices for effectively using digital devices was associated with higher reading scores, on average across OECD countries (Table V.B1.5.20).

HOW MATERIAL RESOURCES ARE RELATED TO DIFFERENCES IN PERFORMANCE AND EQUITY IN EDUCATION ACROSS COUNTRIES/ECONOMIES (SYSTEM-LEVEL ANALYSIS)

This section examines whether measures of material resources are related to education outcomes at the system level. Two education outcomes are considered: mean performance in reading and equity in reading performance. As in previous PISA reports, equity in reading performance is measured by the percentage of variation in reading performance accounted for by differences in students' socio-economic status; the smaller the variation in performance explained by socio-economic status, the greater the equity in performance (OECD, 2018[18]; OECD, 2019[19]).

Figure V.5.9 shows system-level correlation coefficients between material resources on the one hand, and reading performance and equity in reading performance on the other. Correlational analyses were conducted separately for OECD countries and for all countries and economies that participated in PISA 2018. In addition, correlations were computed before and after accounting for per capita GDP, to account for the level of economic development of a country/economy.

Figure V.5.9 [1/2] **Selected indicators of material resources, student performance and equity**

Correlation coefficients between two relevant measures

		OECD countries			
		Mean reading score		Equity in reading[1]	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Shortage of material resources	Shortage of material resources	-0.34			
	Instruction hindered by a lack of educational materials	-0.46	*-0.33*		
	Instruction hindered by Inadequate or poor quality educational materials	-0.40			
	Instruction hindered by a lack of physical infrastructure	*-0.29*			
	Instruction hindered by Inadequate or poor quality physical infrastructure				
	Allocation of material resources related to schools' socio-economic profile	0.56	0.49		
Availability of digital devices	Computers per student	*0.30*			
	Computers per student: difference between advantaged and disadvantaged schools				
	Portable computers (% of school computers that are portable)			0.41	0.44
	Internet (% of school computers connected to the internet)	0.73	0.68		
	Internet: difference between advantaged and disadvantaged schools	-0.69	-0.64		
	Computers connected to the Internet for teachers	0.54	0.47	0.40	0.44
School's capacity to enhance teaching and learning using digital devices	Number of digital devices connected to the Internet sufficient	0.44	0.37		
	The school's Internet bandwidth or speed is sufficient	0.50	0.40	0.38	0.43
	The number of digital devices for instruction is sufficient	0.34			
	Digital devices have sufficiently powerful computing capacity	0.52	0.38	*0.28*	0.36
	The availability of appropriate software is sufficient	0.53	0.40		
	Teachers have skills to integrate digital devices into instruction				
	Teachers have sufficient time to prepare lessons by digital devices				
	Effective professional resources for teachers on how to use digital devices				
	An effective online learning support platform is available	0.45	0.45	0.39	0.39
	Teachers.have incentives to integrate digital devices into their class				
	The school has sufficient, qualified technical-assistant staff				
School guidelines and practices for the use of digital devices	Its own written statement about the use of digital devices	0.48	0.36		
	Its own written statement about using digital devices for pedagogical purposes	0.40			
	A plan to use digital devices for teaching and learning in specific subjects				
	Discussions with staff about using digital devices for pedagogical purposes				
	A specific programme to prepare students for responsible Internet behaviour	0.42	*0.29*		
	Specific policy using social networks in teaching and learning				
	Specific programme to promote teacher collaboration in using digital devices				
	Scheduled time to discuss instructional materials using digital devices			0.42	0.42

1. The percentage of variance in student performance explained by the PISA index of economic, social and cultural status was used as measure of inequity in performance. In a first step, the correlation coefficients between measures of material resources and inequity were computed. In a second step, the sign of the correlation coefficients was reversed (i.e. multiplied by -1) to simplify reporting (i.e. report correlation with equity instead of with inequity).

Notes : Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Source: OECD, PISA 2018 Database, Table V.B1.5.21.

StatLink https://doi.org/10.1787/888934131348

Figure V.5.9 [2/2] **Selected indicators of material resources, student performance and equity**

Correlation coefficients between two relevant measures

		All countries and economies			
		Mean reading score		Equity in reading[1]	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Shortage of material resources	Shortage of material resources	-0.50	-0.24		
	Instruction hindered by a lack of educational materials	-0.56	-0.36		
	Instruction hindered by Inadequate or poor quality educational materials	-0.56	-0.32		
	Instruction hindered by a lack of physical infrastructure	-0.44	-0.24		
	Instruction hindered by Inadequate or poor quality physical infrastructure	-0.38			
	Allocation of material resources related to schools' socio-economic profile	0.49	0.45		
Availability of digital devices	Computers per student	0.59	0.43		
	Computers per student: difference between advantaged and disadvantaged schools	-0.42	-0.64		
	Portable computers (% of school computers that are portable)	0.39	0.29		
	Internet (% of school computers connected to the internet)	0.75	0.68		
	Internet: difference between advantaged and disadvantaged schools	-0.54	-0.47	-0.28	-0.24
	Computers connected to the Internet for teachers	0.68	0.55	*0.21*	
School's capacity to enhance teaching and learning using digital devices	Number of digital devices connected to the Internet sufficient	0.60	0.40	0.23	*0.21*
	The school's Internet bandwidth or speed is sufficient	0.59	0.45	0.28	0.28
	The number of digital devices for instruction is sufficient	0.57	0.34		
	Digital devices have sufficiently powerful computing capacity	0.58	0.34		
	The availability of appropriate software is sufficient	0.58	0.40	*0.21*	
	Teachers have skills to integrate digital devices into instruction				
	Teachers have sufficient time to prepare lessons by digital devices	*-0.19*	-0.29		
	Effective professional resources for teachers on how to use digital devices				
	An effective online learning support platform is available	0.46	0.27	0.27	0.28
	Teachers.have incentives to integrate digital devices into their class				
	The school has sufficient, qualified technical-assistant staff			0.26	0.24
School guidelines and practices for the use of digital devices	Its own written statement about the use of digital devices	0.39			
	Its own written statement about using digital devices for pedagogical purposes				
	A plan to use digital devices for teaching and learning in specific subjects		-0.28		
	Discussions with staff about using digital devices for pedagogical purposes				
	A specific programme to prepare students for responsible Internet behaviour	0.42			
	Specific policy using social networks in teaching and learning				
	Specific programme to promote teacher collaboration in using digital devices		-0.36		
	Scheduled time to discuss instructional materials using digital devices		*-0.20*		

1. The percentage of variance in student performance explained by the PISA index of economic, social and cultural status was used as measure of inequity in performance. In a first step, the correlation coefficients between measures of material resources and inequity were computed. In a second step, the sign of the correlation coefficients was reversed (i.e. multiplied by -1) to simplify reporting (i.e. report correlation with equity instead of with inequity).

Notes : Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level (p < 0.10) are in italics. All other values are statistically significant at the 5% level (p < 0.05).

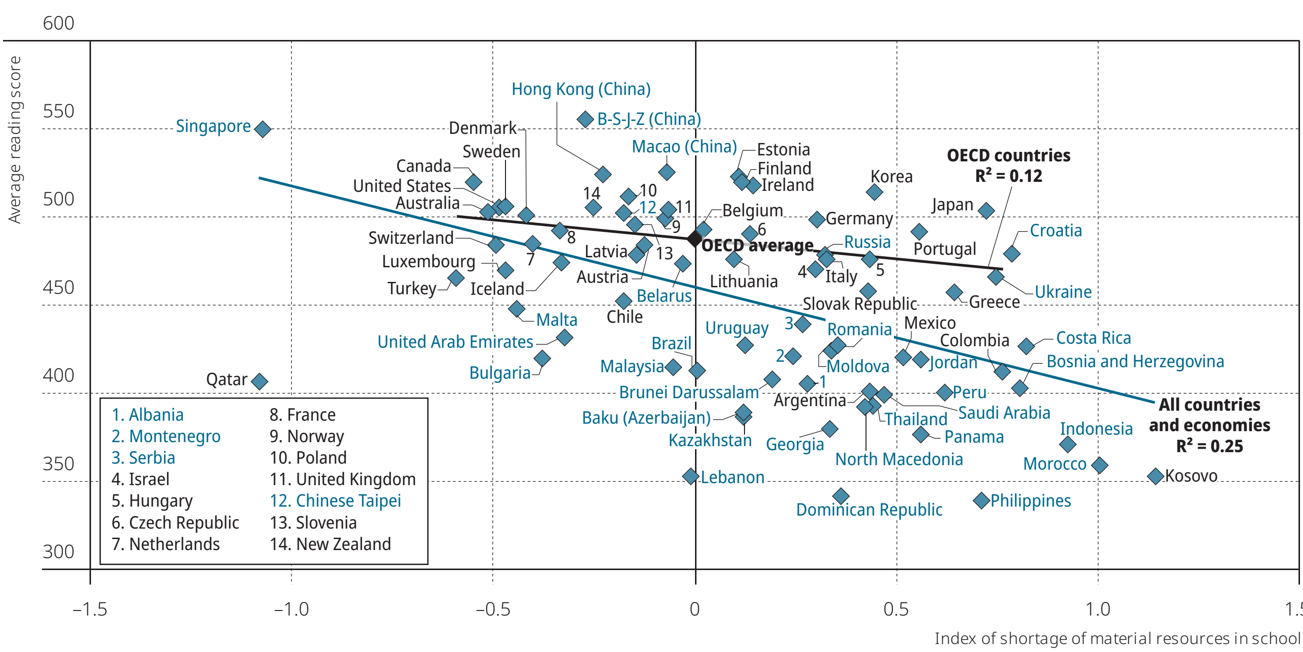
Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Source: OECD, PISA 2018 Database, Table V.B1.5.21.

StatLink https://doi.org/10.1787/888934131348

At the system level, countries and economies with fewer shortages of material resources generally performed better in PISA. As shown in Figure V.5.10, differences in the index of shortage of material resources accounted for about 25% of the differences in mean reading performance across all participating countries and economies in PISA 2018. Across all participating countries and economies, the index of shortage of material resources was negatively correlated to mean performance in reading, mathematics and science even after accounting for per capita GDP (partial correlation coefficients around -0.25) (Table V.B1.5.21). Figure V.5.10 also shows that, before accounting for per capita GDP, the relationship between material resources and reading performance was weaker, but statistically significant, across OECD countries than across all countries/economies. This is partly because the level of material resources tends to be more similar across OECD countries than across all countries/economies. This system-level association between material resources and reading achievement is consistent with the same association, at the student level, observed in many countries and on average across OECD countries (Figure V.3.EDUSHORT Table V.B1.5.2).

Figure V.5.10 **Shortage of material resources in schools and reading performance**



Positive values in this index indicate more shortages of quality material resources than on average across OECD countries; negative values indicate greater availability and quality of material resources than on average across OECD countries.
Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.5.2.

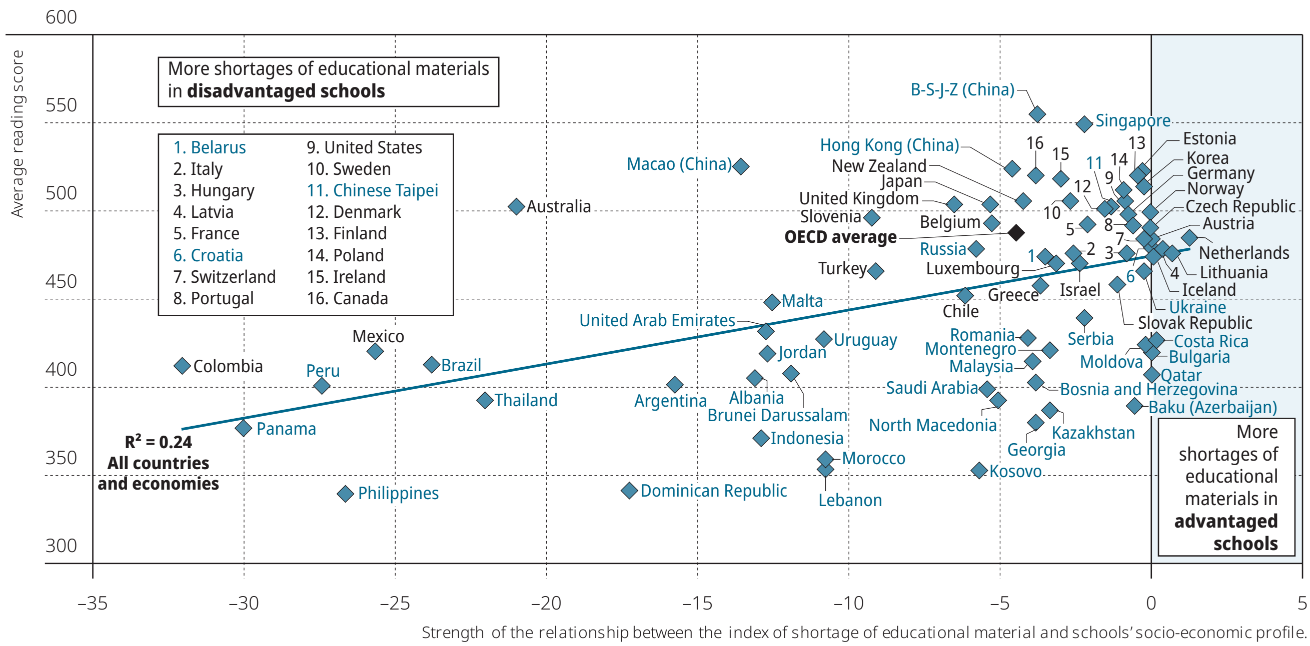
StatLink https://doi.org/10.1787/888934131367

When considering the components of the index of educational materials separately, it was observed that, at the system level, mean reading performance was more strongly correlated with educational materials than with physical infrastructure. This is consistent with student-level analyses (Figure V.5.3). Countries with a higher percentage of students in schools whose principal reported that a lack of educational materials hinders learning generally showed lower mean reading scores, even after accounting for per capita GDP, both across OECD countries (partial r = -0.36) and across all participating countries and economies (partial r = -0.33) (Figure V.5.9). The lack of school infrastructure was correlated with lower mean reading performance, even after accounting for per capita GDP, across all participating countries and economies, (partial r = -0.24); but across OECD countries, the correlation was not statistically significant (Figure V.5.9).

Furthermore, school systems where material resources are allocated equitably amongst socio-economically advantaged and disadvantaged schools – or, in some cases, where disadvantaged schools have more material resources than advantaged schools – generally performed better in PISA. Across all participating countries and economies, the index of equity in the allocation of material resources[2] was positively correlated with mean performance in reading, mathematics and science, even after accounting for per capita GDP (partial r coefficients ranging from 0.43 to .48) (Table V.B1.5.21). As shown in Figure V.5.11, differences in the allocation of material resources in relation to schools' socio-economic profile accounted for about 24% of the differences in mean reading performance across all participating countries and economies in PISA 2018.[3]

Figure V.5.11 **Allocation of material resources related to schools' socio-economic profile and reading performance**

Results based on principals' reports



1. This is the strength of the association between the school's socio-economic profile and the principal's concern about the educational material at the school. Positive values indicate that principals of socio-economically advantaged schools are more concerned than principals of disadvantaged schools. Negative values indicate that principals of disadvantaged schools are more concerned than principals of advantaged schools. A value of 0 means there is no difference between advantaged and disadvantaged schools.

Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.5.5.

StatLink https://doi.org/10.1787/888934131386

When it comes to the availability of digital resources, Internet connectivity is the most strongly associated with mean reading scores. At the system level, there was a strong positive association between the percentage of school computers (those available to 15-year-olds for educational purposes) that are connected to the Internet and mean reading performance, even after accounting for per capita GDP, across all participating countries and economies (Figure V.5.9). As shown in Figure V.5.12, differences in Internet connectivity accounted for as much as 57% of the differences in mean reading performance across all participating countries and economies in PISA 2018.[4] In addition, schools' Internet bandwidth or speed is positively correlated to mean reading performance and to equity in reading performance, across OECD countries, and across all countries and economies, before and after accounting for per capita GDP (Figure V.5.9).

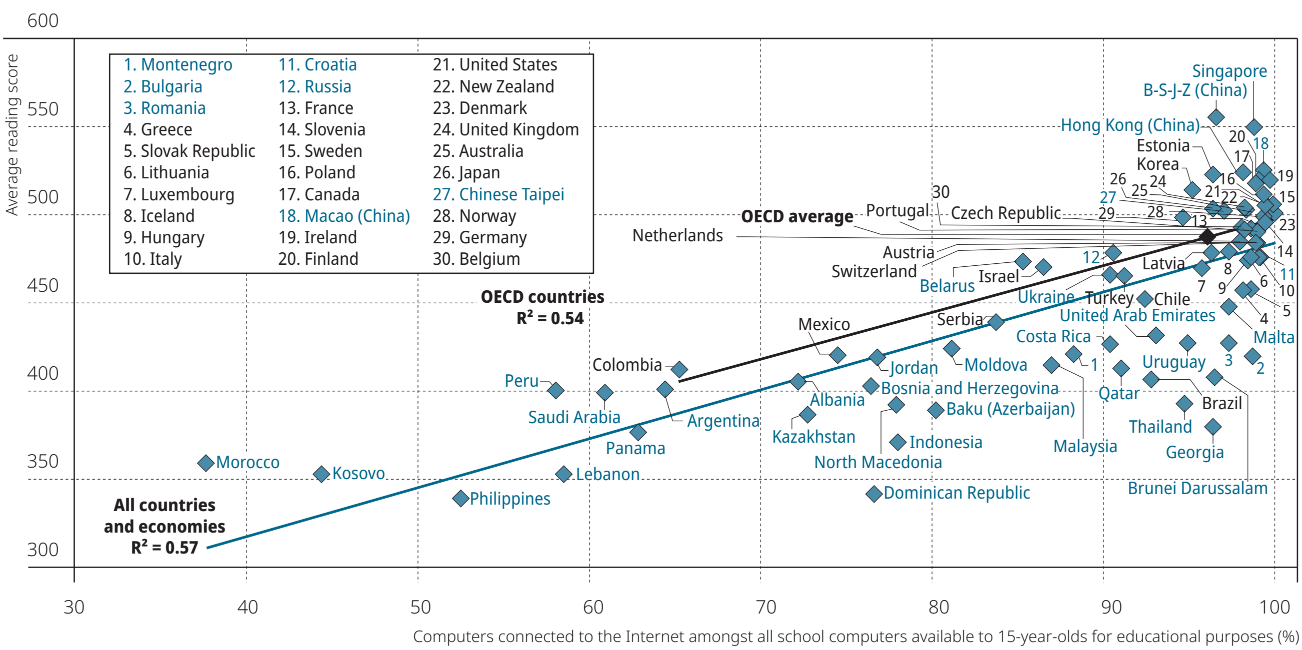
Some measures of schools' capacity to enhance teaching and learning using digital devices were positively correlated with mean reading performance, even after accounting for per capita GDP, across OECD countries, and across all participating countries and economies (Figure V.5.9). For example, some 34% of the variation in mean reading performance across all countries/economies could be accounted for by differences in the availability of adequate software (Figure V.5.13).

Most measures of schools' capacity to enhance teaching and learning using digital devices were weakly related to equity in education. However, one particular measure, namely access to an effective online learning support platform, was related to equity in student performance in all core subjects, across OECD countries, and across all countries and economies, before and after accounting for per capita GDP (Table V.B1.5.21). Across OECD countries, about 15% of the differences in equity in reading performance can be accounted for by the percentage of students in schools whose principal agreed or strongly agreed that "an effective online learning support platform is available" (Figure V.5.14).[5] The correlation is weaker, but statistically significant, across all countries/economies. Effective online learning support platforms are more often available in advantaged schools than disadvantaged schools, on average across OECD countries (a difference of 10 percentage points) and in 34 countries (Table V.B1.5.16).

Some school practices for using digital devices were also related to education outcomes at the system level. For example, across OECD countries, and across all countries and economies, school systems with a higher percentage of students in schools whose principals reported that their school has its own written statement about the use of digital devices generally showed higher mean performance in reading, mathematics and science (Table V.B1.5.21). Having a written statement about the use of digital devices could be a proxy for regulatory practices that aim to ensure the efficacy of using those devices for learning.

As shown in Figure V.5.15, the association is somewhat stronger across OECD countries than across all countries/economies. Across OECD countries, some 23% of the differences in equity in reading performance can be accounted for by the percentage of students in schools whose principal reported that their school has its own written statement about the use of digital devices.[6]

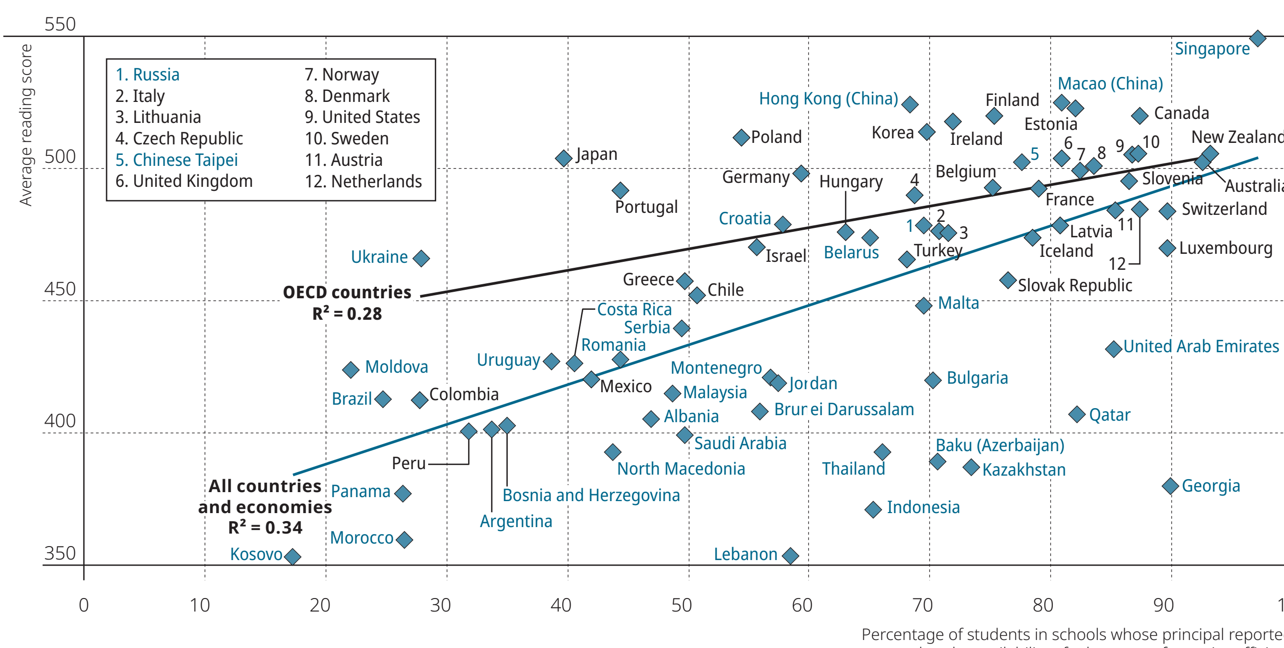
Figure V.5.12 **Computers at school connected to the Internet and reading performance**



Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.5.13.

StatLink https://doi.org/10.1787/888934131405

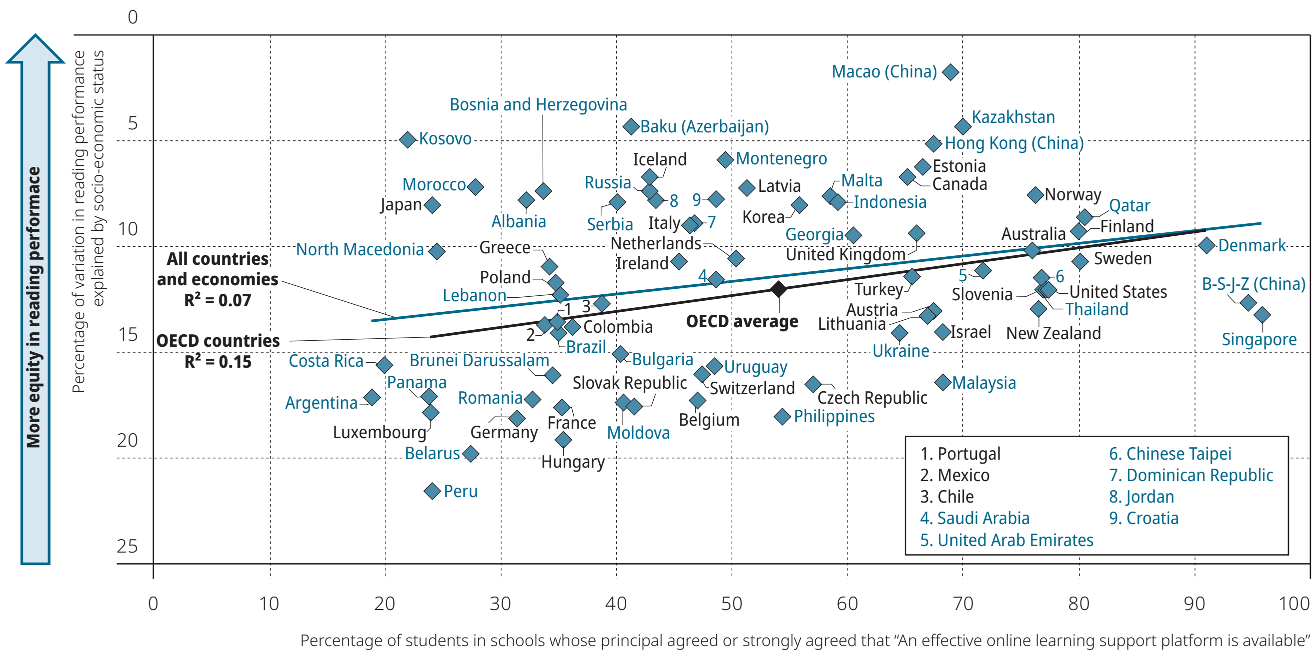
Figure V.5.13 **Availability of adequate software and reading performance**



Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.5.15.

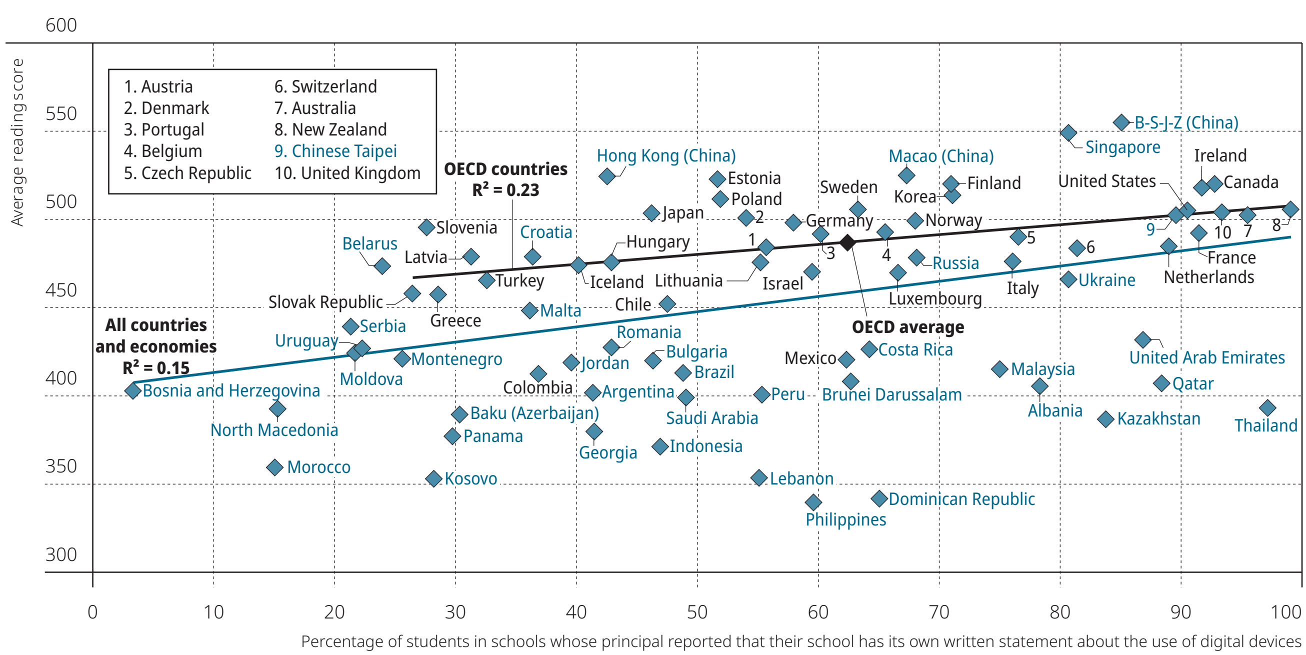
StatLink https://doi.org/10.1787/888934131424

Figure V.5.14 **Online learning support platform and equity in reading performance**



Note: This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Sources: OECD, PISA 2018 Database, Tables II.B1.2.3 and V.B1.5.15.
StatLink https://doi.org/10.1787/888934131443

Figure V.5.15 **Schools' written statements about the use of digital devices and reading performance**



Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.5.18.
StatLink https://doi.org/10.1787/888934131462

Notes

1. Across OECD countries, after accounting for per capita GDP, there was a positive correlation between the share of computers that are portable and equity in reading (partial r = -0.44), mathematics (partial r = -0.43) and science (partial r = -0.41) performance (Table V.B1.5.21). Across all countries and economies, the correlation was not statistically significant.

2. The index of equity in the allocation of material resources is the percentage of the variation in the index of shortage of educational materials explained by the PISA index of economic, social and cultural status of the school multiplied by a negative or positive sign, depending on the sign of the relationship. A value of 0 indicates that there is no difference between socio-economically advantaged and disadvantaged schools in the index of shortage of educational materials; positive values (greater equity) indicate that advantaged schools show higher values in the index of shortage of educational materials than disadvantaged schools.

3. The correlation was also strong across OECD countries; however, it was entirely driven by two outliers, Colombia and Mexico, which have lower levels of equity in allocation of material resources and lower mean reading performance than other OECD countries. After excluding the countries with the lowest levels of equity in the allocation of material resources (i.e. values lower than -20 in the index), the association remained significant across all countries and economies (R^2 = 0.20), but across OECD countries the association weakened substantially (including all OECD countries, the R^2 was 0.54; after excluding Mexico and Colombia, the R^2 was 0.15).

4. As with the index of equity in material resources, the correlation between Internet connectivity and mean reading performance was also strong across OECD countries; however, it was entirely driven by two outliers, Colombia and Mexico, which have less Internet connectivity and lower mean reading performance than other OECD countries. After excluding the countries with the lowest percentage of computers connected to the Internet at school (i.e. lower than 80%), the association remained unchanged across all countries and economies (R^2 = 0.57), but across OECD countries the association disappears (R^2 = 0.01).

5. After excluding low-performing countries/economies (i.e. mean performance in reading lower than 413 points), the strength of the association across OECD countries remained almost unaltered (after exclusion, R^2 = 0.14), whereas across all countries/economies, the association strengthened slightly (after exclusion, R^2 = 0.10).

6. After excluding low-performing countries/economies (i.e. mean performance in reading lower than 413 points), the association across OECD countries weakened slightly (after exclusion, R^2 = 0.20), whereas the across all countries/economies the association strengthened markedly (after exclusion, R^2 = 0.27).

References

Barrow, L., L. Markman and **C. Rouse** (2009), "Technology's Edge: The Educational Benefits of Computer-Aided Instruction", *American Economic Journal: Economic Policy*, Vol. 1/1, pp. 52-74, http://dx.doi.org/10.1257/pol.1.1.52. [9]

Conlin, M. and **P. Thompson** (2017), "Impacts of new school facility construction: An analysis of a state-financed capital subsidy program in Ohio", *Economics of Education Review*, Vol. 59, pp. 13-28, http://dx.doi.org/10.1016/j.econedurev.2017.05.002. [3]

Dolan, J. (2016), "Splicing the Divide: A Review of Research on the Evolving Digital Divide Among K–12 Students", *Journal of Research on Technology in Education*, Vol. 48/1, pp. 16-37, http://dx.doi.org/10.1080/15391523.2015.1103147. [11]

Fried, C. (2008), "In-class laptop use and its effects on student learning", *Computers and Education*, Vol. 50/3, pp. 906-914, http://dx.doi.org/10.1016/j.compedu.2006.09.006. [15]

Gunter, T. and **J. Shao** (2016), *Synthesizing the effect of building condition quality on academic performance*, MIT Press Journals, http://dx.doi.org/10.1162/EDFP_a_00181. [4]

Hawkins, E. and **K. Hawkins** (2003), "Bridging Latin America's Digital Divide: Government Policies and Internet Access", *Journalism & Mass Communication Quarterly*, doi: 10.1177/107769900308000310, pp. 646-665, http://dx.doi.org/10.1177/107769900308000310. [22]

Jaillet, A. (2004), *What Is Happening With Portable Computers in Schools?*. [14]

Lee, M. (2010), "Interactive whiteboards and schooling: the context", *Technology, Pedagogy and Education*, Vol. 19/2, pp. 133-141, http://dx.doi.org/10.1080/1475939X.2010.491215. [10]

McKnight, K. et al. (2016), "Teaching in a digital age: How educators use technology to improve student learning", *Journal of Research on Technology in Education*, Vol. 48/3, pp. 194-211, http://dx.doi.org/10.1080/15391523.2016.1175856. [13]

Means, B. (2010), "Technology and education change: Focus on student learning", *Journal of Research on Technology in Education*, Vol. 42/3, pp. 285-307, http://dx.doi.org/10.1080/15391523.2010.10782552. [12]

Mueller, P. and **D. Oppenheimer** (2014), "The pen is mightier than the keyboard: Advantages of longhand over laptop note taking", *Psychological Science*, Vol. 25/6, pp. 1159-1168, http://dx.doi.org/10.1177/0956797614524581. [17]

Murillo, F. and **M. Román** (2011), "School infrastructure and resources do matter: analysis of the incidence of school resources on the performance of Latin American students", *School Effectiveness and School Improvement*, Vol. 22/1, pp. 29-50, http://dx.doi.org/10.1080/09243453.2010.543538. [2]

Neilson, C. and **S. Zimmerman** (2014), "The effect of school construction on test scores, school enrollment, and home prices", *Journal of Public Economics*, Vol. 120, pp. 18-31, http://dx.doi.org/10.1016/j.jpubeco.2014.08.002. [5]

Oakes, J. and **M. Saunders** (2004), *Education's most basic tools: Access to textbooks and instructional materials in California's public schools*, Teachers College, Columbia University, http://dx.doi.org/10.1111/j.1467-9620.2004.00423.x. [1]

OECD (2019), *Education at a Glance 2019: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/f8d7880d-en. [21]

OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/b5fd1b8f-en. [19]

OECD (2019), *Trends Shaping Education 2019*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2019-en. [8]

OECD (2018), *Equity in Education: Breaking Down Barriers to Social Mobility*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264073234-en. [18]

OECD (2018), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264306707-en. [20]

OECD (2015), *Students, Computers and Learning: Making the Connection*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264239555-en. [6]

Sana, F., T. Weston and **N. Cepeda** (2013), "Laptop multitasking hinders classroom learning for both users and nearby peers", *Computers and Education*, Vol. 62, pp. 24-31, http://dx.doi.org/10.1016/j.compedu.2012.10.003. [16]

Tamim, R. et al. (2011), "What Forty Years of Research Says About the Impact of Technology on Learning", *Review of Educational Research*, Vol. 81/1, pp. 4-28, http://dx.doi.org/10.3102/0034654310393361. [7]

6

Learning time during and after school hours

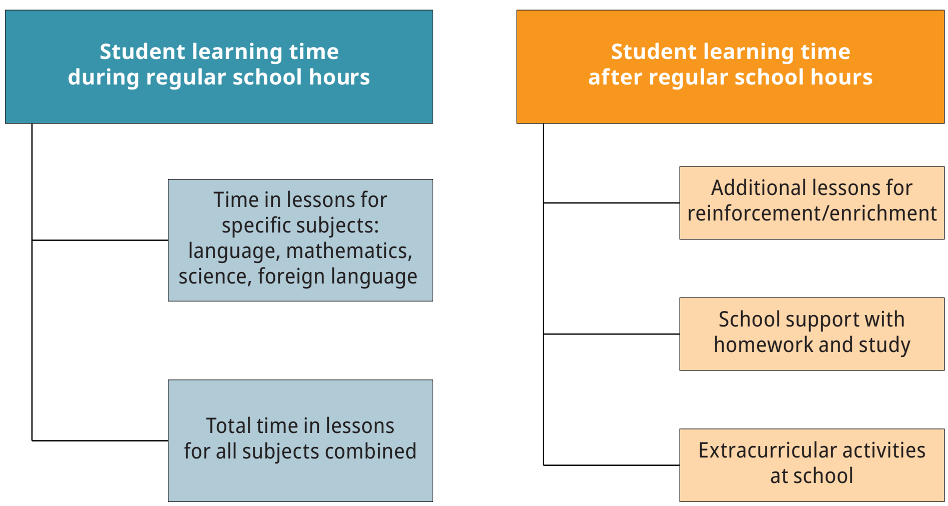
This chapter describes how much time students devote to learning, both in school and after school hours. In addition to time spent learning the core PISA subjects of reading, mathematics and science, for the first time, PISA has data on the time students spend learning foreign languages in school. The chapter also examines the types of extracurricular activities that are available to students at school, from remedial or enhancement classes, to art clubs and orchestras. These findings are then related to student performance and equity in education systems.

Learning takes time, and time is limited. Thus, time is a key education resource that must be used effectively in and outside of school. Investing in and optimising the use of students' learning time has the potential to improve the quality and equity of education outcomes (OECD, 2011[1]). However, the relationship between learning time and academic achievement is complex: additional learning time does not translate automatically into better outcomes (Gromada and Shewbridge, 2016[2]).

This chapter examines two ways in which students spend time learning (Figure V.6.1). First, the chapter covers learning that takes place during regular school hours. It compares countries in terms of the amount of learning time allocated for lessons in key subjects, such as language-of-instruction (language-of-instruction refers to the main language that teachers use in their lessons, which is usually the same as the language of the PISA assessment),[1] mathematics and science. It also considers how this time is allotted within countries, across students and schools, and how that allocation is related to student achievement. For the first time, PISA 2018 collected information about learning time in foreign-language lessons, and the results are reported here.

Second, the chapter examines learning that takes place after regular school hours. In this case, the emphasis is not on the amount of time invested, but on the opportunities that schools offer to their students. The chapter examines additional lessons offered at school for reinforcement and enrichment purposes, school support with homework and study, and extracurricular activities, such as sporting teams, volunteering or art clubs and music bands.

Figure V.6.1 **Student learning time as covered in PISA 2018**



What the data tell us

- On average across OECD countries, performance in reading improved with each additional hour of language-of-instruction lessons per week, up to 3 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 28 countries and economies, students spent more time in foreign-language lessons than in language-of-instruction lessons; the opposite was observed in 47 countries and economies.
- On average across OECD countries, students who have access to a room for homework at school scored 14 points higher in reading than students without access to a room for homework; after accounting for socio-economic status, they scored 5 points higher. Education systems with larger shares of students in schools that offer a room(s) for homework tended to show better mean performance in reading, mathematics and science, even after accounting for per capita GDP.
- Students who were enrolled in schools that offer more creative extracurricular activities (including music and art activities) performed better in reading, on average across OECD countries (by 4 score points) and in 32 countries and economies, after accounting for students' and schools' socio-economic profile. At the system level, countries and economies whose schools offer more creative extracurricular activities tended to show greater equity in student performance.

LEARNING TIME DURING REGULAR SCHOOL HOURS

Research on the relationship between learning time and student achievement offers mixed evidence. The relationship is hard to observe empirically because a number of factors, including the quality of the curriculum, teachers' instructional practices, students' aptitudes and motivation to learn, and even countries' level of economic development, can mediate or condition the effectiveness of learning time (Carroll, 1989[3]; Baker et al., 2004[4]; Scheerens and Hendriks, 2014[5]). Key findings in recent research show that additional learning time has positive but diminishing effects on student performance, and that the benefits of additional learning time can be heterogeneous, depending on the type of student (e.g. low performing or socio-economically disadvantaged) (Cattaneo, Oggenfuss and Wolter, 2017[6]; Patall, Cooper and Allen, 2010[7]; Gromada and Shewbridge, 2016[2]; Bellei, 2009[8]).

PISA measures learning time as the number of hours per week that students are required to attend regular school lessons. To create measures of learning time, PISA 2018 asked each student to report the number of class periods she or he is required to attend for specific subjects (language-of-instruction, mathematics, science and foreign language); the total number of class periods per week she or he is required to attend in all subjects; and the average number of minutes per class period.

On average across OECD countries in 2018, students spent about 3.7 hours per week in language-of-instruction lessons and in mathematics lessons, 3.4 hours per week in science lessons, and 3.6 hours per week in foreign-language lessons. The total learning time in regular school lessons (in all subjects) was 27 hours per week, on average across OECD countries (Table V.B1.6.1).

Learning time in language-of-instruction lessons varied across countries (Figure V.6.2). In 18 countries and economies, students attended language-of-instruction classes for more than 2 but less than 3 hours per week. The least learning time, on average, was observed in Belarus (2.3 hours) and Finland (2.5 hours). In these two countries, and also in Bosnia and Herzegovina, Croatia, Montenegro, Serbia and Slovenia, almost 9 out of 10 students attended language-of-instruction classes for 3 hours per week or less. In 32 countries/economies, they attended such classes for 3 or more, but less than 4, hours per week; in 20 countries and economies, they attended such classes for 4 or more, but less than 5, hours per week; and in 6 countries/economies, students attended language-of-instruction classes for 5 or more hours per week. Amongst the latter group, average learning time, per week, in language-of-instruction lessons was the longest in Chile (6.8 hours), Denmark (5.8 hours), Canada (5.4 hours) and Peru (5.4 hours). In these countries, and in Hong Kong (China) and Beijing, Shanghai, Jiangsu and Zhejiang (China) (hereafter "B-S-J-Z [China]), at least 30% of students attended language-of-instruction lessons for more than 5 hours per week (Table V.B1.6.2).

The average amount of time that students in a country or economy spent in language-of-instruction lessons tended to be similar to the average time they spent in mathematics lessons and in science lessons.[2] This was not the case, however, with regard to foreign-language lessons.

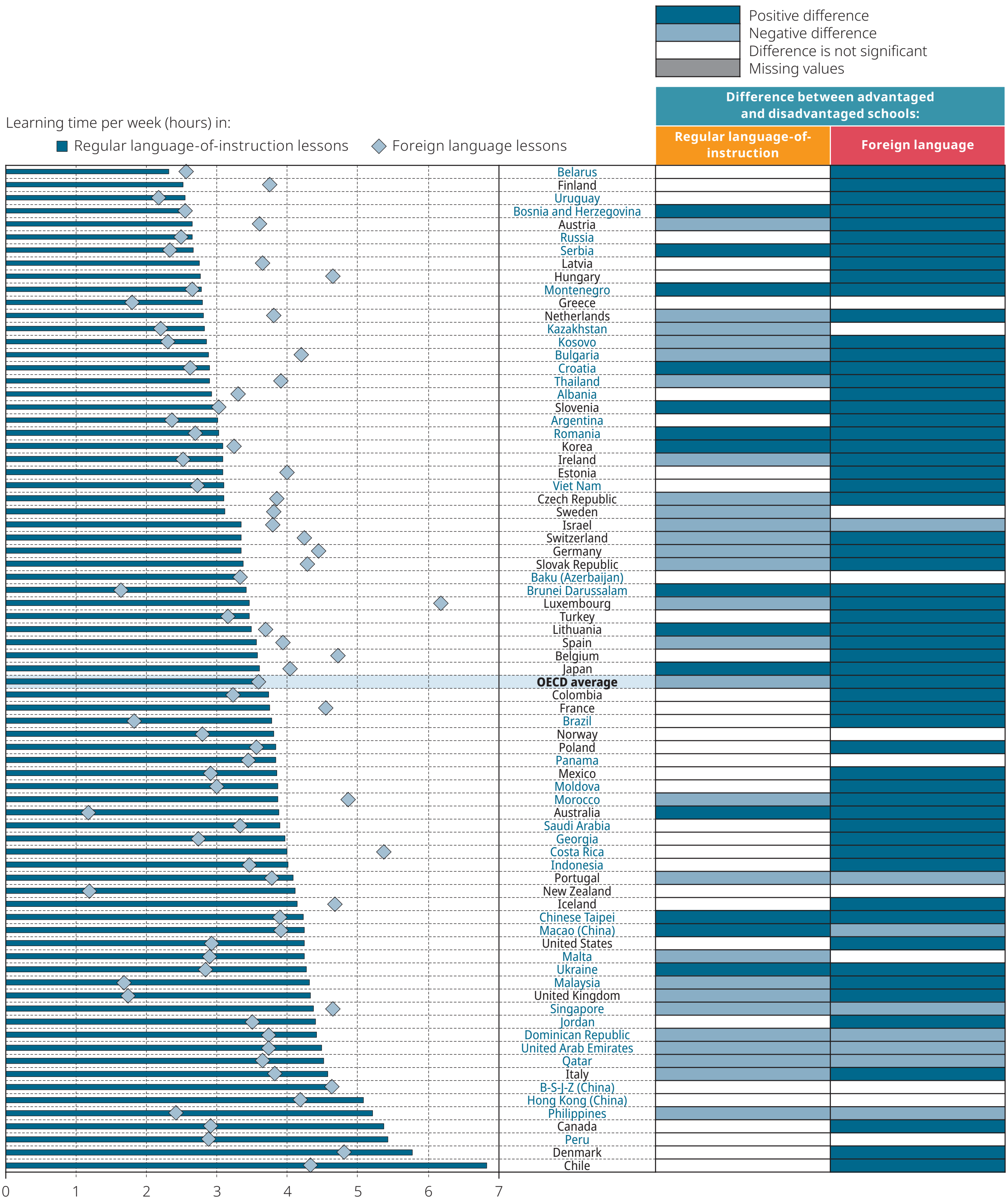
As shown in Figure V.6.2, in 47 countries and economies, the time students spent in language-of-instruction lessons in 2018 was greater than the amount of time they spent in foreign-language lessons;[3] but in 28 countries and economies the opposite was true. In Luxembourg, 15-year-old students attended foreign-language lessons for three hours per week more than language-of-instruction lessons.[4] In Hungary, students spent two hours more per week in foreign-language lessons than in language-of-instruction class. And in Austria, Belgium,[5] Bulgaria, Costa Rica, the Czech Republic, Estonia, Finland,[6] France, Germany, Latvia, Morocco, the Netherlands, the Slovak Republic, Sweden, Switzerland[7] and Thailand, students spent about one hour more per week in foreign-language class than in language-of-instruction lessons.

Disparities in students' learning time related to schools' socio-economic profile are relatively small. On average across OECD countries, students in disadvantaged schools spent 6 minutes more per week in language-of-instruction lessons than did their counterparts in advantaged schools (Table V.B1.6.3). In 26 countries and economies, students in disadvantaged schools spent more learning time in language-of-instruction lessons than students in advantaged schools; but in only 8 countries (the Dominican Republic, Germany, Morocco, the Netherlands, the Philippines, Singapore, the Slovak Republic and the United Kingdom) was the difference greater than 40 minutes per week (Figure V.6.2). By contrast, in 14 countries and economies students in advantaged schools spent more time in language-of-instruction lessons than did students in disadvantaged schools, but only in Japan and Chinese Taipei was the difference greater than 40 minutes per week.

Variations in students' learning time related to schools' socio-economic profile are also small when considering mathematics and science lessons (Table V.B1.6.3), but they are much greater when it comes to foreign-language lessons, and are in favour of students in advantaged schools, on average (Figure V.6.2). On average across OECD countries, students in advantaged schools spent almost one hour more per week in regular foreign-language lessons than did students in disadvantaged schools. In 57 countries and economies, students in advantaged schools spent more time in foreign-language classes than did students in disadvantaged schools. In Austria, Belgium, Costa Rica, Germany, Hungary, Morocco, the Netherlands and the Slovak Republic, advantaged schools offered at least two additional hours of foreign-language lessons per week than did disadvantaged schools. Only in the Dominican Republic, Israel, Macao (China), the Philippines, Portugal, Qatar, Singapore and the United Arab Emirates did disadvantaged students spend more time in foreign-language lessons at school than did advantaged students.

Figure V.6.2 **Learning time in language-of-instruction and foreign language lessons, by schools' socio-economic profile**

Based on students' reports



	Regular language-of-instruction	Foreign language
Countries/economies with a positive difference	14	57
Countries/economies with no difference	36	11
Countries/economies with a negative difference	26	8

Countries and economies are ranked in ascending order of the learning time per week in regular language-of-instruction lessons.

Sources: OECD, PISA 2018 Database, Tables V.B1.6.1 and V.B1.6.3.

StatLink https://doi.org/10.1787/888934131481

Differences in students' learning time related to school location (i.e. urban versus rural schools), school type (i.e. public versus private schools) and level of education (i.e. lower versus upper secondary schools) were small, on average across OECD countries.

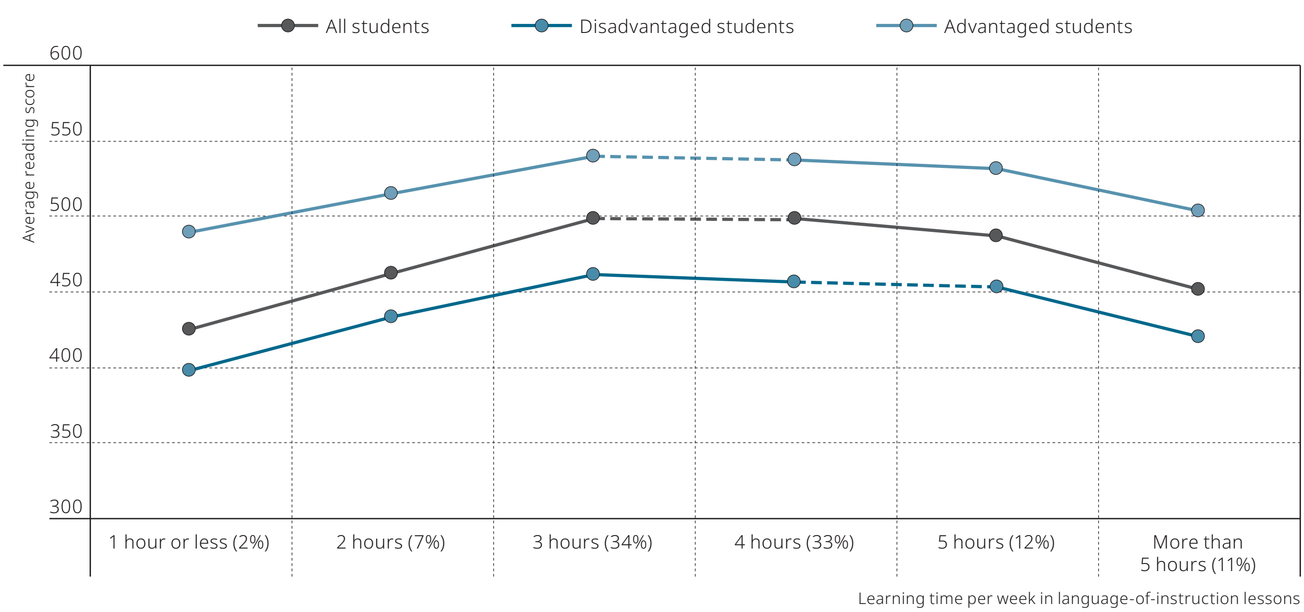
Learning time and student outcomes

The most common way PISA summarises the relationship between school practices and student achievement is by fitting a straight line to model the observed data (i.e. linear regression approach). For example, in 2018 an increase of one unit in the PISA index of socio-economic status was associated with an increase of 37 score points in reading, on average across OECD countries (OECD, 2019[10]). In some cases, however, the relationship between two variables is not well summarised by a straight line. This is the case with learning time in regular school lessons and student achievement. As shown in Figure V.6.3, the relationship between reading performance and learning time in regular language-of-instruction lessons is non-linear; instead, it is hump-shaped.

On average across OECD countries, performance in reading improved with each additional hour of language-of-instruction lessons per week, up to 3 hours. Students who spent an hour or less per week in language-of-instruction lessons scored 425 points in reading; those who spent two hours per week scored 463 points (36 points higher than the prior group); and those who spent three hours per week scored 499 points (37 points higher than the prior group). This strong positive association between more time in language-of-instruction lessons and reading performance was evident amongst both disadvantaged and advantaged students (Figure V.6.3).

Figure V.6.3 **Learning time in language-of-instruction lessons, socio-economic status and reading performance**

Based on students' reports; OECD average



Notes: For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 2 hours, learning time could be 2 hours or less but more than 1 hour.

Differences between categories that are not statistically significant are marked with dotted lines (see Annex A3).

The share of students per average learning time in language-of-instruction lessons is indicated next to each category.

Sources: OECD, PISA 2018 Database, Tables V.B1.6.2 and V.B1.6.5.

StatLink https://doi.org/10.1787/888934131500

After accounting for students' and schools' socio-economic profile, on average across OECD countries, there were large gains in reading achievement associated with attending language-of-instruction lessons for two or three hours per week (Table V.B1.6.6). More than 40% of students attended language-of-instruction lessons for two or three hours per week, on average across OECD countries (Table V.B1.6.2).

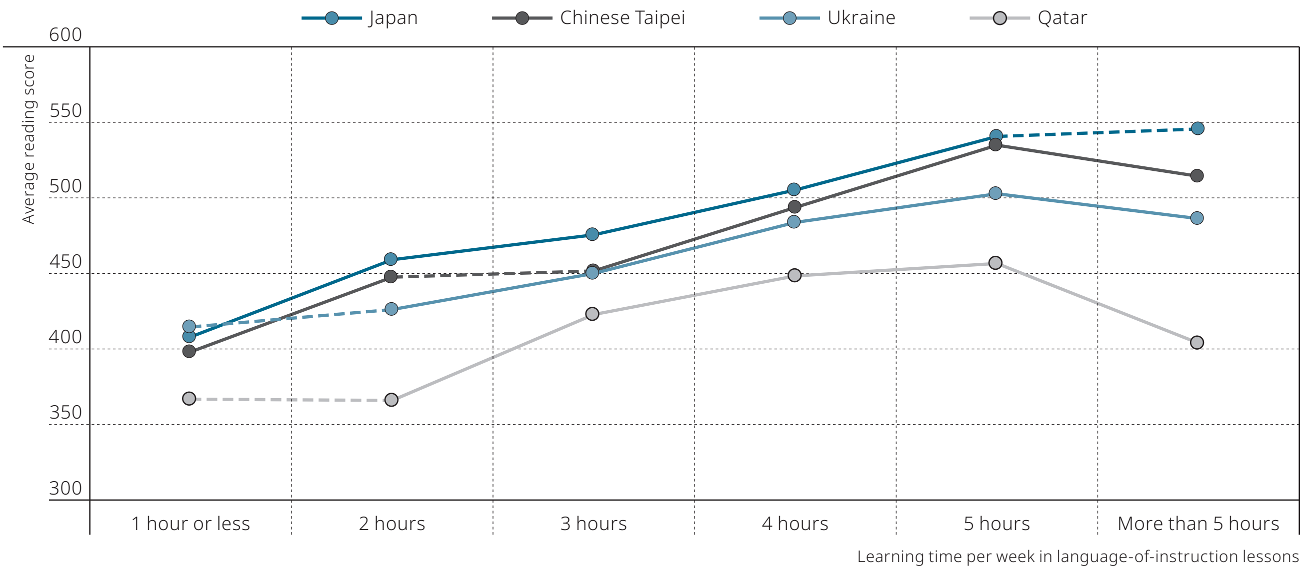
However, this positive association between learning time in regular language-of-instruction lessons and reading performance weakened amongst students who spent more than three hours per week in these lessons. On average across OECD countries, students who spent 4 hours per week in language-of-instruction lessons had an average mean reading score of 499 points, which is almost identical to the score of students who spent one hour less in class (Figure V.6.3).

The same pattern (i.e. a positive slope that becomes flat after three hours of instruction per week) was observed amongst advantaged students. Amongst disadvantaged students, the slope did not flatten but instead became slightly negative. Disadvantaged students who spent four hours per week in language-of-instruction lessons scored five points lower than disadvantaged students who spent three hours per week in language-of-instruction lessons, on average across OECD countries. These results do not necessary suggest that spending more time in class results in lower scores; some low-performing students may take more classes for remedial purposes.

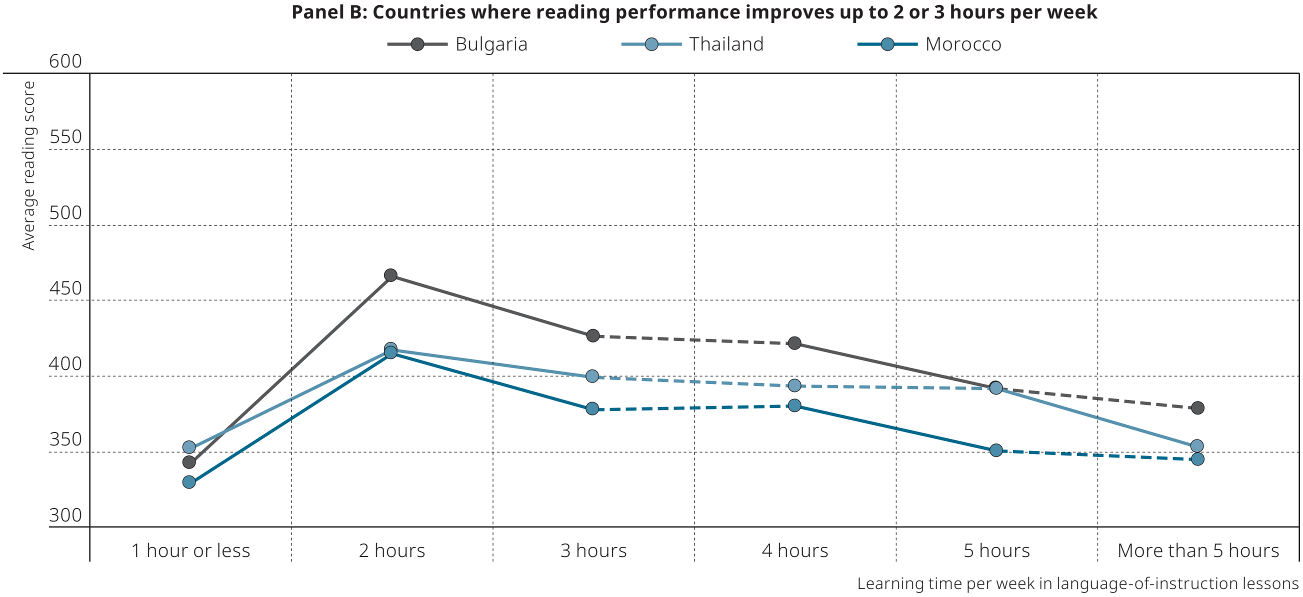
Figure V.6.4 **Learning time in language-of-instruction lessons and reading performance**

Based on students' reports; selected cases

Panel A: Countries/Economies where reading performance improves up to 5 hours of instruction per week



Panel B: Countries where reading performance improves up to 2 or 3 hours per week



Notes: For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 2 hours, learning time could be 2 hours or less but more than 1 hour.

Differences between categories that are not statistically significant are marked with dotted lines (see Annex A3).

Sources: OECD, PISA 2018 Database, Table V.B1.6.5.

StatLink https://doi.org/10.1787/888934131519

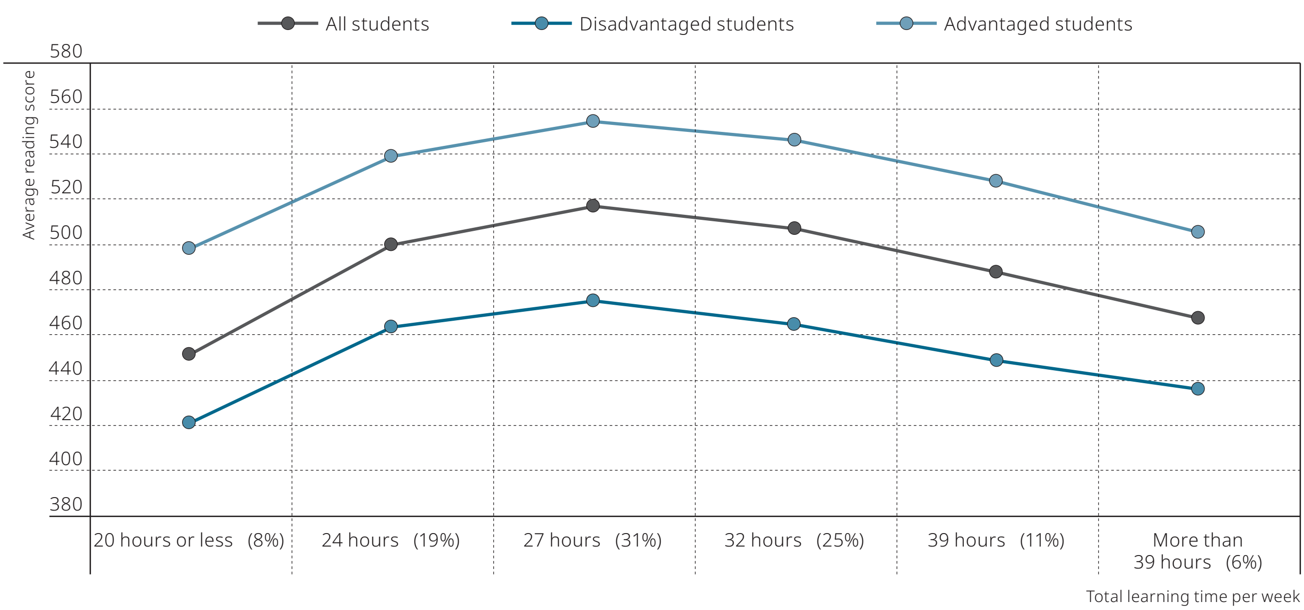
Nonetheless, after accounting for students' and schools' socio-economic profile, on average across OECD countries, students who spent four hours per week in language-of-instruction lessons scored better in reading by two points than students who spent three hours per week in those lessons (Table V.B1.6.6). In 2018, about a third of students attended language-of-instruction lessons for four hours per week, on average across OECD countries (Table V.B1.6.2).

Reading performance started to decline amongst students who attended language-of-instruction lessons for longer amounts of time. On average across OECD countries, students who spent more than five hours per week in language-of-instruction lessons scored worse in reading than students who spent between three and five hours per week in class. The same pattern was observed amongst both disadvantaged and advantaged students. After accounting for students' and schools' socio-economic profile, on average across OECD countries, attending language-of-instruction lessons for 5 hours per week was associated with a 9-point decline in reading scores (compared to students who attended class for 4 hours per week); attending for more than 5 hours per week was associated with a 28-point drop in reading scores (compared to students who attended class for 5 hours per week) (Table V.B1.6.6). Almost one in four students attended language-of-instruction lessons for more than four hours per week, on average across OECD countries (Table V.B1.6.2).

The average hump-shaped pattern observed across OECD countries, as shown in Figure V.6.3 (i.e. positive changes in performance up to three hours of instruction per week, no difference after one additional hour of instruction per week, then negative changes after five or more hours per week), was consistent across most PISA-participating countries and economies. In countries as diverse as Croatia, Estonia, Finland, Luxembourg, Montenegro, Portugal, Serbia and the United Arab Emirates, the relationship between learning time in language-of-instruction lessons and reading performance was similar to the average pattern observed across OECD countries (Table V.B1.6.5).

Figure V.6.5 **Total student learning time, socio-economic status and reading performance**

Based on students' reports; OECD average



Notes: For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 24 hours, learning time could be 24 hours or less but more than 20 hours.

All differences between categories are statistically significant (see Annex A3).

The share of students per average total learning time is indicated next to each category.

Sources: OECD, PISA 2018 Database, Tables V.B1.6.14 and V.B1.6.15.

StatLink https://doi.org/10.1787/888934131538

However, some countries differed from the average OECD pattern in the point at which the slope of the relationship changed direction. In 29 countries and economies, students who spent 4 hours per week in language-of-instruction lessons scored better than students who spent 3 hours per week. In 9 countries and economies, students who spent 5 hours per week in language-of-instruction lessons scored better than students who spent 4 hours per week in class (Table V.B1.6.5). Japan, Qatar, Chinese Taipei and Ukraine were amongst the countries where additional hours of study, up to five hours, tended to be associated with improvements in reading performance (Figure V.6.4, Panel A).

By contrast, in 17 countries and economies students who spent 4 hours per week in language-of-instruction lessons in 2018 scored worse than students who spent 3 hours per week in instruction; in 4 countries, students who spent 3 hours in language-of-instruction lessons scored lower than students who spent 2 hours in instruction. In Bulgaria, Morocco and Thailand, an additional hour of class time after two hours per week tended to be associated with declines in reading performance, even though students who spent two hours per week in language-of-instruction lessons scored higher in reading than students who spent only one hour or less in language-of-instruction lessons (Figure V.6.4, Panel B).

Similar curvilinear patterns of association between learning time and student performance were observed for mathematics (Table V.B1.6.8), science (Table V.B1.6.10) and foreign-language lessons (i.e. associated with reading performance in the test language; Table V.B1.6.12), on average across OECD countries. Furthermore, when the total amount of learning time per week in regular lessons (in all subjects) was considered, the same hump-shaped pattern emerged (Figure V.6.5).

ADDITIONAL LESSONS AT SCHOOL AFTER REGULAR SCHOOL HOURS

Offering additional lessons on curricular subjects after regular hours at school is a common practice across PISA-participating countries and economies. These activities typically aim to reinforce or enrich instruction and learning that has taken place during regular school hours. Sometimes, after-school lessons specifically target low-performing students, socio-economically disadvantaged students or language-minority students (Park et al., 2016[11]; Jacob and Lefgren, 2002[12]; Curwen and Colón-Muñiz, 2013[13]). In contexts where socio-economically advantaged students have privileged access to private tutoring after school, public schools offer after-school lessons to expand learning opportunities for disadvantaged students (Bae et al., 2010[14]). Some after-school programmes target high-performing students from low-income families (Miller and Gentry, 2010[15]).

PISA 2018 asked school principals whether their school offers additional language-of-instruction lessons after school hours. It also asked about the purposes of these additional lessons.

On average across OECD countries, 46% of students were in schools where additional language-of-instruction lessons are offered. There was wide variation across PISA-participating countries and economies in the extent to which schools offer additional language lessons after regular school hours. In 12 countries and economies, 3 out of 4 students were in schools that offer additional language lessons, but in another 10 countries, only 1 out of 4 students attended such schools.

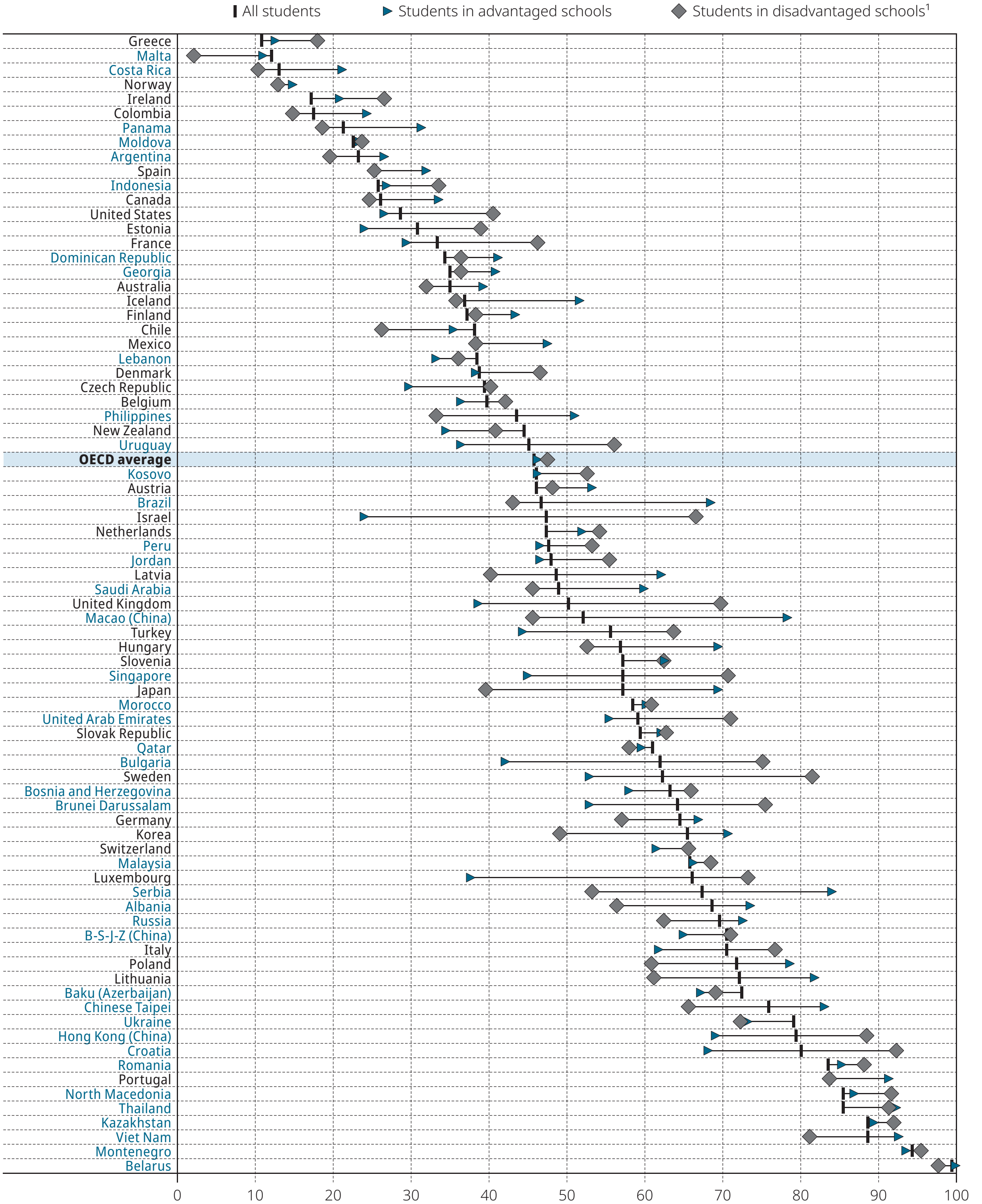
In 14 countries and economies, students in advantaged schools were more likely than students in disadvantaged schools to be in schools that offer additional language lessons after regular school hours; but in another 12 countries and economies, students in disadvantaged schools were more likely than students in advantaged schools to have these kinds of lessons available to them at school.

After-school lessons can have different purposes. On average across OECD countries in 2018, 52% of students attended schools that offer after-school lessons for both remedial and enrichment purposes; 31% attended schools that offer these lessons for remedial purposes only; 12% were in schools that offer these lessons integrating remedial and enrichment purposes; and only 5% of students attended schools that offer these lessons for enrichment purposes only (Table V.B1.6.18).

Students in schools that offer additional language-of-instruction lessons did not score better or worse in reading than students who do not have these kinds of lessons available to them at school, on average across OECD countries (Table V.B1.6.17).

Figure V.6.6 **Participation in additional language-of-instruction lessons after regular school hours, by schools' socio-economic profile**

Based on students' reports



1. A socio-economically disadvantaged (advantaged) school is a school whose socio-economic profile (i.e. the average socio-economic status of the students in the school) is in the bottom (top) quarter of the PISA index of economic, social and cultural status amongst all schools in the relevant country/economy.

Countries and economies are ranked in ascending order of the percentage of students in schools that provide additional language-of-instruction lessons after regular school hours.

Source: OECD, PISA 2018 Database, Table V.B1.6.17.

StatLink https://doi.org/10.1787/888934131557

SCHOOL-BASED HELP WITH HOMEWORK AND STUDY AFTER REGULAR HOURS

A longstanding and widely used instructional practice (Murillo and Martinez-Garrido, 2014[16]), homework can have a positive influence on student achievement (Cooper, Robinson and Patall, 2006[17]) and also on the development of attitudes towards achievement, such as motivation and self-regulation (Ramdass and Zimmerman, 2011[18]). However, critics argue that too much homework is ineffective, that it takes time from leisure activities, or that it is stressful or harmful to children's development or family life (Baker and Letendre, 2005[19]; Dudley-Marling, 2015[20]).

Previous PISA reports show that homework is widely used across PISA-participating countries and economies. For example, on average across OECD countries in 2015, 15-year-old students reported that they spent 17 hours per week studying after school, including homework, private study and other related activities (OECD, 2016[21]). PISA findings also suggest that homework can help students succeed academically. Students who spend more time doing homework tended to score higher in mathematics, even after accounting for their social and demographic background (OECD, 2014[22]).

A key concern about homework is whether it might have the unintended consequence of widening the performance gap between students from different socio-economic backgrounds. PISA shows that socio-economically advantaged students and students who attend socio-economically advantaged schools tend to spend more time doing homework (OECD, 2014[22]). The lack of a quiet space to study at home, the disparity in home Internet service and computer access, and perhaps less parental support with their studies are amongst the reasons why disadvantaged students spend less time doing homework (Bolkan, 2017[23]).

PISA 2018 did not collect information about how much time students spend doing homework or studying after school. Instead, PISA asked about the kinds of support or help that schools provide to students for completing homework and studying after school. More specifically, PISA asked school principals if their school offers a room where students can do their homework, staff who help students with their homework, or peer-to-peer tutoring. Having a room in the school available for homework hinges on the school's infrastructure. The availability of staff to help students with their homework has to do with the school's human resources and with the financial resources needed to hire teachers or other staff after school hours. Peer-to-peer tutoring does not depend on a school's resources, but rather on its organisational capacity and practices.

Of these three kinds of school support for homework and study after regular school hours, the most frequently observed was having a room where students can do their homework. On average across OECD countries in PISA 2018, three out of four students attended a school that provides a room where students can do their homework. In Canada, France, Japan, Luxembourg, Macao (China), Singapore, Slovenia, Sweden, Chinese Taipei and the United Kingdom, at least 9 out of 10 students had access to a study room after regular hours. By contrast, in Albania, Argentina, Jordan, Kosovo, Lebanon, the United Arab Emirates and Viet Nam, at most 4 out of 10 students attended a school that provides a room in which they can do their homework.

Students in advantaged schools were more likely than students in disadvantaged schools to attend a school that provides a room for homework. On average, the share of students in advantaged schools whose school provides a room for homework was about 7 percentage points larger than the share of students in disadvantaged schools whose school provides such a space. The disparity in favour of students in advantaged schools was found in 24 countries and economies, and in 16 of these countries and economies the size of the disparity was 20 percentage points or larger. Only in six education systems (Brunei Darussalam, Estonia, Latvia, Macao [China], Montenegro and Ukraine) were students in disadvantaged schools more likely than students in advantaged schools to have access to a place at school to do their homework.

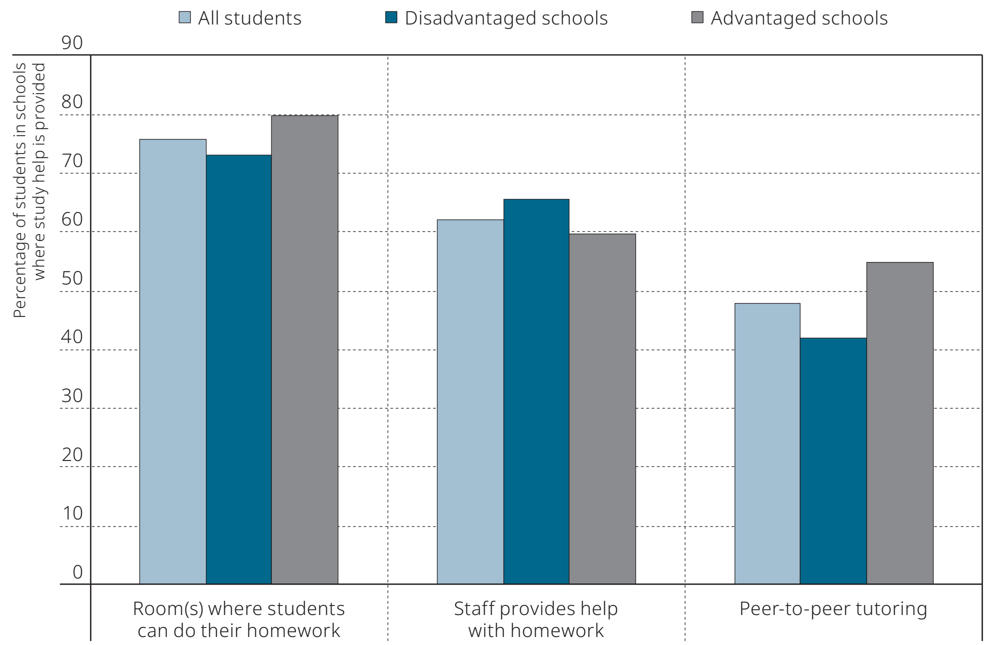
The share of students in schools that provide a room where students can do their homework increased between 2015 and 2018, on average across OECD countries (by 3 percentage points) and in 20 countries and economies. In Finland, Iceland, Mexico, the Republic of Moldova, Norway, Qatar and Turkey, the share increased by more than ten percentage points, but it decreased by more than ten percentage points in Brazil and Denmark.

The incidence of peer-to-peer tutoring was measured for the first time in PISA 2018. On average across OECD countries, almost half of all students attended a school that provides this form of study help. In 24 countries and economies, 75% of students or more were in schools with peer-to-peer tutoring after regular hours, including B-S-J-Z (China), Malaysia, the Philippines, Thailand and Ukraine, where 90% of students or more attended such schools. By contrast, in Finland, Japan, Malta, Sweden and Switzerland, only 25% of students or less attended a school where peer-to-peer tutoring is available (Table V.B1.6.19).

Socio-economic disparities were greater in peer-to-peer tutoring than in the other two forms of study help. On average across OECD countries, the share of students in advantaged schools whose school provides peer-to-peer tutoring was about 13 percentage points larger than the share of students in disadvantaged schools whose school provides this form of study help. In 22 education systems, this disparity in favour of students in advantaged schools was statistically significant, compared to only 7 education systems where the disparity favoured students in disadvantaged schools (Table V.B1.6.19).

Figure V.6.7 **Study help after regular hours, by schools' socio-economic profile**

Based on principals' reports; OECD average



	Room(s) where students can do their homework	Staff provides help with homework	Peer-to-peer tutoring
Countries/economies with a positive difference (% of students is higher in advantaged than disadvantaged schools)	23	9	22
Countries/economies with no difference	48	55	49
Countries/economies with a negative difference (% of students is higher in disadvantaged than advantaged schools)	6	13	7

Note: All differences between advantaged and disadvantaged schools are statistically significant, on average across OECD countries (see Annex A3).
Source: OECD, PISA 2018 Database, Table V.B1.6.19.
StatLink https://doi.org/10.1787/888934131576

School-based help with homework and study, and student performance

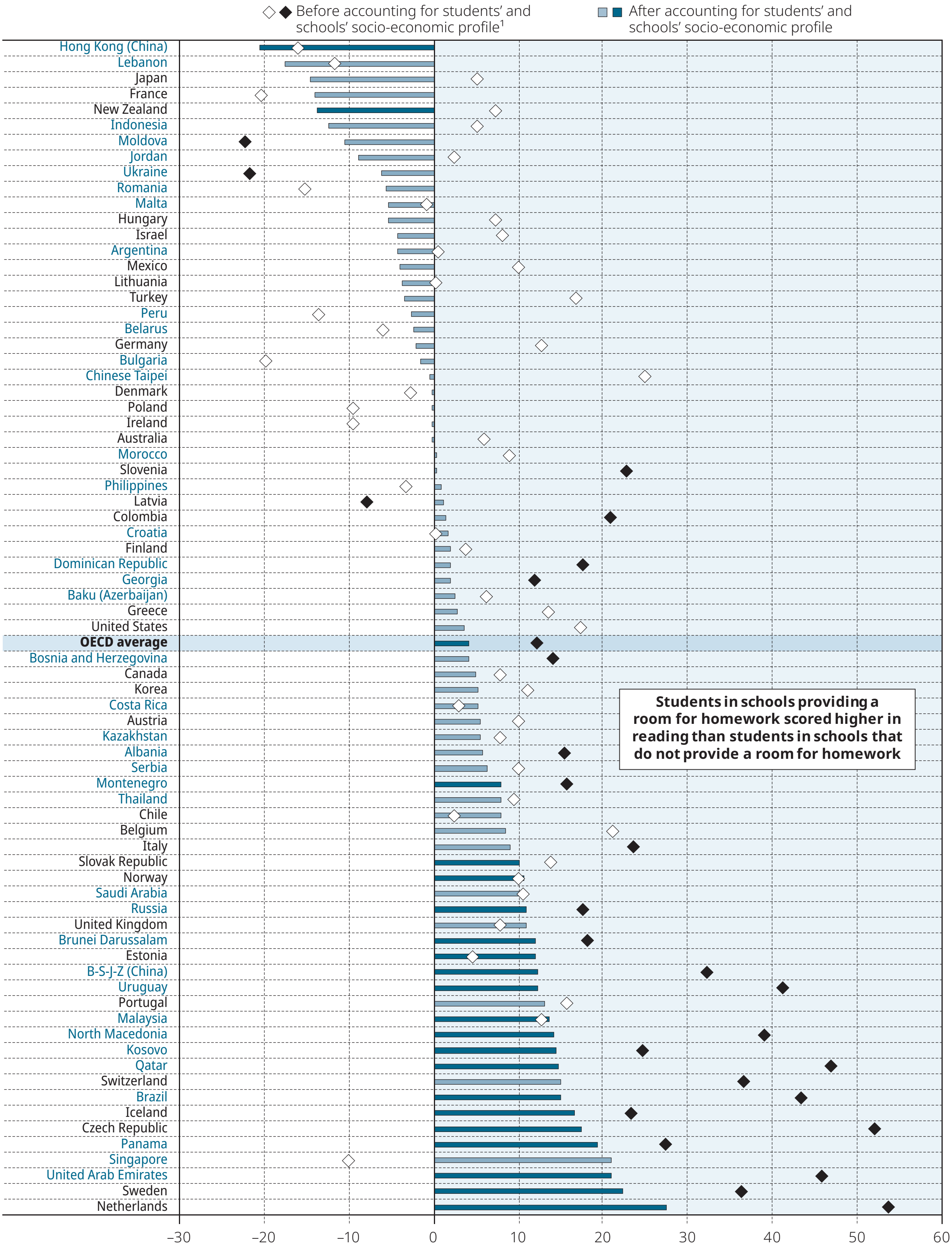
In 20 countries and economies, attending a school that provides space where students can do their homework is associated with higher scores in reading, after accounting for the socio-economic profile of students and schools (Figure V.6.8). On average across OECD countries, students who have access to a room for homework at school scored 12 points higher in reading than students without access to a room for homework, before accounting for other variables, and 4 points higher after accounting for socio-economic variables.

Furthermore, at the system level, those education systems with a higher percentage of students who have access to a room for homework at school tended to show better mean performance in PISA. After accounting for per capita GDP, across all countries and economies, there was a strong correlation between the share of students who have access to a room for homework at school and mean performance in reading (partial r = .54), mathematics (partial r = .51) and science (partial r = .55). Across OECD countries, the correlations were weaker, but also statistically significant, after accounting for per capita GDP, in the three core subjects (partial coefficients between .34 and .47).

Peer-to-peer tutoring was also associated with better performance, although in a smaller number of countries and with narrower score-point differences (Figure V.6.9). On average across OECD countries, students in schools with peer-to-peer tutoring scored 14 points higher in reading than students without access to peer-to-peer tutoring, before accounting for other variables, and 4 points higher after accounting for socio-economic variables. Peer-to-peer tutoring was associated with better reading performance in 15 countries and economies, after accounting for students' and schools' socio-economic profile.

Figure V.6.8 **Availability of a room(s) at school for homework and reading performance**

Score-point difference in reading associated with schools providing a room for homework



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Note: Statistically significant values are shown in darker tones (see Annex A3).

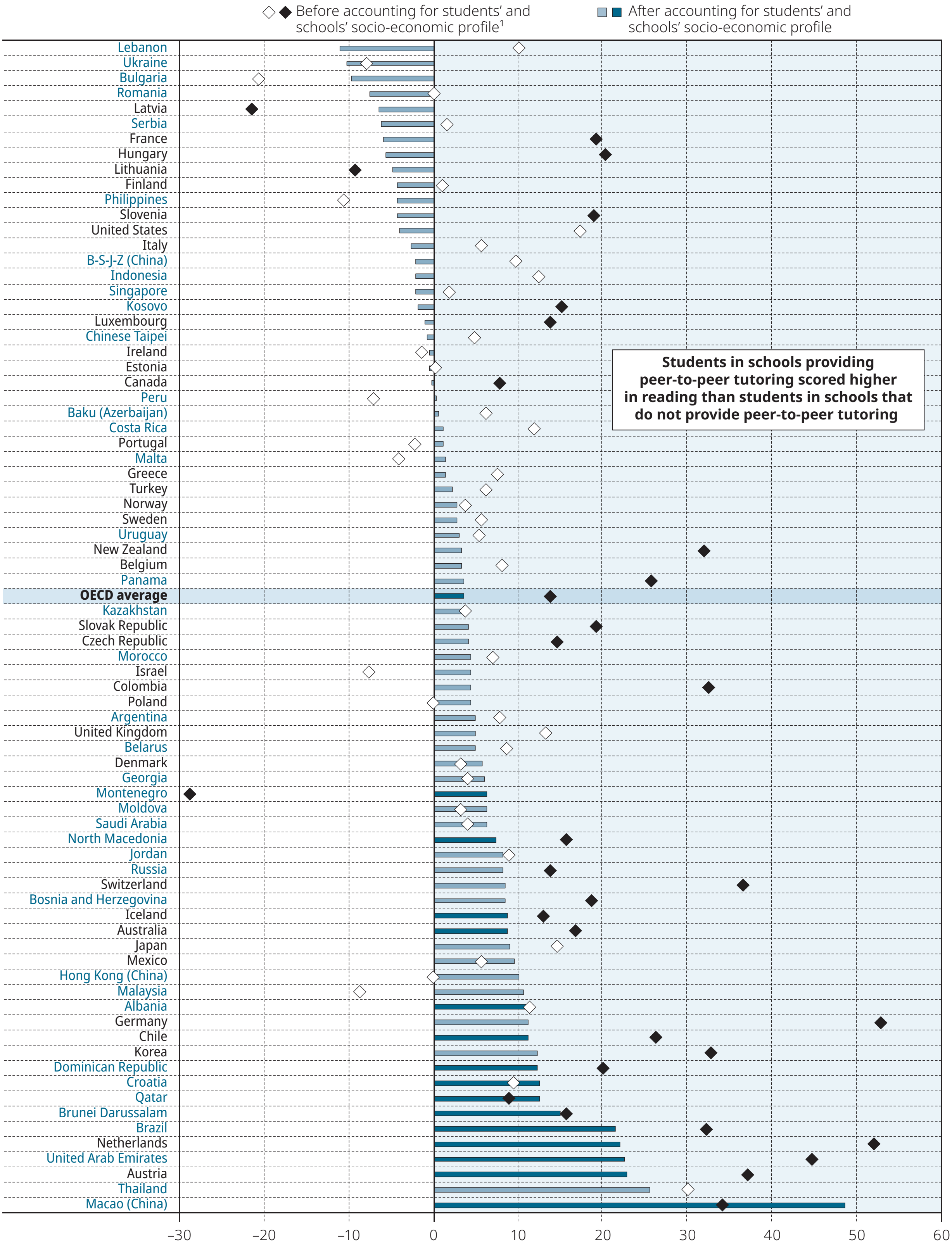
Countries and economies are ranked in ascending order of the score-point difference associated with schools providing a room for homework, after accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2018 Database, Table V.B1.6.21.

StatLink https://doi.org/10.1787/888934131595

Figure V.6.9 **Peer-to-peer tutoring and reading performance**

Score-point difference in reading associated with schools providing peer-to-peer tutoring



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Note: Statistically significant values are shown in darker tones (see Annex A3).

Countries and economies are ranked in ascending order of the score-point difference associated with schools providing peer-to-peer tutoring, after accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2018 Database, Table V.B1.6.21.

StatLink https://doi.org/10.1787/888934131614

EXTRACURRICULAR ACTIVITIES AT SCHOOL

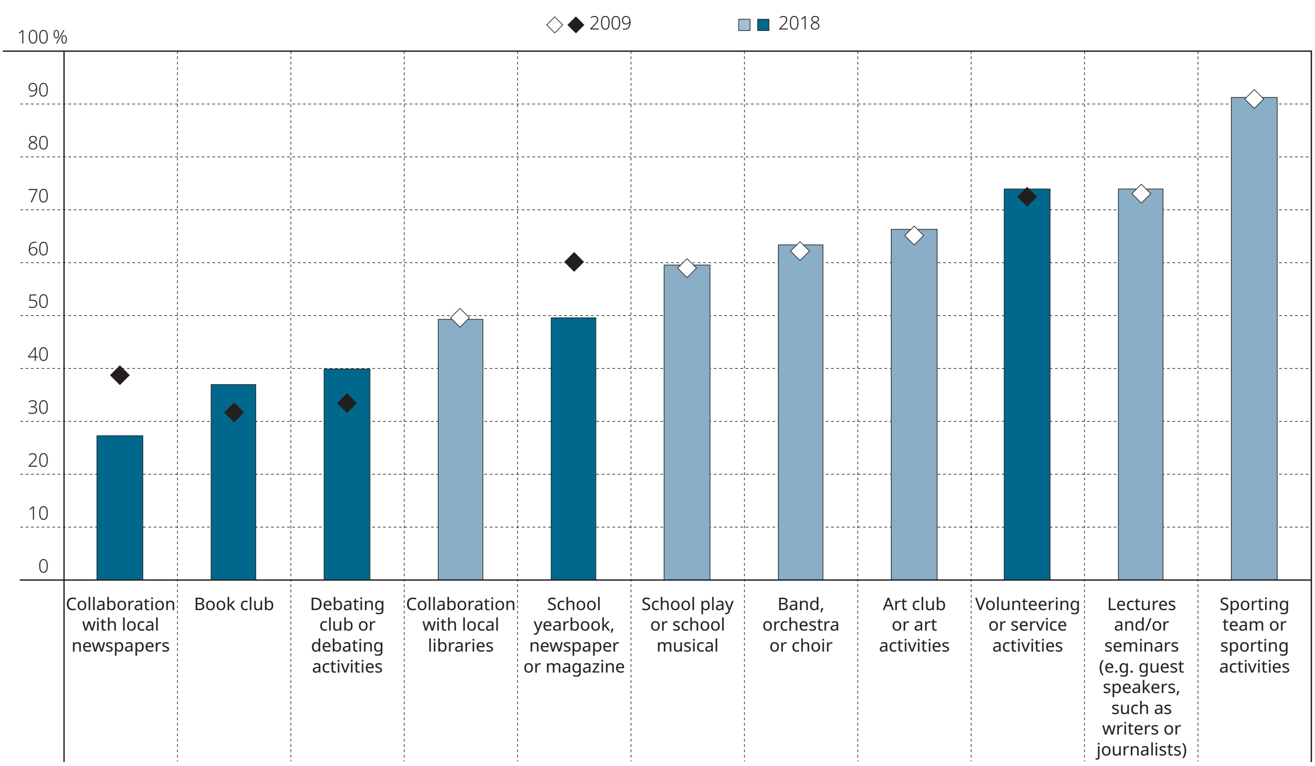
While some of the activities that schools offer after school hours have an explicit academic focus (e.g. offering additional enrichment or remedial lessons), other activities do not. Extracurricular activities at school usually aim to achieve a broader set of goals, such as physical exercise and health, the development of creativity and practice or appreciation of the arts, or volunteering and engagement with the community. Participation in extracurricular activities can also help students develop non-cognitive skills that are helpful for academic success, such as persistence, teamwork or a stronger sense of belonging at school (Farb and Matjasko, 2012[23]; Massoni, 2011[24]). They can also help develop social networks (Stuart et al., 2011[25]). However, research suggests that extracurricular activities might have the unintended effect of enhancing disparities in achievement related to socio-economic status because they tend to be more frequently available in advantaged than in disadvantaged schools (Covay and Carbonaro, 2010[26]; Stearns and Glennie, 2010[27]).

PISA 2018 asked school principals whether their school offers a range of extracurricular activities. These activities are shown in Figure V.6.10. On average across OECD countries, sporting activities were the extracurricular activities most frequently offered to 15-year-old students (90% of students have access to sports activities), followed by lectures or seminars and volunteering or service activities (74% of students). Debating clubs (40% of students), book clubs (37% of students) and collaboration with local newspapers (27%) were the least frequently offered extracurricular activities, on average across OECD countries.

Over the past decade, the largest declines in extracurricular activities were observed amongst those related to newspapers. On average across OECD countries, the share of students in schools whose principal reported that the school offers collaboration with local newspapers decreased by 11 percentage points, and the share of students in schools that support a school yearbook, newspaper or magazine shrank by 10 percentage points. By contrast, the share of students in schools that offer debating clubs increased by 7 percentage points, and the share of students in schools that offer book clubs increased by 5 percentage points.

Figure V.6.10 **Change between 2009 and 2018 in extracurricular activities offered at school**

Percentage of students in schools where extracurricular activities are offered; OECD average



Note: Statistically significant changes between 2009 and 2018 are marked in a darker tone (see Annex A3).

Source: OECD, PISA 2018 Database, Table V.B1.6.22.

StatLink https://doi.org/10.1787/888934131633

The index of creative extracurricular activities at school was computed as the total number of the following music- and art-related activities that are offered at school: band, orchestra or choir; school play or school musical; and art club or art activities. Values in the index range from 0 to 3. On average across OECD countries in 2018, creative extracurricular activities were more frequently offered in advantaged (2.12 in the index) than in disadvantaged (1.65 in the index) schools, in urban (1.94 in the index) than in rural (1.65 in the index) schools, and in private (2.08 in the index) than in public (1.93 in the index) schools.

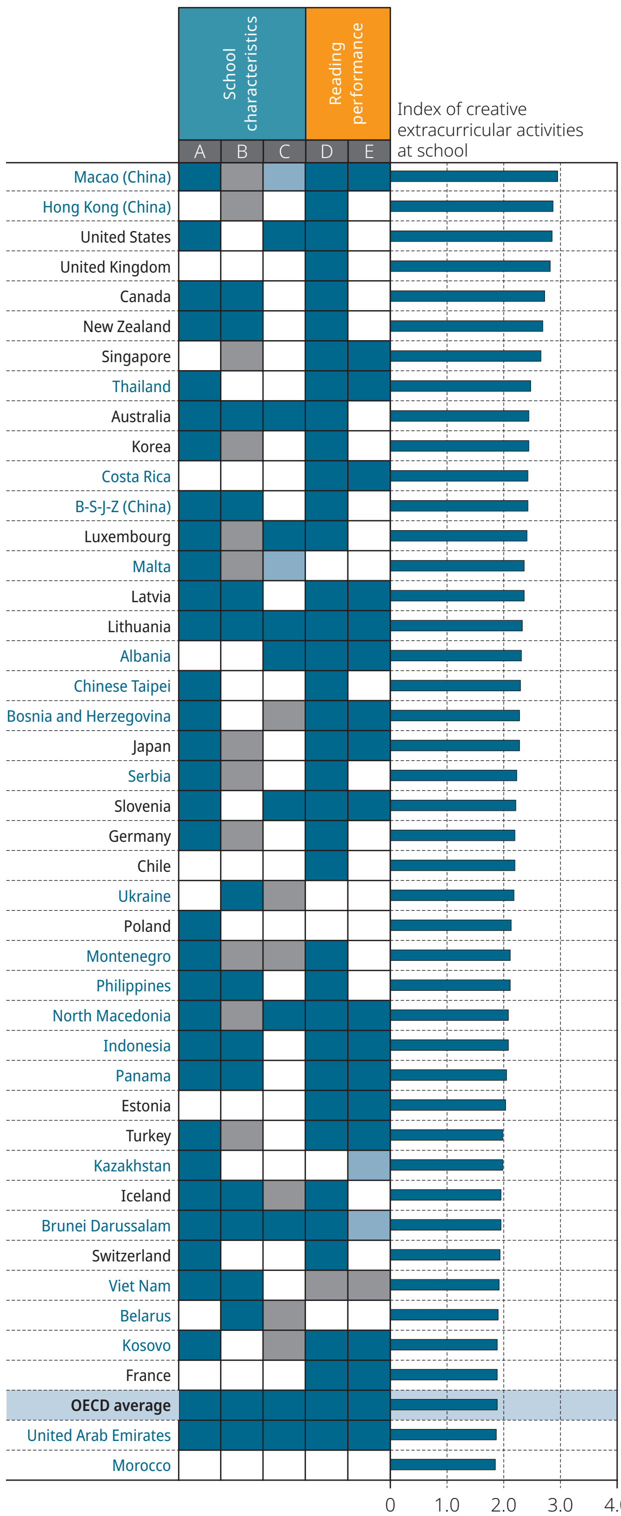
Figure V.6.11 **Creative extracurricular activities offered at school, school characteristics and reading performance**

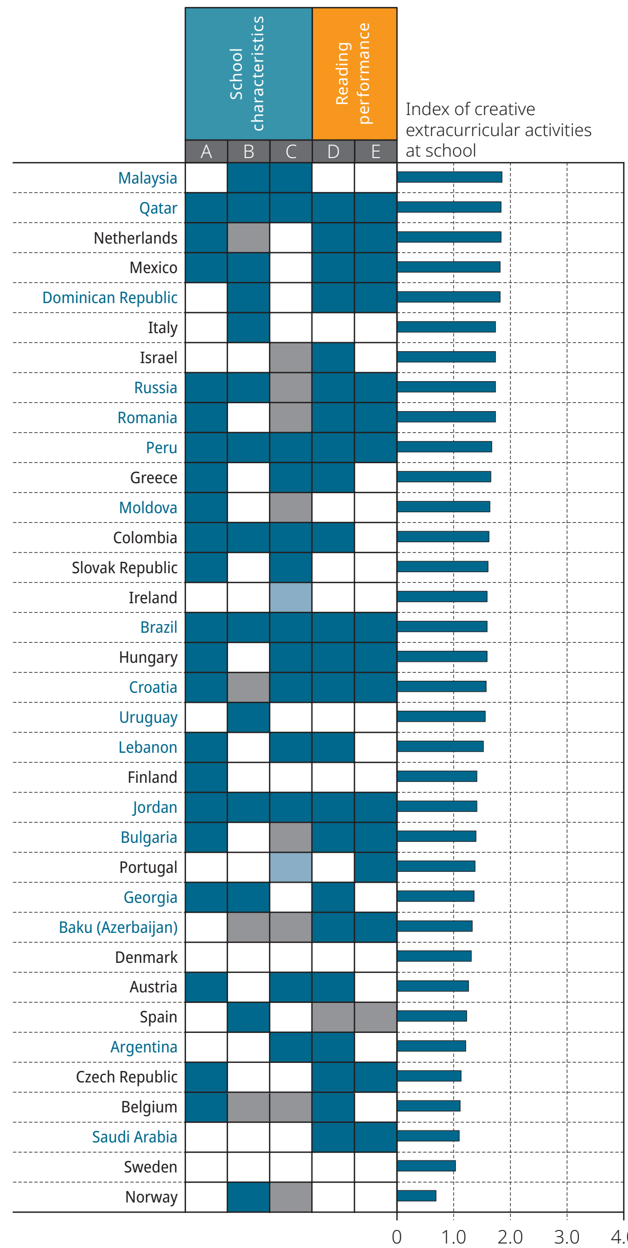
Based on principals' reports

Positive difference | Negative difference | Difference is not significant | Missing values

A Advantaged - disadvantaged schools | B City - rural schools | C Private - public schools

D Before accounting for students' and schools' socio-economic profile[1] | E After accounting for students' and schools' socio-economic profile[1]





	A	B	C	D	E
Countries/economies with a positive difference	53	29	22	59	34
Countries/economies with no difference	25	33	38	17	40
Countries/economies with a negative difference	0	0	4	0	2

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Note: Higher values in the index indicate greater number of creative extracurricular activities at school.
Countries and economies are ranked in descending order of the index of creative extracurricular activities at school.
Source: OECD, PISA 2018 Database, Table V.B1.6.23.
StatLink https://doi.org/10.1787/888934131652

After accounting for students' and schools' socio-economic profile, students who were enrolled in schools that offer more creative extracurricular activities performed better in reading, on average across OECD countries (by 4 score points) and in 32 countries and economies.

HOW LEARNING TIME IS RELATED TO DIFFERENCES IN PERFORMANCE AND EQUITY IN EDUCATION ACROSS COUNTRIES/ECONOMIES (SYSTEM-LEVEL ANALYSIS)

This section examines whether learning time is related to education outcomes at the system level. Two education outcomes are considered: mean performance in reading and equity in reading performance. As in previous PISA reports, equity in reading performance is measured by the percentage of variation in reading performance accounted for by the variation in students' socio-economic status: the smaller the variation in performance explained by socio-economic status, the greater the equity in performance (OECD, 2018[18]; OECD, 2019[19]).

Figure V.6.12 shows system-level correlation coefficients between various measures of learning time, on the one hand, and reading performance and equity in reading, on the other. Correlational analyses were conducted separately for OECD countries and for all countries and economies that participated in PISA 2018. In addition, correlations were computed before and after accounting for per capita GDP to account for the level of economic development of a country/economy.

Consistent with the average hump-shaped pattern observed across OECD countries (see Figure V.6.3), 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. Figure V.6.13 shows that education systems where more students spent 20 hours or less per week in regular school lessons, including language-of-instruction, mathematics, science and foreign-language lessons, tended to show lower average performance in reading. Figure V.6.14 shows that education systems where more students spent 39 hours or more per week in regular lessons in all subjects tended to have lower scores in reading. These relationships were observed both across OECD countries, and across all countries and economies, even after accounting for per capita GDP. Similar patterns were observed when considering mathematics and science performance (Table V.B1.6.24).

Differences in learning time for foreign-language instruction were related to equity in student performance. Figure V.6.15 shows that education systems with a narrower socio-economic gap in regular foreign-language learning time tended to achieve greater equity in reading performance. This relationship was observed both across OECD countries and across all countries and economies, even after accounting for per capita GDP. A similar pattern was also observed for equity in mathematics and science performance (Table V.B1.6.24).

In high-performing education systems, schools tend to provide a room where students can do their homework, and school staff provides help with students' homework. Figure V.6.16 shows that education systems where more students have access to a room for homework at school tended to perform better in reading. Figure V.6.17 shows that education systems where more students attended schools where the staff provides help for their homework tended to perform better in reading. These relationships are observed both across OECD countries, and across all countries and economies, even after accounting for per capita GDP. Similar patterns were also observed for equity in mathematics and science performance (Table V.B1.6.24). Across all countries and economies, there was a weak negative correlation between access to a room for homework at school and equity in performance, after accounting for per capita GDP (partial r = -0.22).

At the system level, countries and economies with more students in schools that offer lectures and/or seminars (e.g. guest speakers, such as writers or journalists) tended to perform better in reading. These countries also tended to show greater equity in performance. These relationships were observed both across OECD countries and across all countries and economies, even after accounting for per capita GDP (Figure V.6.12).

Figure V.6.12 [1/2] **Relationship between measures of student learning time, and student performance and equity**

Correlation coefficients between two relevant measures

		OECD countries			
		Mean reading score		Equity in reading	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Learning time[1]	Regular language-of-instruction learning time (mean)				
	Regular language-of-instruction learning time (difference top-bottom quarters of school socio-economic profile)				
	Regular mathematics learning time (mean)				
	Regular mathematics learning time (difference top-bottom quarters of school socio-economic profile)				
	Regular science learning time (mean)				
	Regular science learning time (difference top-bottom quarters of school socio-economic profile)			-0.40	-0.40
	Regular foreign language learning time (mean)			-0.38	-0.39
	Regular foreign language learning time (difference top-bottom quarters of school socio-economic profile)			-0.55	-0.55
	Total learning time (mean)				
	Total learning time (difference top-bottom quarters of school socio-economic profile)				
	Regular language-of-instruction lessons: 1 hour or less per week (%)				
	Regular language-of-instruction lessons: 2 hours per week (%)				
	Regular language-of-instruction lessons: 3 hours per week (%)				
	Regular language-of-instruction lessons: 4 hours per week (%)				
	Regular language-of-instruction lessons: 5 hours per week (%)				
	Regular language-of-instruction lessons: more than 5 hours per week (%)				
	Total learning time per week: 20 hours or less	-0.70	-0.65		
	Total learning time per week: between 20 hours and less than 24 hours				
	Total learning time per week: between 24 and less than 27 hours				
	Total learning time per week: between 27 and less than 32 hours				
	Total learning time per week: between 32 and less than 39 hours	-0.34	*-0.31*		
	Total learning time per week: 39 hours or more	-0.46	-0.39		
Study help	Additional language-of-instruction lessons offered				
	Enrichment only				
	Remedial only				
	Both enrichment and remedial				
	Without differentiation			*0.32*	*0.32*
	Room where students can do their homework	0.54	0.42		
	Staff provides help	0.53	0.45		
	Peer-to-peer tutoring				
Extracurricular activities	Creative extracurricular activities at school				
	Band	0.33	*0.30*		
	School play				
	School yearbook				
	Volunteering				
	Book club				
	Debating club				
	Art club				
	Sporting team				
	Lectures	0.35	0.38	*0.30*	*0.30*
	Collaboration with libraries		*0.31*		
	Collaboration with newspapers				

1. For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 2 hours, learning time could be 2 hours or less but more than 1 hour.

Notes: Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Source: OECD, PISA 2018 Database, Table V.B1.6.24.

StatLink https://doi.org/10.1787/888934131671

Figure V.6.12 [2/2] **Relationship between measures of student learning time, and student performance and equity**

Correlation coefficients between two relevant measures

		All countries and economies			
		Mean reading score		Equity in reading	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Learning time[1]	Regular language-of-instruction learning time (mean)				
	Regular language-of-instruction learning time (difference top-bottom quarters of school socio-economic profile)	0.25	0.32		
	Regular mathematics learning time (mean)				
	Regular mathematics learning time (difference top-bottom quarters of school socio-economic profile)		*0.20*		
	Regular science learning time (mean)				
	Regular science learning time (difference top-bottom quarters of school socio-economic profile)				
	Regular foreign language learning time (mean)	0.23			
	Regular foreign language learning time (difference top-bottom quarters of school socio-economic profile)		0.30	-0.30	-0.28
	Total learning time (mean)				
	Total learning time (difference top-bottom quarters of school socio-economic profile)	-0.33	-0.32		
	Regular language-of-instruction lessons: 1 hour or less per week (%)	-0.45	-0.45	*-0.22*	*-0.21*
	Regular language-of-instruction lessons: 2 hours per week (%)	-0.40	-0.27		
	Regular language-of-instruction lessons: 3 hours per week (%)		*0.20*		
	Regular language-of-instruction lessons: 4 hours per week (%)				
	Regular language-of-instruction lessons: 5 hours per week (%)				
	Regular language-of-instruction lessons: more than 5 hours per week (%)				
	Total learning time per week: 20 hours or less	-0.64	-0.58		
	Total learning time per week: between 20 hours and less than 24 hours				
	Total learning time per week: between 24 and less than 27 hours	0.31	0.29		
	Total learning time per week: between 27 and less than 32 hours	0.41	*0.22*		
	Total learning time per week: between 32 and less than 39 hours				
	Total learning time per week: 39 hours or more	-0.48	-0.49		
Study help	Additional language-of-instruction lessons offered				
	Enrichment only				
	Remedial only	0.29		*-0.22*	*-0.28*
	Both enrichment and remedial				
	Without differentiation	*-0.19*			0.25
	Room where students can do their homework	0.62	0.54		*-0.22*
	Staff provides help	0.43	0.30		
	Peer-to-peer tutoring	-0.26	-0.25		
Extracurricular activities	Creative extracurricular activities at school	0.22		0.24	0.26
	Band	0.41	0.34		
	School play			0.30	0.29
	School yearbook			0.26	*0.22*
	Volunteering			*0.19*	
	Book club	-0.24	-0.36		
	Debating club	*-0.21*	-0.34	0.27	0.26
	Art club				
	Sporting team				
	Lectures	0.36	0.25	0.27	0.26
	Collaboration with libraries		0.23		
	Collaboration with newspapers				

1. For each learning time displayed, the time range covered starts where it ends for the previous one; for example, for 2 hours, learning time could be 2 hours or less but more than 1 hour.

Notes: Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

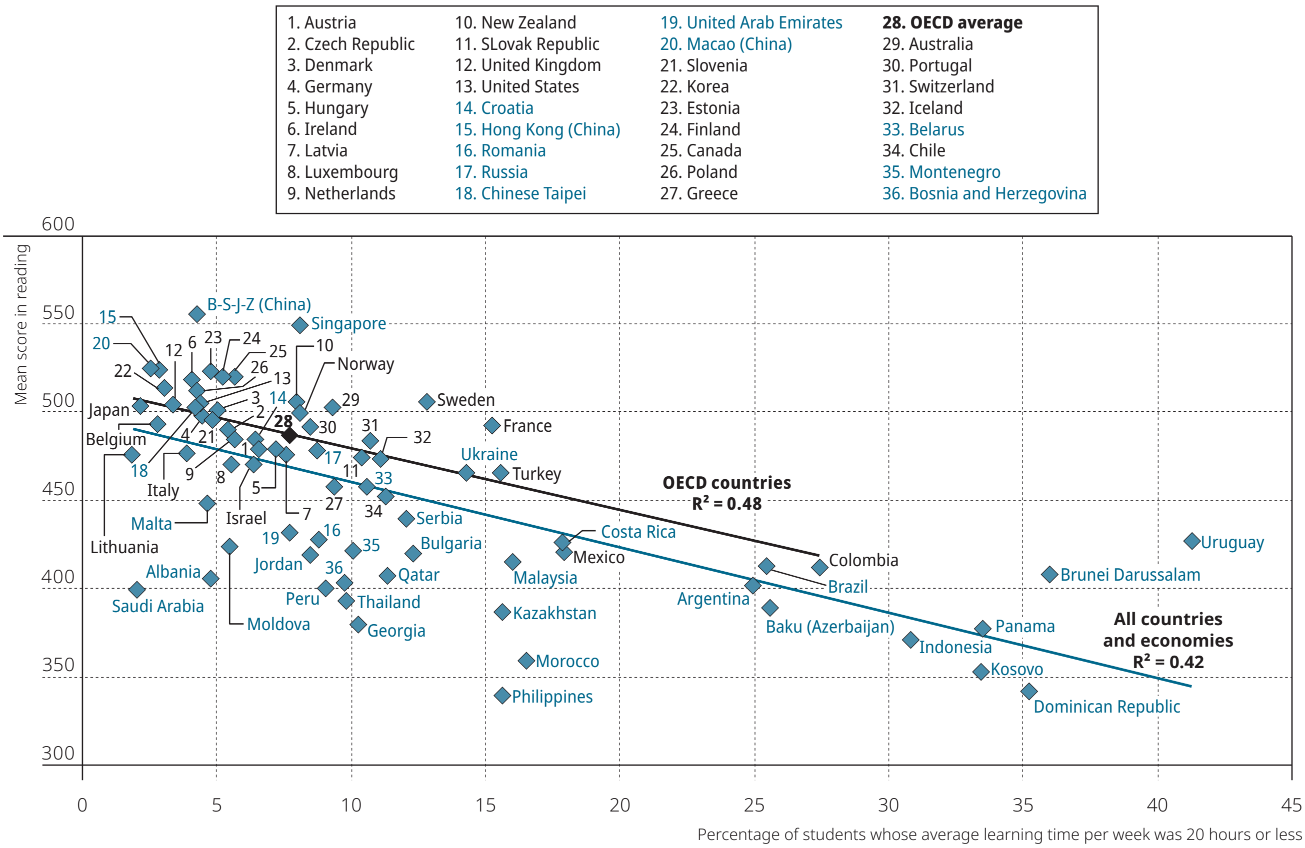
Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Source: OECD, PISA 2018 Database, Table V.B1.6.24.

StatLink https://doi.org/10.1787/888934131671

Figure V.6.13 **Short average learning time in regular lessons and mean reading performance**

Students who spent 20 hour or less per week in all subjects

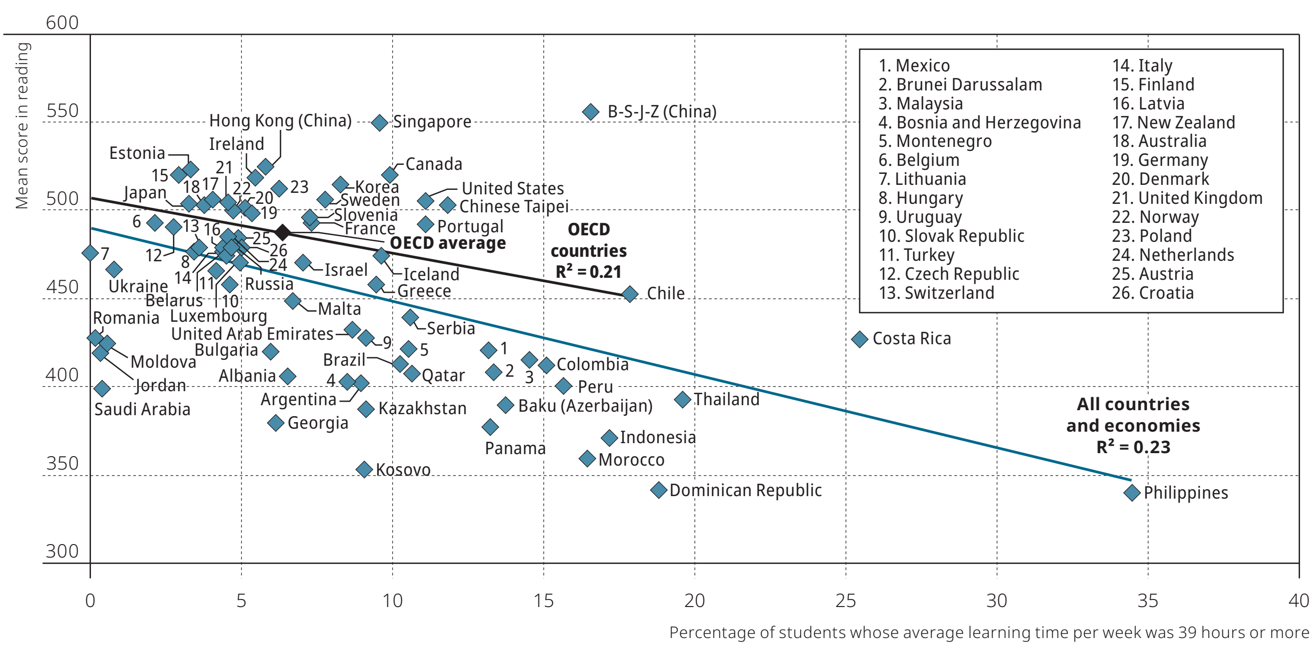


Sources: OECD, PISA 2018 Database, Tables V.B1.6.13 and I.B1.4.

StatLink https://doi.org/10.1787/888934131690

Figure V.6.14 **Long average learning time in regular lessons and mean reading performance**

Students who spent 39 hours or more per week in all subjects

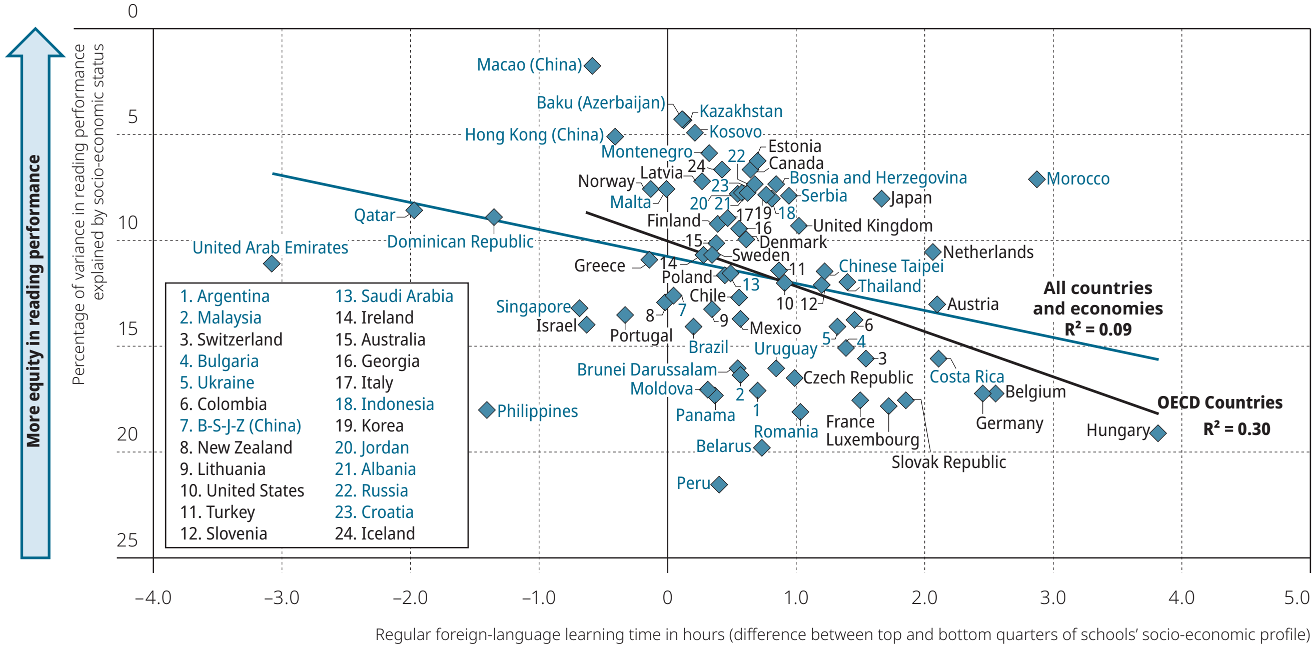


Sources: OECD, PISA 2018 Database, Tables V.B1.6.13 and I.B1.4.

StatLink https://doi.org/10.1787/888934131709

Figure V.6.15 **Disparity in regular foreign-language learning time and equity in reading performance**

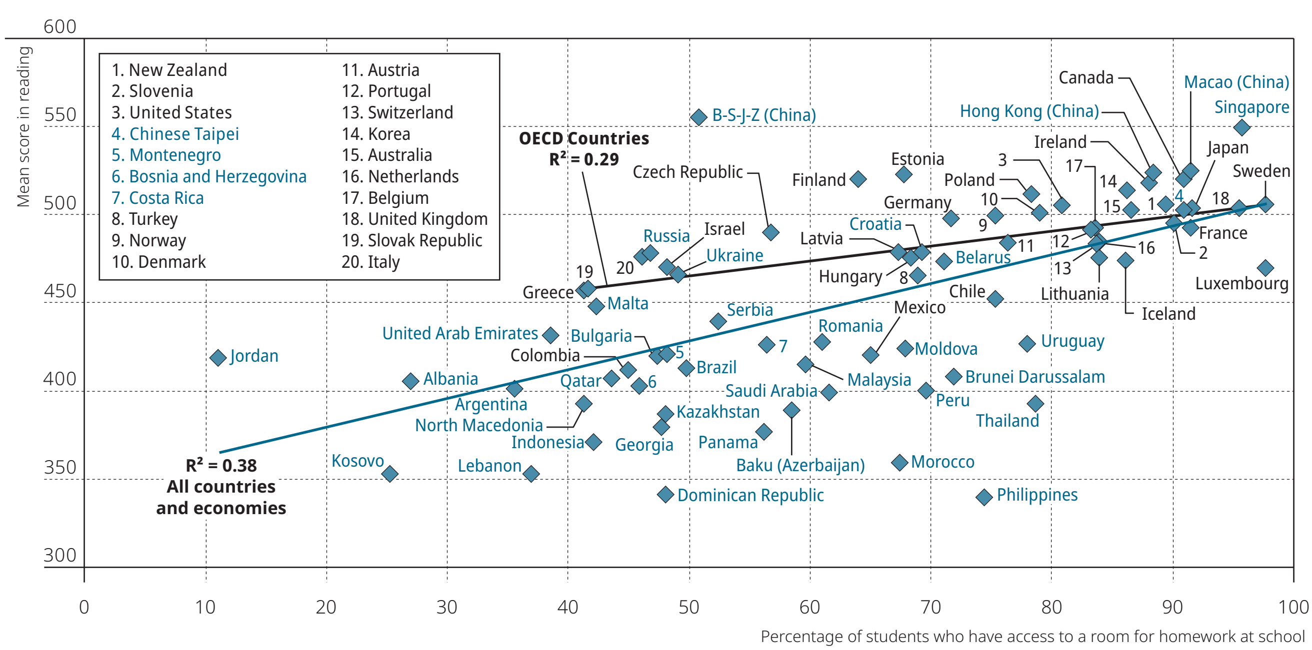
Regular school lessons



Sources: OECD, PISA 2018 Database, Tables V.B1.6.3 and II.B1.2.3.

StatLink https://doi.org/10.1787/888934131728

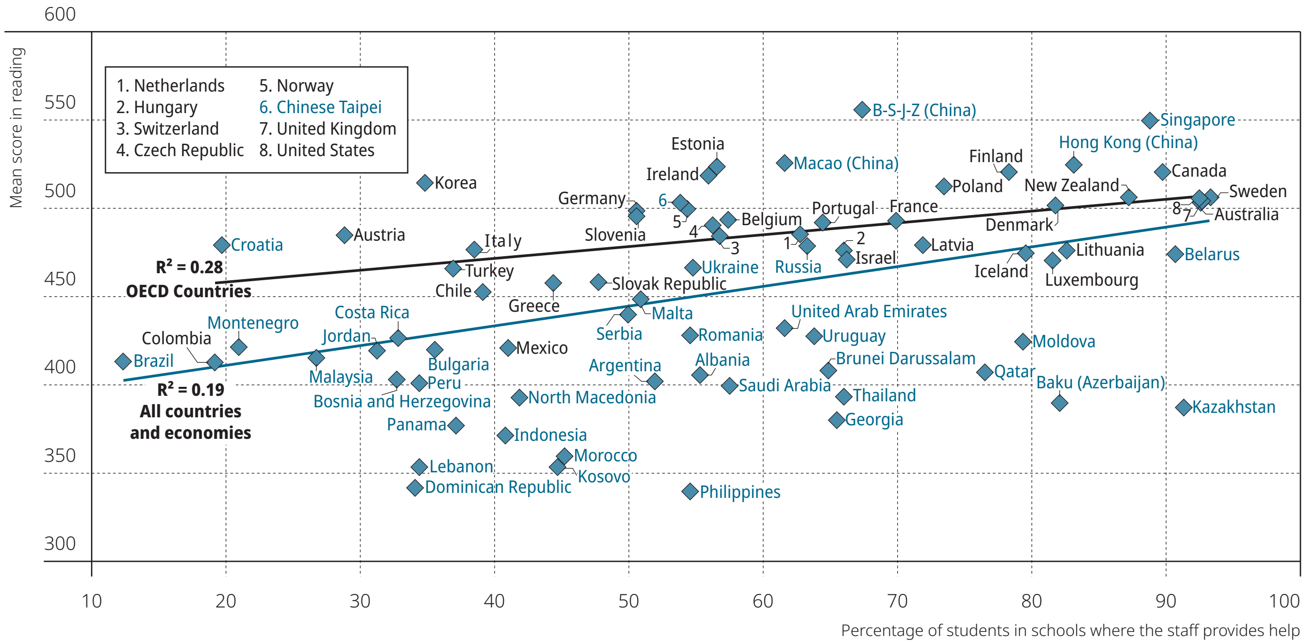
Figure V.6.16 **Students who have access to a room for homework at school and mean reading performance**



Sources: OECD, PISA 2018 Database, Tables V.B1.6.19 and I.B1.4.

StatLink https://doi.org/10.1787/888934131747

Figure V.6.17 **Students in schools where the staff provides help and mean reading performance**



Sources: OECD, PISA 2018 Database, Tables V.B1.6.19 and I.B1.4.

StatLink https://doi.org/10.1787/888934131766

Notes

1. For instance, in the Czech Republic, students were asked about "Czech-language lessons", in Mexico about "Spanish classes" and in Norway about "Norwegian lessons". However, in some countries and economies, the term <test language> was adapted differently, usually to include the term "literature". Some of these exceptions include the following:
   - Bulgaria: Bulgarian language and literature
   - Belarus: Belarusian language and literature
   - Chile: Language and communication
   - Estonia: Estonian language and literature
   - Greece: modern Greek language and literature
   - Hungary: Hungarian language and literature
   - Korea: Korean language arts
   - Peru: Communication
   - Romania: Romanian language and literature
   - The Russian Federation: Russian language and literature
   - The Slovak Republic: Slovak language and literature
   - Ukraine: Ukrainian language and literature, together with foreign literature
   - Uruguay: Spanish language or literature
   - United States: English/Language arts classes
2. Across all countries and economies, the correlation coefficient between learning time in language-of-instruction lessons and learning time in mathematics lessons is 0.82 (partial correlation after accounting for per capita GDP is 0.82). The correlation coefficient between learning time in language-of-instruction lessons and learning time in science lessons is 0.42 (partial correlation after accounting for per capita GDP is 0.43). The correlation coefficient between learning time in language-of-instruction lessons and total learning time (all subjects) is 0.46 (partial correlation after accounting for per capita GDP is 0.42). Across OECD countries, all of the above correlations are as strong or stronger. The correlation coefficient between learning time in language-of-instruction lessons and learning time in foreign-language lessons is not statistically significant across all countries and economies or across OECD countries.
3. Foreign language refers to any language other than the language of instruction. It also includes possible other national languages of a country.
4. In Luxembourg, French and German are official languages and mandatory foreign languages at school.
5. In Belgium, French and Flemish are official languages and mandatory foreign languages at school, depending on the district, and German is an official language and an optional foreign language at school.
6. In Finland, Finnish and Swedish are official languages and mandatory foreign languages at school.
7. In Switzerland, French, German and Italian are official languages and mandatory foreign languages at school.

References

Bae, S. et al. (2010), "The impact of after-school programs on educational equality and private tutoring expenses", *Asia Pacific Education Review*, Vol. 11/3, pp. 349-361, http://dx.doi.org/10.1007/s12564-010-9088-y. [14]

Baker, D. et al. (2004), "Instructional Time and National Achievement: Cross-National Evidence", *PROSPECTS*, Vol. 34/3, pp. 311-334, http://dx.doi.org/10.1007/s11125-004-5310-1. [4]

Baker, D. and **G. Letendre** (2005), *National differences, global similarities: World culture and the future of schooling*, Stanford University Press. [19]

Bellei, C. (2009), "Does lengthening the school day increase students' academic achievement? Results from a natural experiment in Chile", *Economics of Education Review*, Vol. 28/5, pp. 629-640, http://dx.doi.org/10.1016/j.econedurev.2009.01.008. [8]

Carroll, J. (1989), "The Carroll Model: A 25-Year Retrospective and Prospective View", *Educational Researcher*, Vol. 18/1, pp. 26-31, http://dx.doi.org/10.2307/1176007. [3]

Cattaneo, M., C. Oggenfuss and **S. Wolter** (2017), "The more, the better? The impact of instructional time on student performance", *Education Economics*, doi: 10.1080/09645292.2017.1315055, pp. 433-445, http://dx.doi.org/10.1080/09645292.2017.1315055. [6]

Cooper, H., J. Robinson and **E. Patall** (2006), "Does Homework Improve Academic Achievement? A Synthesis of Research, 1987–2003", *Review of Educational Research*, doi: 10.3102/00346543076001001, pp. 1-62, http://dx.doi.org/10.3102/00346543076001001. [17]

Council of Europe (2018), *Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Companion Volume with new descriptors*, Language Policy Programme Education Policy Division Education Department, http://www.coe.int/lang-cefr. [9]

Covay, E. and **W. Carbonaro** (2010), "After the Bell: Participation in Extracurricular Activities, Classroom Behavior, and Academic Achievement", *Sociology of Education*, doi: 10.1177/0038040709356565, pp. 20-45, http://dx.doi.org/10.1177/0038040709356565. [26]

Curwen, M. and **A. Colón-Muñiz** (2013), "Educators challenging poverty and latino low achievement:extending and enriching the school day", *Journal of Urban Learning, Teaching, and Research*, Vol. 9, pp. 65-77. [13]

Dudley-Marling, C. (2015), "How School Troubles Come Home: The Impact of Homework on Families of Struggling Learners", *Current Issues in Education*, Vol. 6/0, https://cie.asu.edu/ojs/index.php/cieatasu/article/view/1681 (accessed on 12 December 2019). [20]

Farb, A. and **J. Matjasko** (2012), *Recent advances in research on school-based extracurricular activities and adolescent development*, http://dx.doi.org/10.1016/j.dr.2011.10.001. [23]

Fredrick, W. and **H. Walberg** (1980), "Learning as a Function of Time", *The Journal of Educational Research*, doi: 10.1080/00220671.1980.10885233, pp. 183-194, http://dx.doi.org/10.1080/00220671.1980.10885233. [28]

Gromada, A. and **C. Shewbridge** (2016), "Student Learning Time: A Literature Review", *OECD Education Working Papers*, No. 127, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jm409kqqkjh-en. [2]

Jacob, B. and **L. Lefgren** (2002), "Remedial Education and Student Achievement: A Regression-Discontinuity Analysi", *Working Paper Series*, http://dx.doi.org/10.3386/w8918. [12]

Massoni, E. (2011), *Positive Effects of Extra Curricular Activities on Students*, http://dc.cod.edu/essai/vol9/iss1/27. [24]

Miller, R. and **M. Gentry** (2010), "Developing Talents Among High-Potential Students From Low-Income Families in an Out-of-School Enrichment Program", *Journal of Advanced Academics*, doi: 10.1177/1932202X1002100403, pp. 594-627, http://dx.doi.org/10.1177/1932202X1002100403. [15]

Murillo, F. and **C. Martinez-Garrido** (2014), "Homework and primary-school students' academic achievement in Latin America", *International Review of Education*, Vol. 60/5, pp. 661-681, http://dx.doi.org/10.1007/s11159-014-9440-2. [16]

OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/b5fd1b8f-en. [10]

OECD (2016), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264267510-en. [21]

OECD (2014), "Does Homework Perpetuate Inequities in Education?", *PISA in Focus*, No. 46, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jxrhqhtx2xt-en. [22]

OECD (2011), *Quality Time for Students: Learning In and Out of School*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264087057-en. [1]

Park, H. et al. (2016), "Learning Beyond the School Walls: Trends and Implications", *Annual Review of Sociology*, doi: 10.1146/annurev-soc-081715-074341, pp. 231-252, http://dx.doi.org/10.1146/annurev-soc-081715-074341. [11]

Patall, E., H. Cooper and **A. Allen** (2010), "Extending the School Day or School Year: A Systematic Review of Research (1985–2009)", *Review of Educational Research*, doi: 10.3102/0034654310377086, pp. 401-436, http://dx.doi.org/10.3102/0034654310377086. [7]

Ramdass, D. and **B. Zimmerman** (2011), "Developing Self-Regulation Skills: The Important Role of Homework", *Journal of Advanced Academics*, doi: 10.1177/1932202X1102200202, pp. 194-218, http://dx.doi.org/10.1177/1932202X1102200202. [18]

Scheerens, J. and **M. Hendriks** (2014), "State of the Art of Time Effectiveness", in Scheerens, J. (ed.), *Effectiveness of Time Investments in Education: Insights from a review and meta-analysis*, Springer International Publishing, Cham, http://dx.doi.org/10.1007/978-3-319-00924-7_2. [5]

Stearns, E. and **E. Glennie** (2010), "Opportunities to participate: Extracurricular activities' distribution across and academic correlates in high schools", *Social Science Research*, Vol. 39/2, pp. 296-309, http://dx.doi.org/10.1016/j.ssresearch.2009.08.001. [27]

Stuart, M. et al. (2011), "The impact of engagement with extracurricular activities on the student experience and graduate outcomes for widening participation populations", *Active Learning in Higher Education*, doi: 10.1177/1469787411415081, pp. 203-215, http://dx.doi.org/10.1177/1469787411415081. [25]

PISA

7

Private schools and school choice

This chapter explores the relationship between school type (broadly, public or private), on the one hand, and student performance and equity in the education system, on the other. It also examines whether giving parents a greater choice of schools for their child is related to the quality of the education system, as a whole.

Over the past two decades, education policies involving private schools, school competition and school choice have been the focus of sometimes heated debate in a growing number of countries (Adamson, Astrand and Darling-Hammond, 2016[1]; Forsey, Davies and Walford, 2008[2]; Chakrabarti and Peterson, 2009[3]; Koinzer, Nikolai and Waldow, 2017[4]).

The governance of school funding across OECD countries is characterised by complex relationships between the various actors involved in raising and spending funds for schooling. While the majority of school funding originates at the central government level, other actors increasingly contribute to raising funds, including subcentral governments. Private spending on schools has increased considerably in recent years and international funding provides an important source of funding in a range of countries (OECD, 2017[5]). These cross-country differences should be taken into account in interpreting results related to public/private schools.

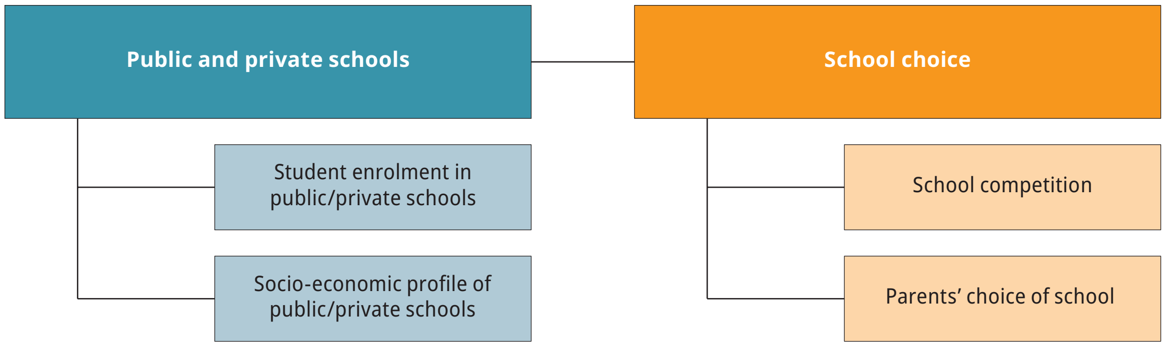
In this chapter, two of these issues are explored using PISA data. The first is whether policies aimed at increasing the involvement of private institutions in the education system (e.g. such as providing government funds through vouchers or other mechanisms to operate private schools) are correlated with an improvement in student performance and equity in education. The chapter considers this issue by examining the rate of private school enrolment across PISA-participating countries and economies, and how it has changed over time. It also explores the relationship between school type and student performance, taking into account the socio-economic profile of public and private schools.

In addition, the chapter examines the issue of school choice. According to advocates of school choice, expanding the availability of schools can improve student outcomes because doing so provides incentives for schools, both public and private, to improve their instructional quality. But the evidence on this is not conclusive (Hoxby, 2002[5]; Urquiola, 2016[6]). Moreover, some research warns that school choice can unintentionally widen already existing inequities in education because socio-economically disadvantaged families are more constrained in their choice of school than advantaged families (Hsieh and Urquiola, 2006[7]; Schneider, Elacqua and Buckley, 2006[8]; Goldring and Phillips, 2008[9]; Rowe and Lubienski, 2017[10]).

What the data tell us

- On average across OECD countries in 2018, only 2 out of 10 students attended a private school (either private dependent or independent); but in Chile, Hong Kong (China), Lebanon, Macao (China), the Netherlands, the United Arab Emirates and the United Kingdom, more than one in two students attended a private school.
- The share of students enrolled in private dependent and independent schools remained stable since 2000, on average across OECD countries, but it increased in 10 education systems and decreased in 2. Between 2015 and 2018, the share of students in private schools increased in 12 and decreased in 8 education systems.
- After accounting for students' and schools' socio-economic profile, students in public schools scored higher in reading than students in private schools, on average across OECD countries (by 14 score points, in favour of public schools) and in 19 education systems (ranging from 13 score points higher in Indonesia to 117 points higher in Serbia). At the system level, across all countries and economies, school systems with larger shares of students in private-independent schools tended to show lower mean performance in reading, mathematics and science, after accounting for per capita GDP.
- On average across OECD countries in 2018, 78% of students attended a school whose principal reported that there is at least one other school in the same area available for students. In most countries, and on average across OECD countries, school availability and perhaps competition is associated with better reading performance, before accounting for socio-economic disparities; but there is no difference in student performance after accounting for students' and schools' socio-economic profile.

Figure V.7.1 **Private schools and school choice in PISA 2018**



PUBLIC AND PRIVATE SCHOOLS

As defined in PISA and in this report, public schools are those managed by a public education authority, government agency, or governing board appointed by government or elected by public franchise. Private schools refer to schools managed directly or indirectly by a non-government organisation (such as a church, trade union, business or other private institution). PISA distinguishes between two types of school within the private school sector, based on their level of public funding. Government-independent private schools are those funded mainly through student fees or other private contributions (e.g. benefactors, donations); government-dependent private schools are privately managed schools that receive more than half of their funding from government sources.

Student enrolment in public and private schools

In most countries and economies that participated in PISA 2018, the large majority of 15-year-old students attended public schools (Figure V.7.2). On average across OECD countries, 82% of students attended a public school. In 56 out of 68 education systems, at least 80% of students attended public schools, including 24 education systems in which at least 95% of students attended public schools. In the United States, one of the countries where the debate on school choice is particularly vigorous, 93% of students attended public schools (Table V.B1.7.1).

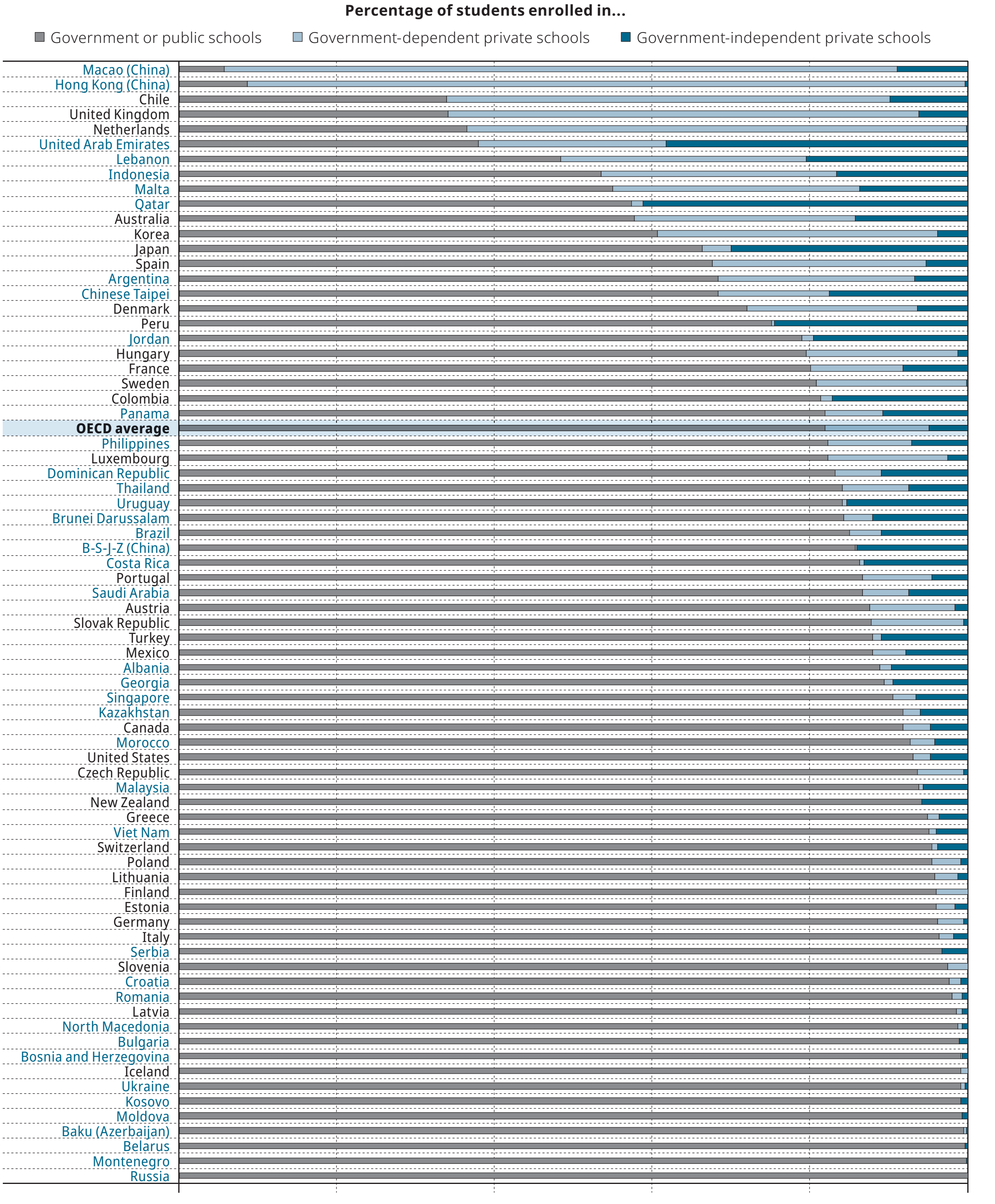
On average across OECD countries, 5% of students were enrolled in private-independent schools (i.e. private schools receiving at least half of their funding from private sources) and 13% of students were enrolled in private-dependent schools (i.e. private schools receiving half or more of their funding from the government) in 2018. Thus, 18% of students, on average across OECD countries, attended a private school (Table V.B1.7.1).

In most countries, the private-independent and the private-dependent school sectors are relatively small. In 55 education systems, 10% of students or less were enrolled in private-independent schools in 2018; in 39 education systems, 5% of students or less attended such schools; in 28 systems less than 2% of students did; and in Finland, Iceland, Norway, the Russian Federation (hereafter "Russia") and Slovenia, no 15-years-old student attended a government-independent private school. Similarly, in 53 education systems, less than 10% of students attended a private-dependent school, and in some countries and economies, namely Belarus, Bulgaria, Kosovo, the Republic of Moldova, Montenegro, New Zealand, Russia and Serbia, no 15-year-old student attended a private-dependent school (Table V.B1.7.1).

Education systems where larger shares of students attend private schools are typically those in which the government provides substantial funding for private schools to operate. In 17 countries and economies, at least 25% of students were enrolled in the private school sector as a whole in 2018. In 14 of them, at least 20% of 15-year-old students were enrolled in government-dependent private schools, including 5 education systems (Chile, Hong Kong [China], Macao [China], the Netherlands and the United Kingdom) in which more than 50% of students were enrolled in a government-dependent private school (Table V.B1.7.1).

In Japan, Peru, Qatar and the United Arab Emirates at least around 25% of students were enrolled in government-independent private schools in 2018, as were as many as 41% of students in Qatar and 38% of students in the United Arab Emirates. In most of these cases, the large shares of students in private schools was not due to a government policy to provide funding for private schools, but to greater private investment in schools from families (Table V.B1.7.1).

Figure V.7.2 **Student enrolment in public and private schools**



Countries are ranked in ascending order of the percentage of students enrolled in publicly managed schools.

Source: OECD, PISA 2018 Database, Table V.B1.7.1.

StatLink https://doi.org/10.1787/888934131785

In 53 out of 66 countries and economies with available data, the average socio-economic status of students who attended private schools was more advantaged that that of those who attended public schools (Table V.B1.7.2). Only in Chinese Taipei was the socio-economic profile of public schools more advantaged, on average, than that of private schools. More specifically, in Chinese Taipei, the socio-economic status of students in private-dependent schools was significantly more disadvantaged than that of students in public schools, but private-independent schools and public schools had similar socio-economic profiles (Table V.B1.7.3).

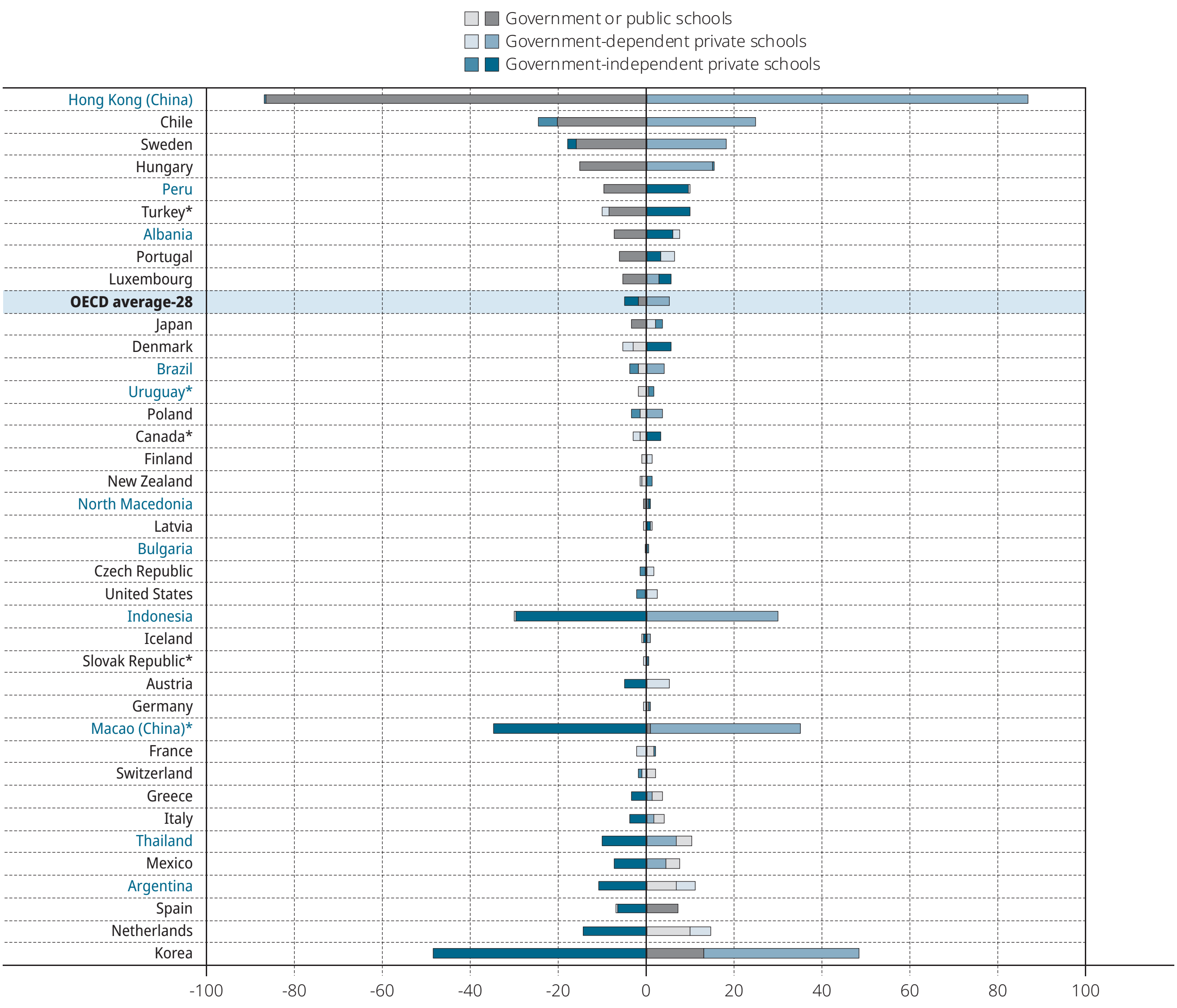
Has enrolment in public and private schools changed across PISA cycles?

On average across OECD countries, the share of students enrolled in public schools remained stable during the past two decades. In 2000, some 83% of students were enrolled public schools – one percentage point more than in 2018.

Despite this average stability, several countries and economies showed changes in the size of the public and private school sectors over time (Table V.B1.7.1)

In 12 out of 43 education systems with comparable data, the share of students in public schools shrank since 2000 (Figure V.7.3). The largest declines in public school enrolment were observed in Hong Kong (China), where almost 9 out of 10 students left the public school sector to enrol in private-dependent schools. In Chile, Hungary and Sweden, between 15% and 20% of students left the public sector since 2000, with a corresponding increase in the private-dependent school sector. In Albania, Luxembourg, the Republic of North Macedonia (hereafter "North Macedonia"), Peru, Portugal and Turkey, the decline in the share of students enrolled in public schools was accompanied by an increase in the share of students enrolled in private-independent schools (Figure V.7.3).

Figure V.7.3 **Change between 2000 and 2018 in enrolment in public and private schools**

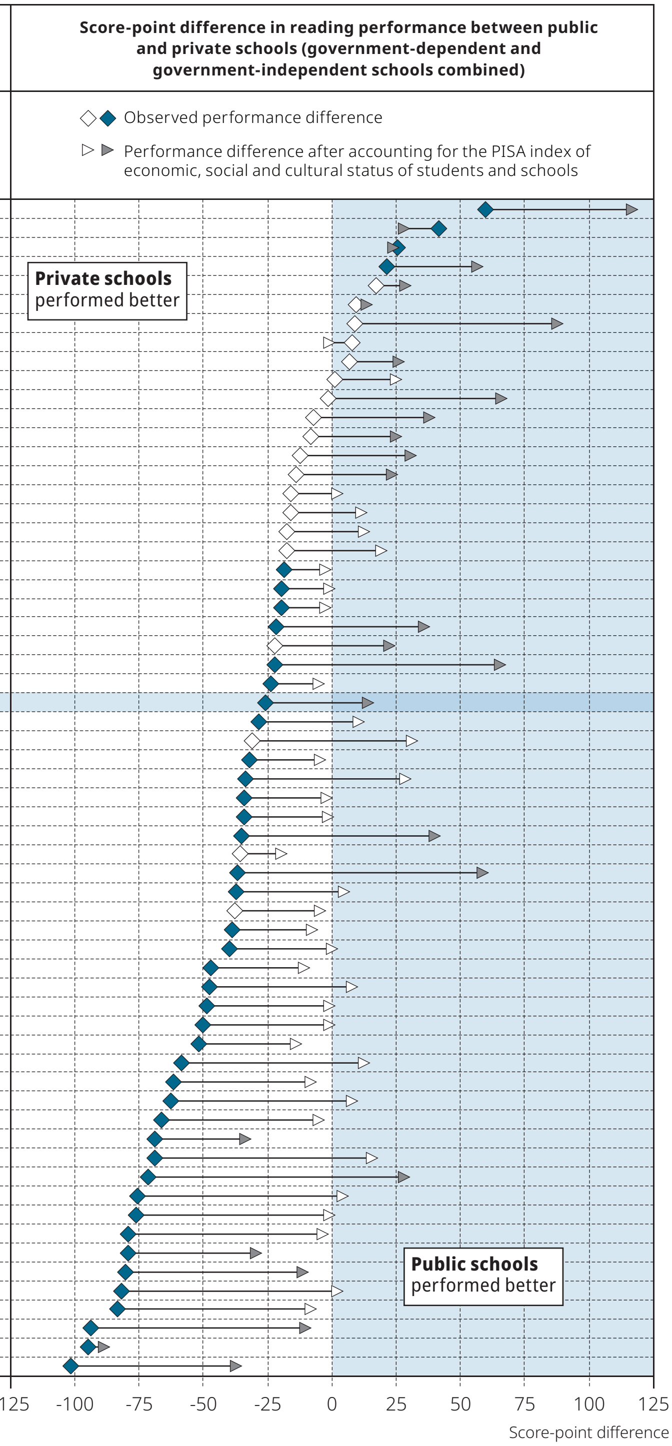


Notes: Countries and economies with a statistically significant change between PISA 2000 (or PISA 2003) and PISA 2018 in the percentage of students enrolled in public, private-dependent or private-independent schools are shown in a darker tone (see Annex A3). PISA 2003 was used for countries and economies (marked with an asterisk) that did not participate in PISA 2000.
OECD average-28 is the arithmetic mean across all OECD countries that participated in both PISA 2000 and PISA 2018 (i.e. all OECD countries excluding Colombia, Estonia, Lithuania, Luxembourg, the Netherlands, the Slovak Republic, Slovenia, Turkey and the United Kingdom).
Countries and economies are ranked in ascending order of the percentage-point difference between PISA 2000 or PISA 2003 and PISA 2018 in the percentage of students enrolled in public schools.
Source: OECD, PISA 2018 Database, Table V.B1.7.1.
StatLink https://doi.org/10.1787/888934131804

Figure V.7.4 **Reading performance in public and private schools**

Difference in reading score between students in public schools and students in private schools (private-dependent and private-independent combined

	Percentage of students attending:		
	Government or public schools[1]	Government-dependent private schools[2]	Government-independent private schools[3]
Serbia	96.8	0.0	3.2
Chinese Taipei	68.4	14.0	17.6
Hong Kong (China)	8.6	91.1	0.3
Japan	66.3	3.6	30.1
Portugal	86.6	8.8	4.6
Indonesia	53.5	30.0	16.6
Turkey	87.9	1.1	11.0
Netherlands	36.5	63.4	0.1
Thailand	84.0	8.5	7.4
Latvia	98.5	0.8	0.7
Switzerland	95.5	0.7	3.8
Italy	96.4	1.7	1.9
Czech Republic	93.6	5.8	0.6
Saudi Arabia	86.7	5.8	7.5
France	80.0	11.7	8.3
B-S-J-Z (China)	85.7	0.3	14.0
Hungary	79.4	19.3	1.2
Estonia	96.1	2.3	1.6
United States	93.0	2.2	4.8
Korea	60.6	35.5	3.9
Sweden	80.7	19.2	0.1
Denmark	72.0	21.7	6.3
Mexico	87.9	4.2	7.9
Malaysia	93.8	0.5	5.7
Singapore	90.5	3.0	6.6
United Kingdom	34.0	59.8	6.2
OECD average	81.9	13.2	4.9
Austria	87.6	10.8	1.6
Germany	96.1	3.4	0.6
Jordan	78.9	1.4	19.6
Croatia	97.6	1.5	0.9
Canada	91.8	3.4	4.8
Luxembourg	82.3	15.1	2.6
Morocco	92.7	3.0	4.3
Finland	95.9	4.1	0.0
North Macedonia	98.7	0.6	0.7
Australia	57.6	28.2	14.2
Kazakhstan	91.7	2.3	6.0
Slovak Republic	87.7	11.8	0.5
Chile	34.0	56.2	9.8
Albania	88.8	1.5	9.7
Lebanon	48.4	31.2	20.4
Poland	95.5	3.6	0.9
New Zealand	94.2	0.0	5.8
Georgia	89.3	1.1	9.5
Philippines	82.3	10.6	7.1
Malta	54.9	31.4	13.7
Dominican Republic	83.1	6.0	10.9
Lithuania	95.8	3.0	1.2
Qatar	57.3	1.5	41.2
Greece	94.9	1.4	3.7
Uruguay	84.1	0.5	15.3
Panama	81.9	7.2	10.8
Peru	75.2	0.3	24.6
Slovenia	97.5	2.5	0.0
United Arab Emirates	38.0	23.8	38.2
Argentina	68.4	24.8	6.8
Costa Rica	86.2	0.7	13.1
Colombia	81.4	1.4	17.2
Brunei Darussalam	84.3	3.5	12.1
Macao (China)	5.7	85.3	9.0
Brazil	85.0	4.1	10.9



1. Schools that are directly controlled or managed by: a public education authority or agency, or a government agency directly or a governing body, most of whose members are either appointed by a public authority or elected by public franchise.
2. Schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Notes: White symbols represent differences that are not statistically significant (see Annex A3).
This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Countries and economies are ranked in descending order of the score-point difference in reading performance between public and private schools (government-dependent and government-independent private schools combined).
Sources: OECD, PISA 2018 Database, Tables V.B1.7.1 and V.B1.7.4.

StatLink https://doi.org/10.1787/888934131823

By contrast, in Korea and Spain the share of students in public schools increased as the share of students in private-independent schools decreased. In Macao (China), public school enrolment increased by a small margin, but the most significant trend in this economy was a large increase in the share of private-dependent schools concurrent with a decrease in the share of students in private-independent schools (Figure V.7.3).

In some countries, the share of private-dependent schools grew while that of private-independent schools declined or vice versa. In Brazil, Greece, Iceland, Indonesia, Italy, Mexico, Norway, Poland and Thailand, the share of students in private-dependent schools increased without a decline in the share of public schools. In the Netherlands and North Macedonia, the share of students in private-independent schools increased without a decline in the share of students attending public schools (Table V.B1.7.1).

The large differences in socio-economic profile between private and public schools did not change since 2003, nor since 2015, on average across OECD countries (Table V.B1.7.2).

Student performance in public and private schools

On average across OECD countries and in 40 education systems, students in private schools (government-dependent and government-independent combined) scored higher in reading than students in public schools (the "raw" difference, i.e. before accounting for socio-economic profile) (Table V.B1.7.4). Across these 40 education systems, the raw score-point difference in favour of students in private schools ranged from 19 points in Korea to 102 points in Brazil. By contrast, the raw score-point difference in reading favoured public schools in Hong Kong (China), Japan, Serbia and Chinese Taipei (Table V.B1.7.4).

However, after accounting for students' and schools' socio-economic profile, reading scores were higher in public schools than in private schools, on average across OECD countries (a 14 score-point difference in favour of public schools) and in 20 education systems. Across these 20 systems, the score-point difference in favour of public school students, after accounting for students' and schools' socio-economic profile, ranged from 13 points in Indonesia to 117 points in Serbia. By contrast, in six education systems, students in private schools scored higher than students in public schools, after accounting for socio-economic profile (Table V.B1.7.4).

When compared with public schools, private-dependent schools scored higher than private-independent schools, after accounting for students' and schools' socio-economic profile. On average across OECD countries, students in private-dependent schools scored 6 points lower than students in public schools, whereas students in private-independent schools scored 23 points lower than students in public schools, after accounting for students' and schools' socio-economic profile (Table V.B1.7.5 and Table V.B1.7.6).

SCHOOL-CHOICE POLICIES

Competition for students between schools

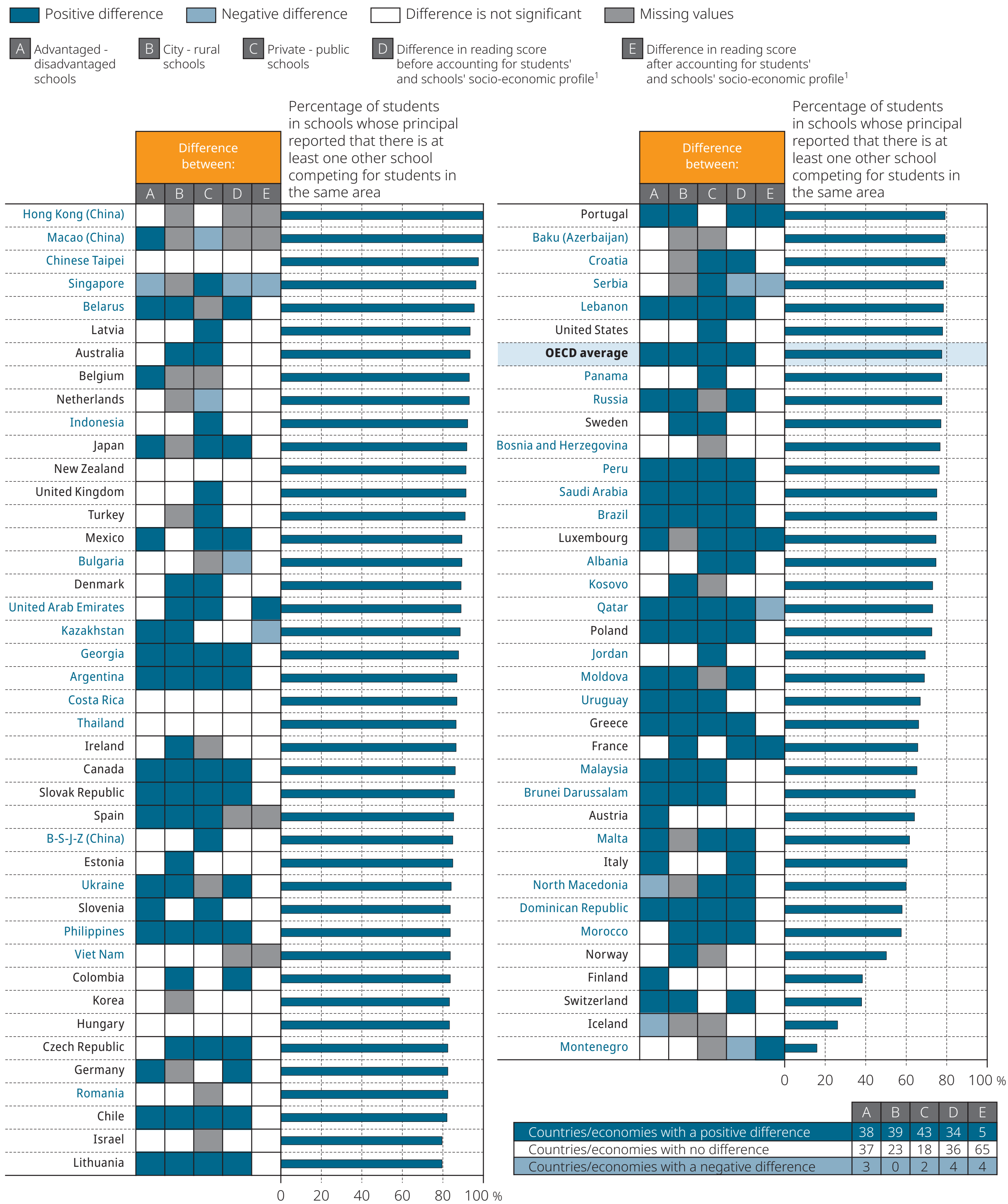
Availability of different school options is common across the countries and economies that participated in PISA 2018. On average across OECD countries, 78% of students attended a school whose principal reported that there is at least one other school in the same area that students can attend; 63% of students attended a school whose principal reported that there are at least two other schools competing for students. In 59 countries and economies, at least one in two students attended a school that competed with two or more other schools in the same area. Competition with two or more schools was most common in six East Asian education systems (Hong Kong [China], Indonesia, Japan, Macao [China], Singapore and Chinese Taipei), Australia, Belarus and the Netherlands. By contrast, it was least common in three northern European countries (Finland, Iceland and Norway) and in Montenegro, Morocco and Switzerland (Table V.B1.7.7).

As shown in Figure V.7.5, the share of students in schools whose principal reported that one or more schools in the same area compete for students was larger in socio-economically advantaged schools (85% of students) than in disadvantaged schools (72% of students), in urban schools (87% of students) than in rural schools (53% of students), and in private schools (89% of students) than in public schools (76% of students), on average across OECD countries (Table V.B1.7.8).

A small increase in the availability of options for school, and perhaps competition, was observed between 2006 and 2018, on average across OECD countries. The share of students in schools with two or more competing schools in the same area grew by four percentage points, and the share of students in schools with no competing schools in the area decreased by three percentage points (Table V.B1.7.7).

These average trends, however, mask some heterogeneity in national trends in school competition since 2006. Increases in the share of students in schools that compete with two or more schools were statistically significant in 18 countries and economies, and larger than 20 percentage points in Brazil, Qatar, Romania, Slovenia and Turkey. By contrast, Finland, Israel, Italy, Montenegro and the Slovak Republic moved towards less school competition during the period (Table V.B1.7.7).

Figure V.7.5 **School competition, school characteristics and reading performance**



	A	B	C	D	E
Countries/economies with a positive difference	38	39	43	34	5
Countries/economies with no difference	37	23	18	36	65
Countries/economies with a negative difference	3	0	2	4	4

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that there is at least one other school competing for students in the same area.

Source: OECD, PISA 2018 Database, Table V.B1.7.8.

StatLink https://doi.org/10.1787/888934131842

Similar to what was found when comparing student performance in public and private schools, in most countries, and on average across OECD countries, school competition was associated with higher reading scores, before accounting for socio-economic disparities; but this difference disappeared after accounting for students' and schools' socio-economic profile. Only in France, Luxembourg, Montenegro, Portugal and the United Arab Emirates were reading scores higher amongst students in schools that compete with one or more schools in the area, relative to students in schools that do not compete with other schools. By contrast, in Kazakhstan, Qatar, Serbia and Singapore, students in schools that do not compete with other schools performed better in reading (Table V.B1.7.8).

HOW THE PREVALENCE OF PRIVATE SCHOOLS AND SCHOOL-CHOICE POLICIES ARE RELATED TO DIFFERENCES IN PERFORMANCE AND EQUITY IN EDUCATION ACROSS COUNTRIES/ECONOMIES (SYSTEM-LEVEL ANALYSIS)

This section examines whether measures of private schools and school choice are related to education outcomes at the system level. As shown in Figure V.7.6, two education outcomes are considered: mean performance in reading and equity in reading performance.

At the system level, across all countries and economies, school systems with larger shares of students in private-independent schools tended to show lower mean performance in reading (r = -0.24). After accounting for per capita GDP, the coefficient and partial correlation was -0.46. Figure V.7.7 shows that Qatar and the United Arab Emirates were two extreme cases. After excluding these cases, the correlation became non-significant at the 5% level, but remained significant at the 10% (r = -0.22) level, while the partial correlation was -0.29. A correlation between higher enrolment in private-independent schools and lower mean performance was not observed across OECD countries.

No clear system-level patterns were observed in the relationships between various indicators of school competition, on the one hand, and performance and equity in reading performance, on the other.

Figure V.7.6 **Relationship between measures of private schools, school choice, and student performance and equity**

Correlation coefficients between two relevant measures

		OECD countries				All countries and economies			
		Mean reading score		Equity in reading		Mean reading score		Equity in reading	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Public and private schools	Public schools (% students enrolled)							*-0.20*	*-0.20*
	Private schools (% students enrolled)							*0.20*	*0.20*
	Government-dependent private schools (% students enrolled)					0.24		*0.22*	*0.22*
	Government-independent private schools (% students enrolled)					-0.24	-0.46		
School competition	Compete with no other school								
	Compete with one other school					-0.29			
	Compete with two or more other schools					0.26	*0.21*		
	Compete with at least one other school								

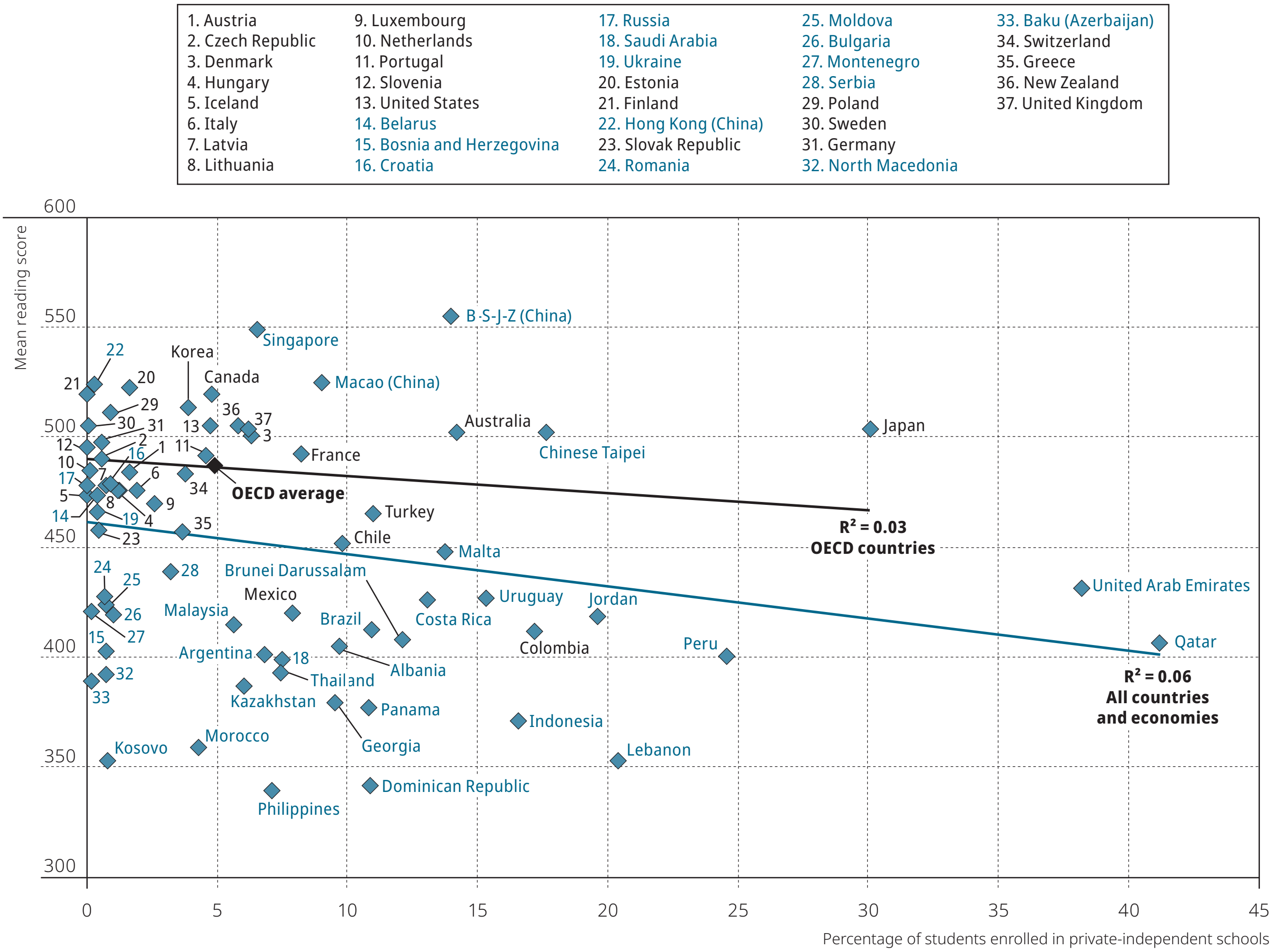
Notes: Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Source: OECD, PISA 2018 Database, Table V.B1.7.9.

StatLink https://doi.org/10.1787/888934131861

Figure V.7.7 **Students enrolled in private-independent schools and mean reading performance**



Source: OECD, PISA 2018 Database, Tables V.B1.7.6 and I.B1.4.

StatLink https://doi.org/10.1787/888934131880

References

Adamson, F., B. Astrand and **L. Darling-Hammond** (eds.) (2016), *Global education reform : how privatization and public investment influence education outcomes*, Routledge. [1]

Chakrabarti, R. and **P. Peterson** (2009), *School choice international : exploring public-private partnerships*, MIT Press. [3]

Forsey, M., S. Davies and **G. Walford** (eds.) (2008), *The globalisation of school choice?*, Symposium Books, https://doi.org/10.15730/books.70 (accessed on 14 January 2020). [2]

Goldring, E. and **K. Phillips** (2008), "Parent preferences and parent choices: the public–private decision about school choice", *Journal of Education Policy*, doi: 10.1080/02680930801987844, pp. 209-230, http://dx.doi.org/10.1080/02680930801987844. [9]

Hoxby, C. (2002), "School Choice and School Productivity (or Could School Choice be a Tide that Lifts All Boats?)", *NBER Working Papers*. [5]

Hsieh, C. and **M. Urquiola** (2006), "The effects of generalized school choice on achievement and stratification: Evidence from Chile's voucher program", *Journal of Public Economics*, Vol. 90/8-9, pp. 1477-1503, http://dx.doi.org/10.1016/J.JPUBECO.2005.11.002. [7]

Koinzer, T., R. Nikolai and **F. Waldow** (2017), *Private schools and school choice in compulsory education: Global change and national challenge*, Springer Fachmedien Wiesbaden, http://dx.doi.org/10.1007/978-3-658-17104-9. [4]

Kosunen, S. et al. (2016), "School Choice to Lower Secondary Schools and Mechanisms of Segregation in Urban Finland", *Urban Education*, doi: 10.1177/0042085916666933, p. 0042085916666933, http://dx.doi.org/10.1177/0042085916666933. [12]

Plank, D. (2010), "The Globalisation of School Choice? edited by Martin Forsey, Scott Davies, and Geoffrey Walford School Choice International: Exploring Public-Private Partnerships edited by Rajashri Chakrabarti and Paul E. Peterson", *Comparative Education Review*, doi: 10.1086/650710, pp. 142-145, http://dx.doi.org/10.1086/650710. [11]

Rowe, E. and **C. Lubienski** (2017), "Shopping for schools or shopping for peers: public schools and catchment area segregation", *Journal of Education Policy*, doi: 10.1080/02680939.2016.1263363, pp. 340-356, http://dx.doi.org/10.1080/02680939.2016.1263363. [10]

Schneider, M., G. Elacqua and **J. Buckley** (2006), "School choice in Chile: Is it class or the classroom?", *Journal of Policy Analysis and Management*, Vol. 25/3, pp. 577-601, http://dx.doi.org/10.1002/pam.20192. [8]

Urquiola, M. (2016), "Competition Among Schools: Traditional Public and Private Schools", in *Handbook of the Economics of Education*, Elsevier, http://dx.doi.org/10.1016/B978-0-444-63459-7.00004-X. [6]

PISA

8

Assessments, evaluations and how they are used

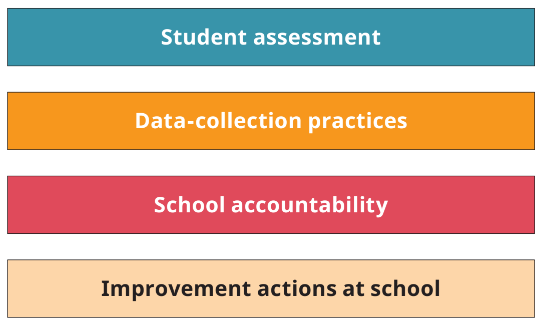
This chapter examines four evaluation and assessment activities in particular: student assessments, data-collection practices, school accountability and improvement actions at school. It discusses how school systems use the information they gather from these evaluations and assessments. The ways school systems use this data are then correlated with student performance and equity in the education system.

Evaluation and assessment, as discussed in this chapter, refers to the policies and practices through which education systems assess student learning, and evaluate teacher practices and school outcomes. It also conveys how education systems and schools use the results from assessment and evaluation to improve classroom processes and student learning.

The *OECD Review on Evaluation and Assessment Frameworks for Improving School Outcomes* identifies the hallmarks of strong evaluation and assessment systems (OECD, 2013[1]). These include setting clear and ambitious goals or standards for what is expected of students, schools and the system overall, and collecting reliable data to measure the extent to which goals are being met. In addition, in strong evaluation and assessment systems, students, teachers, schools and policy makers receive the feedback they need to reflect critically on their own progress, and remain engaged and motivated to succeed.

In this chapter, four evaluation and assessment topics are covered (Figure V.8.1): student assessment, data-collection practices, school accountability and improvement actions at school.

Figure V.8.1 **Evaluation and assessment as covered in PISA 2018**



What the data tell us

- On average across OECD countries, the prevalence of using student assessments for various purposes declined between 2012 and 2018. For example, in 2012, 55% of students were enrolled in a school that compares its performance with that of other schools, while in 2018, 46% of students attended such a school. Similarly, in 2012, 53% of students attended a school that uses student assessments to make judgements about teachers' effectiveness, while in 2018, 44% of students attended such a school.
- Some 38% of students were enrolled in schools that post achievement data publicly, on average across OECD countries. These students scored five points higher in reading, on average across OECD countries, than students in schools that do not post data publicly, even after accounting for students' and schools' socio-economic profile. At the system level, however, the incidence of posting achievement data publicly was not correlated with mean performance in PISA, nor with equity in performance.
- On average across OECD countries, students in schools whose principal reported that their school seeks written feedback from students scored better in reading than students in schools that do not seek written feedback, even after accounting for students' and schools' socio-economic profile. In addition, equity in student performance tended to be greater amongst countries and economies that have a higher percentage of students in schools that seek written feedback from students.
- High-performing countries and economies tended to have more teacher mentoring on the school's initiative. In those systems, more schools implemented a standardised policy for reading-related subjects taught at school (including a school curriculum with shared instructional materials, and staff development and training) based on district or national policies.
- Countries and economies tended to have better equity in education when they: use student assessments to inform parents about their child's progress; use student assessments to identify aspects of instruction or the curriculum that could be improved; use written specifications for student performance on the school's initiative; seek feedback from students; and have regular consultations on school improvement at least every six months, based on district or national policies.

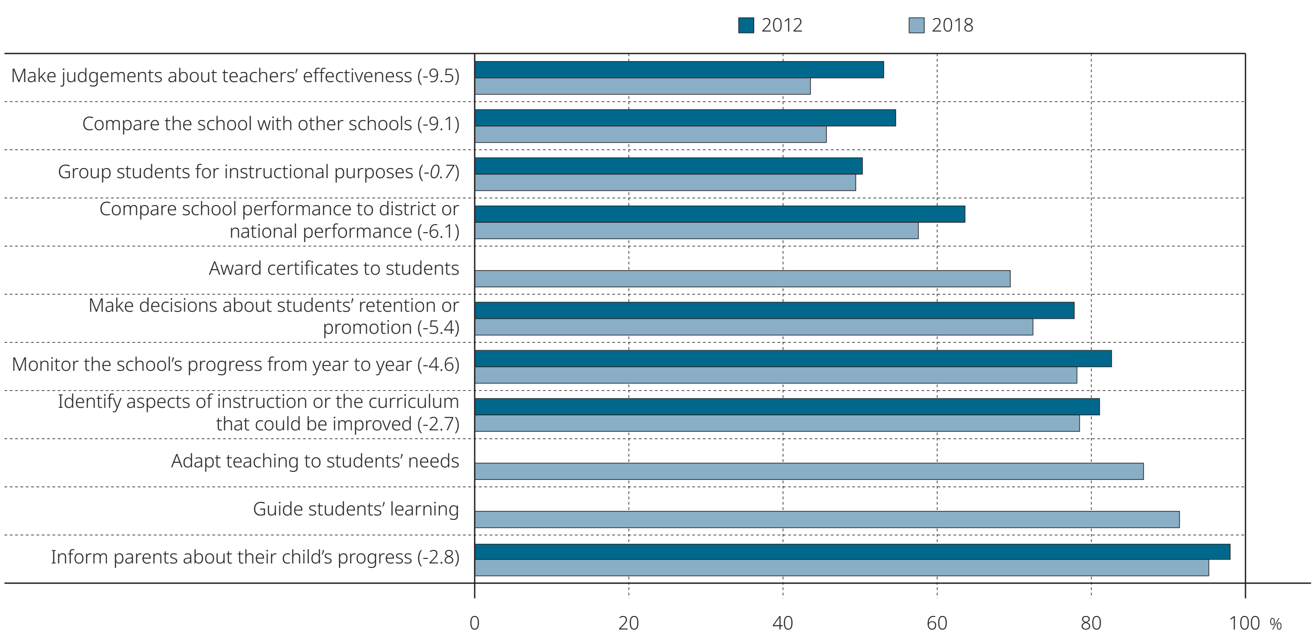
STUDENT ASSESSMENT

Student assessment refers to judgements on individual students' progress and achievement. It covers school-based assessments designed by teachers or other staff at school, as well as large-scale external assessment and examinations (OECD, 2013[1]). Student assessments can have different purposes (Rosenkvist, 2010[2]; Lesaux, 2006[3]; Looney, 2011[4]). For example, formative assessments, or assessments for learning, do not have consequences for students, but instead aim to provide feedback to help students progress on their learning path (Shepard, 2000[5]; Hattie and Timperley, 2007[6]). Summative assessments, or assessments of learning, summarise and certify achieved learning and are sometimes used to make high-stakes decisions for students or teachers, such as promoting or retaining students, or grouping students by their achievement level.

PISA 2018 asked school principals about the purposes of the student assessments used in their school. On average across OECD countries, student assessments were most often used to inform parents about their child's progress (95% of students were in schools whose principal reported that assessments are used for this purpose), to guide students' learning (91%), and to adapt teaching to the students' needs (87%) (Figure V.8.2). Student assessments were also commonly used to identify aspects of instruction or the curriculum that could be improved (78%), to monitor the school's progress from year to year (78%) and to make decisions about students' retention or promotion (72%). Less than half of students were in schools that use student assessments to group students by ability, to compare the school to other schools, or to make judgements about teachers' effectiveness, on average across OECD countries.

Figure V.8.2 **Change between 2012 and 2018 in purposes of student assessment**

Percentage of students in schools whose principal reported that assessments of students are used for the following; OECD average



Notes: Differences between 2012 and 2018 are shown between parentheses next to the purpose of student assessment. All differences are statistically significant, except for the item "Group students for instructional purposes" (see Annex A3). Some items do not have a dark blue bar because data were not collected in PISA 2012.

Source: OECD, PISA 2018 Database, Table V.B1.8.1.

StatLink https://doi.org/10.1787/888934131899

According to school principals, using student assessments for formative purposes was common in nearly all PISA-participating countries and economies. Three items included in Figure V.8.3 are measures of formative student assessment:

- In 2018, at least 70% of students in every participating country and economy were enrolled in schools that use student assessments to guide student learning (Table V.B1.8.1).
- Similarly, in 68 out of 79 countries and economies at least 70% of students were enrolled in schools that use student assessments to identify aspects of instruction or the curriculum that could be improved.
- In addition, in 74 countries and economies, at least 70% of students attended a school that uses student assessments to adapt instruction to students' needs.

By contrast, the incidence of using student assessments to make high-stakes decisions for either students or teachers was somewhat lower:

- In only 22 countries and economies were there at least 70% of students enrolled in schools that use student assessments to group students for instructional purposes.
- In 36 countries and economies, at least 70% of students were enrolled in schools that use student assessments to make judgements about teachers' effectiveness.
- In 58 countries and economies, at least 70% of students were enrolled in schools that use student assessments to make decisions about retaining or promoting students.

On average across OECD countries, the practice of using student assessments to make judgements about teachers' effectiveness declined by ten percentage points between 2012 and 2018, using student assessments to compare the school with other schools declined by nine percentage points, and using student assessments to make decisions about students' retention or promotion declined by five percentage points (Table V.B1.8.1). Of all the purposes of student assessments included in Figure V.8.2, using student assessments for grouping students for instructional purposes – a practice that remained stable over the period (50% of students attended schools that use student assessments for this purpose) – was the only practice that did not decline over the period, on average across OECD countries.

The prevalence of using student assessments for specific purposes was similar between socio-economically advantaged and disadvantaged schools, with some exceptions. On average across OECD countries, using student assessments to group students for instructional purposes, to adapt teaching to students' needs and to monitor the school's progress from year to year was more common amongst disadvantaged than advantaged schools (Table V.B1.8.2).

PISA measures of the purposes of student assessments included in Figure V.8.2 were unrelated or only weakly related to reading performance (Table V.B1.8.4). On average across OECD countries, schools that showed higher performance tended to use student assessments to make decisions about their students' retention or promotion, after accounting for students' and schools' socio-economic profile. In contrast, schools that showed lower performance tended to use student assessments to guide their students' learning or adapt teaching to their students' needs, on average across OECD countries. However, these results were not consistent across countries, showing both positive and negative associations.

COLLECTING DATA ON STUDENT OUTCOMES

PISA 2018 asked school principals whether their school collected data on student outcomes, specifically on students' test results and graduation rates. On average across OECD countries, some 93% of students were in schools whose principals reported that they systematically record students' test results and graduation rates (Figure V.8.3). Only in Austria, Brazil, Finland, Greece, Luxembourg and Switzerland was the share of students in schools that carried out systematic recording of student outcomes lower than 85%.

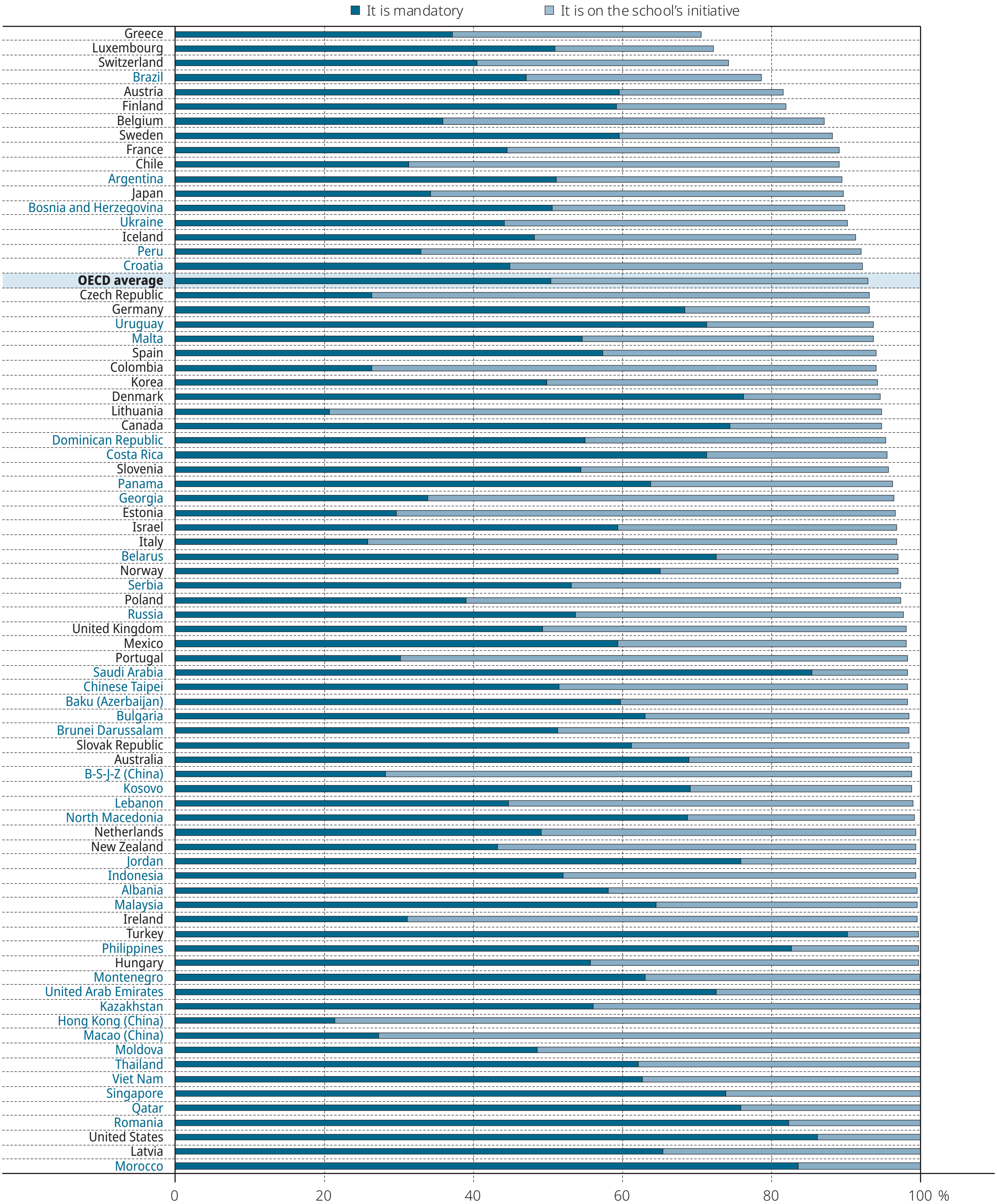
On average across OECD countries, about half of students were in schools whose principal reported that collecting data on student outcomes is mandatory (e.g. based on district or ministry policies), and 42% were in schools where data is collected on the school's initiative (Figure V.8.2). In most countries and economies, most students were in schools where the collection of data on student outcomes is mandatory; but in 20 countries and economies, more than half of students were in schools where data on student outcomes is collected on the school's initiative. In Beijing, Shanghai, Jiangsu and Zhejiang (China) (hereafter "B-S-J-Z [China]"), Hong Kong (China), Italy, Lithuania and Macao (China), more than 70% of students were in schools where data on student outcomes is collected on the school's initiative, as opposed to being based on mandatory governmental policies.

The systematic recording of student outcomes was more prevalent in 2018 than in 2015 in Italy, Kosovo, Lithuania, Montenegro, the Republic of North Macedonia (hereafter "North Macedonia") and Switzerland, and was less prevalent in Brazil, Greece, Iceland, Luxembourg, Malta and Slovenia (Table V.B1.8.12).

On average across OECD countries, the prevalence of collecting data on student outcomes was similar, regardless of the socio-economic profile of the school, but differences were observed in some countries. In Austria, Belarus, Brunei Darussalam, Georgia, Iceland, Peru and Spain, collecting data on students' results and graduation rates was more prevalent in advantaged schools, while in Denmark, France, Kazakhstan, Lithuania, Luxembourg and North Macedonia, this practice was more prevalent in disadvantaged schools (Table V.B1.8.13).

Figure V.8.3 **Collecting data on student outcomes in schools**

Percentage of students in schools that systematically record students' test results and graduation rates; based on principals' reports



Countries are ranked in ascending order of the percentage of students in schools where such data are collected.

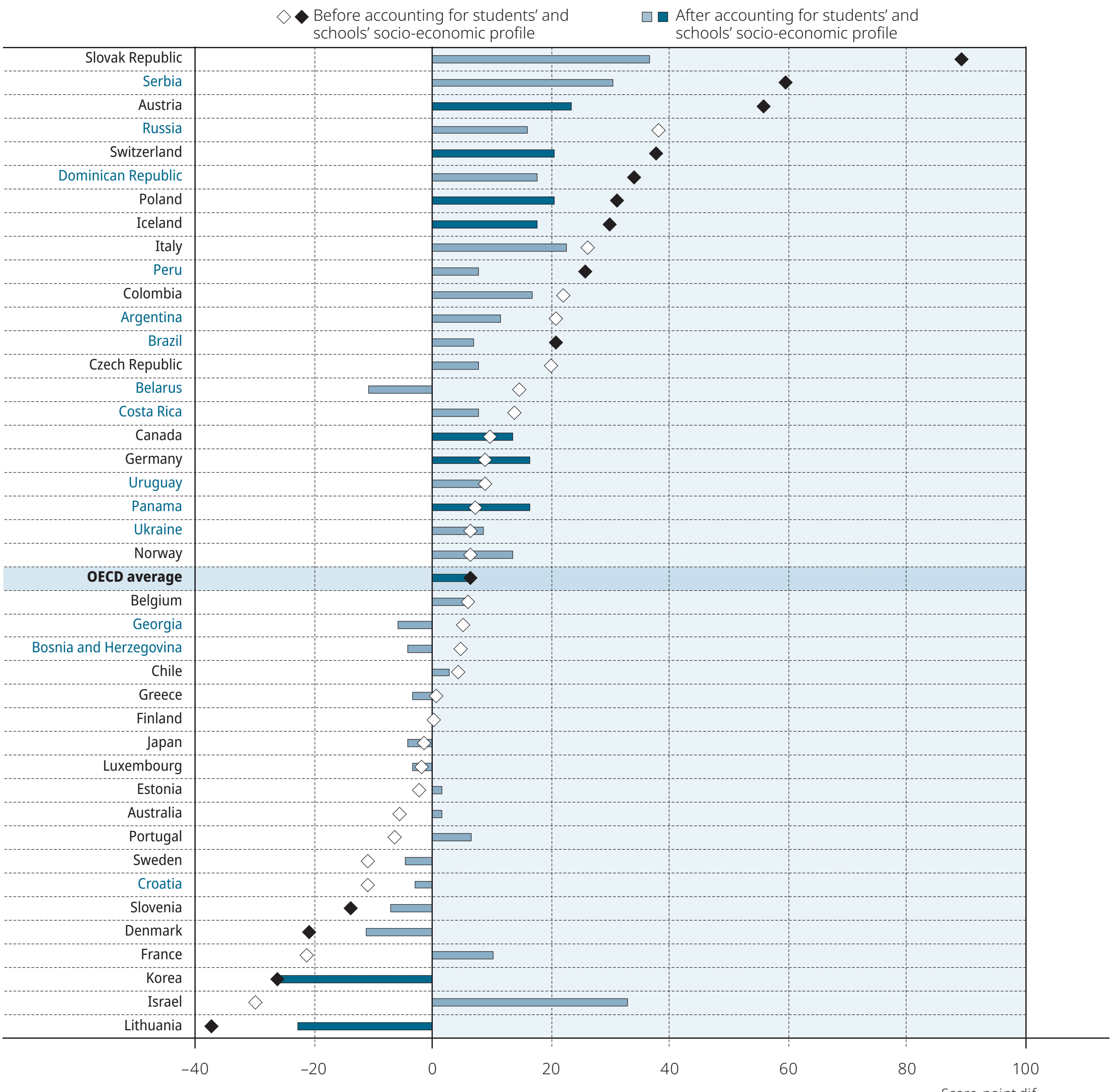
Source: OECD, PISA 2018 Database, Table V.B1.8.11.

StatLink https://doi.org/10.1787/888934131918

On average across OECD countries, students in schools that systematically record students' test results and graduation rates scored better in reading than students in schools that do not collect this kind of data (a difference of six score points). After accounting for students' and schools' socio-economic profile, students in schools that collect data on student outcomes scored better in reading, on average across OECD countries (a difference of seven points) and in seven countries and economies (Figure V.8.4).

Figure V.8.4 **Recording students' test results and graduation rates, and reading performance**

Score-point difference in reading performance in schools that systematically record students' test results and graduation rates



Notes: Statistically significant changes are shown in darker tones (see Annex A3).
The socio-economic profile is measured by the PISA index of economic, social and cultural status.
Countries and economies are ranked in descending order of the score-point difference in reading performance in schools that systematically record students' test results and graduation rates, before accounting for students' and schools' socio-economic profile.
Source: OECD, PISA 2018 Database, Table V.B1.8.15.
StatLink https://doi.org/10.1787/888934131937

SCHOOL ACCOUNTABILITY

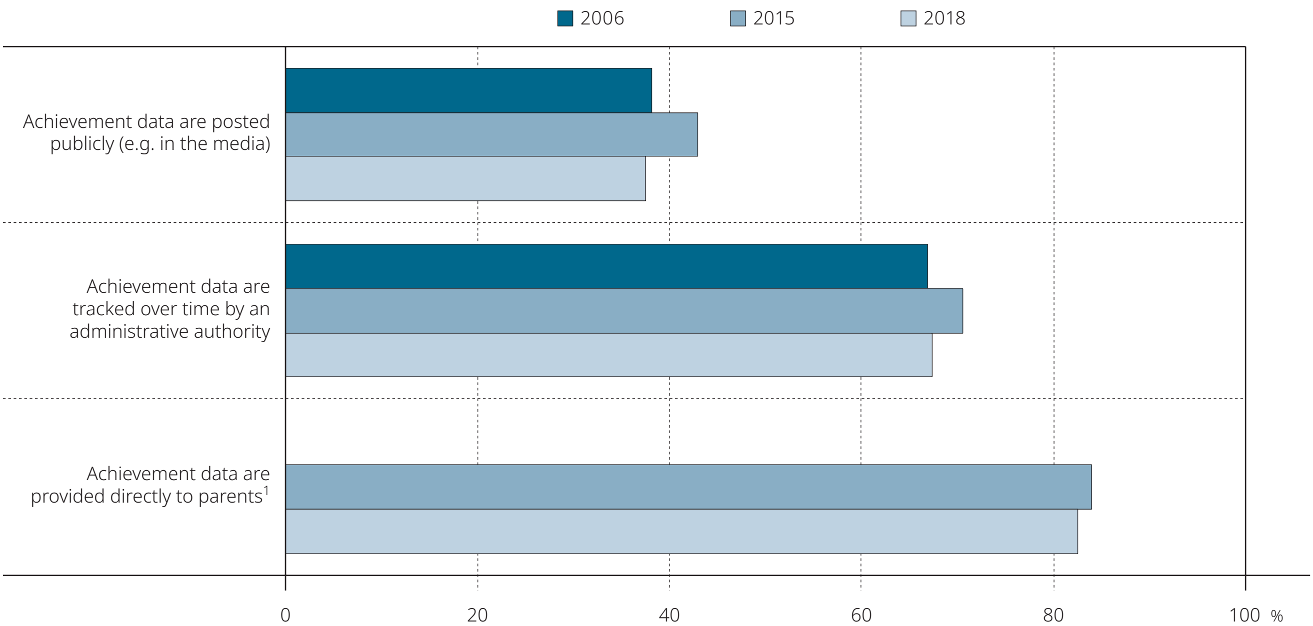
PISA 2018 asked school principals whether their school uses achievement data for accountability purposes, and if so, how. Three forms of school accountability were considered: providing achievement data to parents directly, posting achievement data publicly (for example, in the media), and tracking achievement data over time by an administrative authority. Achievement data, as defined here, refers to aggregated school or grade-level test scores or grades, or graduation rates.

On average across OECD countries in 2018, about 83% of students attended schools that provide achievement data to parents directly (Figure V.8.5). This is the most common form of school accountability considered in PISA. In all countries and economies except Austria, at least half of students were enrolled in schools that provide achievement data to parents directly (Table V.B1.8.7).

Posting achievement data publicly (for example, in the media) is the least common form of school accountability, on average across OECD countries (38% of students attended schools that do this) (Figure V.8.6). In 58 out of 79 education systems, less than half of students were in schools that post achievement data publicly (Table V.B1.8.7). Posting data publicly was more common amongst advantaged schools (43% of students attended such schools) than disadvantaged schools (34%), and more common in urban (39%) than in rural (33%) schools, on average across OECD countries (Table V.B1.8.8).

Figure V.8.5 **Trends in school accountability, 2006, 2015 and 2018**

Percentage of students in schools that use achievement data for accountability purposes; OECD average



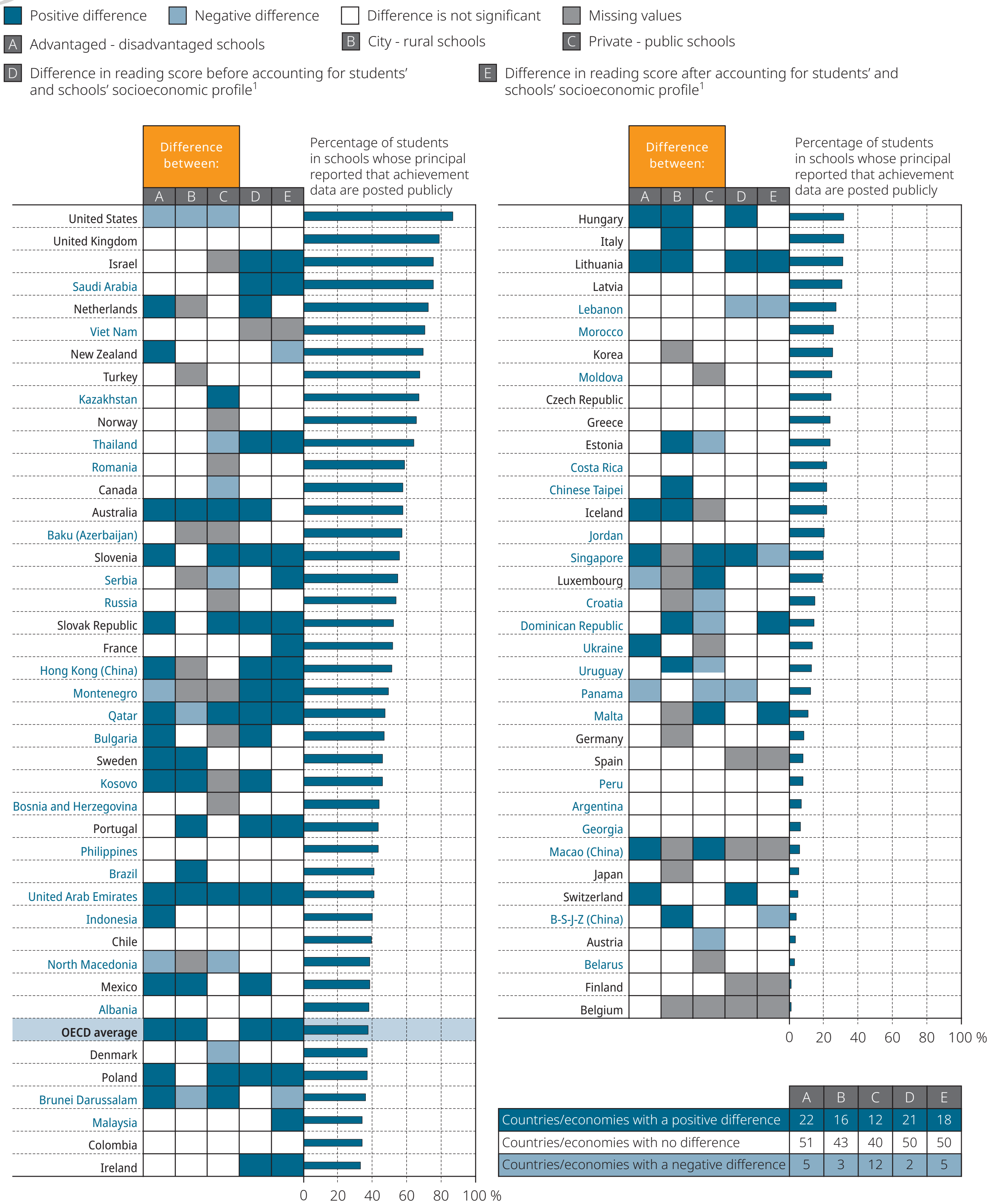
1. Data on "Achievement data are provided directly to parents" were not collected in PISA 2006.
Note: All differences between 2015 and 2018 are statistically significant; all differences between 2006 and 2018 are not (see Annex A3).
Source: OECD, PISA 2018 Database, Table V.B1.8.7.
StatLink https://doi.org/10.1787/888934131956

The earliest cycle in which PISA collected information on school accountability was PISA 2006. On average across OECD countries, there was no change between 2006 and 2018 in the share of students in schools that post achievement data publicly (Figure V.8.6). In Brazil, Bulgaria, Indonesia, Ireland, Israel, Norway, Portugal, the Slovak Republic, Slovenia and Turkey, posting achievement data was more prevalent in 2018 than in 2006; but in Croatia, the Czech Republic, Estonia, Luxembourg, Montenegro, the Netherlands, the Russian Federation, Sweden, Chinese Taipei and the United Kingdom, it was less prevalent in 2018 than in 2006 (Table V.B1.8.7).

Similarly, the share of students in schools where achievement data are tracked over time by an administrative authority did not change between 2006 and 2018, on average across OECD countries (in both cycles it was 67%) (Figure V.8.5). In 19 countries and economies, the share of students in schools where achievement data are tracked over time by an administrative authority increased (Table V.B1.8.7). The largest increases were observed in Denmark, Indonesia, Norway and Chinese Taipei. In 10 countries and economies, the share of students in schools where achievement data are tracked over time by an administrative authority shrank over the period. The largest decreases were observed in Finland, Iceland and Luxembourg.

PISA 2006 did not collect information about schools providing data to parents.

Figure V.8.6 **Posting achievement data publicly, school characteristics and reading performance**



	A	B	C	D	E
Countries/economies with a positive difference	22	16	12	21	18
Countries/economies with no difference	51	43	40	50	50
Countries/economies with a negative difference	5	3	12	2	5

1. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that achievement data are posted publicly.

Source: OECD, PISA 2018 Database, Table V.B1.8.8.

StatLink https://doi.org/10.1787/888934131975

PISA also collected data on school accountability in 2015. All three forms of school accountability were less prevalent in 2018 than in 2015, on average across OECD countries. The share of students in schools that post achievement data publicly was five percentage points smaller in 2018 than in 2015, on average across OECD countries. In Argentina, Bulgaria, Croatia, Greece, Hong Kong (China), Iceland and Latvia, the share of students enrolled in schools that post data publicly decreased by ten percentage points or more; in Korea and Luxembourg, the shares shrank by 20 and 21 percentage points, respectively (Table V.B1.8.7). By contrast, in Kosovo, Macao (China), Malta, Montenegro, Slovenia and Chinese Taipei, the share of students in schools that post achievement data publicly increased by five percentage points or more during this period.

A majority of students were in schools that use at least one of the three forms of school accountability: providing achievement data to parents directly, posting achievement data publicly, and having achievement data tracked over time by an administrative authority (Table V.B1.8.6). Across OECD countries, on average, only 5% of students were in schools whose principal reported that none of these three forms is used. While less than 5% of students in more than 60 countries and economies attended such schools, more than 20% of students in Austria, Finland and Germany did. In contrast, 26% of students were in schools whose principal reported that all three forms of school accountability are used. More than 50% of students in Kazakhstan, New Zealand, Saudi Arabia, Thailand, Turkey, the United Kingdom, the United States and Viet Nam attended such schools.

On average across OECD countries, students enrolled in schools that post achievement data publicly scored better in reading (by 13 points) than students in schools that do not post data publicly. Yet, socio-economically advantaged schools were more likely than disadvantaged schools to post achievement data publicly. After accounting for students' and schools' socio-economic profile, students in schools that post achievement data publicly still scored five points higher in reading, on average across OECD countries (Figure V.8.6). At the system level, however, the incidence of posting achievement data publicly was not correlated with mean performance in PISA, nor with equity in performance, as described in detail later in this chapter.

The relationship between student achievement and other forms of school accountability was weak after accounting for students' and schools' socio-economic profile. After accounting for students' and schools' socio-economic profile, in nine countries and economies, students in schools where achievement data is tracked over time by an administrative authority scored better in reading; in two countries, they scored worse (Table V.B1.8.9).

Similarly, after accounting for students' and schools' socio-economic profile, in six countries, students in schools that provide achievement data to parents directly scored better in reading, but in three countries they scored worse (Table V.B1.8.10).

IMPROVEMENT ACTIONS AT SCHOOL

Seeking written feedback from students

One way that schools evaluate themselves is by seeking written feedback from students. On average across OECD countries, 68% of students were in schools whose principal reported that the school seeks written feedback from students regarding their lessons, teachers or resources. This practice is typically based on the school's own initiative (OECD average = 56%) rather than being mandatory (12%) (Table V.B1.8.11).

Students in schools that seek feedback from students performed better in reading than students in schools that do not, on average across OECD countries and in 16 countries. Yet, the association between student feedback and student performance is confounded by the fact that, in many education systems, socio-economically advantaged schools tend to seek feedback from their students more than disadvantaged schools do. After accounting for students' and schools' socio-economic profile, seeking feedback from students is still associated with better reading performance, on average across OECD countries and in nine countries and economies. The largest performance differences (at least 25 score points) were observed in B-S-J-Z (China), Macao (China), Qatar, Singapore and the United Arab Emirates.

Teacher mentoring

On average across OECD countries, 77% of students were enrolled in schools whose principal reported that teacher mentoring is provided in their school. In 62 countries and economies, more than three out of four students were enrolled in schools where teacher mentoring is provided. Teacher mentoring was the least prevalent in Germany, Iceland, Italy and Spain.

On average across OECD countries, teacher mentoring was typically based on the school's own initiative (61% of students were enrolled in such schools), rather than being mandatory (17%). In B-S-J-Z (China), the Czech Republic, Estonia, the Netherlands, Poland and the United Kingdom, at least 85% of students were enrolled in schools whose principal reported that teacher mentoring in their school is provided on the school's initiative. The countries where the availability of mandatory teacher mentoring was the greatest were North Macedonia (84% of students attended such a school), Serbia (70%), Saudi Arabia (69%) and Qatar (66%) (Table V.B1.8.11).

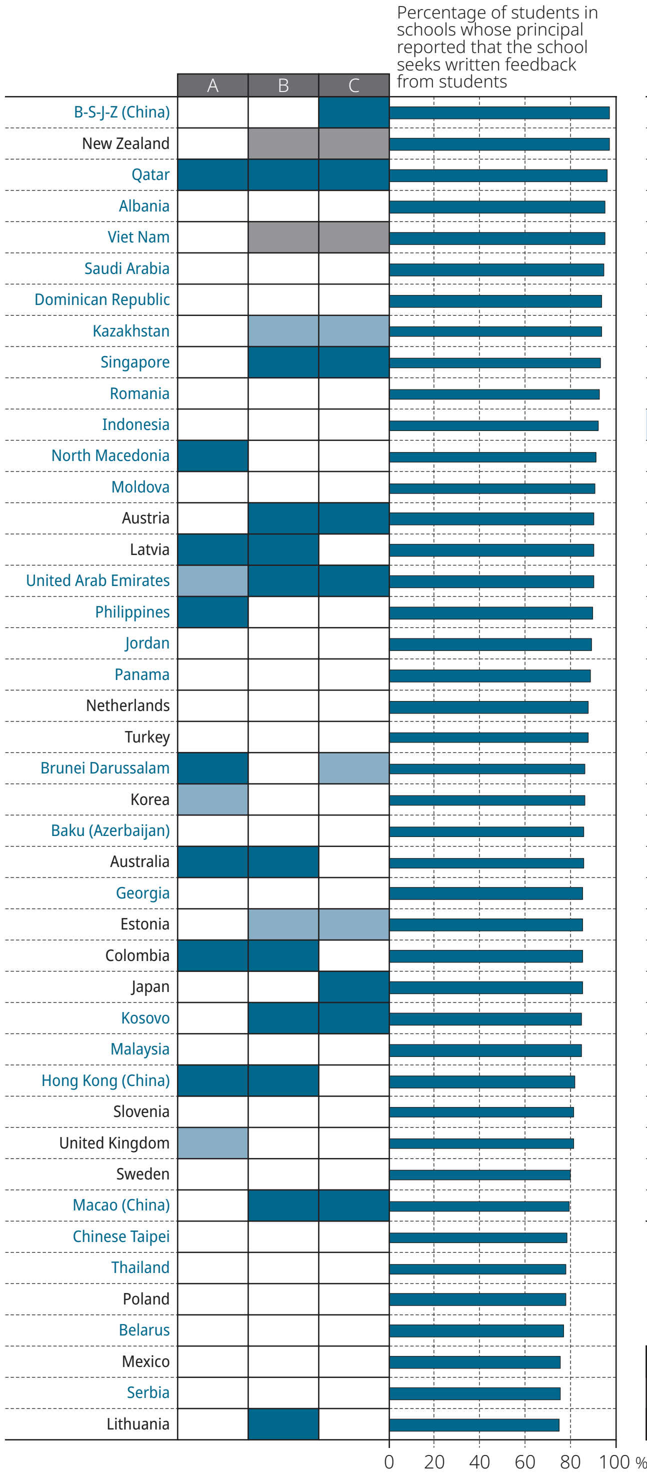
Figure V.8.7 **Seeking feedback from students, schools' socio-economic profile and reading performance**

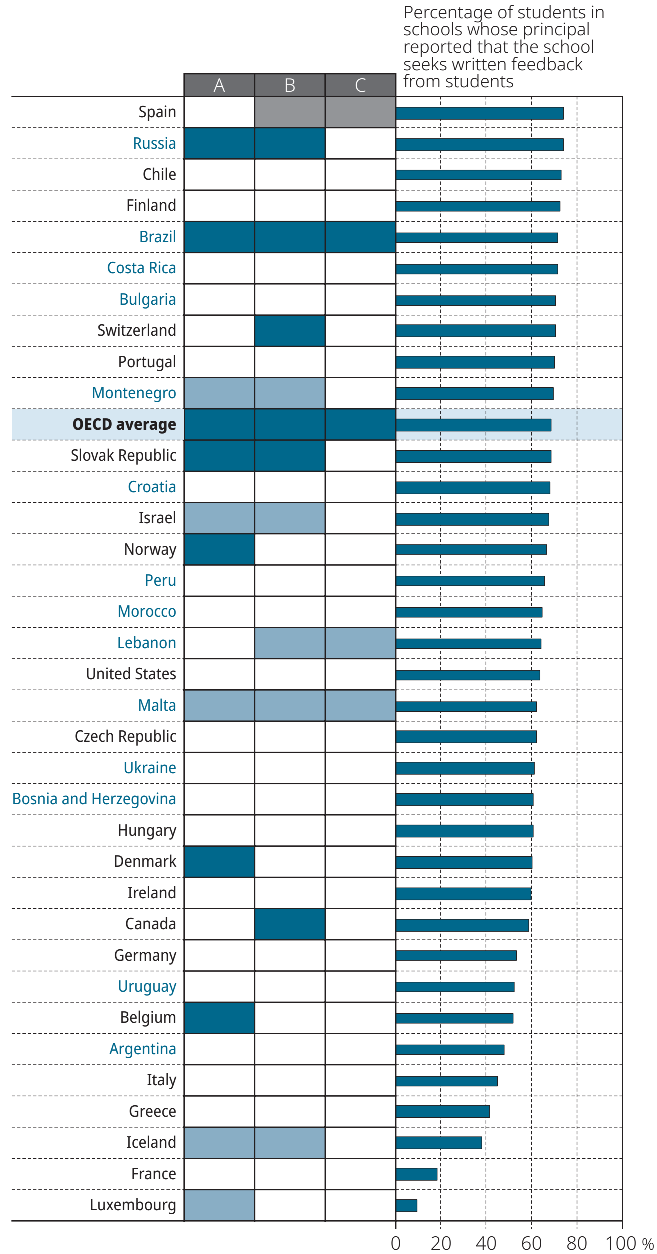
Positive difference | Negative difference | Difference is not significant | Missing values

A Difference between advantaged and disadvantaged schools (advantaged - disadvantaged)[1]

B Difference in reading score before accounting for students' and schools' socio-economic profile[2]

C Difference in reading score after accounting for students' and schools' socio-economic profile[2]





	A	B	C
Countries/economies with a positive difference	14	16	9
Countries/economies with no difference	56	52	61
Countries/economies with a negative difference	8	7	5

1. A socio-economically disadvantaged (advantaged) school is a school whose socio-economic profile (i.e. the average socio-economic status of the students in the school) is in the bottom (top) quarter of the PISA index of economic, social and cultural status amongst all schools in the relevant country/economy.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that the school seeks written feedback from students.

Sources: OECD, PISA 2018 Database, Tables V.B1.8.12, V.B1.8.13 and V.B1.8.15.

StatLink https://doi.org/10.1787/888934131994

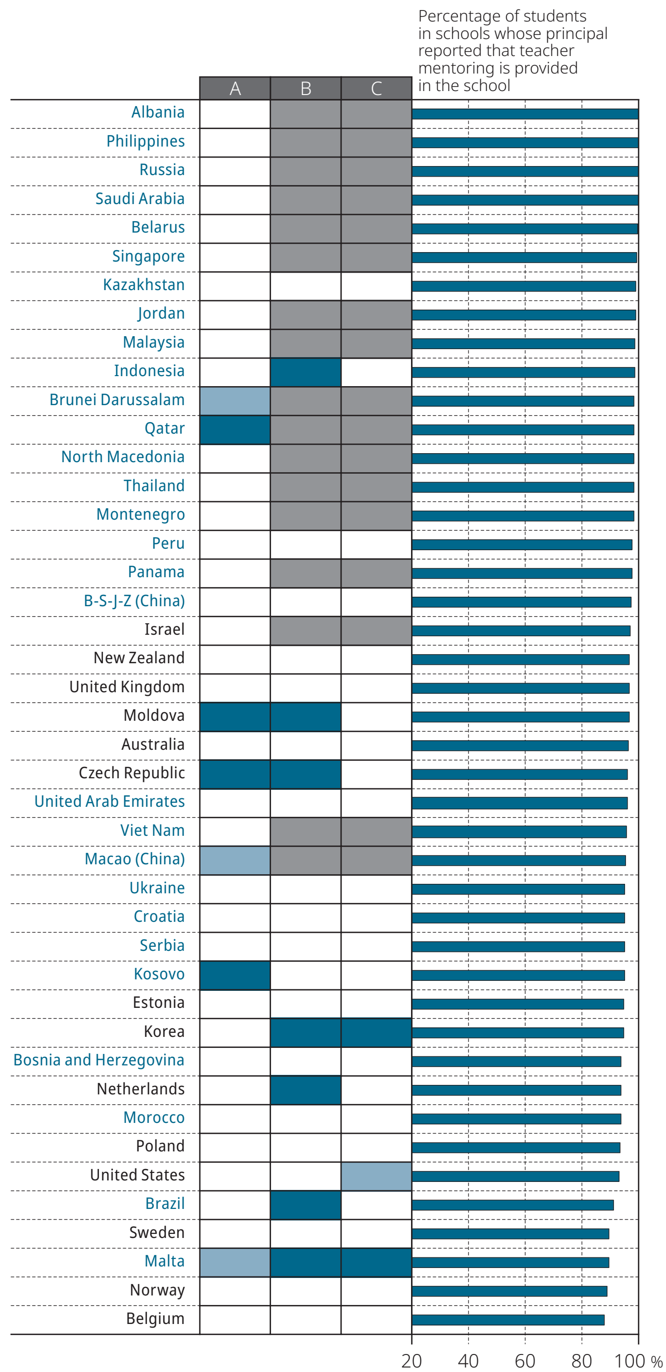
Figure V.8.8 **Teacher mentoring, schools' socio-economic profile and reading performance**

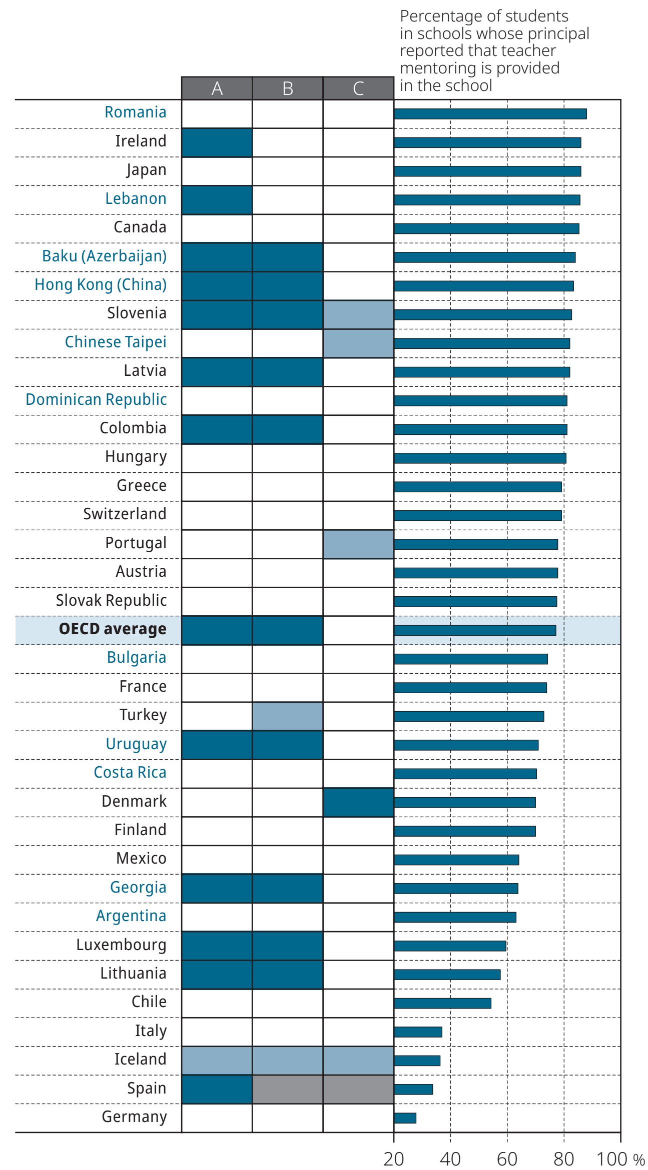
Positive difference | Negative difference | Difference is not significant | Missing values

A Difference between advantaged and disadvantaged schools (advantaged - disadvantaged)[1]

B Difference in reading score before accounting for students' and schools' socio-economic profile[2]

C Difference in reading score after accounting for students' and schools' socio-economic profile[2]





	A	B	C
Countries/economies with a positive difference	16	16	3
Countries/economies with no difference	58	42	52
Countries/economies with a negative difference	4	2	5

1. A socio-economically disadvantaged (advantaged) school is a school whose socio-economic profile (i.e. the average socio-economic status of the students in the school) is in the bottom (top) quarter of the PISA index of economic, social and cultural status amongst all schools in the relevant country/economy.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Countries and economies are ranked in descending order of the percentage of students in schools whose principal reported that teacher mentoring is provided in the school.

Sources: OECD, PISA 2018 Database, Tables V.B1.8.12, V.B1.8.13 and V.B1.8.15.

StatLink https://doi.org/10.1787/888934132013

Students in schools where teacher mentoring is provided performed better in reading than students enrolled in schools where no mentoring is provided, on average across OECD countries (a 7 score-point difference), and in 16 countries and economies. Yet, the association between teacher mentoring and student performance is confounded by the fact that, in many education systems, the availability of teacher mentoring is greater in socio-economically advantaged than in disadvantaged schools.

HOW THE MEASURES OF EVALUATION AND ASSESSMENT ARE RELATED TO DIFFERENCES IN PERFORMANCE AND EQUITY IN EDUCATION ACROSS COUNTRIES/ECONOMIES (SYSTEM-LEVEL ANALYSIS)

This section examines how various policies and practices on evaluation and assessment are related to education outcomes at the system level. As shown in Figure V.8.9, two education outcomes are considered: mean performance in reading and equity in reading performance.

At the system level, countries and economies tended to show greater equity in education when they use student assessments to inform parents about their child's progress (Figure V.8.10). Across OECD countries, after accounting for per capita GDP, the higher the percentage of students in schools that use student assessments to inform parents about their child's progress, the weaker the relationship between students' socio-economic status and their reading performance. After accounting for per capita GDP, these correlations are statistically significant in reading, mathematics and science both across OECD countries, and across all countries and economies.[1]

At the system level, countries and economies tended to have better equity in education when they use student assessments to identify aspects of instruction or the curriculum that could be improved (Figure V.8.11). Across OECD countries, after accounting for per capita GDP, the percentage of students in schools that use student assessments to identify aspects of instruction or the curriculum that could be improved was correlated with better equity in performance in reading (partial r = 0.41), mathematics (partial r = 0.40) and science (partial r = 0.45) (Table V.B1.8.16). Across all countries and economies, these correlations were statistically significant after accounting for per capita GDP.[2]

There was no clear pattern in the relationship between reading performance and the prevalence of using student assessments to identify aspects of instruction and the curriculum that could be improved. However, the disparity, related to socio-economic status, in the use of student assessments for this purpose was associated with reading performance. In high-performing education systems, the prevalence of using student assessments for this purpose was similar in socio-economically advantaged and disadvantaged schools or, in some cases, it was more prevalent amongst disadvantaged schools than advantaged schools (Figure V.8.12). For example, in Slovenia, 73% of students in disadvantaged schools attended a school where student assessments are used to identify aspects of instruction and the curriculum that could be improved, while 48% of students in advantaged schools attended such schools. In contrast, in Baku (Azerbaijan), 77% of students in disadvantaged schools attended a school where student assessments are used to identify aspects of instruction and the curriculum that could be improved, while 98% of students in advantaged schools attended such schools (Table V.B1.8.2).

To consider the issue of quality assurance and improvement actions at school, school principals were asked to report whether there are written specifications for student performance at the school and, if so, whether they are mandatory (e.g. based on district or ministry policies) or on the school's initiative. Figure V.8.13 shows that, at the system level, countries and economies tended to show greater equity in education when more students were in schools that have written specifications for student performance based on the school's initiative.[3]

The origin of such written specifications for student performance had a distinct relationship with education outcomes. When written specifications for student performance are mandatory, no clear relationship with equity was observed. However, across all countries and economies, there was a negative relationship with performance in reading, mathematics and science (Table V.B1.8.16). The relationships were significantly negative even after accounting for per capita GDP. This means that lower-performing education systems tended to have more students in schools that have mandatory written specifications for student performance. This could be interpreted to mean that in order to mitigate low performance, district or ministry policies are implemented to set mandatory specifications for student performance.

Another issue regarding quality assurance and improvement actions at school related to equity in performance is whether schools seek written feedback from students (e.g. regarding lessons, teachers or resources). Figure V.8.14 shows that, at the system level, equity in student performance tended to be greater in countries and economies with a higher percentage of students in schools whose principal reported that their school seeks feedback from students (regardless whether such feedback is mandatory or on the school's initiative).[4] Over 12% of the variation in equity in reading performance across OECD countries could be accounted for by differences in the prevalence of schools seeking feedback from students. The correlation between the percentage of students in schools seeking feedback from students and equity in reading, mathematics and science performance was statistically significant, even after accounting for per capita GDP, across OECD countries, and across all countries and economies (Table V.B1.8.16).

Figure V.8.9 [1/4] **Evaluation and assessment, and student performance and equity**

Correlation coefficients between two relevant measures

		OECD countries			
		Mean reading score		Equity in reading	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Purposes of student assessment	To guide students' learning			*0.32*	*0.32*
	To guide students' learning: top-bottom quarter difference in schools' socio-economic profile				
	To inform parents about their child's progress			*0.30*	*0.31*
	To inform parents about their child's progress: top-bottom quarter difference in schools' socio-economic profile				
	To make decisions about students' retention or promotion				*-0.29*
	To make decisions about students' retention or promotion: top-bottom quarter difference in schools' socio-economic profile				
	To group students for instructional purposes				
	To group students for instructional purposes: top-bottom quarter difference in schools' socio-economic profile				
	To compare school performance to district/national performance				
	To compare school performance to district/national performance: top-bottom quarter difference in schools' socio-economic profile				
	To monitor the school's progress from year to year				
	To monitor the school's progress from year to year: top-bottom quarter difference in schools' socio-economic profile				
	To make judgements about teachers' effectiveness				
	To make judgements about teachers' effectiveness: top-bottom quarter difference in schools' socio-economic profile	-0.44	-0.39		
	To identify aspects of instruction/curriculum be improved			0.39	0.41
	To identify aspects of instruction/curriculum be improved: top-bottom quarter difference in schools' socio-economic profile	*-0.32*	*-0.30*		
	To adapt teaching to the students' needs			0.41	0.41
	To adapt teaching to the students' needs: top-bottom quarter difference in schools' socio-economic profile			0.35	0.35
	To adapt teaching to compare the school with other schools				
	To adapt teaching to compare the school with other schools: top-bottom quarter difference in schools' socio-economic profile				
	To award certificates to students				
	To award certificates to students: top-bottom quarter difference in schools' socio-economic profile				
School accountability	Achievement data are posted publicly				
	Achievement data are tracked over time by an administrative authority				
	Achievement data are provided directly to parents	-0.34			

Notes: Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Source: OECD, PISA 2018 Database, Table V.B1.8.16.

StatLink https://doi.org/10.1787/888934132032

Figure V.8.9 [2/4] **Evaluation and assessment, and student performance and equity**

Correlation coefficients between two relevant measures

		OECD countries			
		Mean reading score		Equity in reading	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Quality assurance and improvement actions at school	Internal evaluation/self-evaluation				
	Internal evaluation/self-evaluation is mandatory			*0.30*	*0.30*
	Internal evaluation/self-evaluation is on the school's initiative				
	There is no internal evaluation/self-evaluation				
	External evaluation				
	External evaluation is mandatory				
	External evaluation is on the school's initiative				
	There is no external evaluation				
	Written specification of school's curricular profile and education goals				
	Written specification of school's curricular profile and education goals is mandatory			*-0.30*	*-0.30*
	Written specification of school's curricular profile and education goals is on the school's initiative			0.35	0.35
	There is no written specification of school's curricular profile and education goals				
	Written specification of student performance standards				
	Written specification of student performance standards is mandatory				
	Written specification of student performance standards is on the school's initiative			0.42	0.42
	There is no written specification of student performance standards				
	Systematic recording of data				
	Systematic recording of data is mandatory				
	Systematic recording of data is on the school's initiative				
	There is no systematic recording of data				
	Systematic recording of student test results and graduation rates (combined)				
	Systematic recording of student test results and graduation rates is mandatory				
	Systematic recording of student test results and graduation rates is on the school's initiative				
	There is no systematic recording of student test results and graduation rates				
	Seeking written feedback from students		*0.33*	0.36	0.39
	Seeking written feedback from students is mandatory			*0.31*	*0.31*
	Seeking written feedback from students is on the school's initiative		*0.31*		
	There is no written feedback from students		*-0.33*	-0.36	-0.39
	Teacher mentoring	0.35	0.40		
	Teacher mentoring is mandatory				
	Teacher mentoring is on the school's initiative	0.40	0.45		
	There is no teacher mentoring	-0.35	-0.40		
	Regular consultation on school improvement at least over 6 months				
	Regular consultation on school improvement at least over 6 months is mandatory			*0.30*	*0.31*
	Regular consultation on school improvement at least over 6 months is on the school's initiative				
	There is no regular consultation on school improvement at least over 6 months				
	Implementation of a standardised policy for reading subjects				
	Implementation of a standardised policy for reading subjects is mandatory				
	Implementation of a standardised policy for reading subjects is on the school's initiative				
	There is no implementation of a standardised policy for reading subjects				

Notes: Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Source: OECD, PISA 2018 Database, Table V.B1.8.16.

StatLink https://doi.org/10.1787/888934132032

Figure V.8.9 [3/4] **Evaluation and assessment, and student performance and equity**

Correlation coefficients between two relevant measures

		All countries and economies			
		Mean reading score		Equity in reading	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Purposes of student assessment	To guide students' learning		*-0.23*		
	To guide students' learning: top-bottom quarter difference in schools' socio-economic profile	*-0.21*	*-0.20*		
	To inform parents about their child's progress		-0.24	0.30	0.29
	To inform parents about their child's progress: top-bottom quarter difference in schools' socio-economic profile	*-0.20*			
	To make decisions about students' retention or promotion	-0.28	*-0.21*		
	To make decisions about students' retention or promotion: top-bottom quarter difference in schools' socio-economic profile	-0.24			
	To group students for instructional purposes		-0.37	*0.22*	
	To group students for instructional purposes: top-bottom quarter difference in schools' socio-economic profile				
	To compare school performance to district/national performance				
	To compare school performance to district/national performance: top-bottom quarter difference in schools' socio-economic profile				
	To monitor the school's progress from year to year	-0.31	-0.29		*0.20*
	To monitor the school's progress from year to year: top-bottom quarter difference in schools' socio-economic profile				
	To make judgements about teachers' effectiveness	-0.40	-0.40	*0.20*	*0.22*
	To make judgements about teachers' effectiveness: top-bottom quarter difference in schools' socio-economic profile	-0.35			
	To identify aspects of instruction/curriculum be improved	-0.20	*-0.23*		*0.20*
	To identify aspects of instruction/curriculum be improved: top-bottom quarter difference in schools' socio-economic profile	-0.38	-0.29		
	To adapt teaching to the students' needs				
	To adapt teaching to the students' needs: top-bottom quarter difference in schools' socio-economic profile	-0.24			
	To adapt teaching to compare the school with other schools	*-0.21*	*-0.21*	*0.20*	*0.20*
	To adapt teaching to compare the school with other schools: top-bottom quarter difference in schools' socio-economic profile				
	To award certificates to students		*-0.22*	*0.27*	*0.26*
	To award certificates to students: top-bottom quarter difference in schools' socio-economic profile				
School accountability	Achievement data are posted publicly			*0.19*	
	Achievement data are tracked over time by an administrative authority	-0.34	-0.31		
	Achievement data are provided directly to parents	-0.44	-0.30		

Notes: Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Source: OECD, PISA 2018 Database, Table V.B1.8.16.

StatLink https://doi.org/10.1787/888934132032

Figure V.8.9 [4/4] **Evaluation and assessment, and student performance and equity**

Correlation coefficients between two relevant measures

		All countries and economies			
		Mean reading score		Equity in reading	
		Before accounting for per capita GDP	After accounting for per capita GDP	Before accounting for per capita GDP	After accounting for per capita GDP
Quality assurance and improvement actions at school	Internal evaluation/self-evaluation				
	Internal evaluation/self-evaluation is mandatory			*0.19*	*0.20*
	Internal evaluation/self-evaluation is on the school's initiative				
	There is no internal evaluation/self-evaluation				
	External evaluation				
	External evaluation is mandatory				
	External evaluation is on the school's initiative	-0.24	*-0.20*		
	There is no external evaluation				
	Written specification of school's curricular profile and education goals				
	Written specification of school's curricular profile and education goals is mandatory	-0.24			
	Written specification of school's curricular profile and education goals is on the school's initiative	*0.21*			
	There is no written specification of school's curricular profile and education goals				
	Written specification of student performance standards	-0.31	-0.31		
	Written specification of student performance standards is mandatory	-0.35	*-0.23*		
	Written specification of student performance standards is on the school's initiative			0.34	0.34
	There is no written specification of student performance standards	0.31	0.31		
	Systematic recording of data	-0.25	-0.26		
	Systematic recording of data is mandatory	*-0.22*	*-0.22*		
	Systematic recording of data is on the school's initiative				
	There is no systematic recording of data	0.25	0.26		
	Systematic recording of student test results and graduation rates (combined)			*0.21*	*0.22*
	Systematic recording of student test results and graduation rates is mandatory	-0.29	-0.30		
	Systematic recording of student test results and graduation rates is on the school's initiative	0.24	0.25		
	There is no systematic recording of student test results and graduation rates			*-0.21*	*-0.22*
	Seeking written feedback from students			*0.22*	0.23
	Seeking written feedback from students is mandatory	-0.24	-0.31		
	Seeking written feedback from students is on the school's initiative				
	There is no written feedback from students			*-0.22*	-0.23
	Teacher mentoring				
	Teacher mentoring is mandatory	-0.51	-0.50		
	Teacher mentoring is on the school's initiative	0.40	0.37		
	There is no teacher mentoring				
	Regular consultation on school improvement at least over 6 months	-0.34	-0.45	*0.20*	*0.20*
	Regular consultation on school improvement at least over 6 months is mandatory	-0.48	-0.57		
	Regular consultation on school improvement at least over 6 months is on the school's initiative			*0.20*	*0.20*
	There is no regular consultation on school improvement at least over 6 months	0.34	0.45	*-0.20*	*-0.20*
	Implementation of a standardised policy for reading subjects	-0.41	-0.44		
	Implementation of a standardised policy for reading subjects is mandatory	-0.50	-0.49		
	Implementation of a standardised policy for reading subjects is on the school's initiative				
	There is no implementation of a standardised policy for reading subjects	0.41	0.44		

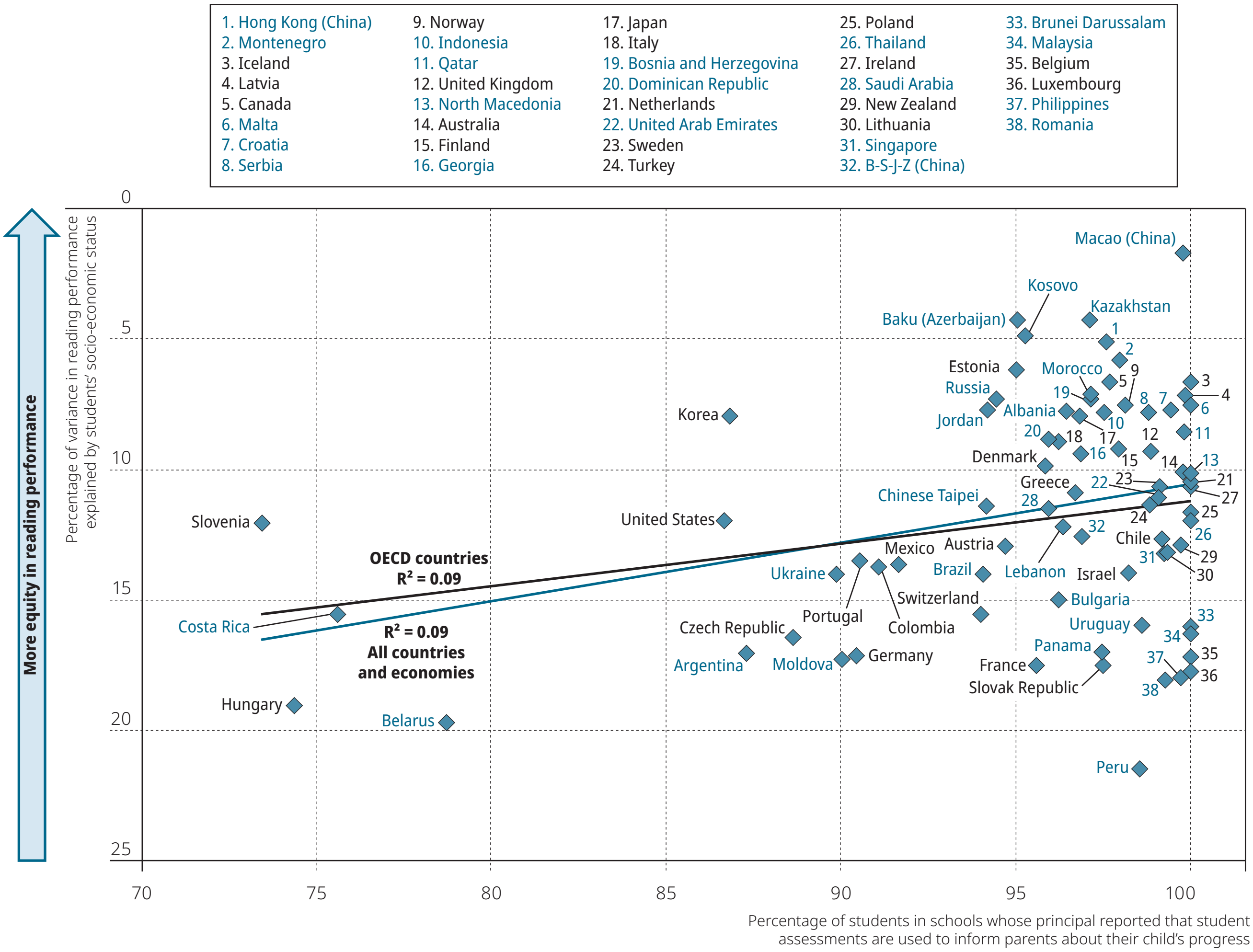
Notes: Correlation coefficients range from -1.00 (i.e. a perfect negative linear association) to +1.00 (i.e. a perfect positive linear association). When a correlation coefficient is 0, there is no linear relationship between the two measures.

Only statistically significant coefficients are shown. Values that are statistically significant at the 10% level ($p < 0.10$) are in italics. All other values are statistically significant at the 5% level ($p < 0.05$).

Source: OECD, PISA 2018 Database, Table V.B1.8.16.

StatLink https://doi.org/10.1787/888934132032

Figure V.8.10 **Using student assessment to inform parents about their child's progress and equity in reading performance**



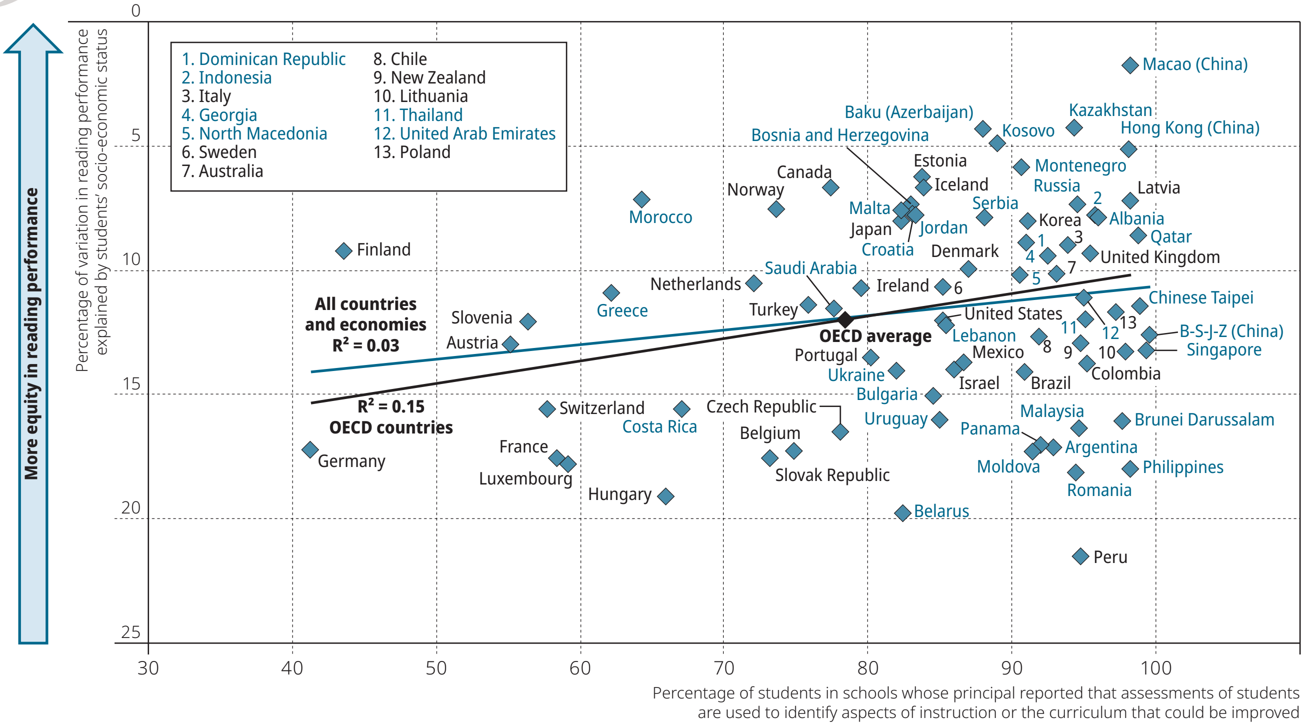
Sources: OECD, PISA 2018 Database, Tables II.B1.2.3 and V.B1.8.1.

StatLink https://doi.org/10.1787/888934132051

At the system level, mean student performance tended to be higher in countries and economies with a larger share of students in schools whose principal reported that teacher mentoring is provided on the school's initiative. Some 17% of the variation in mean reading performance across all PISA-participating countries and economies could be accounted for by differences in the prevalence of teacher mentoring at the school's initiative (Figure V.8.15). The correlation coefficients between the percentage of students in schools with teacher mentoring on the school's initiative and mean performance in each of the three core PISA subjects – reading, mathematics and science – were positive and statistically significant, even after accounting for per capita GDP, across OECD countries, and across all countries and economies (partial r coefficients ranging between 0.37 and 0.45) (Table V.B1.8.16).

When examining all countries and economies, the origin of providing teacher mentoring had a distinct relationship with performance. While mandatory teacher mentoring was negatively related to performance, teacher mentoring on the school's initiative was positively correlated with performance across all countries and economies. This difference was not observed across OECD countries.

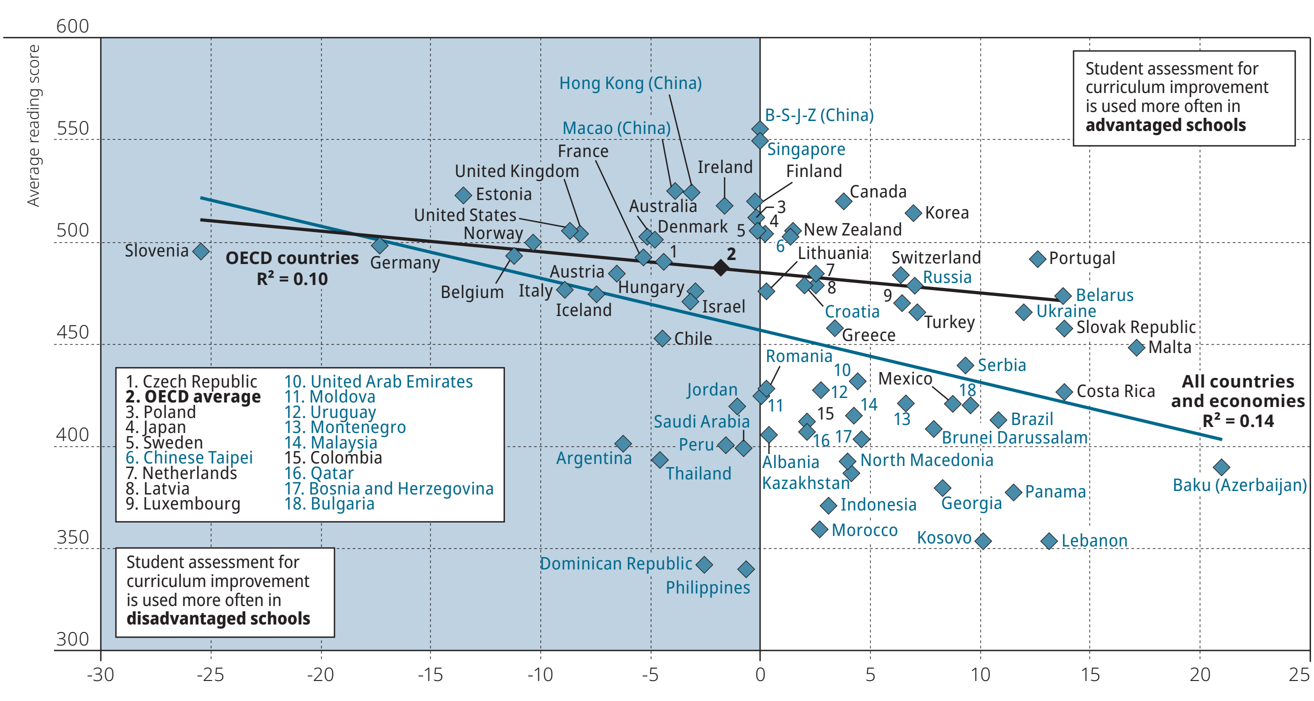
Figure V.8.11 **Using student assessment for curriculum improvement and equity in reading performance**



Sources: OECD, PISA 2018 Database, Tables II.B1.2.3 and V.B1.8.1.

StatLink https://doi.org/10.1787/888934132070

Figure V.8.12 **Socio-economic disparities in using student assessment for curriculum improvement and mean reading performance**

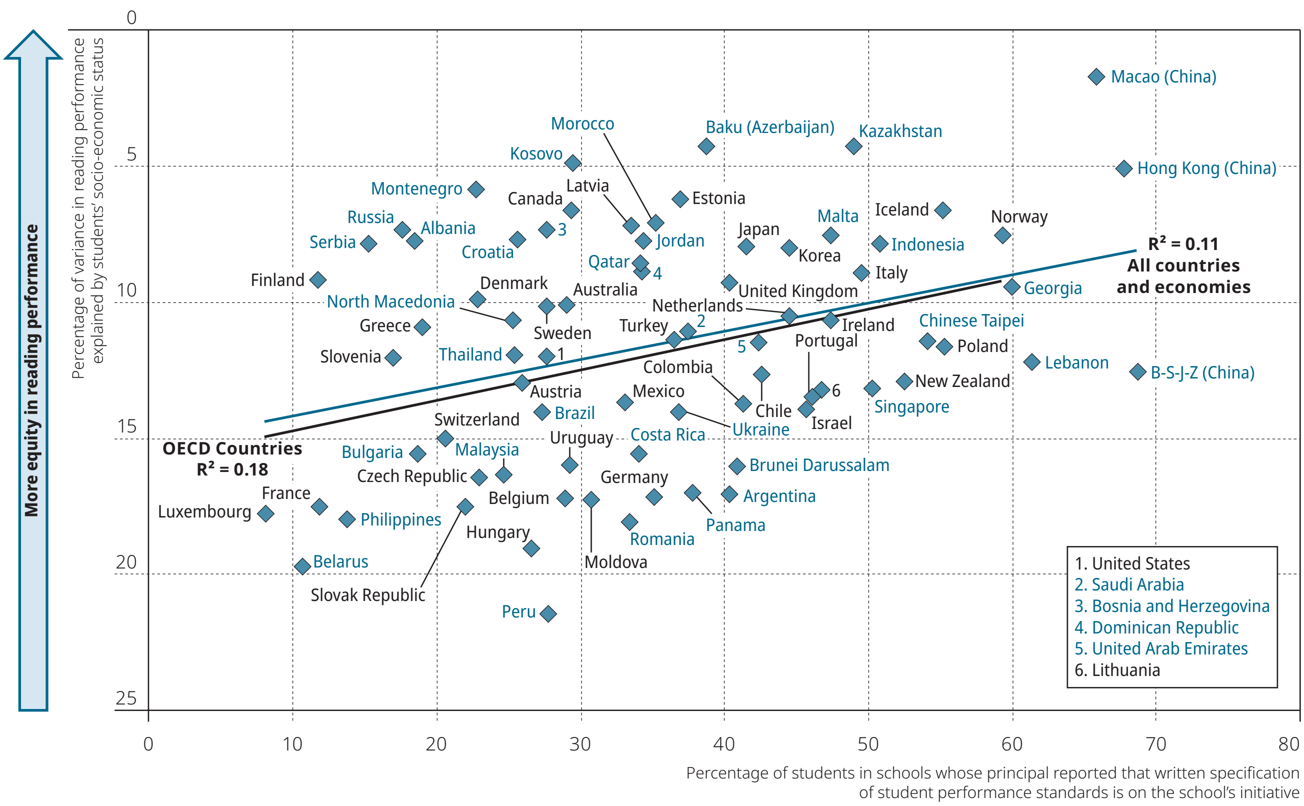


Note: A socio-economically disadvantaged (advantaged) school is a school whose socio-economic profile (i.e. the average socio-economic status of the students in the school) is in the bottom (top) quarter of the PISA index of economic, social and cultural status amongst all schools in the relevant country/economy.

Sources: OECD, PISA 2018 Database, Tables I.B1.4 and V.B1.8.2.

StatLink https://doi.org/10.1787/888934132089

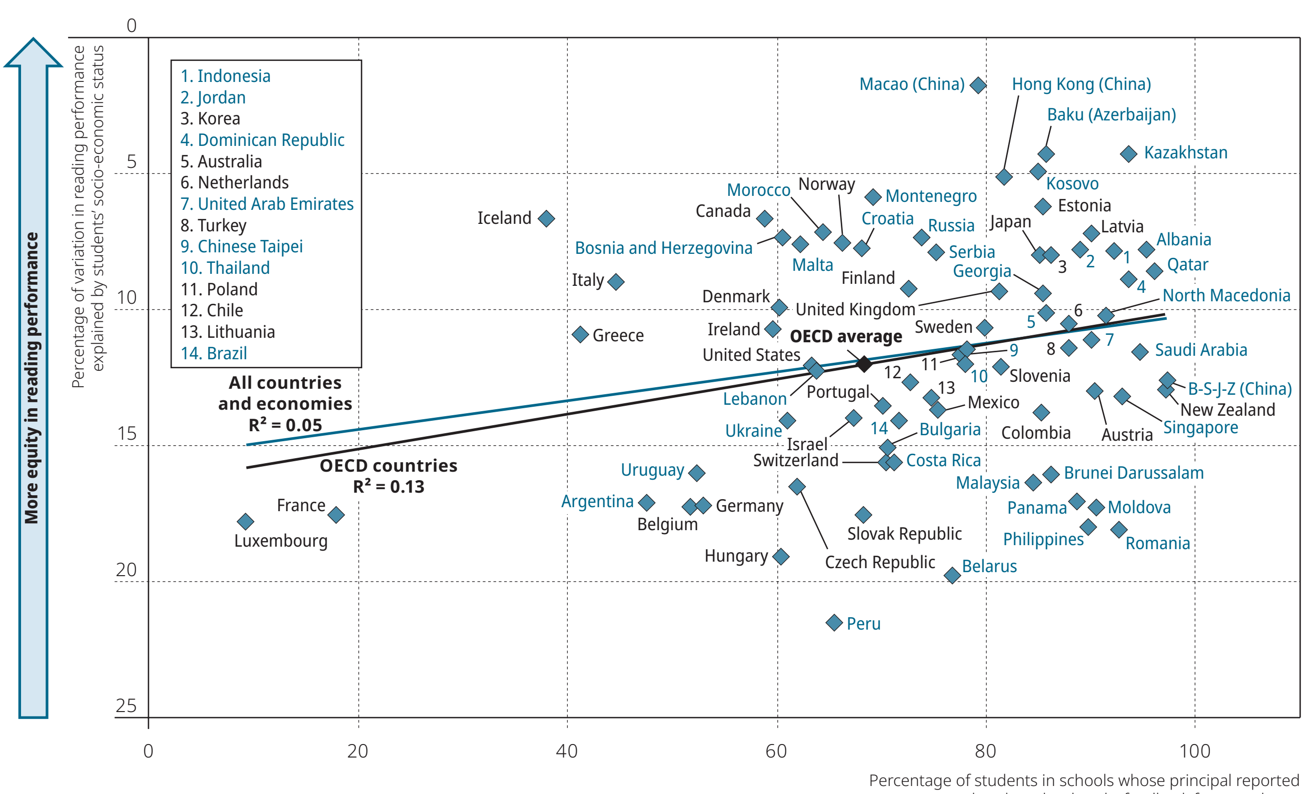
Figure V.8.13 **Written specification of student performance standards on the school's initiative and equity in reading performance**



Sources: OECD, PISA 2018 Database, Tables II.B1.2.3 and V.B1.8.11.

StatLink https://doi.org/10.1787/888934132108

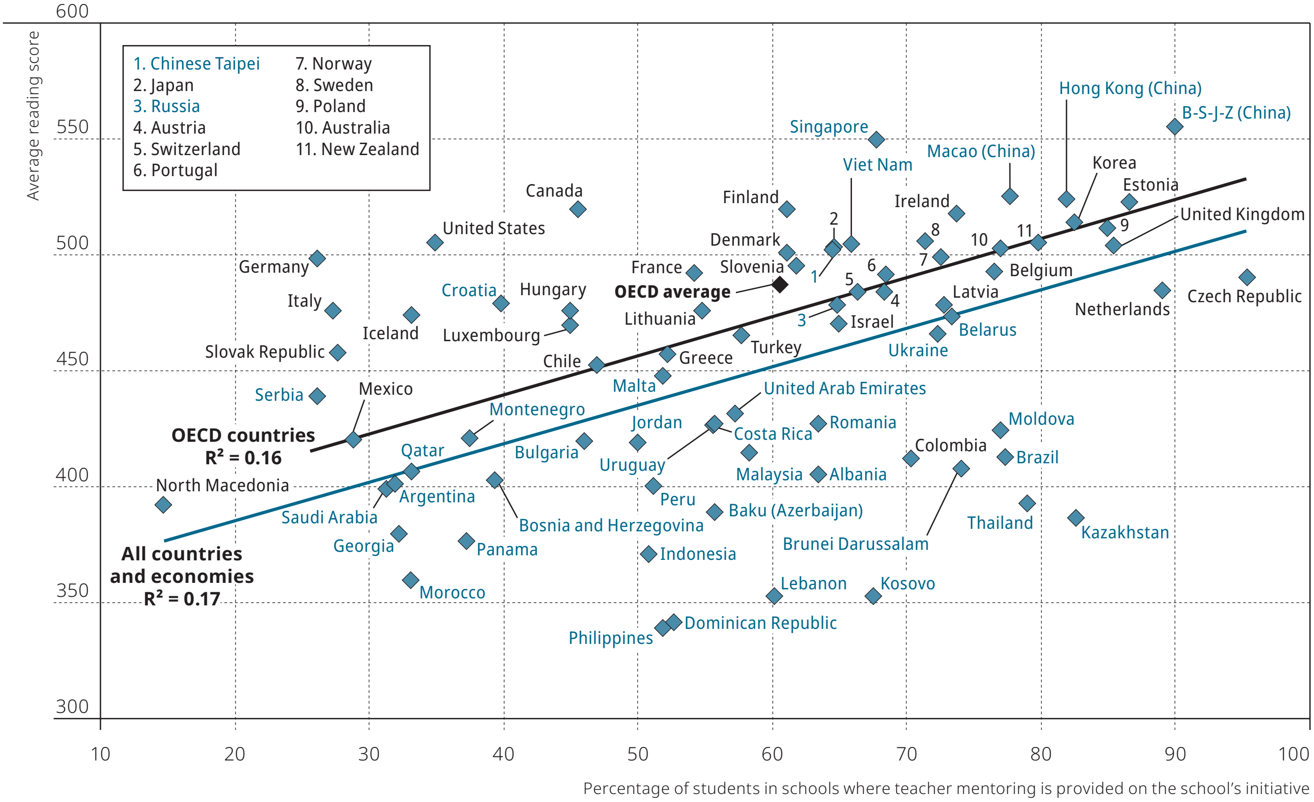
Figure V.8.14 **Seeking feedback from students, and equity in reading performance**



StatLink https://doi.org/10.1787/888934132127

Figure V.8.15 **Teacher mentoring on the school's initiative and reading performance**

Based on principals' reports



StatLink https://doi.org/10.1787/888934132146

Notes

1. After excluding low-performing countries/economies (i.e. mean performance in reading lower than 413 points), the strength of the association across OECD countries remained almost unaltered (after exclusion, R^2 = 0.29), whereas across all countries/economies, the association strengthened (after exclusion, R^2 = 0.37).

2. After excluding low-performing countries/economies (i.e. mean performance in reading lower than 413 points), the strength of the association increased both across OECD countries (after exclusion, R^2 = 0.42), and across all countries/economies (after exclusion, R^2 = 0.30).

3. After excluding low-performing countries/economies (i.e. mean performance in reading lower than 413 points), the strength of the association increased both across OECD countries (after exclusion, R^2 = 0.43), and across all countries/economies (after exclusion, R^2 = 0.40).

4. After excluding low-performing countries/economies (i.e. mean performance in reading lower than 413 points), the strength of the association across OECD countries remained almost unaltered (after exclusion, R^2 = 0.37), whereas across all countries/economies, the association was not significant.

References

Förster, C. et al. (2017), *El poder de la evaluación en el aula*. [8]

Hattie, J. and **H. Timperley** (2007), "The Power of Feedback", *Review of Educational Research*, doi: 10.3102/003465430298487, pp. 81-112, http://dx.doi.org/10.3102/003465430298487. [6]

Lesaux, N. (2006), "Meeting Expectations? An Empirical Investigation of a Standards-Based Assessment of Reading Comprehension", *Educational Evaluation and Policy Analysis - EDUC EVAL POLICY ANAL*, Vol. 28, pp. 315-333, http://dx.doi.org/10.3102/01623737028004315. [3]

Looney, J. (2011), "Alignment in Complex Education Systems: Achieving Balance and Coherence", *OECD Education Working Papers*, No. 64, OECD Publishing, Paris, https://dx.doi.org/10.1787/5kg3vg5lx8r8-en. [4]

OECD (2013), *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, OECD Reviews of Evaluation and Assessment in Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264190658-en. [1]

OECD (2013), "The evaluation and assessment framework: Embracing a holistic approach", in *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264190658-6-en. [7]

Rosenkvist, M. (2010), "Using Student Test Results for Accountability and Improvement: A Literature Review", *OECD Education Working Papers*, No. 54, OECD Publishing, Paris, https://dx.doi.org/10.1787/5km4htwzbv30-en. [2]

Shepard, L. (2000), "The Role of Assessment in a Learning Culture", *Educational Researcher*, doi: 10.3102/0013189X029007004, pp. 4-14, http://dx.doi.org/10.3102/0013189X029007004. [5]

PISA

9

The questions education policy makers should ask

This chapter provides a synthesis of the PISA results concerning school policies and practices, and how they are related to both student performance and equity across a school system. It also summarises the characteristics common to high-performing and equitable school systems.

At the time this report was published, the COVID-19 pandemic was raging around the globe. Medical systems were straining to combat, or at least contain, the virus, as they struggled with severe shortages of supplies to tend to the seriously ill. National economies suffered vertiginous falls in their capital markets as "lockdown" measures, imposed to slow human-to-human transmission of the virus, shuttered businesses large and small. The course of the virus was unpredictable, as was the number of people who would ultimately succumb to it. The only certainties on the horizon were tens of thousands of deaths and a global recession, which would only exacerbate the already profound income inequality observed in most OECD countries.

What the COVID-19 pandemic meant for students and teachers in many parts of the world was an abrupt suspension of classes and closing of schools. Those who could, continued teaching and learning on line; those who weren't equipped with a computer or an Internet connection had more difficulty guiding and using their learning time. If they weren't already, parents became even more involved in their child's education – and often had to juggle the demands of their own work and household maintenance with the need to create and maintain a productive and captivating learning environment.

PISA 2018 was conducted well before COVID-19 had claimed its first victim, or had even become a household name. The findings discussed in this report do not reflect the impact of the pandemic. However, it may be useful to consider the implications of the results in light of the uncertainties and economic contractions that governments around the globe will be facing in the immediate aftermath of the pandemic - and probably well beyond.

In times of growing budget deficits, spending on education needs to be wise and appropriate. 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. And that's where results from PISA can help. When governments have to make tough choices about how to spend their money most effectively, 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.

Indeed, the results from PISA 2018 show that, across all countries and economies, about 23% of the variation in reading performance was associated with differences in student performance between the participating school systems. When considering performance differences within countries, about 33% of the variation lay between schools and 67% lay within schools. This means that both policy makers and school leaders need to assess what's working and what isn't in their systems and classrooms so that all students are given equal opportunities to succeed.

For example, with this unanticipated and sudden shift to online learning, policy makers and school leaders must now ask themselves:

ARE SCHOOLS EQUIPPED TO TEACH – AND ARE STUDENTS READY TO LEARN – REMOTELY?

Availability of technology at school

On average across OECD countries in 2018, there was almost one computer available at school for educational purposes for every 15-year-old student (the computer-student ratio is equal to 0.8). In Austria, Iceland, Luxembourg, Macao (China), New Zealand, the United Kingdom and the United States, the computer-student ratio was 1.25 or more, while in Albania, Brazil, Greece, Kosovo, Montenegro, Morocco, Turkey and Viet Nam, there was only one computer (or fewer) available for every 4 students (ratio = 0.25).

In most countries, the distribution of computers tended to be more equitable in schools than in homes. In fact, in 16 countries and economies, the computer-student ratio was greater in disadvantaged schools than in advantaged schools. In 17 countries and economies, the number of computers available per student was greater in advantaged schools than in disadvantaged schools. There were also more computers per student in private than in public schools, and in rural than in urban schools.

There has been notable progress in equipping schools with computers, with a widespread increase in the computer-student ratio between 2009 and 2018. The largest increases in the average number of computers per student were observed in Estonia, Iceland, Lithuania, Luxembourg, Sweden, the United Kingdom and the United States. On average across OECD countries, there was one additional computer available per every four students in 2018 than was available in 2009 (0.26 of an additional computer per student).

It is noteworthy that students attending schools with more computers per student scored lower in the PISA assessment than their peers in schools with fewer computers per student. On average across OECD countries, one additional computer per student in a school was associated with a 12-point decline in reading scores before accounting for other factors, and with a 6-point decline after accounting for students' and schools' socio-economic profile. (In 47 out of 77 participating countries/economies, the proportion of portable computers, such as laptops, in school was unrelated to students' reading scores.) While there may be many reasons why there was a negative association between computers-per-student and students' scores, the finding does suggest that it takes more than providing technology to see better learning outcomes.

Adequacy of the technology available at school

Making digital devices available at school will not be useful unless those devices are adequate to the teaching and learning tasks at hand. PISA 2018 found that little more than two in three 15-year-old students were enrolled in a school whose principal reported that the digital devices at school are sufficiently powerful, in terms of computing capacity. In Japan, less than half of students were enrolled in such a school, and in Kosovo just one in five students were.

Differences between advantaged and disadvantaged schools were significant. For example, in Brazil 68% of students in advantaged schools attended a school whose principal reported that the school had sufficiently powerful digital devices, but just 10% of students in disadvantaged schools attended such a school. Large disparities were observed amongst OECD countries too. In Spain, there was a 40 percentage-point difference (70% vs. 30%) in the availability of sufficiently powerful digital devices between advantaged and disadvantaged schools.

Equally important, while in the four Chinese provinces/municipalities that participated in PISA 2018 (Beijing, Jiangsu, Shanghai and Zhejiang), Denmark, Lithuania, Singapore and Slovenia, 9 out of 10 students were in schools whose principal reported that their school's Internet bandwidth or speed is sufficient, on average across OECD countries, only 6 in 10 students attended such schools.

Some 40% of all computers available to 15-year-olds in school are portable. In a few high-income countries, most computers available at school are portable: in Denmark, Norway, Singapore and Sweden, 9 out of 10 computers are portable, and in the United States, 8 out of 10 computers are portable. By contrast, in 50 countries and economies, only 30%, at most, of all computers available at school are portable. In Georgia, Jordan, Malta, Morocco, the Philippines and Thailand, only 1 in 10 computers, at most, are portable.

Portable computers are more frequently available in private than in public schools, and in socio-economically advantaged than in disadvantaged schools, on average across OECD countries. Indeed, the growth in the availability of portable computers at school between 2015 and 2018 was due to gains amongst schools in the second, third and top quarters of the distribution of schools' socio-economic profile, while amongst disadvantaged schools, the share of portable computers did not change during the period. As a result, the disparity in access to portable computers related to socio-economic status increased between 2015 and 2018.

In addition, the infrastructure needed to use digital technologies effectively is not universally available. On average across OECD countries in 2018, more than 65% of students attended a school whose principal reported that the school's capacity to enhance learning and teaching using digital devices is sufficient in terms of the adequacy of software available, the computing capacity of digital devices, the Internet bandwidth or speed, and the number of digital devices connected to the Internet. Around 55% of students attended a school where an effective online learning platform is available to them, on average across OECD countries.

But differences between advantaged and disadvantaged schools in this regard are notable. For example, 71% of students attended schools where appropriate software is provided. However, significantly more students in advantaged schools (77% of students in advantaged schools) than in disadvantaged schools (65% of students in disadvantaged schools) were able to benefit from adequate software at school.

Teachers' capacity to use technology

PISA 2018 asked school principals about different aspects of their school's capacity to enhance teaching and learning using digital devices. On average across OECD countries in 2018, 65% of 15-year-olds were enrolled in schools whose principal reported that teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction. The proportion varied considerably between socio-economically advantaged and disadvantaged schools. In Sweden, for example, 89% of students in advantaged schools attended such a school, but only 54% of students in disadvantaged schools did.

On average across OECD countries, about 60% of 15-year-old students were enrolled in schools whose principal reported that teachers have sufficient time to prepare lessons integrating digital devices, ranging from close to 90% of students in the four Chinese provinces/municipalities that participated in PISA 2018 to little more than 10% of students in Japan.

The picture was similar when it comes to the availability of professional resources for teachers to learn how to use the digital devices. About 55% of students were in schools where teachers are provided with incentives to integrate digital devices into their teaching or have sufficiently qualified technical assistant staff.

School practices for using digital devices effectively

The effectiveness of using digital devices and ICT to enhance teaching and learning may also depend on schools' policies and practices. PISA 2018 asked school principals whether they had formal guidelines (e.g. written statements, programmes or policies) or specific practices (e.g. regularly scheduled meetings) that focus on how to use digital devices effectively in the classroom.

On average across OECD countries, the most common school practices intended to improve learning through the use of digital devices were: having regular discussions between principals and teachers about the use of digital devices for pedagogical purposes (63% of students attended schools that practice this); having written school statements about the use of digital devices (62% of students); and having a specific programme to prepare students for responsible Internet behaviour (60% of students).

Box V.9.1. **Inequities in the home learning environment**

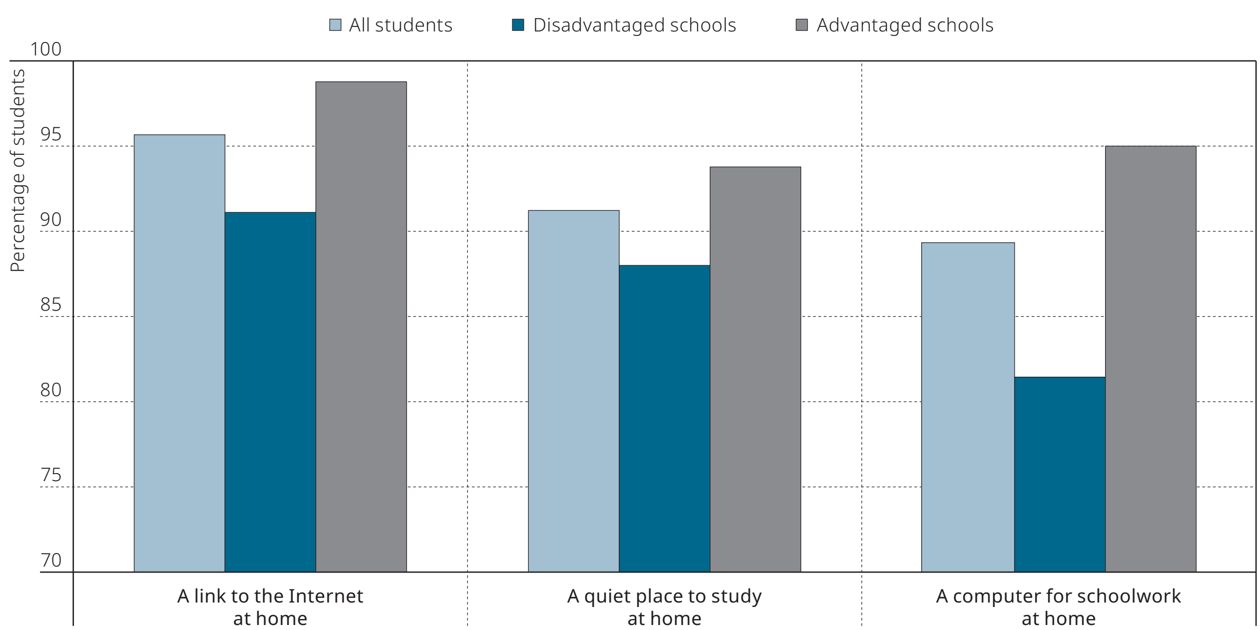
For some students, even the basics for learning are not available at home. On average across OECD countries, 9% of 15-year-old students do not have a quiet place to study in their home; in Indonesia, the Philippines and Thailand, more than 30% of students do not have such a place to study. These tend to be students from the most socio-economically disadvantaged backgrounds. Even in PISA top-performer Korea one in five students from the 25% most disadvantaged schools reported that they do not have a place to study at home, while one in 10 students in advantaged schools reported so.

Online learning does not just require a place to study, but also a computer at home that students can use to do their work. PISA 2018 results revealed considerable disparities across and within countries in the availability of home computers for schoolwork. While in Austria, Denmark, Iceland, Lithuania, the Netherlands, Norway, Poland, Slovenia and Switzerland over 95% of students reported that they have a computer at home to use for their schoolwork, only 34% of students in Indonesia reported so. Here, too, there tend to be large differences between socio-economic groups. For example, virtually every 15-year-old in socio-economically advantaged schools in the United States has a computer at home for schoolwork, but only three in four students in disadvantaged schools have one. In Peru, 88% of students in advantaged schools but just 17% of students in disadvantaged schools have a computer at home for their schoolwork.

When it comes to Internet connectivity, the picture is similar. In some countries, access to the Internet at home is nearly universal, while in others only 50% of 15-year-old students have Internet access at home. In Mexico, 94% of advantaged students have an Internet connection at home, but just 29% of disadvantaged students do.

Figure V.9.1 **Students' online learning environment at home**

Based on principals' reports; OECD average



Note: All differences between advantaged and disadvantaged schools are statistically significant, on average across OECD countries.
Source: OECD, PISA 2018 Database, Table V.B1.9.1,Table V.B1.9.2 and Table V.B1.9.3.
StatLink https://doi.org/10.1787/888934132165

School guidelines and practices to enhance teaching and learning using digital devices were more often observed in socio-economically advantaged schools than disadvantaged schools. Across OECD countries, some 23% of the differences in equity in reading performance could be accounted for by the percentage of students in schools whose principal reported that their school has its own written statement about the use of digital devices.

The results show that it is important to distinguish between the quantity and quality of digital devices. While the number of computers available to students in advantaged and disadvantaged schools were nearly the same, portable computers, including laptops and tablets, were more prevalent in advantaged schools. 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 at home is less equitable, so it would be particularly important to provide portable digital devices to students in disadvantaged schools.

The results also show significant disparities in the availability of computers with sufficient power and Internet bandwidth or speed. Disadvantaged schools should be provided with sufficient bandwidth since PISA finds that that particular resource is associated with greater equity at the system level.

In order to use the hardware efficiently, adequate software and digitally qualified teachers must also be available. Having adequate software and an effective online learning platform was also unevenly distributed between advantaged and disadvantaged schools. It would be useful to develop software and online platforms that are accessible to all schools. There were more teachers with the necessary skills to integrate digital devices into instruction, and more qualified technical assistant staff, in advantaged schools than in disadvantaged schools. More than one in three teachers lack fundamental technical and pedagogical skills, so providing teachers with the necessary training would certainly improve online teaching. It would also be helpful to offer schools guidelines for the use digital devices since having such guidelines is associated with greater equity in the system.

Even while addressing the suddenly urgent issue of connectivity, and even – perhaps especially – as the global economy contracts as a result of the pandemic, education policy makers still need to consider other basic questions if they want to be able to provide all students with the best education possible. For example:

IS HAVING MORE COMPUTERS AT SCHOOL RELATED TO BETTER PERFORMANCE?

While results show that the proportion of portable computers in school is largely unrelated to students' reading scores, having high-speed Internet access at school is associated with better performance, even after accounting for socio-economic status.

Access to the Internet was virtually universal in most education systems that participated in PISA 2018. In 55 out of 79 countries and economies, 9 out of 10 computers available to 15-year-olds for educational purposes at school were connected to the Internet. On average across OECD countries, having more computers at school that are connected to the Internet was positively associated with reading performance. Students in schools whose principal reported that the school's Internet bandwidth or speed is sufficient scored 10 score points higher in reading, on average across OECD countries, than students in schools whose principals did not report adequate Internet speed. However, after accounting for students' and schools' socio-economic profile, these positive associations disappeared, as students in advantaged schools, where computers are more often connected to the Internet and the connection is faster, tended to score higher.

Internet connectivity was strongly associated with mean reading performance at the system level. High-performing countries and economies tended to have more school computers (those available to 15-year-olds for educational purposes) that are connected to the Internet. This positive relationship was observed, even after accounting for per capita GDP, across all participating countries and economies. Differences in Internet connectivity accounted for as much as 57% of the differences in mean reading performance across all participating countries and economies in PISA 2018. In addition, schools' Internet bandwidth or speed was positively correlated to mean reading performance, and to equity in reading performance, across all participating countries and economies, before and after accounting for per capita GDP.

But access to adequate hardware is just one component of digital learning; teachers need to know how to use technology to enhance their instruction. PISA 2018 found that a school's capacity to enhance teaching and learning using digital devices is greater in socio-economically advantaged schools than disadvantaged schools. On average across OECD countries, students in advantaged schools were more likely to attend a school whose principal agreed that the school's capacity for using digital devices is sufficient.

Students attending schools with a greater capacity to enhance teaching and learning using digital devices scored higher in reading, on average across OECD countries. For example, students in schools where teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction scored five points higher than students in schools where teachers did not have these skills, although this difference was not statistically significant after accounting for socio-economic status.

Having the right software for learning was also related to reading performance. Some 34% of the variation in mean reading performance across all countries/economies could be accounted for by differences in the availability of adequate software.

It is important, too, for schools to clarify how computers are to be used in their classrooms. Doing so can provide a blueprint for teachers as they design lessons that may include web-based material. Across all participating countries and economies, school systems with a higher percentage of students in schools whose principal reported that their school has its own written statement about the use of digital devices generally showed higher mean performance in reading, mathematics and science.

At the system level, both the absolute level of and disparities in digital resources are associated with countries'/economies' performance and degree of equity in education, as shown in Box V.9.2. Providing all schools, including disadvantaged schools, with greater access to digital devices and guidelines for using them appropriately would be crucial for both performance and equity.

ARE TODAY'S SCHOOLS WELL-EQUIPPED WITH THE RELEVANT HUMAN AND MATERIAL RESOURCES TO MEET THEIR STUDENTS' NEEDS? ARE THESE RESOURCES DISTRIBUTED EQUALLY AMONGST SCHOOLS IN AN EDUCATION SYSTEM?

The most valuable educational resource at school is the teaching staff. Students cannot be expected to learn effectively if they do not have access to well-prepared and qualified teachers – and if there are not enough teachers at the school to give their students the support they need. On average across OECD countries in 2018, 27% of students were enrolled in schools whose principal reported that learning is hindered by a perceived lack of teaching staff, and 33% were enrolled in schools whose principal reported that learning is hindered by a perceived lack of assisting staff. Shortages of teachers and support staff tended to be reported more often by principals of disadvantaged schools (in 42 countries and economies) and by principals of public schools (in another 42 countries and economies). In 44 countries and economies, students attending schools whose principal reported greater shortages of teaching and support staff scored lower in reading.

The percentage of teachers fully certified by an appropriate authority was positively correlated with mean performance in reading, even after accounting for per capita GDP, across OECD countries. Differences in teacher certification accounted for about 16% of the differences in mean reading performance across all countries and economies. Moreover, the percentage of full-time teachers was associated with greater equity in reading performance across all countries and economies, even after accounting for per capita GDP.

As with shortages of teaching and support staff, socio-economically disadvantaged schools were more likely than advantaged schools to suffer shortages of material resources (i.e. school infrastructure and educational materials), on average across OECD countries and in 47 education systems. Disparities in material resources related to schools' socio-economic profile were comparatively large in six Latin American countries (Argentina, Brazil, Colombia, Mexico, Panama and Peru) and three Southeast Asian countries (Indonesia, the Philippines and Thailand).

Disparities in shortages of material resources were also observed between rural and urban schools (in 25 education systems, rural schools suffered from more shortages) and between public and private schools (in 39 education systems, public schools suffered from more shortages).

On average across OECD countries, shortages of educational materials were more strongly associated with lower reading performance than shortages of physical infrastructure. After accounting for students' and schools' socio-economic profile, the association between students' reading scores and schools' physical infrastructure became statistically insignificant; but the association between reading scores and shortages of educational materials remained negative and statistically significant.

At the system level, PISA 2018 found that instruction hindered by a lack of educational materials was associated with lower reading scores in all participating countries and economies. School systems that showed more equity in the allocation of material resources tended to score higher in reading.

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. On average across OECD countries in 2018, just about half of 15-year-olds were enrolled in schools whose principal reported that an effective online learning support platform is available. Again, there were large variations within and across countries, especially related to schools' socio-economic profile. Across all countries and economies, on average, 58.8% of students in advantaged schools attended a school whose principal reported that the school has an effective online learning platform, while only 48.8% of students in disadvantaged schools attended such a school. In the four Chinese provinces/municipalities that participated in PISA 2018, Denmark, Macao (China) and Singapore, 9 out of 10 students were enrolled in schools that have an effective online learning support platform; in Argentina, Belarus, Costa Rica, Japan, Kosovo, Luxembourg, Morocco, the Republic of North Macedonia, Panama and Peru, less than 30% of students were enrolled in such a school.

Across OECD countries, about 15% of the difference in equity in reading performance could be accounted for by the percentage of students in schools whose principal agreed or strongly agreed that "an effective online learning support platform is available". The correlation was weaker, but statistically significant, across all countries/economies. Across all participating countries and economies, having an effective online platform was also associated with better performance at the system level.

One of the intersections of material and human resources at school is class size. Do schools have the physical infrastructure to accommodate smaller classes? Are there enough teachers at school to provide more personalised support to students when there are fewer of them in class? And how is class size associated with student performance?

On average across OECD countries in 2018, large language-of-instruction classes were more frequently observed in socio-economically advantaged schools than in disadvantaged schools, in urban than in rural schools, in public than in private schools, and in upper secondary than in lower secondary schools. Students attending larger language-of-instruction classes (i.e. one more student per class) scored three score points higher in reading, on average across OECD countries. Even after accounting for students' and schools' socio-economic profile, in 39 countries/economies and on average across OECD countries, students attending larger language-of-instruction classes scored higher in reading (an increase of one student per class corresponded to an increase of one score point). In 3 countries/economies the relationship was negative and in 33 countries/economies it was not statistically significant.

But at the system level, the results were different. Education systems with smaller language-of-instruction classes generally showed higher mean reading performance than systems with larger classes. There was a negative correlation between larger classes and mean performance in reading, even after accounting for GDP, across all participating countries and economies. Differences in class size accounted for about 12% of the difference in mean reading performance across all countries and economies.

While high-performing systems tended to invest in smaller classes, PISA 2018 data show that large classes have not prevented schools in East Asia from providing good instruction, and that, across OECD countries, students in large classes tended to score higher. Given the high costs associated with smaller classes, governments should seriously consider the opportunity costs of reducing class size, and other approaches should be also considered to compensate for large classes. For example, the role of teaching strategies, disciplinary climate, and student motivation and dispositions in large classes could be further studied in order to provide guidance for schools and teachers who teach large classes.

Can schools compensate for disadvantage at home?

In many countries, disadvantaged students often do not have a quiet place to study at home. This makes it even more important that schools provide such a space for their students. It is an investment that pays off in student outcomes – at both the school and system levels. PISA 2018 found that in 20 countries and economies, attending a school that provides space where students can do their homework is associated with higher scores in reading, after accounting for the socio-economic profile of students and schools. Students who have access to a room at school for doing homework scored 14 points higher in reading than students without access to such a room at school, on average across OECD countries; after accounting for socio-economic status, they scored 4 points higher.

Across all countries and economies, and after accounting for per capital GDP, there was a strong correlation between the share of students who have access to a room at school for doing homework and mean performance in reading, mathematics and science. Across OECD countries, the correlations were weaker, but they were also statistically significant in the three core subjects, after accounting for per capita GDP.

But the share of students in disadvantaged schools whose school provides a room for homework was about 7 percentage points smaller than the share of students in advantaged schools whose school provides such a space, on average. This indicates that the students who could benefit the most from this precious resource – a space dedicated to quiet study – are less likely to have access to it.

Providing all schools with better physical infrastructure and extra capacity is important as it lends additional space for students. In the aftermath of the coronavirus pandemic, schools may need to become more flexible and accommodate students with more space to adhere to the new conventions.

The PISA 2018 results also showed considerable disparities between advantaged and disadvantaged schools related to shortages of education staff and material resources, including digital resources. However, in high-performing countries/economies, differences in the availability and quality of material resources between disadvantaged and advantaged schools were smaller or, in some cases, disadvantaged schools had more material resources than advantaged schools. The picture was similar when considering digital resources, including Internet speed, digital devices' computing capacity, and the availability of software and an effective online learning support platform. Here too, in high-performing countries/economies, socio-economic disparities were smaller or, in some cases, disadvantaged schools tended to have more of these resources than advantaged schools, while the level of digital resources in these systems was generally high to begin with. Furthermore, in high-performing countries and economies, more schools had a specific programme to prepare students for responsible Internet behaviour. Socio-economic disparities were also smaller and, in some cases, disadvantaged schools were more likely than advantaged schools to have such a programme.

Ensuring that all schools, both disadvantaged and advantaged, have adequate and high-quality material resources, including digital resources, and the appropriate support is important for the learning needs of students from all backgrounds.

IS MORE LEARNING TIME ASSOCIATED WITH BETTER STUDENT PERFORMANCE?

There is still no consensus on how much time students should spend in regular classes each week. PISA 2018 found that learning time in regular language-of-instruction lessons was positively associated with reading achievement, but only amongst students who spent up to three hours per week in such lessons; amongst students who spent four, five or more hours per week, the association between learning time and student achievement became null then negative, on average across OECD countries.

System-level analyses also showed a similar curvilinear relationship between time spent in regular lessons and performance. Across all countries and economies, in those countries/economies where more students spent less than 20 hours per week in regular lessons (including all subjects) or more than 39 hours per week, students scored worse (the upper threshold in OECD countries was 32 hours per week). Moving from one hour or less of learning time in the language of instruction to three hours was associated with larger improvements in reading scores amongst disadvantaged than advantaged students. This may reveal that, initially, returns to learning were greater amongst disadvantaged students. However, beyond three hours of instruction there were diminishing returns to learning for disadvantaged students, while diminishing returns were observed after four hours of instruction for advantaged students This suggests that the relationship between learning time and performance is heterogeneous, depending on student, and perhaps school, characteristics.

Most parents would like to see their children in schools where they can acquire solid academic knowledge and skills but also have enough time to participate in non-academic activities, such as sports, theatre or music, that develop their social and emotional skills, and contribute to their well-being. Therefore, it is important to ensure that learning time is productive so that students can develop their academic, social and emotional skills in a balanced way.

DO ALL STUDENTS HAVE EQUAL OPPORTUNITIES TO LEARN AT SCHOOL?

PISA 2018 shows that foreign-language lessons take up a substantial proportion of 15-year-old students' learning time in school. On average across OECD countries, students spent more time in foreign-language lessons (3.6 hours per week) than in science lessons (3.4 hours), while they spent slightly more time in language-of-instruction lessons (3.7 hours) and mathematics lessons (3.7 hours) than in foreign-language lessons.

Socio-economic disparities in learning time in regular school lessons are most prominent in foreign-language lessons, followed by science lessons, on average across OECD countries. Disadvantaged students reported spending 3.3 hours per week in foreign-language lessons, while advantaged students reported spending 4 hours per week. This means that advantaged students spent 42 minutes more than disadvantaged students in foreign-language lessons. Similarly, advantaged students spent 3.8 hours per week and disadvantaged students spent 3.2 hours per week in science lessons, a difference of 34 minutes. Smaller differences were observed for mathematics lessons: advantaged students spent 3.8 hours per week and disadvantaged students spent 3.6 hours per week in regular mathematics lessons. Both advantaged and disadvantaged students spent 3.7 hours per week in language-of-instruction classes.

Why are socio-economic disparities in learning time observed in foreign-language and science lessons, but less so in mathematics lessons and not at all in language-of-instruction lessons? One possible explanation would be that the two former subjects are more likely to be non-compulsory. Either certain schools do not offer these lessons or students do not enrol in these classes as they are elective subjects, even if offered by schools.

It is worth noting that advantaged students reported spending more time in foreign-language lessons than in the other three subjects. On average across OECD countries, advantaged students reported spending 4 hours per week in foreign-language lessons, while they reported spending 3.7 hours per week in language-of-instruction and 3.8 hours per week in mathematics and science lessons. This suggests that advantaged students emphasise learning foreign languages.

Being able to communicate in multiple languages is increasingly important in an interconnected world. Beyond its use as a practical tool, a mastery of other languages may be related to more positive attitudes towards other cultures. Volume VI of PISA 2018 Results analyses in detail the relationship between students' mastery of languages other than their own and their ability to communicate across cultures.

PISA 2018 results may suggest the emergence of a new type of social divide and a potential threat to achieving a harmonious interconnected world: advantaged students have more opportunities to learn foreign languages than disadvantage students do. This may lead to unequal job opportunities later on in their lives. It may leave certain groups of students unprepared for living with others from different backgrounds if exposure to other languages is related to students' ability to engage in open, appropriate and effective communication across cultures.

Further research is needed to fully understand what drives the socio-economic disparities in time spent in foreign-language lessons. Both whether and how different types of schools provide foreign-language lessons, and the choices students make, could result in such socio-economic disparities. On average across OECD countries, students in private schools, in schools in urban areas, or in upper secondary education spend more time in foreign-language lessons than those in public schools, in schools in rural areas, or in lower secondary education. One may also need to examine the potential risk of providing more choice of subject matter to students without providing relevant and proper guidance. Would more elective courses result in some students selecting their courses based on their immediate interest rather than their long-term benefit? Would a stringent core curriculum ensure that all students have equal opportunities to learn skills that are key to their future well-being? These questions need to be considered in any discussion about the trade-offs between teaching to a curriculum common to all students vs. teaching to cater to individual students' needs and interests.

WHAT CAN PRE-PRIMARY EDUCATION MEAN FOR PERFORMANCE AND EQUITY IN EDUCATION?

Many studies, including previous PISA assessments, have consistently shown that attendance at pre-primary school is associated with higher performance amongst adolescents. In recent years, many countries have expanded access to this level of education. Still, on average across OECD countries, around 20% of the students who sat the PISA 2018 test reported that they had not attended pre-primary education. In 14 countries and economies, more than half of students had not attended. Baku (Azerbaijan), Bosnia and Herzegovina, Colombia, Kosovo, Saudi Arabia, Serbia and Turkey showed the largest proportions of students (between 65% and 75%) who had not attended pre-primary education.

In 68 out of 78 countries and economies for which there were comparable data, students who had not attended pre-primary education were more likely to be socio-economically disadvantaged and enrolled in more disadvantaged schools at the age of 15.

In addition, in many countries, more students had spent more years in pre-primary education than was observed in earlier cycles of PISA. Between 2015 and 2018, in 28 countries/economies, the share of students who had attended pre-primary school for three years increased. Students who had attended pre-primary education for longer scored better in reading than students who had not attended pre-primary education at all – but only up to a certain point. The relationship between attendance at pre-primary education and student achievement later on was curvilinear, or u-shaped, after accounting for students' and schools' socio-economic profile.

Changes between PISA 2015 and 2018 in the percentage of students who had attended pre-primary school for one year were positively correlated with changes in mean reading performance over the same period, across all participating countries and economies. At the system level, across all participating countries and economies, education systems where more students had attended pre-primary education for three years or more generally showed higher mean performance in reading, even after accounting for per capita GDP. In addition, a positive association with equity was observed across OECD countries.

Not attending pre-primary education is associated with lower reading scores, and there are substantial differences between socio-economically advantaged and disadvantaged students (a 12 percentage-point difference). It is therefore important to provide access to pre-primary education to all students, but especially disadvantaged students. A strong beginning in early learning establishes neural pathways that are more difficult to develop later. Research has shown the benefits of pre-primary education in promoting the development of cognitive, language and numeracy skills, especially amongst the least advantaged students.

Ensuring pre-primary attendance for all students is not sufficient to create an equitable education system. PISA 2018 results showed that in countries/economies where more students had attended pre-primary education for at least two years but less than three, students' socio-economic profile was more strongly related to their performance at the age of 15. Further examination is needed to fully understand this relationship, but these results may imply that advantaged students tend to benefit more than disadvantaged students from spending more time in pre-primary education – or that there is a difference between the two groups of students in the quality of the pre-primary education they had attended. When expanding and extending pre-primary education, care must be taken not to widen the gap between advantaged and disadvantaged students in access to and the quality of this level of education.

IS GIVING PARENTS MORE SCHOOL CHOICE BETTER FOR AN EDUCATION SYSTEM AS A WHOLE? WHAT ABOUT SELECTIVITY IN SCHOOL ADMISSIONS?

In theory, given students' diverse needs and interests, a larger number of options for schooling in any one school system offers better value by promoting competition for enrolment amongst schools and, in doing so, prompting schools to innovate, experiment with new pedagogies, become more efficient and improve the quality of the learning experience. Proponents of school choice argue that the social and cultural diversity of modern societies calls for greater diversification in the education landscape, including by allowing non-traditional providers and commercial companies to enter the market.

But critics of school choice argue that, when presented with more choice, students from advantaged backgrounds often opt to leave the public system, leading to greater social and cultural segregation in the school system. At the macro level, such segregation deprives children of opportunities to learn, play and communicate with children from different social, cultural and ethnic backgrounds, which, in turn, threatens social cohesion.

More concretely, many parents assume that private schools produce better learning outcomes for their children. PISA 2018 found that, on average across OECD countries and in 40 education systems, students in private schools (government-dependent and -independent combined) performed better in reading than students in public schools (the "raw" difference, i.e. before accounting for students' and schools' socio-economic profile). Amongst these 40 education systems, the raw score-point difference in favour of students in private schools ranged from 19 points in Korea to 102 points in Brazil.

But after accounting for students' and schools' socio-economic profile, students in public schools scored higher in reading than students in private schools, on average across OECD countries (by 14 score points, in favour of public schools) and in 21 education systems (ranging from 22 score points higher in Malaysia to 117 points higher in Serbia). Students in private government-dependent schools scored 4 points lower in reading, on average, while those in private independent schools scored 21 points lower than students in public schools.

At the system level, there were no clear patterns of correlation between the share of students in different types of schools and mean student performance or equity in education.

The share of students in schools whose principal reported that one or more schools compete for students in the same area was larger in socio-economically advantaged schools (85% of students) than in disadvantaged schools (72% of students), in urban schools (87% of students) than in rural schools (53% of students), and in private schools (90% of students) than in public schools (75% of students).

At the system level, across all participating countries/economies, the percentage of schools that compete with two or more schools was weakly but positively associated with reading scores, after accounting for per capita GDP. However, such a positive association was not observed across OECD countries.

Academic selectivity was not consistently correlated with mean student performance; however students in academically selective schools scored five points higher, on average across OECD countries, after accounting for socio-economic status. OECD countries with fewer academically selective schools generally showed greater equity in student performance. Furthermore, in systems with greater equity in education, students are sorted into different education programmes when they are older.

Across OECD countries, changes between 2009 and 2018 in the percentage of students attending a school where admission is never based on the student's record of academic performance were positively correlated with changes in equity in reading. This means that equity in education tended to improve in countries where the prevalence of academic selectivity decreased over the period.

Nurturing academic excellence for all students might entail having good schools easily accessible in every neighbourhood, providing adequate transportation and reducing the financial burden on parents, particularly those in low-income areas. To help families understand the full range of options available to them, systems that offer a choice of schools can create or improve websites or other information systems that provide parents with clear information about schools in their area, such as the schools' academic performance, graduation rates and admissions policy. These systems can also provide families who do not have access to such information with the additional support they need to obtain it.

WHAT KINDS OF ASSESSMENT AND EVALUATION POLICIES MAKE A REAL DIFFERENCE FOR SCHOOLS AND SCHOOL SYSTEMS?

On average across OECD countries, students in schools whose principals reported that their school seeks written feedback from students scored better in reading than students in schools that do not seek written feedback, even after accounting for students' and schools' socio-economic profile. In addition, equity in student performance tended to be greater amongst countries and economies that have a higher percentage of students in schools that seek written feedback from students.

Feedback from students is useful for identifying the aspects of teaching or school management that could be improved. Schools that seek feedback from students may be better prepared to correct deficiencies in the education process. Moreover, this type of feedback provides an incentive for teachers to improve their methods of instruction, especially if this feedback is in written form. Written feedback can give students a sense of agency, and a belief that they can influence their own learning. It can also strengthen schools' and teachers' sense of accountability.

In countries/economies with greater equity in education, student assessments are used to inform parents about their child's progress and to identify aspects of instruction/curriculum that could be improved. The importance of parents' involvement is also highlighted in Volume III of PISA 2018 Results. The average reading score was higher in those countries and economies where more parents discussed their child's progress on the initiative of teachers, and that positive association remained even after accounting for per capita GDP. 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. While these results cannot be interpreted as cause and effect, the prevalence of parents discussing their child's progress on the initiative of teachers may be an indication of a school system's responsiveness. The results imply that schools' taking the initiative to share the results of student assessments and discuss with parents their child's progress may be one way for schools to be accountable for their students' learning.

To improve the quality of the education they provide, high-performing countries/economies find a balance between school autonomy and more centralised accountability measures. For example, countries and economies with greater equity in education often have some mandatory accountability arrangements that are set at the district or national level, such as seeking written feedback from students or having regular consultations on school improvement at least every six months, while schools are responsible for ensuring their students' learning by, for example, developing and disseminating written standards of student performance. Similarly, in high-performing countries/economies, implementation of a standardised policy for reading-related subjects taught at school (including a school curriculum with shared instructional materials, and staff development and training) tends to be mandatory and regulated at the district or national level, while schools encourage and make available teacher mentoring on their own initiative. This indicates that schools' professional autonomy and more centralised accountability measures work in concert to ensure the quality of all student learning.

Box V.9.2. **What are the characteristics common to successful education systems?**

While there is no silver bullet in education, as previous PISA assessments have shown, PISA 2018 results suggest that high-performing systems and/or systems with greater equity in education share several characteristics.[1]

In high-performing education systems:

- More students had attended pre-primary school for three years or more.
- Fewer students had repeated a grade.
- More students are in the modal grade.
- Ability grouping in classes in all subjects is less prevalent, while ability grouping in classes in some subjects is more prevalent.
- More teachers are fully certified.
- There are fewer students per class.
- The gap in the availability and quality of material resources between disadvantaged and advantaged schools is smaller or, in some cases, disadvantaged schools have more material resources than advantaged schools.

...

- In terms of digital resources:
  - Schools have more digital devices, such as data projectors, and computers that are connected to the Internet with sufficient speed and that have sufficient computing capacity, and have an effective online learning support platform.
  - More schools have sufficient Internet speed and bandwidth.
  - The differences between disadvantaged and advantaged schools in Internet speed, digital devices' computing capacity, the availability of software and effective online learning support platform are small. In some cases, disadvantaged schools have more of these than advantaged schools.
  - Disparities between disadvantaged and advantaged schools in the likelihood of whether schools have their own written statement about the use of digital devices, and whether schools have their own written statement about using digital devices for pedagogical purposes are small. In some cases, disadvantaged schools are more likely to have them than advantaged schools.
  - More schools have a specific programme to prepare students for responsible Internet behaviour. Socio-economic disparities are also smaller and, in some cases, disadvantaged schools are more likely to have such a programme than advantaged schools.
  - More schools schedule time to discuss instructional materials using digital devices.
- More students spend a moderate amount of time in regular school lessons (24-27 hours per week for language-of-instruction, mathematics, science and foreign-language lessons), rather than 20 hours or less or 39 hours or more.
- More schools provide a room where students can do their homework and staff who help students with their homework.
- More schools provide extracurricular activities, such as band, orchestra or choir, lectures or seminars (e.g. guest speakers, such as writers or journalists) and work with local libraries.
- More schools organise teacher mentoring based on their own initiative.
- More schools implement a standardised policy for reading-related subjects taught at school (including a school curriculum with shared instructional materials, and staff development and training) based on district or national policies.

In systems with greater equity in education:

- Fewer students had attended pre-primary school at least two years but less than three.
- Fewer students had repeated a grade.
- More students are in the modal grade.
- Students are sorted into different education programmes when they are older.
- In terms of digital resources:
  - More schools have an effective online learning support platform.
  - More schools schedule time to discuss instructional materials using digital devices.
- Disadvantaged schools offer almost as much learning time for foreign languages in regular school lessons as advantaged schools do (or, in some cases, disadvantaged schools offer even more time than advantaged schools).
- More schools use student assessments to inform parents about their child's progress and to identify aspects of instruction or the curriculum that could be improved.
- More schools have 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.

HOW CAN EDUCATION SYSTEMS SHOW THAT THEY HAVE HIGH EXPECTATIONS FOR ALL OF THEIR STUDENTS?

What is the best way of helping struggling students? Retaining students in the same grade for an additional year may be a popular idea amongst policy makers and educators in many countries, but a growing body of research points to the negative consequences of grade repetition. PISA 2018, like previous PISA results, showed that countries/economies where grade repetition is more prevalent tended to have lower performance and less equity in education.

The results suggest that making struggling students repeat a grade is a less-efficient approach to attaining higher performance in the education system as a whole than advancing struggling students to the next grade with others while providing additional support for them. Furthermore, in countries/economies where many students had repeated a grade, students' socio-economic status strongly determined their performance. This is because, in a majority of countries/economies, disadvantaged students had a greater chance of having repeated a grade than advantaged students, even when comparing students from the two socio-economic groups who had similar reading scores. This suggests that factors other than academic performance influence the decision on whether a student has to repeat a grade – and this is more likely to happen to socio-economically disadvantaged students than to advantaged students. Consequently, the performance gap between disadvantaged and advantaged students increases through their education career.

It may be difficult for school systems to identify those cases where students are retained unfairly, so setting ambitious goals to reduce the use of such practices throughout the system may help limit abuses. But struggling students still need support. Additional guidance and learning time inside or outside of school, accompanied by the establishment of clear, challenging and achievable goals can help. Curricula are usually designed to be followed by all students; but designing individualised learning plans may allow students who are struggling to learn the material and to progress at their own pace, ultimately meeting the standards set for all students, but over a longer period of time.

Fortunately, there has been notable progress in reducing the use of grade repetition. The percentage of students who reported that they had repeated a grade at least once prior to sitting the PISA test decreased by three percentage points between 2003 and 2018, on average across OECD countries. The number of countries/economies where the incidence of grade repetition decreased over this period is larger than the number countries/economies where the incidence of grade repetition increased.

Despite these signs of progress, changing a school system's policies and practices does not happen overnight. Still, 11% of students had repeated a grade on average across OECD in 2018. What immediate actions can schools and teachers take to minimise the negative impact of grade repetition? PISA 2018 results show that in a majority of countries/economies students who had repeated a grade in primary or secondary school were less likely than students who had not repeated a grade to believe that their ability and intelligence can develop over time, i.e. they benefited from having a growth mindset. If a person thinks that his/her ability is more or less fixed and unchangeable, why would he/she make an effort to improve?

Volume III of PISA 2018 Results, *What School Life Means for Students' Lives*, examines the relationship between a growth mindset and various student characteristics. According to the results discussed in that volume, students who endorsed a growth mindset scored better in reading, set more ambitious learning goals, were more motivated to master tasks, and perceived more value in schooling, on average across OECD countries, than students who did not endorse a growth mindset. These results suggest that a lack of a growth mindset amongst grade repeaters may amplify performance gaps between students who had repeated a grade and those who had not.

It is crucial for schools and teachers to provide feedback to students and guide students to the appropriate strategies to enhance their learning. Through positive learning experiences (e.g. persevering after failure and ultimately succeeding) students would see the importance of investing effort and trying various approaches. Instilling a growth mindset in students who had repeated a grade may lead to improvements in their performance, which, in turn, could result in higher overall performance in the school system and greater equity in education.

Similarly, instilling a growth mindset has the potential to mitigate the adverse impact of tracking on equity in education. Equity in reading performance was generally greater in countries and economies with a higher percentage of students enrolled in general, as opposed to vocational, programmes. In a majority of countries/economies, students enrolled in a general/academic school or programme at age 15 were more likely than students in vocational schools or programmes to endorse a growth mindset. Encouraging students who are enrolled in vocational schools and programmes to believe that they can develop their intelligence over time could reduce socio-economic disparities in student achievement.

………

Note

1. The following cases are shown in this box: system-level correlation coefficients (both r and partial r) are significant at least for two subjects both across OECD countries and across all participating countries and economies, and at least one of the coefficients is above 0.35 in Tables V.B1.2.14, V.B1.3.12, V.B1.4.18, V.B1.5.21, V.B1.6.24 and V.B1.8.16.

ANNEX A

PISA 2018 technical background

All figures and tables in Annex A are available on line

ANNEX A1
Construction of indices

EXPLANATION OF INDICES

This section explains the indices derived from the PISA 2018 student, school, parent and ICT questionnaires used in this volume.

Several PISA measures reflect indices that summarise responses from students, their parents, teachers or school representatives (typically principals) to a series of related questions. The questions were selected from a larger pool on the basis of theoretical considerations and previous research. The *PISA 2018 Assessment and Analytical Framework* (OECD, 2019[1]) provides an in-depth description of this conceptual framework. Item response theory (IRT) modelling was used to confirm the theoretically expected behaviour of the indices and to validate their comparability across countries. For a detailed description of the methods, see the section "Cross-country comparability of scaled indices" in this chapter, and the *PISA 2018 Technical Report* (OECD, forthcoming[2]).

There are three types of indices: simple indices, new scale indices and trend scale indices.

Simple indices are the variables that are constructed through the arithmetic transformation or recoding of one or more items in exactly the same way across assessments. Here, item responses are used to calculate meaningful variables, such as the recoding of the four-digit ISCO-08 codes into "Highest parents' socio-economic index (HISEI)" or teacher-student ratio based on information from the school questionnaire.

Scale indices are the variables constructed through the scaling of multiple items. Unless otherwise indicated, the index was scaled using a two-parameter item response model (a generalised partial credit model was used in the case of items with more than two categories) and values of the index correspond to Warm likelihood estimates (WLE) (Warm, 1989[1]). For details on how each scale index was constructed, see the *PISA 2018 Technical Report* (OECD, forthcoming[2]). In general, the scaling was done in two stages:

- The item parameters were estimated based on all students from equally weighted countries and economies; only cases with a minimum number of three valid responses to items that are part of the index were included. In the case of some trend indices, a common calibration linking procedure was used: countries/economies that participated in both PISA 2009 and PISA 2018 contributed both samples to the calibration of item parameters; each cycle and, within each cycle, each country/economy contributed equally to the estimation.
- For new scale indices, the Warm likelihood estimates were then standardised so that the mean of the index value for the OECD student population was zero and the standard deviation was one (countries were given equal weight in the standardisation process).

Sequential codes were assigned to the different response categories of the questions in the sequence in which the latter appeared in the student, school or parent questionnaire. Where indicated in this section, these codes were inverted for the purpose of constructing indices or scales. Negative values in an index do not necessarily imply that students responded negatively to the underlying questions. A negative value merely indicates that a respondent answered less positively than other respondents did on average across OECD countries. Likewise, a positive value in an index indicates that a respondent answered more favourably, or more positively, on average, than other respondents in OECD countries did.

Terms enclosed in brackets < > in the following descriptions were replaced in the national versions of the student, school and parent questionnaires by the appropriate national equivalent. For example, the term <qualification at ISCED level 5A> was translated in the United States into "Bachelor's degree, post-graduate certificate program, Master's degree program or first professional degree program". Similarly, the term <classes in the language of assessment> in Luxembourg was translated into "German classes" or "French classes", depending on whether students received the German or French version of the assessment instruments.

In addition to simple and scaled indices described in this annex, there are a number of variables from the questionnaires that were used in this volume and correspond to single items. All the context questionnaires, and the PISA international database, including all variables, are available at www.oecd.org/pisa.

STUDENT-LEVEL SIMPLE INDICES

Immigrant background

Information was collected on the country of birth of the students and their parents. Included in the database are three country-specific variables related to the country of birth of the student, mother and father (ST019). The variables are binary and indicate whether the student, mother and father were born in the country of assessment or elsewhere. The index on immigrant background (IMMIG) is calculated from these variables, and has the following categories: (1) native students (those students with at least one parent who was born in the country); (2) second-generation students (those students born in the country of assessment but whose parents were born in another country); and (3) first-generation students (those students born outside the country of assessment and whose parents were also born outside the country of assessment). Students with missing responses for either the student or for both parents were given missing values for this variable.

Grade repetition

The grade repetition variable (REPEAT) was computed by recoding variables ST127Q01TA, ST127Q02TA and ST127Q03TA. REPEAT took the value of "1" if the student had repeated a grade in at least one ISCED level and the value of "0" if "no, never" was chosen at least once, provided that the student had not repeated a grade in any of the other ISCED levels. The index was assigned a missing value if none of the three categories were ticked for any of the three ISCED levels.

Study programme indices

PISA collects data on study programmes available to 15-year old students in each country. This information is obtained through the student tracking form and the Student Questionnaire (ST002). In the final database, all national programmes are included in a separate derived variable (PROGN) where the first six digits represent the National Centre code, and the last two digits are the nationally specific programme code. All study programmes were classified using the International Standard Classification of Education (ISCED 1997). The following indices were derived from the data on study programmes: programme level (ISCEDL) indicates whether students were at the lower or upper secondary level (ISCED 2 or ISCED 3); programme designation (ISCEDD) indicates the designation of the study programme (A = general programmes designed to give access to the next programme level, B = programmes designed to give access to vocational studies at the next programme level, C = programmes designed to give direct access to the labour market, M = modular programmes that combine any or all of these characteristics); and programme orientation (ISCEDO) indicates whether the programme's curricular content was general, pre-vocational or vocational.

Early childhood education and care

Questions ST125 and ST126 measure the starting age in ISCED 1 and ISCED 0. The indicator DURECEC is built as the difference of ST126 and ST125 plus the value of "2" to indicate the number of years a student spent in early childhood education and care.

Learning time

Learning time in the test language (LMINS) was computed by multiplying the number of minutes, on average, in the test-language class by number of test-language class periods per week (ST061 and ST059). Comparable indices were computed for mathematics (MMINS) and science (SMINS). Learning time in total (TMINS) was computed using information about the average minutes in a <class period> (ST061) in relation to information about the number of class periods per week attended in total (ST060).

Expected occupational status

As in previous cycles of PISA, students were asked to report their expected occupation at age 30 and a description of this job (ST114). The responses were coded to four-digit ISCO codes (OCOD3) and then mapped to the ISEI index (Ganzeboom and Treiman, 2003[1]). Recoding of ISCO codes into ISEI index results in scores for the student's expected occupational status (BSMJ), where higher scores of ISEI indicate higher levels of expected occupational status.

STUDENT-LEVEL SCALE INDICES

Sense of belonging

The index of sense of belonging (BELONG) was constructed using students' responses to a trend question about their sense of belonging at school. Students were asked whether they agree ("strongly disagree", "disagree", "agree", "strongly agree") with the following school-related statements (ST034): "I feel like an outsider (or left out of things) at school"; "I make friends easily at school"; "I feel like I belong at school"; "I feel awkward and out of place in my school"; "Other students seem to like me"; and "I feel lonely at school". Positive values in this scale mean that students reported a greater sense of belonging at school than did the average student across OECD countries.

SCALING OF INDICES RELATED TO THE PISA INDEX OF ECONOMIC, SOCIAL AND CULTURAL STATUS

The PISA index of economic, social and cultural status (ESCS) was derived, as in previous cycles, from three variables related to family background: parents' highest level of education (PARED), parents' highest occupational status (HISEI), and home possessions (HOMEPOS), including books in the home.

Parents' highest level of education

Students' responses to questions ST005, ST006, ST007 and ST008 regarding their parents' education were classified using ISCED 1997 (OECD, 1999[5]). Indices on parental education were constructed by recoding educational qualifications into the following categories: (0) None; (1) <ISCED level 1> (primary education); (2) <ISCED level 2> (lower secondary); (3) <ISCED level 3B or 3C> (vocational/pre-vocational upper secondary); (4) <ISCED level 3A> (general upper secondary) and/or <ISCED level 4> (non-tertiary post-secondary); (5) <ISCED level 5B> (vocational tertiary); and (6) <ISCED level 5A> and/or <ISCED level 6> (theoretically oriented tertiary and post-graduate). Indices with these categories were provided for a student's mother (MISCED) and father (FISCED), and the index of highest education level of parents (HISCED) corresponded to the higher ISCED level of either parent. The index of highest education level of parents was also recoded into estimated number of years of schooling (PARED). In PISA 2018, to avoid issues related to the misreporting of parental education by students, students' answers about post-secondary qualifications were considered only for those students who reported their parents' highest level of schooling to be at least lower secondary education. The conversion from ISCED levels to year of education is common to all countries. This international conversion was determined by using the modal years of education across countries for each ISCED level. The correspondence is available in the *PISA 2018 Technical Report* (OECD, forthcoming[2]).

Parents' highest occupational status

Occupational data for both the student's father and the student's mother were obtained from responses to open-ended questions. The responses were coded to four-digit ISCO codes (ILO, 2007) and then mapped to the international socio-economic index of occupational status (ISEI) (Ganzeboom and Treiman, 2003[1]). In PISA 2018, as in PISA 2015, the new ISCO and ISEI in their 2008 version were used rather than the 1988 versions that had been applied in the previous four cycles (Ganzeboom, 2010[2]). Three indices were calculated based on this information: father's occupational status (BFMJ2); mother's occupational status (BMMJ1); and the highest occupational status of parents (HISEI), which corresponds to the higher ISEI score of either parent or to the only available parent's ISEI score. For all three indices, higher ISEI scores indicate higher levels of occupational status. In PISA 2018, in order to reduce missing values, an ISEI value of 17 (equivalent to the ISEI value for ISCO code 9000, corresponding to the major group "Elementary Occupations") was attributed to pseudo-ISCO codes 9701, 9702 and 9703 ("Doing housework, bringing up children", "Learning, studying", "Retired, pensioner, on unemployment benefits").

Household possessions

In PISA 2018, students reported the availability of 16 household items at home (ST011), including three country-specific household items that were seen as appropriate measures of family wealth within the country's context. In addition, students reported the amount of possessions and books at home (ST012, ST013). HOMEPOS is a summary index of all household and possession items (ST011, ST012 and ST013).

Computation of ESCS

For the purpose of computing the PISA index of economic, social and cultural status (ESCS), values for students with missing PARED, HISEI or HOMEPOS were imputed with predicted values plus a random component based on a regression on the other two variables. If there were missing data on more than one of the three variables, ESCS was not computed and a missing value was assigned for ESCS.

In previous cycles, the PISA index of economic, social and cultural status was derived from a principal component analysis of standardised variables (each variable has an OECD mean of 0 and a standard deviation of 1), taking the factor scores for the first principal component as measures of the PISA index of economic, social and cultural status. In PISA 2018, ESCS was computed by attributing equal weight to the three standardised components. As in PISA 2015, the three components were standardised across all countries and economies (both OECD and partner countries/economies), with each country/economy contributing equally (in cycles prior to 2015, the standardisation and principal component analysis was based on OECD countries only). As in every previous cycle, the final ESCS variable was transformed, with 0 the score of an average OECD student and 1 the standard deviation across equally weighted OECD countries.

SCHOOL-LEVEL SIMPLE INDICES

School type

Schools are classified as either public or private, according to whether a private entity or a public agency has the ultimate power to make decisions concerning its affairs (Question SC013). Public schools are managed directly or indirectly by a public education authority, government agency or governing board appointed by government or elected by public franchise. Private schools are managed directly or indirectly by a non-government organisation, such as a church, trade union, business or other private institution. In some countries and economies, such as Ireland, the information from SC013 was combined with administrative data to determine whether the school is privately or publicly managed.

Socio-economic profile of the schools

Advantaged and disadvantaged schools are defined in terms of the socio-economic profile of schools. All schools in each PISA- participating education system are ranked according to their average PISA index of economic, social and cultural status

(ESCS) and then divided into four groups with approximately an equal number of students (quarters). Schools in the bottom quarter are referred to as "socio-economically disadvantaged schools"; and schools in the top quarter are referred to as "socio-economically advantaged schools".

School size

The index of school size (SCHSIZE) contains the total enrolment at school. It is based on the enrolment data provided by the school principal, summing up the number of girls and boys at a school (SC002). This index was calculated in 2018 and in all previous cycles.

Class size

The average class size (CLSIZE, SC003) is derived from one of nine possible categories in question SC003, ranging from "15 students or fewer" to "More than 50 students".

Availability of computers

School principals were asked to report the number of computers available at school (SC004). The index of availability of computers (RATCMP1) is the ratio of computers available to 15-year-olds for educational purposes to the total number of students in the modal grade for 15-year-olds. The index RATCMP2 was calculated as the ratio of number of computers available to 15-year-olds for educational purposes to the number of these computers that were connected to the Internet.

Quantity of teaching staff at school

Principals were asked to report the total number of teachers at their school (TOTAT).

Extracurricular activities at school

School principals were asked to report what extracurricular activities their schools offered to 15-year-old students (SC053). The index of creative extracurricular activities at school (CREACTIV) was computed as the total number of the following activities that occurred at school: i) band, orchestra or choir; ii) school play or school musical; and iii) art club or art activities.

SCHOOL-LEVEL SCALE INDICES

Indices included in earlier assessments

School resources

As in PISA 2015 and 2012, PISA 2018 included an eight-item question (SC017) about school resources, measuring school principals' perceptions of potential factors hindering instruction at school ("Is your school's capacity to provide instruction hindered by any of the following issues?"). The four response categories were: "not at all", "very little", "to some extent", "a lot". A similar question was used in previous cycles, but items were reduced and reworded for 2012 focusing on two derived variables. The index of staff shortage (STAFFSHORT) was derived from the first four items: a lack of teaching staff; inadequate or poorly qualified teaching staff; a lack of assisting staff; inadequate or poorly qualified assisting staff. The index of educational material shortage (EDUSHORT) was derived from the second set of four items: a lack of educational material; inadequate or poor quality educational material; a lack of physical infrastructure; inadequate or poor quality physical infrastructure. Positive values in this index mean that principals viewed the amount and/or quality of the human or educational resources in their schools as an obstacle to providing instruction to a greater extent than the OECD average.

References

Ganzeboom, H. (2010), "A new International Socio-Economic Index (ISEI) of occupational status for the International Standard Classification of Occupation 2008 (ISCO-08) constructed with data from the ISSP 2002–2007". [6]

Ganzeboom, H. and **D. Treiman** (2003), "Three internationally standardised measures for comparative research on occupational status", *Advances in cross-cultural comparison*. [4]

OECD (2019), *PISA 2018 Assessment and Analytical Framework*, OECD Publishing, Paris, https://dx.doi.org/10.1787/b25efab8-en. [1]

OECD (1999), *Classifying Educational Programmes: Manual for ISCED-97 Implementation in OECD Countries*, OECD Publishing, Paris, http://www.oecd.org/education/1841854.pdf (accessed on 28 October 2019). [5]

OECD (forthcoming), *PISA 2018 Technical Report,*, OECD Publishing, Paris. [2]

Warm, T. (1989), "Weighted likelihood estimation of ability in item response theory", *Psychometrika*, Vol. 54/3, pp. 427-450, http://dx.doi.org/10.1007/BF02294627. [3]

ANNEX A2
The PISA target population, the PISA samples and the definition of schools

This annex discusses the PISA target population and the procedures used to select the sample that represented the target population. The information presented below is, for the most part, a summary of the information presented in Annex A2 of *PISA 2018 Results (Volume I): What Students Know and Can Do* (OECD, 2019$_{[1]}$); the reader is invited to refer to that volume for more details. This annex also includes information specific to the financial literacy sample.

WHO IS THE PISA TARGET POPULATION?

PISA 2018 assessed the cumulative outcomes of education and learning at a point at which most young people are still enrolled in formal education – when they are 15 years old.

Any international survey of education must guarantee the comparability of its target population across nations. One way to do this is to assess students at the same grade level. However, differences between countries in the nature and extent of pre-primary education and care, the age at entry into formal schooling, and the institutional structure of education systems do not allow for a definition of internationally comparable grade levels.

Other international assessments have defined their target population by the grade level that provides maximum coverage of a particular age cohort. However, this method is particularly sensitive to the distribution of students across age and grade levels; small changes in this distribution can lead to the selection of different target grades, even within the same country over different PISA cycles. There also may be differences across countries in whether students who are older or younger than the desired age cohort are represented in the modal grade, further rendering such grade level-based samples difficult to compare.

To overcome these problems, PISA uses an age-based definition of its target population, one that is not tied to the institutional structures of national education systems. PISA assesses students who were aged between 15 years and 3 (complete) months and 16 years and 2 (complete) months[1] at the beginning of the assessment period, plus or minus an allowed 1-month variation, and who were enrolled in an educational institution[2] at grade 7 or higher.[3] All students who met these criteria were eligible to sit the PISA assessment, regardless of the type of educational institution in which they were enrolled and whether they were enrolled in full-time or part-time education. This also allows PISA to evaluate students shortly before they are faced with major life choices, such as whether to continue with education or enter the workforce.

Hence, PISA makes statements about the knowledge and skills of a group of individuals who were born within a comparable reference period, but who may have undergone different educational experiences both in and outside of school. These students may be distributed over different ranges of grades (both in terms of the specific grade levels and the spread in grade levels) in different countries, or in different tracks or streams within countries. It is important to consider these differences when comparing PISA results across countries. In addition, differences in performance observed when students are 15 may disappear later on if students' experiences in education converge over time.

If a country's mean scores in reading, mathematics, science or financial literacy are significantly higher than those of another country, it cannot automatically be inferred that schools or particular parts of the education system in the first country are more effective than those in the second. However, one can legitimately conclude that it is the cumulative impact of learning experiences in the first country, starting in early childhood and up to the age of 15, and including all experiences, whether they be at school, home or elsewhere, that have resulted in the better outcomes of the first country in the subjects that PISA assesses.[4]

The PISA target population does not include residents of a country who attend school in another country. It does, however, include foreign nationals who attend school in the country of assessment.

To accommodate countries that requested grade-based results for the purpose of national analyses, PISA 2018 provided a sampling option to supplement age-based sampling with grade-based sampling.

HOW WERE STUDENTS CHOSEN?

The accuracy of the results from any survey depends on the quality of the information drawn from those surveyed as well as on the sampling procedures. Quality standards, procedures, instruments and verification mechanisms were developed for PISA that ensured that national samples yielded comparable data and that the results could be compared across countries with confidence. Experts from the PISA Consortium selected the samples for most participating countries/economies and monitored the sample-selection process closely in those countries that selected their own samples.

Most PISA samples were designed as two-stage stratified samples.[5] The first stage sampled schools in which 15-year-old students may be enrolled. Schools were sampled systematically with probabilities proportional to the estimated size of their (eligible) 15-year-old population. At least 150 schools[6] were selected in each country, although the requirements for national analyses often demanded a larger sample. Replacement schools for each sampled school were simultaneously identified, in case an originally sampled school chose not to participate in PISA 2018.

The second stage of the selection process sampled students within sampled schools. Once schools were selected, a list of each sampled school's 15-year-old students was prepared. From this list, 42 students were then selected with equal probability (all 15-year-old students were selected if fewer than 42 were enrolled). The number of students who were to be sampled in a school could deviate from 42 but could not fall below 20.

Data-quality standards in PISA required minimum participation rates for schools as well as for students. These standards were established to minimise the potential for bias resulting from non-response. Indeed, it was likely that any bias resulting from non-response would be negligible – i.e. typically smaller than the sampling error – in countries that met these standards.

At least 85% of the schools initially selected to take part in the PISA assessment were required to agree to conduct the test. Where the initial response rate of schools was between 65% and 85%, however, an acceptable school-response rate could still be achieved through the use of replacement schools. Inherent in this procedure was a risk of introducing bias, if replacement schools differed from initially sampled schools along dimensions other than those considered for sampling. Participating countries were therefore encouraged to persuade as many of the schools in the original sample as possible to participate.

Schools with a student participation rate of between 25% and 50% were not considered to be participating schools, but data (from both the cognitive assessment and questionnaire) from these schools were included in the database and contributed to the various estimates. Data from schools with a student participation rate of less than 25% were excluded from the database.

In PISA 2018, two countries that participated in the financial literacy assessment – Latvia (82%) and the United States (65%) – did not meet the 85% threshold, but met the 65% threshold, amongst schools initially selected to take part in the PISA assessment. Upon replacement, the United States (76%) still failed to reach an acceptable participation rate.[7] Amongst the schools initially selected before replacement, the Netherlands (61%) did not meet the 65% school response-rate threshold, but it reached a response rate of 87% upon replacement. However, these were not considered to be major issues as, for each of these countries and economies, additional non-response analyses showed that there were limited differences between schools that did participate and the full set of schools originally drawn in the sample.[8] Data from these jurisdictions were hence considered to be largely comparable with, and were therefore reported together with, data from other countries/economies.

PISA 2018 also required that at least 80% of the students chosen within participating schools participated themselves. This threshold was calculated at the national level and did not have to be met in each participating school. Follow-up sessions were required in schools where too few students had participated in the original assessment sessions. Student-participation rates were calculated over all original schools; and also over all schools, whether original or replacement schools. Students who participated in either the original or in any follow-up assessment sessions were counted in these participation rates; those who attended only the questionnaire session were included in the international database and contributed to the statistics presented in this publication if they provided at least a description of their father's or mother's occupation.

This 80% threshold was met in every country/economy except Portugal, where only 76% of students who were sampled actually participated. The high level of non-responding students could lead to biased results, e.g. if students who did not respond were more likely to be low-performing students. This was indeed the case in Portugal, but a non-response analysis based on data from a national mathematics assessment in the country showed that the upward bias of Portugal's overall results was likely small enough to preserve comparability over time and with other countries. Data from Portugal was therefore reported along with data from the countries/economies that met this 80% student participation threshold.

Table I.A2.3, available on line, shows the response rate for students and schools, before and after replacement.

WHAT PROPORTION OF 15-YEAR-OLDS DOES PISA REPRESENT?

All countries and economies attempted to maximise the coverage of 15-year-olds enrolled in education in their national samples, including students enrolled in special-education institutions.

The sampling standards used in PISA only permitted countries to exclude up to a total of 5% of the relevant population (i.e. 15-year-old students enrolled in school at grade 7 or higher) either by excluding schools or excluding students within schools. Exclusions that should remain within the above limits include both:

- at the school level:
  - schools that were geographically inaccessible or where the administration of the PISA assessment was not considered feasible
  - schools that provided teaching only for students in the categories defined under "within-school exclusions", such as schools for the blind.

  The percentage of 15-year-olds enrolled in such schools had to be less than 2.5% of the nationally desired target population (0.5% maximum for the former group and 2% maximum for the latter group). The magnitude, nature and justification of school-level exclusions are documented in the *PISA 2018 Technical Report* (OECD, forthcoming$_{[2]}$).
- at the student level:
  - schools with an intellectual disability, i.e. a mental or emotional disability resulting in the student being so cognitively delayed that he/she could not perform in the PISA testing environment
  - schools with a functional disability, i.e. a moderate to severe permanent physical disability resulting in the student being unable to perform in the PISA testing environment
  - students with limited assessment-language proficiency. These students were unable to read or speak any of the languages of assessment in the country at a sufficient level and unable to overcome such a language barrier in the PISA testing environment, and were typically students who had received less than one year of instruction in the language of assessment
  - other exclusions, a category defined by the PISA national centres in individual participating countries and approved by the PISA international consortium
  - students taught in a language of instruction for the major domain for which no materials were available.

  Students could not be excluded solely because of low proficiency or common disciplinary problems. The percentage of 15-year-olds excluded within schools had to be less than 2.5% of the national desired target population.

All countries and economies attempted to maximise the coverage of 15-year-olds enrolled in education in their national samples, including students enrolled in special-education institutions. The only countries that participated in the PISA 2018 financial literacy assessment that did not meet this 5% standard were Canada (6.87%),[9] the Netherlands (6.24%), Australia (5.72%) and Estonia (5.03%) (Table I.A2.1a, available on line). When language exclusions[10] were accounted for (i.e. removed from the overall exclusion rate), Estonia no longer had an exclusion rate greater than 5%. Although exceeding the exclusion rate limit of 5%, data from Australia and Canada were deemed to be acceptable because exclusion rates have consistently been above 5% across cycles. In particular, this reason was accepted by a data-adjudication panel to allow for the reliable comparison of PISA results across countries and across time; thus the data from these countries were reported together with data from other countries/ economies. More details can be found in the *PISA 2018 Technical Report* (OECD, forthcoming$_{[2]}$).

However, in the Netherlands, there was a marked increase in students who were excluded within schools due to intellectual or functional disabilities. Moreover, a large proportion of students in the Netherlands was not excluded but assigned to UH (*une heure*) booklets, which were intended for students with special education needs (Table IV.A2.1). As these booklets did not cover the domain of financial literacy, the effective exclusion rate for the Netherlands in financial literacy was roughly 20%. This resulted in a strong upward bias in the country mean and other population statistics in that domain. Data from the Netherlands in financial literacy were not comparable with data from other education systems; but data from the Netherlands in the core PISA subjects were still deemed to be largely comparable. Recourse was made to the UH booklet in only four other participating countries and economies (the Canadian provinces, Finland, the Slovak Republic and the United States). In each of these countries/economies, less than 4% of the student sample were presented with this booklet and not the financial literacy booklet. The data-adjudication panel did not judge this to significantly affect the comparison of these countries'/economies' results.

Table I.A2.1a describes the target population of the countries participating in PISA 2018. Further information on the target population and the implementation of PISA sampling standards can be found in the *PISA 2018 Technical Report* (OECD, forthcoming$_{[2]}$).

The high level of coverage contributes to the comparability of the assessment results. For example, even assuming that the excluded students would have systematically scored worse than those who participated, and that this relationship is moderately strong, an exclusion rate on the order of 5% would likely lead to an overestimation of national mean scores of less than 5 score points on the PISA scale (where the standard deviation is 100 score points).[11]

DEFINITION OF SCHOOLS

In some countries, subunits within schools were sampled instead of schools, which may affect the estimate of the between-school variance. In the Netherlands, locations were listed as sampling units. In Australia, each campus of a multi-campus school was sampled independently. Some schools in Portugal were organised into clusters where all units in a cluster shared the same teachers and principal; each of these clusters constituted a single sampling unit.

SAMPLING FOR THE FINANCIAL LITERACY ASSESSMENT

All countries and economies, regardless of their participation in the financial literacy assessment, selected schools in the manner described above. However, countries/economies that participated in the financial literacy assessment sampled a larger number of students in each selected school. In this way, some students in these schools were presented with test forms that involved financial literacy booklets (along with booklets in mathematics, reading or both), while other students were presented with test forms that involved only the core subjects (mathematics, reading and science). To increase the size of the financial literacy student sample, financial literacy scores were imputed for those students who were given forms involving only mathematics and reading (forms 1 to 12); these students were then included in the financial literacy sample.

Table IV.A2.1 presents the number of students who comprised the financial literacy sample in each country/economy, and the number of 15-year-old students in each country/economy that the sample represented.

Table IV.A2.1 **Sample size for financial literacy**

		Financial literacy assessment		
		Number of participating students (unweighted)	Number of participating students (weighted)	Percentage of students sitting the une-heure booklet (%)
		(1)	(2)	(3)
OECD	Australia	9 411	256 109	0.00
	Canadian provinces	7 762	207 800	3.40
	Chile	4 485	211 928	0.00
	Estonia	4 167	11 543	0.00
	Finland	4 328	55 318	0.81
	Italy	9 182	521 823	0.00
	Latvia	3 151	15 979	0.00
	Lithuania	4 076	24 405	0.00
	Netherlands	3 042	163 127	14.11
	Poland	4 295	312 844	0.00
	Portugal	4 568	98 021	0.00
	Slovak Republic	3 411	42 575	2.83
	Spain	9 361	413 345	0.00
	United States	3 738	3 543 521	0.65
Partners	Brazil	8 311	2 045 364	0.00
	Bulgaria	4 110	47 910	0.00
	Georgia	4 321	38 431	0.00
	Indonesia	7 133	3 741 920	0.00
	Peru	4 734	425 561	0.00
	Russia	4 520	1 257 204	0.00
	Serbia	3 874	60 923	0.00

StatLink https://doi.org/10.1787/888934124052

Notes

1. More precisely, PISA assessed students who were at least 15 years and 3 complete months old and who were at most 16 years and 3 complete months old (i.e. younger than 16 years, 2 months and roughly 30 days old), with a tolerance of one month on each side of this age window. If the PISA assessment was conducted in April 2018, as was the case in most countries, all students born in 2002 would have been eligible.

2. Educational institutions are generally referred to as schools in this publication, although some educational institutions (in particular, some types of vocational education establishments) may not be referred to as schools in certain countries.

3. As might be expected from this definition, the average age of students across OECD countries was 15 years and 9 months. The range in country means was 2 months and 13 days (0.20 year), from the minimum country mean of 15 years and 8 months to the maximum country mean of 15 years and 10 months (OECD, 2019[3]).

4. Such a comparison is complicated by first-generation immigrant students, who received part of their education in a country other than the one in which they were assessed. Mean scores in any country/economy should be interpreted in the context of student demographics within that country/economy.

5. Details for countries that applied different sampling designs are documented in the *PISA 2018 Technical Report* (OECD, forthcoming[2]).

6. Due to the small size of these education systems, all schools and all eligible students within these schools were included in the samples of Brunei Darussalam, Iceland, Luxembourg, Macao (China), Malta, Montenegro and Qatar.

7. The threshold for an acceptable participation rate after replacement varies between 85% and 100%, depending on the participation rate before replacement.

8. In particular, in the case of the Netherlands, non-response bias analyses relied on direct measures of school performance external to PISA, typically from national assessments. More indirect correlates of school performance were analysed in the United States, due to the absence of national assessments.

9. Information on exclusions was available only for the entire country of Canada, not for the seven Canadian provinces that took part in the financial literacy assessment.

10. These exclusions refer only to those students with limited proficiency in the language of instruction/assessment. Exclusions related to the unavailability of test material in the language of instruction are not considered in this analysis.

11. If the correlation between the propensity of exclusions and student performance were 0.3, then resulting mean scores would likely have been overestimated by 1 score point if the exclusion rate were 1%; by 3 score points if the exclusion rate were 5%; and by 6 score points if the exclusion rate were 10%. If the correlation between the propensity of exclusions and student performance were 0.5, then resulting mean scores would likely have been overestimated by 1 score point if the exclusion rate were 1%; by 5 score points if the exclusion rate were 5%; and by 10 score points if the exclusion rate were 10%. For this calculation, a model was used that assumed a bivariate normal distribution for performance and the propensity to participate.

References

OECD (2019), *PISA 2018 Initial Report (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/b5fd1b8f-en. [3]

OECD (2019), *PISA 2018 Results (Volume I): What Students Know and Can Do*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/5f07c754-en. [1]

OECD (forthcoming), *PISA 2018 Technical Report*, OECD publishing. [2]

ANNEX A3
Technical notes on analyses in this volume

STANDARD ERRORS, CONFIDENCE INTERVALS AND SIGNIFICANCE TESTS

The statistics in this report represent estimates based on samples of students, rather than values that could be calculated if every student in every country had answered every question. Consequently, it is important to measure the degree of uncertainty of the estimates. In PISA, each estimate has an associated degree of uncertainty, which is expressed through a standard error. The use of confidence intervals provides a way to make inferences about the population parameters (e.g. means and proportions) in a manner that reflects the uncertainty associated with the sample estimates. If numerous different samples were drawn from the same population, according to the same procedures as the original sample, then in 95 out of 100 samples the calculated confidence interval would encompass the true population parameter. For many parameters, sample estimators follow a normal distribution and the 95% confidence interval can be constructed as the estimated parameter, plus or minus 1.96 times the associated standard error.

In many cases, readers are primarily interested in whether a given value in a particular country is different from a second value in the same or another country, e.g. whether students in public schools perform better than students in private schools in the same country. In the tables and figures used in report, differences are labelled as statistically significant when a difference would be observed less than 5% of the time if there were actually no difference in corresponding population values (statistical significance at the 95% level). In other words, the risk of reporting a difference as significant when such difference, in fact, does not exist, is contained at 5%.

Throughout the report, significance tests were undertaken to assess the statistical significance of the comparisons made.

Statistical significance of differences related to type of school and differences between subgroup means

Differences in student performance by type of school or other indices were tested for statistical significance. Positive differences indicate higher scores for students in private schools while negative differences indicate higher scores for students in public schools. Generally, differences marked in bold in the tables in this volume are statistically significant at the 95% confidence level.

Similarly, differences between other groups of students (e.g. students in urban schools and students in rural schools, or socio-economically advantaged and disadvantaged students) were tested for statistical significance. The definitions of the subgroups can, in general, be found in the tables and the text accompanying the analysis. All differences marked in bold in the tables presented in Annex B of this report are statistically significant at the 95% level, unless otherwise indicated.

Statistical significance of differences between subgroup means, after accounting for other variables

For many tables, subgroup comparisons were performed both on the observed difference (“before accounting for other variables”) and after accounting for other variables, such as the PISA index of economic, social and cultural status of students. The adjusted differences were estimated using linear regression and tested for significance at the 95% confidence level. Significant differences are marked in bold.

Statistical significance of performance differences between the top and bottom quartiles of PISA indices and scales

Differences in average performance between the top and bottom quarters of the PISA indices and scales were tested for statistical significance. Figures marked in bold indicate that performance between the top and bottom quarters of students on the respective index is statistically significantly different at the 95% confidence level.

Change in the performance per unit of an index

For many tables, the difference in student performance per unit of an index was calculated. Figures in bold indicate that the differences are statistically and significantly different from zero at the 95% confidence level.

ODDS RATIOS

The odds ratio is a measure of the relative likelihood of a particular outcome across two groups. The odds ratio for observing the outcome when an antecedent is present is simply

$$\mathrm{OR} = {}^{(p_{11}\,/\,p_{12})}\!\big/_{(p_{21}\,/\,p_{22})}$$

where p_{11}/p_{12} represents the "odds" of observing the outcome when the antecedent is present, and p_{21}/p_{22} represents the "odds" of observing the outcome when the antecedent is not present.

Logistic regression can be used to estimate the odds ratio: the exponentiated logit coefficient for a binary variable is equivalent to the odds ratio.

Statistical significance of odds ratios

Figures in bold in the data tables presented in Annex B1 of this report indicate that the odds ratio is statistically significantly different from 1 at the 95% confidence level. To construct a 95% confidence interval for the odds ratio, the estimator is assumed to follow a log-normal distribution, rather than a normal distribution.

In some tables, odds ratios after accounting for other variables are also presented. These odds ratios were estimated using logistic regression and tested for significance against the null hypothesis of an odds ratio equal to 1 (i.e. equal likelihoods, after accounting for other variables).

OVERALL RATIOS AND AVERAGE RATIOS

In this report, the comparisons of ratios related to teachers, such as student-teacher ratio or the proportion of fully certified teachers, are made using overall ratios. This means, for instance, that the student-teacher ratio is obtained by dividing the total number of students in the target population by the total number of teachers in the target population. The overall ratios are computed by first computing the numerator and denominator as the (weighted) sum of school-level totals, then dividing the numerator by the denominator. Similar estimations are made for the proportion of teachers with at least a master's degree, the proportion of novice teachers, the proportion of fully certified teachers, participation in teacher training and teacher participation in selected professional development activities. In most cases (i.e. unless all schools are exactly the same size) this overall ratio differs from the average of school-level ratios.

USE OF STUDENT AND SCHOOL WEIGHTS

The target population in PISA is 15-year-old students, but a two-stage sampling procedure was used. After the population was defined, school samples were selected with a probability proportional to the expected number of eligible students in each school. Only in a second sampling stage were students drawn from amongst the eligible students in each selected school.

Although the student samples were drawn from within a sample of schools, the school sample was designed to optimise the resulting sample of students, rather than to give an optimal sample of schools. It is therefore preferable to analyse the school-level variables as attributes of students (e.g. in terms of the share of 15-year-old students affected), rather than as elements in their own right.

Most analyses of student and school characteristics are therefore weighted by student final weights (or their sum, in the case of school characteristics), and use student replicate weights for estimating standard errors.

In PISA 2018, as in PISA 2012 and 2015, multilevel model weights are used at both the student and school levels. The purpose of these weights is to account for differences in the probabilities of students being selected in the sample. Since PISA applies a two-stage sampling procedure, these differences are due to factors at both the school and the student levels. For the multilevel models, student final weights (W_FSTUWT) were used. Within-school weights correspond to student final weights, rescaled to amount to the sample size within each school. Between-school weights correspond to the sum of final student weights (W_FSTUWT) within each school.

STATISTICS BASED ON MULTILEVEL MODELS

Statistics based on multilevel models include variance components (between- and within-school variance), the index of inclusion derived from these components, and regression coefficients where this has been indicated. Multilevel models are specified as two-level regression models (the student and school levels), with normally distributed residuals, and estimated with maximum likelihood estimation. Models were estimated using the Stata (version 15.1) "mixed" module.

The intra-cluster correlation coefficient, or proportion of the variation that lies between schools, is defined and estimated as:

$$100 * \frac{\sigma_B^2}{\sigma_W^2 + \sigma_B^2}$$

where σ_B^2 and σ_W^2 represent the between- and within-variance estimates, respectively.

Standard errors in statistics estimated from multilevel models

For statistics based on multilevel models (such as the estimates of variance components and regression coefficients from two-level regression models) the standard errors are not estimated with the usual replication method, which accounts for stratification and sampling rates from finite populations. Instead, standard errors are "model-based": their computation assumes that schools, and students within schools, are sampled at random (with sampling probabilities reflected in school and student weights) from a theoretical, infinite population of schools and students, which complies with the model's parametric assumptions. The standard error for the estimated index of inclusion is calculated by deriving an approximate distribution for it from the (model-based) standard errors for the variance components, using the delta method.

References

OECD (forthcoming), *PISA 2018 Technical Report*, OECD Publishing, Paris. [1]

ANNEX A4
Quality assurance

Quality assurance procedures were implemented in all parts of PISA 2018, as was done for all previous PISA surveys. The PISA 2018 Technical Standards (available on line at www.oecd.org/pisa/) specify the way in which PISA must be implemented in each country, economy and adjudicated region. International contractors monitor the implementation in each of these and adjudicate on their adherence to the standards.

The consistent quality and linguistic equivalence of the PISA 2018 assessment instruments were facilitated by assessing the ease with which the original English version could be translated. Two source versions of the assessment instruments, in English and French, were prepared (except for the financial literacy assessment and the operational manuals, which were provided only in English) in order for countries to conduct a double translation design, i.e. two independent translations from the source language(s), and reconciliation by a third person. Detailed instructions for the localisation (adaptation, translation and validation) of the instruments for the field trial and for their review for the main survey, and translation/adaptation guidelines were supplied. An independent team of expert verifiers, appointed and trained by the PISA Consortium, verified each national version against the English and/or French source versions. These translators' mother tongue was the language of instruction in the country concerned, and the translators were knowledgeable about education systems. For further information on PISA translation procedures, see the *PISA 2018 Technical Report* (OECD, forthcoming[1]).

The survey was implemented through standardised procedures. The PISA Consortium provided comprehensive manuals that explained the implementation of the survey, including precise instructions for the work of school co-ordinators and scripts for test administrators to use during the assessment sessions. Proposed adaptations to survey procedures, or proposed modifications to the assessment session script, were submitted to the PISA Consortium for approval prior to verification. The PISA Consortium then verified the national translation and adaptation of these manuals.

To establish the credibility of PISA as valid and unbiased and to encourage uniformity in conducting the assessment sessions, test administrators in participating countries were selected using the following criteria: it was required that the test administrator not be the reading, mathematics or science instructor of any student in the sessions he or she would conduct for PISA; and it was considered preferable that the test administrator not be a member of the staff of any school in the PISA sample. Participating countries organised an in-person training session for test administrators.

Participating countries and economies were required to ensure that test administrators worked with the school co-ordinator to prepare the assessment session, including reviewing and updating the Student Tracking Form; completing the Session Attendance Form, which is designed to record students' attendance and instruments allocation; completing the Session Report Form, which is designed to summarise session times, any disturbance to the session, etc.; ensuring that the number of test booklets and questionnaires collected from students tallied with the number sent to the school (for countries using the paper-based assessment) or ensuring that the number of USB sticks or external laptops used for the assessment were accounted for (for countries using the computer-based assessment); and sending or uploading the school questionnaire, student questionnaires, parent and teacher questionnaires (if applicable), and all test materials (both completed and not completed) to the national centre after the assessment.

The PISA Consortium responsible for overseeing survey operations implemented all phases of the PISA Quality Monitor (PQM) process: interviewing and hiring PQM candidates in each of the countries, organising their training, selecting the schools to visit, and collecting information from the PQM visits. PQMs are independent contractors located in participating countries who are hired by the international survey operations contractor. They visit a sample of schools to observe test administration and to record the implementation of the documented field-operations procedures in the main survey.

Typically, two or four PQMs were hired for each country, and they visited an average of 15 schools in each country. If there were adjudicated regions in a country, it was usually necessary to hire additional PQMs, as a minimum of five schools were observed in adjudicated regions.

Approximately one-third of test items are open-ended items in PISA. Reliable human coding is critical for ensuring the validity of assessment results within a country, as well as the comparability of assessment results across countries. Coder reliability in PISA 2018 was evaluated and reported at both within- and across-country levels. The evaluation of coder reliability was made possible by the design of multiple coding: a portion or all of the responses from each human-coded constructed-response item were coded by at least two human coders.

All quality-assurance data collected throughout the PISA 2018 assessment were entered and collated in a central data-adjudication database on the quality of field operations, printing, translation, school and student sampling, and coding. Comprehensive reports were then generated for the PISA Adjudication Group. This group was formed by the Technical Advisory Group and the Sampling Referee. Its role is to review the adjudication database and reports in order to recommend adequate treatment to preserve the quality of PISA data. For further information, see the *PISA 2018 Technical Report* (OECD, forthcoming[1]). Overall, the review suggests good adherence of national implementations of PISA to the technical standards. Despite the overall high quality of data, a few countries' data failed to meet critical standards or presented inexplicable anomalies, such that the Adjudication Group recommends a special treatment of these data in databases and/or reporting.

The major issues for adjudication discussed at the adjudication meeting that are relevant to the financial literacy assessment are listed below:

- The Netherlands missed the standard for overall exclusions by a small margin. At the same time, in the Netherlands UH booklets, intended for students with special education needs, were assigned to about 17% of the non-excluded students. Because UH booklets do not cover the domain of financial literacy, the effective exclusion rate for the financial literacy additional sample is above 20%. The fact that students that receive support for learning in school were systematically excluded from the financial literacy sample results in a strong upward bias for the country mean and other population statistics. Therefore, the Netherlands' results in financial literacy may not be comparable to those of other countries or to results for the Netherlands from previous years. The Netherlands also missed the school response rate (before replacement) by a large margin, and could only reach close to an acceptable response rate through the use of replacement schools. However, based on evidence provided in a non-response bias analysis, the Netherlands' results in reading, mathematics and science were accepted as largely comparable.
- Portugal did not meet the student-response rate standard. In Portugal, response rates dropped between 2015 and 2018. A student-non-response-bias analysis was submitted, investigating bias amongst students in grades 9 and above. Students in grades 7 and 8 represented about 11% of the total sample, but 20% of the non-respondents. A comparison of the linked responding and non-responding cases, using sampling weights, revealed that non-respondents tended to score about one-third of a standard deviation below respondents on the national mathematics examination (implying a "raw" upward bias of about 10% of a standard deviation on population statistics that are based on respondents only). At the same time, a significant proportion of the performance differences could be accounted for by variables considered in non-response adjustments (including grade level). Nevertheless, a residual upward bias in population statistics remained, even when using non-response adjusted weights. The non-response bias analysis therefore implies a small upward bias for PISA 2018 performance results in Portugal. The Adjudication Group also considered that trend comparisons and performance comparisons with other countries may not be particularly affected, because an upward bias of that size cannot be excluded even in countries that met the response-rate standard or for previous cycles of PISA. Therefore, Portugal's results are reported with an annotation.

While the adjudication group did not consider the violation of response-rate standards by the United States (see Annex A2) as a major adjudication issue, they noted several limitations in the data used in non-response-bias analyses submitted by the United States. In consideration of the lower response rates, compared to other countries, the data for the United States are reported with an annotation.

In Spain, while no major standard violation was identified, subsequent data analyses identified sub-optimal response behaviours of some students. This was especially evident in the reading-fluency items. The reporting of Spain's reading performance will be deferred as this issue will be further investigated.

ANNEX A5
Interpreting the results by student and school characteristics

REPORTING THRESHOLDS IN PISA 2018

When presenting the results by students' gender, socio-economic status, education level and immigrant background, and schools' socio-economic profile, location, type and concentration of immigrant students, the number of students and schools in each subsample has to meet the PISA reporting requirements of at least 30 students and 5 schools. Even when these reporting requirements are met, the reader should interpret the results cautiously when the number of students or schools is just above the reporting threshold. Tables III.A5.1 and III.A5.2, available on line, show the unweighted number of students and schools by student and school characteristics in the PISA 2018 sample so that the reader can interpret the results appropriately.

READING PERFORMANCE, BY STUDENT AND SCHOOL CHARACTERISTICS

Tables III.A5.3 and III.A5.4, available on line, show the average reading performance, by student and school characteristics. These results provide useful information for interpreting the analyses in this volume that show how the school climate and well-being indicators vary by student and school characteristics.

Tables available on line

https://doi.org/10.1787/888934030857

- Table III.A5.1 Unweighted number of students and schools, by student characteristics
- Table III.A5.2 Unweighted number of students and schools, by school characteristics
- Table III.A5.3 Reading performance, by student characteristics
- Table III.A5.4 Reading performance, by school characteristics

ANNEX B

PISA 2018 Data

All tables in Annex B are available on line

Annex B1: Results for countries and economies
https://doi.org/10.1787/888934132203
https://doi.org/10.1787/888934132222
https://doi.org/10.1787/888934132241
https://doi.org/10.1787/888934132260
https://doi.org/10.1787/888934132279
https://doi.org/10.1787/888934132298
https://doi.org/10.1787/888934132317
https://doi.org/10.1787/888934132336

Annex B2: Results for regions within countries
https://doi.org/10.1787/888934132184

Annex B3: PISA 2018 system-level indicators
https://doi.org/10.1787/888934132355

ANNEX B1
Results for countries and economies

Table V.B1.2.2 [1/4] **Brief or no attendance at pre-primary school, by students' and schools' socio-economic profile**
Students who had not attended pre-primary school or who had attended for less than a year; results based on students' reports

		All students			By student's socio-economic status								
					Disadvantaged students[1]			Advantaged students			Difference between advantaged and disadvantaged students		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
OECD	Australia	11.5	(0.4)	†	15.1	(0.9)		8.5	(0.6)		**-6.6**	(1.1)	
	Austria	2.6	(0.3)		5.1	(0.8)		1.2	(0.3)		**-3.8**	(0.8)	
	Belgium	1.6	(0.2)		3.5	(0.5)	†	0.5	(0.2)		**-3.0**	(0.5)	†
	Canada	14.6	(0.5)		21.2	(0.9)		8.9	(0.6)		**-12.3**	(1.1)	
	Chile	4.5	(0.4)	†	8.7	(1.2)	†	1.8	(0.3)		**-7.0**	(1.3)	†
	Colombia	7.7	(0.5)		11.9	(1.1)		3.6	(0.5)		**-8.3**	(1.1)	
	Czech Republic	2.8	(0.2)		5.6	(0.7)		1.3	(0.3)		**-4.3**	(0.7)	
	Denmark	1.2	(0.2)		2.0	(0.3)		1.2	(0.5)		-0.9	(0.6)	
	Estonia	4.1	(0.4)		7.7	(1.1)		2.4	(0.5)		**-5.4**	(1.1)	
	Finland	2.3	(0.3)		3.9	(0.7)		1.2	(0.3)		**-2.6**	(0.8)	
	France	1.5	(0.2)		2.8	(0.6)		0.8	(0.2)		**-2.0**	(0.7)	
	Germany	2.2	(0.3)	†	4.5	(0.8)	†	1.0	(0.3)		**-3.5**	(0.8)	†
	Greece	2.7	(0.3)		4.5	(0.8)		1.7	(0.4)		**-2.8**	(0.8)	
	Hungary	0.6	(0.1)		0.3	(0.2)		0.7	(0.3)		0.3	(0.4)	
	Iceland	1.6	(0.2)	†	3.4	(0.7)	†	1.2	(0.4)		**-2.2**	(0.8)	†
	Ireland	10.3	(0.6)		15.1	(1.3)		6.6	(0.7)		**-8.5**	(1.4)	
	Israel	1.2	(0.2)		2.8	(0.5)		0.5	(0.2)		**-2.3**	(0.6)	
	Italy	3.3	(0.3)		5.1	(0.7)		2.4	(0.4)		**-2.8**	(0.8)	
	Japan	0.3	(0.1)		0.7	(0.3)	†	0.2	(0.1)		-0.6	(0.3)	†
	Korea	3.6	(0.3)		4.5	(0.5)		2.7	(0.4)		**-1.8**	(0.7)	
	Latvia	5.1	(0.4)		7.4	(1.0)		4.4	(0.6)		**-3.0**	(1.1)	
	Lithuania	16.1	(0.8)		26.9	(1.9)		9.3	(0.8)		**-17.6**	(2.0)	
	Luxembourg	5.2	(0.3)		8.2	(0.9)		2.4	(0.5)		**-5.9**	(1.0)	
	Mexico	1.7	(0.3)		4.2	(0.9)		0.4	(0.2)		**-3.8**	(0.9)	
	Netherlands	2.4	(0.3)		4.4	(0.8)		1.3	(0.3)		**-3.1**	(0.9)	
	New Zealand	5.3	(0.4)		9.2	(1.0)		2.9	(0.4)		**-6.2**	(1.0)	
	Norway	3.7	(0.3)	†	8.4	(0.9)	†	1.2	(0.3)		**-7.2**	(0.9)	†
	Poland	17.2	(1.1)		25.1	(1.8)		8.3	(1.1)		**-16.7**	(2.0)	
	Portugal	7.2	(0.4)		11.1	(1.1)		3.7	(0.6)		**-7.5**	(1.1)	
	Slovak Republic	4.5	(0.4)		11.0	(1.4)		2.1	(0.4)		**-8.9**	(1.5)	
	Slovenia	10.3	(0.5)		19.7	(1.4)		5.2	(0.8)		**-14.5**	(1.6)	
	Spain	2.3	(0.2)		4.0	(0.4)		1.4	(0.2)		**-2.6**	(0.4)	
	Sweden	4.2	(0.3)		8.6	(0.9)		1.6	(0.4)		**-7.0**	(1.0)	
	Switzerland	3.4	(0.4)		5.4	(0.8)		2.3	(0.5)		**-3.1**	(0.9)	
	Turkey	37.0	(1.1)		54.4	(1.6)		13.8	(1.3)		**-40.6**	(2.0)	
	United Kingdom	4.5	(0.3)	†	7.6	(0.7)	†	2.3	(0.4)		**-5.3**	(0.9)	†
	United States	18.2	(0.8)	†	26.9	(1.8)	†	8.6	(0.9)		**-18.2**	(2.0)	†
	OECD average	6.2	(0.1)		10.0	(0.2)		3.2	(0.1)		**-6.8**	(0.2)	

1. A socio-economically disadvantaged (advantaged) student is a student in the bottom (top) quarter of the PISA index of economic, social and cultural status (ESCS) in his or her own country/economy.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.2 [2/4] **Brief or no attendance at pre-primary school, by students' and schools' socio-economic profile**
Students who had not attended pre-primary school or who had attended for less than a year; results based on students' reports

	All students			By student's socio-economic status								
				Disadvantaged students[1]			Advantaged students			Difference between advantaged and disadvantaged students		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
Partners												
Albania	12.7	(0.6)		13.8	(1.0)		12.5	(1.0)		-1.3	(1.4)	
Argentina	3.0	(0.3)		5.7	(0.9)		1.3	(0.3)		**-4.4**	(1.0)	
Baku (Azerbaijan)	45.1	(0.9)		53.4	(1.4)		37.2	(1.8)		**-16.2**	(2.4)	
Belarus	4.5	(0.6)		7.8	(1.2)		2.5	(0.5)		**-5.3**	(1.3)	
Bosnia and Herzegovina	58.9	(1.0)		74.1	(1.3)		41.0	(1.3)		**-33.2**	(1.9)	
Brazil	9.9	(0.4)	†	14.9	(0.8)		5.6	(0.6)		**-9.3**	(1.1)	
Brunei Darussalam	22.5	(0.6)		41.6	(1.5)	†	6.6	(0.7)		**-35.1**	(1.7)	†
B-S-J-Z (China)	1.3	(0.2)		2.7	(0.5)		0.5	(0.3)		**-2.2**	(0.6)	
Bulgaria	5.1	(0.4)		6.4	(0.8)		5.3	(0.8)		-1.1	(1.1)	
Costa Rica	9.9	(0.6)		16.0	(1.2)		6.8	(0.8)		**-9.2**	(1.5)	
Croatia	16.3	(0.8)		27.4	(1.5)		6.4	(0.9)		**-20.9**	(1.4)	
Cyprus	2.6	(0.3)		3.7	(0.8)		1.7	(0.4)		**-2.1**	(1.0)	
Dominican Republic	18.9	(0.9)		28.4	(1.3)		10.0	(1.1)	†	**-18.4**	(1.5)	†
Georgia	19.7	(0.9)		31.8	(2.0)		11.8	(1.0)		**-20.0**	(2.1)	
Hong Kong (China)	0.9	(0.2)		2.2	(0.8)		0.8	(0.3)		-1.3	(0.9)	
Indonesia	20.4	(1.4)		35.4	(2.4)		9.1	(1.2)		**-26.3**	(2.5)	
Jordan	11.6	(0.8)		19.8	(2.0)		7.3	(0.7)		**-12.5**	(2.0)	
Kazakhstan	48.7	(1.0)		62.8	(1.3)		34.5	(1.3)		**-28.3**	(1.5)	
Kosovo	33.2	(0.9)		41.2	(1.9)		25.0	(1.6)		**-16.3**	(2.4)	
Lebanon	10.4	(0.8)	†	12.5	(1.5)	†	7.6	(1.2)	†	**-4.9**	(1.9)	†
Macao (China)	0.9	(0.2)		1.5	(0.4)		0.9	(0.4)		-0.6	(0.6)	
Malaysia	3.7	(0.3)		5.6	(0.6)		2.1	(0.4)		**-3.5**	(0.7)	
Malta	2.1	(0.3)		1.7	(0.5)		2.7	(0.5)		0.9	(0.7)	
Moldova	8.2	(0.8)		14.3	(1.7)		4.1	(0.5)		**-10.2**	(1.7)	
Montenegro	30.3	(0.6)		45.4	(1.3)		19.4	(1.0)		**-26.0**	(1.6)	
Morocco	27.0	(1.3)		41.0	(2.0)		14.1	(1.1)		**-26.9**	(2.2)	
North Macedonia	m	m		m	m		m	m		m	m	
Panama	15.3	(0.7)		19.2	(1.3)		9.1	(1.0)		**-10.1**	(1.7)	
Peru	5.0	(0.4)		11.0	(1.3)		1.1	(0.3)		**-9.9**	(1.3)	
Philippines	11.4	(0.7)		17.7	(1.6)		6.4	(0.6)		**-11.2**	(1.7)	
Qatar	16.7	(0.4)	†	34.5	(0.9)	†	7.9	(0.6)		**-26.6**	(1.0)	†
Romania	2.3	(0.3)		5.3	(0.9)		0.9	(0.2)		**-4.4**	(1.0)	
Russia	13.9	(1.0)		21.8	(2.1)		9.4	(0.8)		**-12.4**	(2.3)	
Saudi Arabia	51.7	(1.5)	†	77.9	(1.6)	†	27.8	(1.6)	†	**-50.1**	(2.1)	†
Serbia	2.5	(0.2)		2.0	(0.3)		2.8	(0.5)		0.8	(0.6)	
Singapore	1.7	(0.2)		2.7	(0.5)	†	1.3	(0.4)		**-1.4**	(0.6)	†
Chinese Taipei	1.4	(0.2)	†	2.4	(0.5)	†	1.6	(0.4)		-0.8	(0.6)	†
Thailand	1.2	(0.2)		1.2	(0.4)		0.8	(0.2)		-0.4	(0.5)	
Ukraine	18.5	(0.9)		27.3	(2.1)		13.2	(1.2)		**-14.2**	(2.4)	
United Arab Emirates	9.1	(0.3)	†	16.4	(0.8)	†	4.8	(0.7)		**-11.5**	(1.0)	†
Uruguay	3.3	(0.3)		5.7	(0.7)		1.7	(0.3)		**-4.1**	(0.8)	
Viet Nam	3.4	(0.5)		5.5	(1.2)		1.8	(0.3)		**-3.7**	(1.3)	

1. A socio-economically disadvantaged (advantaged) student is a student in the bottom (top) quarter of the PISA index of economic, social and cultural status (ESCS) in his or her own country/economy.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.2 [3/4] **Brief or no attendance at pre-primary school, by students' and schools' socio-economic profile**
Students who had not attended pre-primary school or who had attended for less than a year; results based on students' reports

	By school's socio-economic profile								
	Disadvantaged schools[1]			Advantaged schools			Difference between advantaged and disadvantaged schools		
	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
OECD									
Australia	14.5	(0.9)	†	8.3	(0.8)		**-6.2**	(1.2)	†
Austria	4.9	(0.6)	†	1.7	(0.4)		**-3.1**	(0.7)	†
Belgium	3.5	(0.6)	†	0.9	(0.2)		**-2.7**	(0.7)	†
Canada	18.1	(0.9)	†	8.6	(0.8)		**-9.5**	(1.2)	†
Chile	9.1	(1.2)	†	2.2	(0.4)		**-6.9**	(1.3)	†
Colombia	12.2	(1.3)		3.3	(0.5)		**-8.9**	(1.4)	
Czech Republic	5.8	(0.8)		1.5	(0.3)		**-4.3**	(0.8)	
Denmark	1.7	(0.3)	†	0.8	(0.5)		-0.8	(0.5)	†
Estonia	7.4	(1.4)		2.8	(0.4)		**-4.7**	(1.5)	
Finland	3.6	(0.7)		1.3	(0.3)		**-2.3**	(0.7)	
France	4.5	(0.8)	†	0.3	(0.2)		**-4.2**	(0.8)	†
Germany	4.1	(0.8)	†	1.1	(0.4)		**-3.0**	(0.9)	†
Greece	5.5	(0.8)		1.4	(0.3)		**-4.1**	(0.9)	
Hungary	0.8	(0.3)		0.4	(0.2)		-0.3	(0.4)	
Iceland	2.1	(0.5)	†	1.1	(0.4)		-1.0	(0.6)	†
Ireland	16.0	(1.6)		6.6	(0.7)		**-9.4**	(1.8)	
Israel	2.7	(0.5)	†	0.4	(0.2)		**-2.3**	(0.6)	†
Italy	5.0	(0.7)		1.8	(0.4)		**-3.2**	(0.8)	
Japan	0.7	(0.3)	†	0.1	(0.1)		**-0.6**	(0.3)	†
Korea	5.0	(0.8)		2.8	(0.5)		**-2.2**	(1.0)	
Latvia	6.7	(1.0)		5.2	(0.8)		-1.5	(1.4)	
Lithuania	30.9	(2.3)		6.9	(0.8)		**-24.0**	(2.4)	
Luxembourg	8.5	(0.9)	†	3.0	(0.5)		**-5.5**	(1.0)	†
Mexico	3.9	(0.8)		0.3	(0.1)		**-3.6**	(0.9)	
Netherlands	3.9	(0.7)		1.9	(0.4)		**-2.0**	(0.8)	
New Zealand	8.9	(1.1)		3.3	(0.5)		**-5.6**	(1.2)	
Norway	5.2	(0.7)	†	3.0	(0.6)	†	**-2.2**	(0.9)	†
Poland	21.6	(2.5)		9.7	(1.2)		**-12.0**	(3.0)	
Portugal	10.7	(1.3)		3.8	(0.8)		**-6.9**	(1.5)	
Slovak Republic	10.8	(1.4)		1.8	(0.4)		**-9.0**	(1.5)	
Slovenia	15.1	(1.3)		5.7	(0.9)		**-9.4**	(1.6)	
Spain	2.7	(0.3)		1.3	(0.2)		**-1.5**	(0.4)	
Sweden	8.2	(0.9)		1.2	(0.3)		**-7.0**	(1.0)	
Switzerland	5.0	(0.7)		2.6	(0.8)		**-2.4**	(1.1)	
Turkey	44.2	(2.2)		18.3	(1.9)		**-25.9**	(2.8)	
United Kingdom	7.0	(0.9)	†	3.0	(0.5)		**-4.1**	(1.0)	†
United States	23.8	(1.9)	†	10.8	(1.4)	†	**-13.0**	(2.5)	†
OECD average	9.3	(0.2)		3.5	(0.1)		**-5.8**	(0.2)	

1. A socio-economically disadvantaged (advantaged) student is a student in the bottom (top) quarter of the PISA index of economic, social and cultural status (ESCS) in his or her own country/economy.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.2 [4/4] **Brief or no attendance at pre-primary school, by students' and schools' socio-economic profile**
Students who had not attended pre-primary school or who had attended for less than a year; results based on students' reports

		By school's socio-economic profile								
		Disadvantaged schools[1]			Advantaged schools			Difference between advantaged and disadvantaged schools		
		%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
Partners	Albania	15.7	(1.4)		11.5	(1.1)		**-4.2**	(1.9)	
	Argentina	6.8	(1.1)		0.8	(0.2)		**-6.0**	(1.1)	
	Baku (Azerbaijan)	52.0	(1.5)		35.4	(2.3)		**-16.6**	(2.6)	
	Belarus	7.9	(2.0)		2.5	(0.4)		**-5.4**	(2.0)	
	Bosnia and Herzegovina	68.5	(2.0)		48.8	(1.9)		**-19.7**	(2.9)	
	Brazil	12.9	(1.2)	†	4.9	(0.7)		**-8.0**	(1.4)	†
	Brunei Darussalam	38.6	(1.5)	†	5.0	(0.5)		**-33.6**	(1.5)	†
	B-S-J-Z (China)	2.4	(0.5)		0.6	(0.2)		**-1.8**	(0.5)	
	Bulgaria	6.5	(0.9)		5.4	(0.6)		-1.1	(1.1)	
	Costa Rica	14.8	(1.4)		4.7	(0.7)		**-10.2**	(1.6)	
	Croatia	25.6	(2.1)		8.3	(1.3)		**-17.3**	(2.5)	
	Cyprus	2.8	(0.8)	†	4.4	(0.6)		1.6	(1.0)	†
	Dominican Republic	27.1	(1.7)		6.3	(0.6)	†	**-20.8**	(1.8)	†
	Georgia	38.8	(3.0)		8.9	(1.1)		**-29.9**	(3.0)	
	Hong Kong (China)	2.2	(0.8)	†	0.7	(0.3)		-1.5	(0.9)	†
	Indonesia	34.6	(3.2)		8.2	(1.4)		**-26.4**	(3.5)	
	Jordan	18.2	(2.6)		8.2	(0.9)		**-10.0**	(2.7)	
	Kazakhstan	61.3	(2.3)		29.3	(1.7)		**-32.0**	(2.9)	
	Kosovo	33.8	(2.3)		32.4	(1.8)		-1.4	(2.9)	
	Lebanon	11.1	(1.7)	†	9.6	(1.6)	†	-1.5	(2.4)	†
	Macao (China)	1.6	(0.5)		0.8	(0.3)		-0.8	(0.6)	
	Malaysia	5.1	(0.7)		1.9	(0.4)		**-3.2**	(0.8)	
	Malta	1.4	(0.5)		3.5	(0.7)		**2.0**	(0.9)	
	Moldova	15.1	(2.9)		4.2	(0.6)		**-10.9**	(2.9)	
	Montenegro	40.7	(1.5)		19.0	(1.1)		**-21.7**	(1.9)	
	Morocco	43.4	(2.5)		10.8	(1.4)		**-32.5**	(2.8)	
	North Macedonia	m	m		m	m		m	m	
	Panama	18.9	(1.5)		9.1	(1.0)		**-9.8**	(1.7)	
	Peru	10.3	(1.3)		1.0	(0.3)		**-9.3**	(1.3)	
	Philippines	14.8	(1.9)		5.6	(0.7)		**-9.2**	(2.1)	
	Qatar	34.5	(0.9)	†	5.4	(0.5)	†	**-29.0**	(1.0)	†
	Romania	4.9	(1.0)		0.8	(0.3)		**-4.1**	(1.1)	
	Russia	21.8	(2.6)		10.9	(0.8)		**-10.8**	(2.9)	
	Saudi Arabia	74.5	(1.9)	†	28.1	(2.1)	†	**-46.5**	(2.9)	†
	Serbia	2.0	(0.3)		3.0	(0.4)		1.0	(0.5)	
	Singapore	2.0	(0.4)	†	2.0	(0.5)		0.1	(0.6)	†
	Chinese Taipei	1.7	(0.3)	†	1.5	(0.3)		-0.2	(0.4)	†
	Thailand	1.6	(0.6)		0.4	(0.1)		**-1.3**	(0.6)	
	Ukraine	28.0	(3.0)		12.5	(1.4)		**-15.5**	(3.3)	
	United Arab Emirates	16.6	(0.8)	†	4.6	(0.6)		**-12.0**	(0.9)	†
	Uruguay	6.0	(0.7)		0.7	(0.3)		**-5.3**	(0.7)	
	Viet Nam	4.8	(1.3)		3.2	(0.7)		-1.5	(1.5)	

1. A socio-economically disadvantaged (advantaged) student is a student in the bottom (top) quarter of the PISA index of economic, social and cultural status (ESCS) in his or her own country/economy.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.10 [1/8] **Grade repetition, school characteristics and reading performance**
Results based on principals' reports

		All students				By school socio-economic profile[1]									
		Average		Variability		Bottom quarter		Second quarter		Third quarter		Top quarter		Top - bottom quarter	
		%	S.E.	S.D.	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	% dif.	S.E.
OECD	**Australia**	5.9	(0.2)	23.5	(0.4)	8.0	(0.6)	5.5	(0.5)	5.3	(0.4)	4.6	(0.5)	**-3.4**	(0.8)
	Austria	14.4	(0.6)	35.1	(0.7)	23.8	(2.0)	15.3	(1.7)	8.8	(1.2)	10.3	(1.2)	**-13.5**	(2.1)
	Belgium	30.8	(0.7)	46.2	(0.3)	58.4	(2.0)	38.2	(1.6)	21.4	(1.6)	10.3	(0.9)	**-48.1**	(2.0)
	Canada	5.4	(0.3)	22.6	(0.5)	10.8	(1.0)	5.4	(0.6)	3.7	(0.4)	2.1	(0.3)	**-8.7**	(1.0)
	Chile	23.2	(0.9)	42.2	(0.6)	35.6	(2.5)	29.7	(2.0)	18.8	(2.4)	9.1	(1.0)	**-26.5**	(2.8)
	Colombia	40.8	(1.0)	49.2	(0.2)	45.3	(2.2)	46.4	(2.2)	43.0	(2.3)	28.7	(2.4)	**-16.5**	(3.3)
	Czech Republic	4.6	(0.5)	20.9	(1.2)	12.3	(1.9)	3.1	(0.8)	2.3	(0.6)	1.0	(0.3)	**-11.3**	(2.0)
	Denmark	3.2	(0.2)	17.5	(0.6)	5.1	(0.6)	3.0	(0.5)	3.3	(0.6)	1.4	(0.4)	**-3.7**	(0.7)
	Estonia	2.9	(0.3)	16.8	(0.8)	4.6	(0.9)	2.8	(0.5)	2.6	(0.4)	1.5	(0.4)	**-3.1**	(1.0)
	Finland	3.3	(0.2)	17.9	(0.6)	4.5	(0.6)	3.4	(0.6)	2.8	(0.5)	2.7	(0.4)	**-1.9**	(0.7)
	France	16.6	(0.6)	37.2	(0.6)	48.5	(2.9)	12.2	(2.7)	3.7	(1.6)	2.1	(0.9)	**-46.4**	(3.3)
	Germany	19.6	(0.9)	39.7	(0.7)	33.6	(2.8)	22.8	(2.4)	16.7	(1.7)	7.8	(1.4)	**-25.8**	(3.1)
	Greece	4.0	(0.5)	19.6	(1.1)	12.5	(1.7)	1.8	(0.6)	1.2	(0.5)	0.7	(0.4)	**-11.8**	(1.8)
	Hungary	8.5	(0.4)	27.9	(0.6)	23.5	(2.0)	5.6	(1.6)	3.0	(0.8)	2.0	(0.5)	**-21.6**	(2.1)
	Iceland	0.9	(0.2)	9.5	(0.9)	1.3	(0.4)	1.1	(0.4)	0.9	(0.3)	0.4	(0.2)	**-1.0**	(0.5)
	Ireland	6.1	(0.4)	24.0	(0.8)	9.0	(1.4)	4.9	(1.1)	6.2	(0.9)	4.5	(0.6)	**-4.5**	(1.5)
	Israel	9.0	(0.7)	28.7	(1.0)	25.0	(1.7)	8.8	(2.6)	2.6	(1.1)	1.0	(0.3)	**-24.0**	(1.7)
	Italy	13.2	(0.5)	33.9	(0.6)	25.7	(1.6)	14.9	(1.3)	8.4	(1.0)	3.9	(0.6)	**-21.8**	(1.7)
	Japan	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	Korea	4.5	(0.3)	20.6	(0.6)	5.6	(0.7)	4.2	(0.6)	4.2	(0.6)	3.8	(0.5)	**-1.8**	(0.9)
	Latvia	3.7	(0.3)	18.9	(0.8)	7.3	(0.9)	4.5	(0.8)	1.7	(0.4)	1.3	(0.3)	**-6.1**	(1.0)
	Lithuania	2.0	(0.2)	14.1	(0.7)	4.4	(0.7)	1.5	(0.5)	1.4	(0.5)	0.8	(0.2)	**-3.6**	(0.8)
	Luxembourg	32.2	(0.6)	46.7	(0.2)	50.1	(1.2)	42.9	(1.2)	24.2	(1.1)	11.8	(0.8)	**-38.2**	(1.5)
	Mexico	15.0	(0.9)	35.7	(0.9)	31.3	(4.4)	9.8	(3.0)	13.4	(3.9)	5.0	(1.4)	**-26.2**	(4.5)
	Netherlands	17.3	(0.7)	37.8	(0.6)	26.9	(1.7)	22.6	(1.9)	13.0	(1.6)	11.4	(1.3)	**-15.6**	(2.1)
	New Zealand	5.6	(0.3)	22.9	(0.6)	6.9	(0.8)	4.4	(0.8)	5.9	(0.7)	5.1	(0.7)	-1.9	(1.1)
	Norway	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	Poland	3.3	(0.3)	17.8	(0.9)	5.5	(1.0)	3.8	(1.0)	3.1	(0.9)	0.7	(0.2)	**-4.8**	(1.0)
	Portugal	26.6	(1.2)	44.2	(0.7)	46.7	(3.9)	28.6	(4.2)	22.4	(4.3)	8.7	(1.1)	**-38.1**	(3.9)
	Slovak Republic	5.5	(0.5)	22.9	(0.9)	16.0	(1.9)	4.4	(0.7)	2.2	(0.5)	0.5	(0.3)	**-15.5**	(1.9)
	Slovenia	3.6	(0.5)	18.6	(1.2)	8.4	(2.0)	3.4	(1.2)	2.2	(0.8)	0.6	(0.3)	**-7.8**	(2.1)
	Spain	28.7	(0.5)	45.2	(0.3)	43.3	(1.2)	32.3	(1.4)	24.6	(1.2)	14.7	(0.7)	**-28.5**	(1.4)
	Sweden	3.5	(0.3)	18.3	(0.8)	7.6	(1.1)	2.9	(0.4)	2.3	(0.4)	1.1	(0.3)	**-6.5**	(1.1)
	Switzerland	17.6	(0.8)	38.1	(0.7)	27.5	(2.4)	20.9	(2.4)	13.9	(2.1)	8.1	(1.3)	**-19.4**	(3.1)
	Turkey	7.4	(0.5)	26.2	(0.8)	14.3	(1.7)	6.9	(1.5)	6.2	(1.1)	2.1	(0.7)	**-12.3**	(1.9)
	United Kingdom	2.5	(0.3)	15.7	(0.8)	4.8	(0.8)	2.0	(0.8)	1.3	(0.3)	2.1	(0.4)	**-2.7**	(0.8)
	United States	9.1	(0.6)	28.8	(0.9)	14.9	(1.3)	12.4	(1.4)	6.4	(1.1)	3.0	(0.6)	**-11.9**	(1.4)
	OECD average	11.4	(0.1)	28.1	(0.1)	20.3	(0.3)	12.3	(0.3)	8.7	(0.2)	5.0	(0.1)	**-15.3**	(0.3)

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Note: Values that are statistically significant are indicated in bold (see Annex A3).
StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.10 [2/8] **Grade repetition, school characteristics and reading performance**
Results based on principals' reports

		All students						By school socio-economic profile[1]														
		Average			Variability			Bottom quarter			Second quarter			Third quarter			Top quarter			Top - bottom quarter		
		%	S.E.	x	S.D.	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
Partners	Albania	3.3	(0.3)		17.8	(0.8)		7.0	(1.0)		2.7	(0.5)		1.9	(0.4)		1.6	(0.6)		**-5.3**	(1.2)	
	Argentina	29.2	(1.1)		45.5	(0.5)		49.5	(2.3)		36.3	(3.1)		22.7	(2.1)		9.1	(1.4)		**-40.3**	(2.4)	
	Baku (Azerbaijan)	2.7	(0.2)		16.3	(0.6)		3.4	(0.7)		2.7	(0.4)		2.7	(0.4)		2.2	(0.4)		-1.2	(0.8)	
	Belarus	1.4	(0.2)		11.9	(0.7)		1.7	(0.4)		2.1	(0.5)		1.2	(0.5)		0.8	(0.2)		**-1.0**	(0.5)	
	Bosnia and Herzegovina	1.9	(0.2)		13.6	(0.7)		3.0	(0.5)		2.7	(0.7)		1.2	(0.4)		0.6	(0.2)		**-2.4**	(0.6)	
	Brazil	34.1	(1.0)		47.4	(0.3)		51.8	(2.4)		36.5	(2.1)		31.7	(2.1)		16.7	(1.4)		**-35.1**	(2.8)	
	Brunei Darussalam	12.0	(0.3)		32.5	(0.3)		15.5	(0.7)		14.1	(0.7)		12.9	(0.7)		5.5	(0.4)		**-10.0**	(0.8)	
	B-S-J-Z (China)	8.3	(0.7)		27.6	(1.1)		18.3	(2.2)		6.4	(2.1)		6.7	(1.4)		1.8	(0.5)		**-16.5**	(2.3)	
	Bulgaria	4.5	(0.5)		20.7	(1.1)		10.8	(1.5)		3.3	(1.7)		3.0	(0.8)		0.9	(0.3)		**-10.0**	(1.5)	
	Costa Rica	28.1	(1.2)		44.9	(0.6)		38.1	(2.4)		32.3	(1.9)		31.1	(2.9)		10.6	(2.8)		**-27.6**	(3.6)	
	Croatia	1.5	(0.2)		12.3	(0.7)		2.7	(0.5)		1.6	(0.4)		1.6	(0.4)		0.2	(0.1)		**-2.5**	(0.5)	
	Cyprus	3.9	(0.4)		19.5	(1.0)		8.5	(1.3)		1.3	(0.3)		2.5	(0.4)		3.5	(0.5)		**-5.1**	(1.2)	
	Dominican Republic	32.5	(1.2)		46.8	(0.5)		47.1	(2.7)		38.3	(2.5)		33.5	(3.5)		11.7	(2.2)		**-35.4**	(3.6)	
	Georgia	3.3	(0.3)		17.8	(0.8)		5.4	(0.9)		3.4	(0.6)		2.5	(0.6)		1.8	(0.3)		**-3.6**	(1.0)	
	Hong Kong (China)	15.7	(0.7)		36.4	(0.6)		27.0	(2.2)		15.2	(1.8)		12.8	(1.5)		8.0	(1.0)		**-19.0**	(2.3)	
	Indonesia	15.5	(0.9)		36.2	(0.9)		19.9	(2.9)		21.7	(2.4)		14.2	(1.9)		5.7	(1.7)		**-14.2**	(3.3)	
	Jordan	10.8	(0.6)		31.0	(0.7)		17.7	(1.9)		10.3	(1.3)		9.2	(1.2)		6.1	(0.9)		**-11.6**	(2.2)	
	Kazakhstan	3.1	(0.2)		17.4	(0.5)		3.7	(0.6)		3.9	(0.5)		2.9	(0.4)		1.9	(0.3)		**-1.8**	(0.6)	
	Kosovo	4.5	(0.3)		20.7	(0.7)		8.1	(0.9)		5.0	(0.8)		3.7	(0.7)		1.2	(0.5)		**-6.8**	(1.0)	
	Lebanon	34.5	(1.8)		47.5	(0.6)		62.9	(3.9)		33.9	(3.1)		27.1	(4.2)		19.2	(3.9)		**-43.7**	(5.5)	
	Macao (China)	30.1	(0.4)		45.9	(0.2)		43.5	(1.0)		30.3	(1.0)		30.6	(1.0)		15.9	(0.8)		**-27.5**	(1.4)	
	Malaysia	m	m		m	m		m	m		m	m		m	m		m	m		m	m	
	Malta	5.5	(0.4)		22.7	(0.7)		7.4	(0.9)		5.7	(0.7)		4.9	(0.6)		4.0	(0.6)		**-3.4**	(1.2)	
	Moldova	2.6	(0.3)		15.9	(0.7)		4.4	(0.7)		3.0	(0.5)		2.0	(0.5)		1.0	(0.3)		**-3.3**	(0.7)	
	Montenegro	1.6	(0.2)		12.4	(0.6)		2.8	(0.5)		1.4	(0.3)		0.8	(0.2)		1.1	(0.2)		**-1.7**	(0.5)	
	Morocco	49.3	(2.8)		50.0	(0.1)		71.5	(4.9)		67.9	(5.4)		49.2	(8.0)		9.1	(4.0)		**-62.4**	(5.5)	
	North Macedonia	3.2	(0.2)		17.5	(0.6)		6.3	(0.8)		3.5	(0.5)		1.9	(0.4)		1.1	(0.3)		**-5.1**	(0.9)	
	Panama	26.5	(1.2)		44.1	(0.6)		42.3	(3.9)		32.7	(4.1)		22.1	(1.9)		9.9	(1.1)		**-32.5**	(3.9)	
	Peru	20.8	(0.8)		40.6	(0.6)		31.1	(1.2)		28.3	(2.0)		17.7	(2.0)		6.5	(0.9)		**-24.6**	(1.6)	
	Philippines	21.1	(1.0)		40.8	(0.7)		28.8	(2.2)		26.3	(1.9)		20.7	(1.3)		8.5	(1.6)		**-20.3**	(2.3)	
	Qatar	17.1	(0.3)		37.7	(0.2)		36.1	(0.7)		15.5	(0.6)		9.7	(0.5)		7.5	(0.4)		**-28.6**	(0.8)	
	Romania	4.5	(0.7)		20.6	(1.5)		12.7	(2.6)		3.3	(0.9)		1.0	(0.4)		0.9	(0.4)		**-11.8**	(2.6)	
	Russia	1.7	(0.2)		13.1	(0.7)		3.1	(0.5)		1.7	(0.5)		1.2	(0.4)		0.9	(0.2)		**-2.2**	(0.7)	
	Saudi Arabia	11.4	(1.1)		31.8	(1.3)		24.2	(3.1)		12.9	(2.6)		5.3	(1.4)		3.3	(0.6)		**-20.9**	(3.2)	
	Serbia	1.4	(0.2)		11.9	(0.8)		2.9	(0.7)		1.5	(0.4)		0.9	(0.4)		0.4	(0.2)		**-2.5**	(0.8)	
	Singapore	4.8	(0.2)		21.4	(0.5)		6.8	(0.4)		4.2	(0.4)		4.1	(0.5)		4.0	(0.7)		**-2.8**	(0.8)	
	Chinese Taipei	0.9	(0.1)		9.4	(0.7)		1.1	(0.2)		1.1	(0.4)		0.5	(0.4)		0.9	(0.4)		-0.2	(0.5)	
	Thailand	6.8	(0.5)		25.1	(0.8)		9.4	(1.6)		8.3	(1.1)		6.2	(1.0)		3.1	(0.6)		**-6.4**	(1.7)	
	Ukraine	1.6	(0.2)		12.6	(0.8)		2.4	(0.5)		2.0	(0.5)		1.1	(0.4)		0.9	(0.3)		**-1.5**	(0.6)	
	United Arab Emirates	10.2	(0.3)		30.3	(0.4)		16.5	(0.8)		9.3	(0.6)		8.1	(0.6)		7.1	(0.7)		**-9.4**	(1.1)	
	Uruguay	33.4	(1.1)		47.2	(0.4)		66.8	(4.2)		44.4	(5.2)		16.2	(3.9)		5.5	(1.2)		**-61.4**	(4.2)	
	Viet Nam	4.9	(1.2)		21.6	(2.6)		12.1	(3.3)		2.1	(0.9)		0.7	(0.8)		4.7	(3.3)		-7.4	(4.8)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Note: Values that are statistically significant are indicated in bold (see Annex A3).
StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.10 [3/8] **Grade repetition, school characteristics and reading performance**
Results based on principals' reports

		By school location											
		Rural area or village (fewer than 3 000 people)			Town (3 000 to 100 000 people)			City (over 100 000 people)			City - rural area		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
OECD	Australia	9.9	(1.4)		6.1	(0.5)		5.6	(0.3)		**-4.2**	(1.4)	
	Austria	16.3	(3.3)		12.7	(0.9)		17.4	(1.3)		1.0	(3.4)	
	Belgium	m	m		26.8	(1.1)		42.9	(2.2)		m	m	
	Canada	5.6	(1.2)		6.2	(0.5)		4.8	(0.4)		-0.8	(1.4)	
	Chile	47.8	(5.4)		23.4	(1.7)		20.7	(1.2)		**-27.2**	(5.5)	
	Colombia	47.3	(4.2)		41.3	(2.1)		38.7	(1.3)		-8.7	(4.5)	
	Czech Republic	9.6	(1.9)		4.6	(0.7)		3.3	(1.2)		**-6.3**	(2.3)	
	Denmark	2.1	(0.5)		3.3	(0.4)		3.2	(0.6)		1.2	(0.8)	
	Estonia	4.9	(0.9)		2.3	(0.3)		2.3	(0.5)		**-2.6**	(1.1)	
	Finland	4.6	(1.3)		3.2	(0.3)		3.3	(0.4)		-1.3	(1.4)	
	France	59.3	(14.2)		14.4	(1.5)		15.5	(3.6)		**-43.8**	(15.1)	
	Germany	m	m		19.7	(1.2)		19.7	(2.1)		m	m	
	Greece	7.5	(2.8)		3.7	(0.7)		3.5	(0.9)		-3.9	(3.0)	
	Hungary	60.4	(6.8)		8.4	(0.9)		3.6	(0.5)		**-56.8**	(6.8)	
	Iceland	1.4	(0.5)		1.0	(0.2)		0.5	(0.2)		-0.9	(0.6)	
	Ireland	7.6	(0.8)		6.3	(0.7)		4.8	(0.7)		**-2.8**	(1.0)	
	Israel	12.6	(3.5)		12.5	(1.6)		3.8	(1.2)		**-8.8**	(3.7)	
	Italy	12.5	(3.8)		12.6	(0.8)		14.5	(1.5)		2.0	(4.0)	
	Japan	m	m		m	m		m	m		m	m	
	Korea	m	m		5.6	(1.0)		4.3	(0.2)		m	m	
	Latvia	6.5	(1.1)		3.4	(0.4)		2.5	(0.6)		**-3.9**	(1.3)	
	Lithuania	3.2	(0.5)		2.2	(0.4)		1.2	(0.3)		**-2.0**	(0.6)	
	Luxembourg	m	m		37.9	(0.8)		24.2	(0.7)		m	m	
	Mexico	29.7	(3.9)		13.2	(3.1)		10.9	(1.5)		**-18.8**	(4.5)	
	Netherlands	m	m		16.7	(0.8)		18.1	(1.7)		m	m	
	New Zealand	5.6	(1.7)		6.2	(0.5)		5.0	(0.5)		-0.6	(1.8)	
	Norway	m	m		m	m		m	m		m	m	
	Poland	3.3	(0.7)		2.9	(0.4)		4.1	(1.1)		0.8	(1.3)	
	Portugal	68.9	(12.7)		29.1	(1.7)		16.6	(2.8)		**-52.3**	(12.3)	
	Slovak Republic	17.4	(2.2)		3.6	(0.6)		1.7	(0.5)		**-15.7**	(2.3)	
	Slovenia	10.6	(4.3)		3.4	(0.7)		2.3	(0.5)		-8.4	(4.4)	
	Spain	34.5	(2.9)		29.7	(0.7)		26.8	(1.2)		**-7.6**	(3.0)	
	Sweden	1.7	(0.5)		3.2	(0.4)		4.2	(0.9)		**2.5**	(1.0)	
	Switzerland	15.6	(2.6)		18.9	(1.2)		12.1	(3.2)		-3.5	(4.5)	
	Turkey	m	m		9.6	(1.1)		6.2	(0.8)		m	m	
	United Kingdom	2.1	(0.9)		1.9	(0.3)		3.6	(0.5)		1.5	(1.0)	
	United States	9.4	(2.5)		8.5	(0.6)		8.6	(1.1)		-0.8	(2.7)	
	OECD average	17.9	(0.8)		11.6	(0.2)		10.3	(0.2)		**-9.4**	(0.9)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Note: Values that are statistically significant are indicated in bold (see Annex A3).
StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.10 [4/8] **Grade repetition, school characteristics and reading performance**
Results based on principals' reports

Partners

	By school location											
	Rural area or village (fewer than 3 000 people)			Town (3 000 to 100 000 people)			City (over 100 000 people)			City - rural area		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
Albania	4.2	(0.7)		3.9	(0.6)		1.7	(0.4)		**-2.4**	(0.8)	
Argentina	44.8	(5.0)		27.8	(1.5)		28.6	(1.8)		**-16.1**	(5.4)	
Baku (Azerbaijan)	m	m		2.6	(0.3)		2.6	(0.3)		m	m	
Belarus	2.3	(0.5)		1.7	(0.4)		1.0	(0.2)		**-1.3**	(0.5)	
Bosnia and Herzegovina	3.8	(1.1)		1.9	(0.2)		1.2	(0.4)		**-2.6**	(1.1)	
Brazil	58.6	(7.0)		34.1	(1.8)		31.9	(1.5)		**-26.7**	(7.1)	
Brunei Darussalam	20.4	(1.2)		10.7	(0.4)		10.6	(1.0)		**-9.7**	(1.6)	
B-S-J-Z (China)	19.9	(4.9)		10.5	(1.4)		5.2	(0.7)		**-14.7**	(4.9)	
Bulgaria	11.1	(3.3)		5.2	(0.8)		2.8	(0.5)		**-8.3**	(3.4)	
Costa Rica	31.5	(2.5)		28.0	(1.5)		23.8	(4.0)		-7.7	(4.8)	
Croatia	m	m		1.6	(0.3)		1.3	(0.2)		m	m	
Cyprus	3.6	(2.4)		4.2	(0.5)		3.5	(0.6)		-0.1	(2.4)	
Dominican Republic	44.4	(3.5)		34.7	(2.1)		24.6	(2.4)		**-19.8**	(4.4)	
Georgia	4.9	(0.7)		3.2	(0.7)		2.3	(0.3)		**-2.7**	(0.8)	
Hong Kong (China)	m	m		19.5	(3.1)		15.2	(1.2)		m	m	
Indonesia	21.4	(2.5)		13.7	(1.4)		8.8	(2.9)		**-12.6**	(3.9)	
Jordan	17.1	(2.6)		12.3	(0.9)		7.6	(0.7)		**-9.4**	(2.7)	
Kazakhstan	4.4	(0.4)		3.2	(0.5)		2.3	(0.2)		**-2.1**	(0.4)	
Kosovo	10.9	(1.7)		4.0	(0.3)		2.3	(0.5)		**-8.5**	(1.8)	
Lebanon	52.4	(5.8)		32.1	(2.1)		24.6	(3.5)		**-27.7**	(6.7)	
Macao (China)	m	m		m	m		30.0	(0.4)		m	m	
Malaysia	m	m		m	m		m	m		m	m	
Malta	3.1	(0.8)		5.7	(0.4)		m	m		m	m	
Moldova	3.1	(0.4)		2.6	(0.5)		1.5	(0.3)		**-1.6**	(0.5)	
Montenegro	m	m		1.4	(0.2)		1.7	(0.3)		m	m	
Morocco	62.9	(5.7)		54.6	(5.1)		39.2	(4.5)		**-23.7**	(7.1)	
North Macedonia	m	m		3.4	(0.4)		2.8	(0.4)		m	m	
Panama	50.1	(5.3)		23.4	(2.1)		17.9	(2.0)		**-32.2**	(5.7)	
Peru	29.4	(1.5)		18.9	(1.0)		11.9	(1.8)		**-17.5**	(2.3)	
Philippines	27.3	(2.8)		22.9	(1.5)		18.3	(1.3)		**-9.1**	(3.1)	
Qatar	23.8	(1.7)		21.7	(0.5)		13.7	(0.3)		**-10.2**	(1.7)	
Romania	22.5	(6.8)		2.9	(0.6)		2.6	(0.6)		**-19.8**	(6.7)	
Russia	3.6	(1.1)		1.8	(0.3)		1.2	(0.2)		**-2.4**	(1.2)	
Saudi Arabia	18.2	(4.7)		14.3	(2.9)		9.1	(1.2)		-9.0	(4.7)	
Serbia	m	m		1.5	(0.3)		1.1	(0.2)		m	m	
Singapore	m	m		m	m		4.8	(0.2)		m	m	
Chinese Taipei	0.7	(0.5)		0.9	(0.2)		0.9	(0.2)		0.1	(0.5)	
Thailand	10.3	(1.7)		7.3	(0.8)		4.5	(0.7)		**-5.8**	(1.8)	
Ukraine	2.6	(0.7)		1.8	(0.4)		1.1	(0.2)		**-1.5**	(0.7)	
United Arab Emirates	10.6	(1.1)		12.6	(0.5)		9.0	(0.4)		-1.6	(1.2)	
Uruguay	35.4	(6.0)		33.7	(2.3)		32.7	(2.6)		-2.7	(6.6)	
Viet Nam	7.9	(2.3)		2.0	(0.4)		4.9	(4.0)		-2.9	(4.6)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Note: Values that are statistically significant are indicated in bold (see Annex A3).
StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.10 [5/8] **Grade repetition, school characteristics and reading performance**
Results based on principals' reports

		By type of school									By education level							
		Public			Private			Private - public			Lower secondary (ISCED 2)			Upper secondary (ISCED 3)			ISCED 3 - ISCED 2	
		%	S.E.	x	%	S.E.	x	% dif.	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
OECD	Australia	6.3	(0.3)		5.2	(0.4)		**-1.0**	(0.5)		6.1	(0.3)		2.8	(0.6)		**-3.3**	(0.6)	
	Austria	14.7	(0.7)		12.8	(3.1)		-1.9	(3.4)		74.6	(3.7)		10.4	(0.5)		**-64.1**	(3.8)	
	Belgium	m	m		m	m		m	m		92.0	(1.6)	†	27.3	(0.7)		**-64.7**	(1.7)	†
	Canada	5.5	(0.3)		4.1	(0.6)		**-1.5**	(0.7)		31.9	(1.5)		2.3	(0.2)		**-29.6**	(1.5)	
	Chile	29.9	(1.8)		19.6	(1.2)		**-10.2**	(2.1)		94.2	(2.0)		19.3	(0.8)		**-75.0**	(2.1)	
	Colombia	43.6	(1.1)		29.3	(2.9)		**-14.3**	(3.2)		82.9	(1.2)		14.6	(0.7)		**-68.3**	(1.4)	
	Czech Republic	4.7	(0.6)		4.3	(2.5)		-0.4	(2.5)		7.1	(0.9)		1.8	(0.3)		**-5.3**	(0.9)	
	Denmark	3.4	(0.3)		2.4	(0.5)		-1.0	(0.6)		3.2	(0.2)		m	m		m	m	
	Estonia	2.9	(0.3)		2.0	(1.5)		-1.0	(1.5)		2.9	(0.3)		3.9	(3.6)		1.0	(3.6)	
	Finland	3.4	(0.2)		2.0	(0.6)		**-1.4**	(0.7)		3.3	(0.2)		m	m		m	m	
	France	17.3	(0.6)		13.7	(2.0)		-3.7	(2.1)		91.5	(1.3)		0.7	(0.1)		**-90.8**	(1.3)	
	Germany	20.0	(1.0)		8.6	(2.9)		**-11.4**	(3.1)		20.2	(0.9)		1.7	(1.1)		**-18.5**	(1.4)	
	Greece	4.2	(0.5)		0.0	c		**-4.2**	(0.5)		66.1	(5.3)		1.2	(0.2)		**-65.0**	(5.3)	
	Hungary	9.3	(0.6)		4.2	(0.9)		**-5.1**	(1.2)		57.3	(3.7)		3.1	(0.3)		**-54.3**	(3.8)	
	Iceland	0.9	(0.2)		m	m		m	m		0.9	(0.2)		m	m		m	m	
	Ireland	6.4	(0.7)		5.9	(0.5)		-0.5	(0.8)		9.2	(0.6)		0.7	(0.2)		**-8.5**	(0.6)	
	Israel	9.0	(0.7)		m	m		m	m		10.6	(1.6)		8.8	(0.7)		-1.7	(1.7)	
	Italy	13.2	(0.6)		12.4	(4.3)		-0.8	(4.6)		89.0	(6.4)		12.5	(0.5)		**-76.5**	(6.5)	
	Japan	m	m		m	m		m	m		m	m		m	m		m	m	
	Korea	4.3	(0.3)		4.8	(0.4)		0.5	(0.5)		4.0	(0.7)		4.5	(0.3)		0.5	(0.7)	
	Latvia	3.7	(0.3)		7.3	(6.7)		3.7	(6.7)		3.8	(0.3)		1.5	(1.3)		-2.3	(1.5)	
	Lithuania	2.1	(0.2)		0.5	(0.4)		**-1.6**	(0.4)		2.0	(0.2)		m	m		m	m	
	Luxembourg	32.6	(0.6)		30.2	(1.0)		**-2.4**	(1.1)		55.2	(1.0)		3.5	(0.3)		**-51.7**	(1.1)	
	Mexico	16.3	(1.0)		5.7	(1.5)		**-10.6**	(1.9)		66.4	(3.4)		1.3	(0.2)		**-65.0**	(3.4)	
	Netherlands	17.4	(1.1)		17.2	(1.1)		-0.1	(1.7)		27.5	(1.0)		1.5	(0.3)		**-26.0**	(1.0)	
	New Zealand	5.4	(0.3)		8.4	(1.7)		3.0	(1.7)		30.9	(2.4)		3.8	(0.3)		**-27.1**	(2.4)	
	Norway	m	m		m	m		m	m		m	m		m	m		m	m	
	Poland	3.4	(0.3)		0.0	c		**-3.4**	(0.3)		3.3	(0.3)		m	m		m	m	
	Portugal	28.1	(1.3)		17.7	(5.0)		-10.3	(5.3)		86.9	(1.1)		0.8	(0.2)		**-86.0**	(1.1)	
	Slovak Republic	5.9	(0.6)		2.6	(1.5)		-3.3	(1.8)		10.8	(0.9)		1.2	(0.4)		**-9.6**	(0.9)	
	Slovenia	3.5	(0.6)		1.5	(0.9)		-2.1	(1.1)		43.8	(5.2)		0.6	(0.1)		**-43.1**	(5.2)	
	Spain	33.9	(0.7)		18.2	(0.8)		**-15.7**	(1.0)		28.7	(0.6)		m	m		m	m	
	Sweden	3.7	(0.4)		2.8	(0.5)		-0.9	(0.6)		3.4	(0.3)		6.4	(3.3)		3.0	(3.4)	
	Switzerland	17.3	(0.9)		23.2	(4.2)		5.9	(4.2)		23.8	(1.1)		2.2	(0.3)		**-21.5**	(1.2)	
	Turkey	7.1	(0.4)		9.6	(3.7)		2.5	(3.9)		m	m		7.2	(0.5)		m	m	
	United Kingdom	2.6	(0.3)		2.5	(0.3)		-0.1	(0.5)		m	m		2.5	(0.3)		m	m	
	United States	9.5	(0.6)		4.9	(1.2)		**-4.5**	(1.4)		67.5	(2.4)		4.6	(0.4)		**-62.9**	(2.4)	
	OECD average	11.5	(0.1)		8.9	(0.4)		**-3.1**	(0.4)		36.4	(0.4)		5.3	(0.2)		**-37.6**	(0.5)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Note: Values that are statistically significant are indicated in bold (see Annex A3).
StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.10 [6/8] **Grade repetition, school characteristics and reading performance**
Results based on principals' reports

		By type of school									By education level								
		Public			Private			Private - public			Lower secondary (ISCED 2)			Upper secondary (ISCED 3)			ISCED 3 - ISCED 2		
		%	S.E.	x	%	S.E.	x	% dif.	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
Partners	Albania	3.5	(0.3)		1.5	(0.6)		**-2.0**	(0.7)		5.5	(0.7)		1.9	(0.2)		**-3.5**	(0.7)	
	Argentina	36.8	(1.4)		13.1	(1.7)		**-23.8**	(2.2)		83.0	(1.6)		2.9	(0.3)		**-80.1**	(1.7)	
	Baku (Azerbaijan)	2.8	(0.2)		m	m		m	m		4.3	(0.5)		1.8	(0.2)		**-2.4**	(0.6)	
	Belarus	1.5	(0.2)		m	m		m	m		2.7	(0.4)		0.4	(0.1)		**-2.3**	(0.5)	
	Bosnia and Herzegovina	1.9	(0.2)		m	m		m	m		3.7	(0.7)		1.5	(0.2)		**-2.2**	(0.7)	
	Brazil	37.6	(1.1)		15.3	(1.2)		**-22.3**	(1.6)		89.8	(1.0)		15.2	(0.6)		**-74.6**	(1.1)	
	Brunei Darussalam	13.2	(0.3)		5.5	(0.6)		**-7.7**	(0.7)		65.7	(7.5)		11.7	(0.3)		**-54.0**	(7.6)	
	B-S-J-Z (China)	8.3	(0.8)		8.3	(2.4)		0.0	(2.5)		16.5	(1.7)		2.7	(0.3)		**-13.8**	(1.7)	
	Bulgaria	4.4	(0.5)		m	m		m	m		m	m		4.4	(0.5)		m	m	
	Costa Rica	30.8	(1.4)		10.5	(2.7)		**-20.3**	(3.0)		51.0	(1.5)		0.7	(0.2)		**-50.3**	(1.5)	
	Croatia	1.6	(0.2)		0.0	c		**-1.6**	(0.2)		m	m		1.3	(0.1)		m	m	
	Cyprus	3.8	(0.4)		4.8	(0.7)		1.0	(0.7)		40.9	(5.0)		2.2	(0.2)		**-38.7**	(5.0)	
	Dominican Republic	35.7	(1.4)		16.9	(2.0)		**-18.7**	(2.6)		68.3	(1.2)		7.4	(0.7)		**-60.9**	(1.3)	
	Georgia	3.5	(0.3)		1.0	(0.3)		**-2.6**	(0.5)		6.6	(0.9)		2.7	(0.3)		**-3.9**	(0.9)	
	Hong Kong (China)	14.1	(1.5)		16.2	(0.9)		2.1	(1.5)		44.8	(1.4)		1.3	(0.2)		**-43.4**	(1.4)	
	Indonesia	15.2	(1.2)		15.8	(1.5)		0.6	(2.0)		27.6	(1.6)		5.4	(0.7)		**-22.3**	(1.8)	
	Jordan	11.9	(0.7)		6.7	(0.8)		**-5.2**	(1.1)		10.8	(0.6)		m	m		m	m	
	Kazakhstan	3.1	(0.2)		2.8	(0.8)		-0.3	(0.8)		4.4	(0.3)		1.8	(0.2)		**-2.6**	(0.4)	
	Kosovo	4.5	(0.4)		m	m		m	m		7.9	(1.0)		3.5	(0.3)		**-4.5**	(1.0)	
	Lebanon	44.7	(2.0)		25.9	(2.3)		**-18.8**	(2.8)		74.9	(1.7)		19.2	(1.9)		**-55.7**	(2.3)	
	Macao (China)	52.0	(1.9)		28.7	(0.5)		**-23.2**	(1.9)		71.7	(1.0)		1.2	(0.2)		**-70.5**	(1.0)	
	Malaysia	m	m		m	m		m	m		m	m		m	m		m	m	
	Malta	6.5	(0.6)		4.2	(0.4)		**-2.3**	(0.7)		m	m		5.4	(0.4)		m	m	
	Moldova	2.6	(0.3)		m	m		m	m		2.7	(0.3)		1.5	(0.6)		**-1.2**	(0.6)	
	Montenegro	1.6	(0.2)		m	m		m	m		5.9	(2.8)		1.4	(0.1)		-4.5	(2.8)	
	Morocco	51.4	(2.9)		22.2	(6.8)		**-29.2**	(7.6)		86.5	(0.7)		5.7	(0.5)		**-80.7**	(0.9)	
	North Macedonia	3.1	(0.2)		1.1	(0.8)		**-1.9**	(0.9)		m	m		3.0	(0.2)		m	m	
	Panama	29.8	(1.2)		13.5	(2.1)		**-16.3**	(2.4)		77.2	(1.3)		5.1	(0.4)		**-72.1**	(1.4)	
	Peru	24.2	(0.9)		10.7	(1.4)		**-13.4**	(1.7)		73.5	(1.4)		6.7	(0.4)		**-66.8**	(1.4)	
	Philippines	23.8	(1.1)		8.3	(1.5)		**-15.4**	(1.8)		21.2	(1.0)		0.0	c		**-21.2**	(1.0)	
	Qatar	23.0	(0.4)		9.3	(0.3)		**-13.7**	(0.5)		46.0	(0.7)		8.3	(0.2)		**-37.6**	(0.7)	
	Romania	4.1	(0.6)		m	m		m	m		37.9	(7.1)		2.0	(0.3)		**-35.9**	(7.1)	
	Russia	1.8	(0.2)		m	m		m	m		1.9	(0.2)		0.8	(0.3)		**-1.0**	(0.3)	
	Saudi Arabia	12.4	(1.3)		5.2	(0.7)		**-7.1**	(1.5)		43.8	(2.4)		3.9	(0.3)		**-39.9**	(2.5)	
	Serbia	1.4	(0.2)		2.7	(0.7)		1.3	(0.7)		m	m		1.1	(0.1)		m	m	
	Singapore	4.6	(0.2)		7.2	(1.2)		**2.6**	(1.2)		39.9	(6.0)		4.4	(0.3)		**-35.5**	(6.1)	
	Chinese Taipei	0.9	(0.2)		0.8	(0.2)		-0.2	(0.2)		1.2	(0.2)		0.7	(0.2)		-0.5	(0.3)	
	Thailand	6.7	(0.5)		7.0	(1.1)		0.3	(1.2)		19.7	(1.7)		3.3	(0.4)		**-16.4**	(1.7)	
	Ukraine	1.6	(0.2)		m	m		m	m		m	m		1.6	(0.2)		m	m	
	United Arab Emirates	13.2	(0.3)		8.4	(0.5)		**-4.8**	(0.6)		41.2	(1.0)		6.3	(0.2)		**-34.9**	(1.1)	
	Uruguay	37.8	(1.3)		9.7	(2.5)		**-28.0**	(3.0)		92.0	(1.0)		0.5	(0.1)		**-91.5**	(1.0)	
	Viet Nam	5.2	(1.3)		0.5	(0.6)		**-4.7**	(1.4)		72.8	(7.3)		1.4	(0.2)		**-71.4**	(7.3)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Note: Values that are statistically significant are indicated in bold (see Annex A3).

StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.10 [7/8] **Grade repetition, school characteristics and reading performance**
Results based on principals' reports

		Before accounting for students' and schools' socio-economic profile[2]						After accounting for students' and schools' socio-economic profile[2]					
		Change in reading score associated with repeating a grade			Explained variance in student performance (r-squared x 100)			Change in reading score associated with repeating a grade			Explained variance in student performance (r-squared x 100)		
		Score dif.	S.E.	x	%	S.E.	x	Score dif.	S.E.	x	%	S.E.	x
OECD	Australia	**-61**	(4.8)		1.7	(0.3)		**-50**	(4.6)		14.8	(0.8)	
	Austria	**-56**	(4.1)		3.4	(0.5)		**-42**	(3.6)		30.6	(2.0)	
	Belgium	**-104**	(2.9)		23.7	(1.1)		**-68**	(3.0)		38.7	(1.2)	
	Canada	**-95**	(4.1)		4.5	(0.4)		**-75**	(4.2)		11.2	(0.8)	
	Chile	**-82**	(3.2)		13.5	(1.0)		**-63**	(2.8)		28.6	(1.4)	
	Colombia	**-63**	(2.8)		12.1	(0.9)		**-52**	(2.5)		32.4	(2.3)	
	Czech Republic	**-126**	(8.5)		7.3	(1.3)		**-69**	(6.8)		35.2	(2.3)	
	Denmark	**-89**	(7.9)		3.0	(0.6)		**-68**	(7.7)		13.6	(1.2)	
	Estonia	**-83**	(10.0)		2.2	(0.6)		**-68**	(9.8)		10.8	(1.5)	
	Finland	**-106**	(7.2)		3.8	(0.6)		**-91**	(7.0)		11.9	(1.1)	
	France	**-123**	(9.2)		5.7	(1.1)		**-82**	(7.3)		27.6	(2.2)	
	Germany	**-80**	(5.3)		9.4	(1.1)		**-44**	(4.7)		38.2	(1.8)	
	Greece	**-128**	(12.1)		2.0	(0.4)		**-101**	(11.1)		19.4	(2.1)	
	Hungary	**-75**	(8.1)		1.9	(0.4)		**-34**	(6.5)		39.2	(2.4)	
	Iceland	c	c		1.7	(0.5)		c	c		8.2	(1.1)	
	Ireland	**-54**	(6.0)		2.0	(0.5)		**-44**	(5.2)		15.5	(1.4)	
	Israel	**-151**	(5.4)		12.8	(1.1)		**-86**	(7.4)		32.2	(1.9)	
	Italy	**-84**	(5.1)		8.2	(0.9)		**-51**	(4.0)		30.9	(2.0)	
	Japan	m	m		m	m		m	m		m	m	
	Korea	**-40**	(7.9)		0.7	(0.3)		**-32**	(7.2)		17.7	(2.7)	
	Latvia	**-99**	(6.9)		4.3	(0.7)		**-74**	(7.1)		15.9	(1.5)	
	Lithuania	**-130**	(7.6)		3.8	(0.6)		**-98**	(9.3)		27.5	(1.5)	
	Luxembourg	**-102**	(2.9)		19.6	(1.0)		**-66**	(2.7)		37.7	(1.0)	
	Mexico	**-56**	(10.0)		0.7	(0.3)		**-57**	(9.8)		19.4	(2.7)	
	Netherlands	**-62**	(5.2)		5.6	(0.8)		**-41**	(4.9)		32.3	(2.8)	
	New Zealand	**-75**	(7.9)		2.7	(0.6)		**-61**	(6.7)		18.1	(1.3)	
	Norway	m	m		m	m		m	m		m	m	
	Poland	**-111**	(10.0)		4.3	(0.9)		**-82**	(10.2)		18.0	(2.1)	
	Portugal	**-120**	(3.9)		26.5	(1.9)		**-102**	(3.6)		31.9	(1.8)	
	Slovak Republic	**-138**	(5.2)		10.3	(1.1)		**-74**	(7.0)		31.8	(1.8)	
	Slovenia	**-100**	(20.0)		0.7	(0.3)		**-96**	(15.6)		33.5	(1.2)	
	Spain	m	m		m	m		m	m		m	m	
	Sweden	**-123**	(10.6)		4.3	(0.8)		**-87**	(10.3)		15.7	(1.8)	
	Switzerland	**-60**	(4.6)		6.1	(0.9)		**-42**	(4.6)		24.8	(2.7)	
	Turkey	**-94**	(5.2)		7.7	(0.9)		**-71**	(5.4)		29.6	(2.7)	
	United Kingdom	**-70**	(8.5)		1.2	(0.3)		**-55**	(8.1)		14.8	(1.5)	
	United States	**-111**	(6.1)		8.9	(1.0)		**-86**	(6.2)		19.9	(1.8)	
	OECD average	**-93**	(1.3)		6.7	(0.1)		**-67**	(1.2)		24.3	(0.3)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Note: Values that are statistically significant are indicated in bold (see Annex A3).
StatLink https://doi.org/10.1787/888934132203

Table V.B1.2.10 [8/8] **Grade repetition, school characteristics and reading performance**
Results based on principals' reports

		Before accounting for students' and schools' socio-economic profile[2]						After accounting for students' and schools' socio-economic profile[2]					
		Change in reading score associated with repeating a grade			Explained variance in student performance (r-squared x 100)			Change in reading score associated with repeating a grade			Explained variance in student performance (r-squared x 100)		
		Score dif.	S.E.	x	%	S.E.	x	Score dif.	S.E.	x	%	S.E.	x
Partners	Albania	**-83**	(8.0)		3.3	(0.7)		**-66**	(9.4)		15.1	(1.7)	
	Argentina	**-88**	(4.1)		17.0	(1.3)		**-55**	(3.0)		35.2	(2.0)	
	Baku (Azerbaijan)	**-70**	(5.9)		2.3	(0.4)		**-64**	(5.6)		10.4	(2.4)	
	Belarus	**-119**	(12.2)		2.5	(0.6)		**-92**	(10.4)		29.4	(1.9)	
	Bosnia and Herzegovina	**-85**	(8.5)		1.8	(0.4)		**-70**	(8.5)		18.7	(2.8)	
	Brazil	**-79**	(3.5)		11.9	(1.0)		**-68**	(3.2)		29.9	(1.6)	
	Brunei Darussalam	**-84**	(3.1)		7.9	(0.6)		**-66**	(2.7)		36.8	(0.8)	
	B-S-J-Z (China)	**-65**	(7.0)		4.3	(0.9)		**-34**	(5.0)		24.3	(2.3)	
	Bulgaria	**-110**	(6.6)		5.2	(0.9)		**-70**	(9.2)		34.0	(3.6)	
	Costa Rica	**-68**	(4.1)		13.9	(1.1)		**-48**	(2.3)		32.5	(2.6)	
	Croatia	**-83**	(9.4)		1.1	(0.3)		**-61**	(10.5)		24.3	(2.0)	
	Cyprus	**-86**	(9.3)		1.8	(0.4)		**-83**	(8.1)		15.8	(1.0)	
	Dominican Republic	**-75**	(3.3)		18.1	(1.2)		**-56**	(2.8)		32.3	(2.4)	
	Georgia	**-94**	(6.0)		3.9	(0.7)		**-81**	(5.9)		17.9	(1.7)	
	Hong Kong (China)	**-67**	(3.8)		6.1	(0.7)		**-50**	(3.5)		16.3	(2.0)	
	Indonesia	**-61**	(4.7)		8.6	(1.2)		**-48**	(4.3)		22.9	(3.0)	
	Jordan	**-82**	(5.6)		8.8	(1.1)		**-69**	(5.5)		15.9	(2.1)	
	Kazakhstan	**-72**	(5.0)		2.6	(0.4)		**-63**	(4.9)		13.1	(1.6)	
	Kosovo	**-81**	(6.3)		4.6	(0.8)		**-62**	(6.0)		23.3	(1.5)	
	Lebanon	**-133**	(5.8)		26.0	(2.2)		**-116**	(8.8)		36.7	(2.0)	
	Macao (China)	**-71**	(2.7)		12.6	(0.9)		**-67**	(2.9)		13.3	(0.9)	
	Malaysia	m	m		m	m		m	m		m	m	
	Malta	**-98**	(9.3)		4.0	(0.8)		**-87**	(8.5)		15.1	(1.1)	
	Moldova	**-85**	(8.6)		2.1	(0.5)		**-61**	(8.0)		24.9	(2.3)	
	Montenegro	**-99**	(9.0)		1.8	(0.4)		**-88**	(8.2)		24.2	(1.0)	
	Morocco	**-82**	(2.9)		29.8	(1.4)		**-66**	(2.7)		33.7	(1.7)	
	North Macedonia	**-131**	(7.7)		5.5	(0.7)		**-103**	(8.2)		28.9	(1.1)	
	Panama	**-71**	(5.4)		9.8	(1.4)		**-49**	(4.4)		34.4	(2.9)	
	Peru	**-76**	(3.4)		11.2	(0.9)		**-49**	(3.2)		35.4	(1.9)	
	Philippines	**-75**	(3.2)		14.5	(0.9)		**-54**	(2.1)		36.5	(2.9)	
	Qatar	**-70**	(3.1)		4.1	(0.4)		**-57**	(3.1)		18.9	(0.6)	
	Romania	**-107**	(9.8)		2.5	(0.6)		**-66**	(8.2)		31.9	(2.8)	
	Russia	**-89**	(11.0)		1.6	(0.4)		**-68**	(9.9)		15.6	(2.2)	
	Saudi Arabia	**-50**	(7.4)		1.5	(0.5)		**-48**	(6.9)		12.1	(2.1)	
	Serbia	**-107**	(10.3)		1.3	(0.3)		**-85**	(9.5)		24.8	(3.6)	
	Singapore	**-98**	(6.9)		3.7	(0.4)		**-84**	(5.0)		23.5	(1.3)	
	Chinese Taipei	**-130**	(19.4)		1.5	(0.5)		**-118**	(21.6)		24.1	(2.0)	
	Thailand	**-58**	(5.8)		2.8	(0.6)		**-48**	(4.6)		29.0	(2.9)	
	Ukraine	**-108**	(11.9)		2.2	(0.6)		**-89**	(9.9)		25.2	(2.4)	
	United Arab Emirates	**-94**	(4.0)		5.7	(0.5)		**-80**	(3.9)		26.1	(1.2)	
	Uruguay	**-107**	(4.4)		27.4	(1.7)		**-75**	(3.9)		36.0	(2.0)	
	Viet Nam	m	m		m	m		m	m		m	m	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Note: Values that are statistically significant are indicated in bold (see Annex A3).
StatLink https://doi.org/10.1787/888934132203

Table V.B1.3.1 [1/6] **Change between 2009 and 2018 in programme orientation**
Results based on students' reports

		Percentage of students who are enrolled in a programme whose curriculum is:																	
		PISA 2009									PISA 2015								
		General			Pre-vocational or vocational			Modular			General			Pre-vocational or vocational			Modular		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	86.2	(1.1)		13.8	(1.1)		0.0	c		87.0	(0.8)		13.0	(0.8)		0.0	c	
	Austria	28.8	(1.2)		71.2	(1.2)		0.0	c		28.6	(0.9)		71.4	(0.9)		0.0	c	
	Belgium	52.2	(1.4)		47.8	(1.4)		0.0	c		58.6	(1.3)		41.4	(1.3)		0.0	c	
	Canada	0.0	c		0.0	c		100.0	c		0.0	c		0.0	c		100.0	c	
	Chile	98.0	(0.2)		2.0	(0.2)		0.0	c		99.4	(0.1)		0.6	(0.1)		0.0	c	
	Colombia	82.1	(2.2)		17.9	(2.2)		0.0	c		79.2	(1.6)		20.8	(1.6)		0.0	c	
	Czech Republic	64.5	(1.1)		35.5	(1.1)		0.0	c		66.7	(1.3)		33.3	(1.3)		0.0	c	
	Denmark	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
	Estonia	99.6	(0.1)		0.4	(0.1)		0.0	c		99.7	(0.1)		0.3	(0.1)		0.0	c	
	Finland	99.9	(0.1)		0.1	(0.1)		0.0	c		100.0	c		0.0	c		0.0	c	
	France	89.9	(1.2)		10.1	(1.2)		0.0	c		81.3	(0.9)		18.7	(0.9)		0.0	c	
	Germany	96.0	(0.5)		4.0	(0.5)		0.0	c		97.3	(0.7)		2.7	(0.7)		0.0	c	
	Greece	86.1	(2.4)		13.9	(2.4)		0.0	c		83.6	(2.6)		16.4	(2.6)		0.0	c	
	Hungary	86.2	(1.1)		13.8	(1.1)		0.0	c		84.1	(0.6)		15.9	(0.6)		0.0	c	
	Iceland	100.0	(0.0)		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
	Ireland	98.4	(0.3)		1.6	(0.3)		0.0	c		99.2	(0.2)		0.8	(0.2)		0.0	c	
	Israel	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
	Italy	45.3	(0.7)		54.7	(0.7)		0.0	c		49.8	(1.2)		50.2	(1.2)		0.0	c	
	Japan	76.1	(1.1)		23.9	(1.1)		0.0	c		75.6	(0.9)		24.4	(0.9)		0.0	c	
	Korea	75.7	(1.8)		24.3	(1.8)		0.0	c		83.9	(0.4)		16.1	(0.4)		0.0	c	
	Latvia	99.1	(0.5)		0.9	(0.5)		0.0	c		99.2	(0.4)		0.8	(0.4)		0.0	c	
	Lithuania	100.0	(0.0)		0.0	(0.0)		0.0	c		98.5	(0.6)		1.5	(0.6)		0.0	c	
	Luxembourg	80.8	(0.2)		13.8	(0.2)		5.4	(0.1)		77.7	(0.2)		15.0	(0.1)		7.3	(0.2)	
	Mexico	77.7	(0.6)		22.3	(0.6)		0.0	c		74.7	(1.1)		25.3	(1.1)		0.0	c	
	Netherlands	68.4	(2.8)		31.6	(2.8)		0.0	c		73.9	(0.9)		26.1	(0.9)		0.0	c	
	New Zealand	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
	Norway	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
	Poland	99.9	(0.1)		0.1	(0.1)		0.0	c		99.9	(0.1)		0.1	(0.1)		0.0	c	
	Portugal	84.1	(1.6)		15.9	(1.6)		0.0	c		86.9	(1.1)		13.1	(1.1)		0.0	c	
	Slovak Republic	59.4	(1.3)		40.6	(1.3)		0.0	c		67.4	(1.0)		5.7	(0.7)		26.9	(1.2)	
	Slovenia	47.0	(0.4)		53.0	(0.4)		0.0	c		42.6	(0.2)		57.4	(0.2)		0.0	c	
	Spain	100.0	(0.0)		0.0	c		0.0	c		99.1	(0.1)		0.9	(0.1)		0.0	c	
	Sweden	99.5	(0.2)		0.5	(0.2)		0.0	c		99.9	(0.1)		0.1	(0.1)		0.0	c	
	Switzerland	91.5	(1.5)		8.5	(1.5)		0.0	c		90.8	(1.1)		9.2	(1.1)		0.0	c	
	Turkey	58.7	(0.6)		41.3	(0.6)		0.0	c		59.0	(1.9)		41.0	(1.9)		0.0	c	
	United Kingdom	100.0	(0.0)		0.0	(0.0)		0.0	c		99.2	(0.2)		0.8	(0.2)		0.0	c	
	United States	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
	OECD average-37	82.3	(0.2)		15.0	(0.2)		2.8	(0.0)		82.6	(0.1)		13.9	(0.1)		3.5	(0.0)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

Costa Rica, Georgia, Malta and Moldova conducted the PISA 2009 assessment in 2010 as part of PISA 2009+.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.1 [2/6] **Change between 2009 and 2018 in programme orientation**
Results based on students' reports

	Percentage of students who are enrolled in a programme whose curriculum is:																	
	PISA 2009									PISA 2015								
	General			Pre-vocational or vocational			Modular			General			Pre-vocational or vocational			Modular		
Partners	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Albania	94.4	(0.7)		5.6	(0.7)		0.0	c		93.6	(1.5)	†	6.4	(1.5)	†	0.0	c	†
Argentina	87.0	(2.4)		13.0	(2.4)		0.0	c		83.4	(2.6)		16.6	(2.6)		0.0	c	
Baku (Azerbaijan)	m	m		m	m		m	m		m	m		m	m		m	m	
Belarus	m	m		m	m		m	m		m	m		m	m		m	m	
Bosnia and Herzegovina	m	m		m	m		m	m		m	m		m	m		m	m	
Brazil	100.0	c		0.0	c		0.0	c		95.3	(1.0)		4.7	(1.0)		0.0	c	
Brunei Darussalam	m	m		m	m		m	m		m	m		m	m		m	m	
B-S-J-Z (China)	m	m		m	m		m	m		m	m		m	m		m	m	
Bulgaria	62.3	(2.5)		37.7	(2.5)		0.0	c		53.8	(2.0)		46.2	(2.0)		0.0	c	
Costa Rica	90.6	(1.7)		9.4	(1.7)		0.0	c		87.7	(1.4)		12.3	(1.4)		0.0	c	
Croatia	28.7	(1.0)		71.3	(1.0)		0.0	c		32.7	(0.8)		67.3	(0.8)		0.0	c	
Cyprus	m	m		m	m		m	m		88.1	(0.1)		11.9	(0.1)		0.0	c	
Dominican Republic	m	m		m	m		m	m		95.2	(0.5)		4.8	(0.5)		0.0	c	
Georgia	100.0	c		0.0	c		0.0	c		98.3	(0.8)		1.7	(0.8)		0.0	c	
Hong Kong (China)	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
Indonesia	84.8	(2.8)		15.2	(2.8)		0.0	c		84.0	(1.3)		16.0	(1.3)		0.0	c	
Jordan	100.0	(0.0)		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
Kazakhstan	92.0	(2.1)		8.0	(2.1)		0.0	c		86.0	(2.1)		14.0	(2.1)		0.0	c	
Kosovo	m	m		m	m		m	m		64.7	(0.7)		35.3	(0.7)		0.0	c	
Lebanon	m	m		m	m		m	m		100.0	c		0.0	c		0.0	c	
Macao (China)	98.7	(0.0)		1.3	(0.0)		0.0	c		98.8	(0.1)		1.2	(0.1)		0.0	c	
Malaysia	87.5	(1.4)		12.5	(1.4)		0.0	c		89.5	(1.2)		10.5	(1.2)		0.0	c	
Malta	100.0	(0.0)		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
Moldova	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
Montenegro	34.7	(1.2)		65.3	(1.2)		0.0	c		34.0	(0.3)		66.0	(0.3)		0.0	c	
Morocco	m	m		m	m		m	m		m	m		m	m		m	m	
North Macedonia	m	m		m	m		m	m		44.9	(0.3)		55.1	(0.3)		0.0	c	
Panama	100.0	c		0.0	c		0.0	c		m	m		m	m		m	m	
Peru	100.0	c		0.0	c		0.0	c		100.0	(0.0)		0.0	c		0.0	c	
Philippines	m	m		m	m		m	m		m	m		m	m		m	m	
Qatar	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
Romania	78.1	(0.6)		21.9	(0.6)		0.0	c		100.0	c		0.0	c		0.0	c	
Russia	95.1	(1.5)		4.9	(1.5)		0.0	c		95.5	(1.5)		4.5	(1.5)		0.0	c	
Saudi Arabia	m	m		m	m		m	m		m	m		m	m		m	m	
Serbia	25.7	(1.1)		74.1	(1.1)		0.2	(0.2)		m	m		m	m		m	m	
Singapore	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		0.0	c	
Chinese Taipei	61.1	(1.5)		38.9	(1.5)		0.0	c		63.7	(1.3)		36.3	(1.3)		0.0	c	
Thailand	79.2	(0.6)		20.8	(0.6)		0.0	c		82.3	(0.8)		17.7	(0.8)		0.0	c	
Ukraine	m	m		m	m		m	m		m	m		m	m		m	m	
United Arab Emirates	100.0	c		0.0	c		0.0	c		96.1	(0.4)		3.9	(0.4)		0.0	c	
Uruguay	96.8	(0.7)		1.0	(0.2)		2.2	(0.6)		97.8	(0.4)		1.7	(0.3)		0.5	(0.3)	
Viet Nam	m	m		m	m		m	m		94.9	(2.0)		0.0	c		5.1	(2.0)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

Costa Rica, Georgia, Malta and Moldova conducted the PISA 2009 assessment in 2010 as part of PISA 2009+.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.1 [3/6] **Change between 2009 and 2018 in programme orientation**
Results based on students' reports

		Percentage of students who are enrolled in a programme whose curriculum is:																	
		PISA 2018									Change between 2009 and 2018 (PISA 2018 - PISA 2009)								
		General			Pre-vocational or vocational			Modular			General			Pre-vocational or vocational			Modular		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
OECD	Australia	90.0	(0.7)		10.0	(0.7)		0.0	c		**3.8**	(1.3)		**-3.8**	(1.3)		0.0	c	
	Austria	34.2	(1.1)		65.8	(1.1)		0.0	c		**5.4**	(1.6)		**-5.4**	(1.6)		0.0	c	
	Belgium	57.5	(1.1)		42.5	(1.1)		0.0	c		**5.3**	(1.8)		**-5.3**	(1.8)		0.0	c	
	Canada	100.0	c		0.0	c		0.0	c		100.0	c		0.0	c		-100.0	c	
	Chile	98.2	(0.2)		1.8	(0.2)		0.0	c		0.2	(0.3)		-0.2	(0.3)		0.0	c	
	Colombia	80.5	(1.7)		19.5	(1.7)		0.0	c		-1.6	(2.8)		1.6	(2.8)		0.0	c	
	Czech Republic	66.1	(1.2)		33.9	(1.2)		0.0	c		1.7	(1.6)		-1.7	(1.6)		0.0	c	
	Denmark	99.9	(0.1)		0.1	(0.1)		0.0	c		-0.1	(0.1)		0.1	(0.1)		0.0	c	
	Estonia	99.9	(0.1)		0.1	(0.1)		0.0	c		0.3	(0.2)		-0.3	(0.2)		0.0	c	
	Finland	99.9	(0.1)		0.1	(0.1)		0.0	c		0.0	(0.1)		0.0	(0.1)		0.0	c	
	France	80.9	(1.1)		19.1	(1.1)		0.0	c		**-9.0**	(1.6)		**9.0**	(1.6)		0.0	c	
	Germany	97.0	(0.4)		3.0	(0.4)		0.0	c		1.0	(0.7)		-1.0	(0.7)		0.0	c	
	Greece	87.1	(1.9)		12.9	(1.9)		0.0	c		1.0	(3.0)		-1.0	(3.0)		0.0	c	
	Hungary	83.9	(0.5)		16.1	(0.5)		0.0	c		-2.3	(1.2)		2.3	(1.2)		0.0	c	
	Iceland	100.0	c		0.0	c		0.0	c		**0.0**	(0.0)		0.0	c		0.0	c	
	Ireland	99.3	(0.1)		0.7	(0.1)		0.0	c		**0.9**	(0.3)		**-0.9**	(0.3)		0.0	c	
	Israel	100.0	c		0.0	c		0.0	c		0.0	c		0.0	c		0.0	c	
	Italy	50.7	(0.9)		49.3	(0.9)		0.0	c		**5.4**	(1.1)		**-5.4**	(1.1)		0.0	c	
	Japan	76.5	(0.6)		23.5	(0.6)		0.0	c		0.4	(1.2)		-0.4	(1.2)		0.0	c	
	Korea	83.5	(1.4)		16.5	(1.4)		0.0	c		**7.8**	(2.3)		**-7.8**	(2.3)		0.0	c	
	Latvia	98.9	(0.2)		1.1	(0.2)		0.0	c		-0.2	(0.5)		0.2	(0.5)		0.0	c	
	Lithuania	98.0	(0.5)		2.0	(0.5)		0.0	c		**-2.0**	(0.5)		**2.0**	(0.5)		0.0	c	
	Luxembourg	78.7	(0.3)		14.4	(0.2)		6.9	(0.2)		**-2.1**	(0.3)		**0.6**	(0.2)		**1.5**	(0.3)	
	Mexico	71.9	(1.2)		28.1	(1.2)		0.0	c		**-5.8**	(1.3)		**5.8**	(1.3)		0.0	c	
	Netherlands	74.2	(1.1)		25.8	(1.1)		0.0	c		5.8	(3.0)		-5.8	(3.0)		0.0	c	
	New Zealand	100.0	c		0.0	c		0.0	c		0.0	c		0.0	c		0.0	c	
	Norway	100.0	c		0.0	c		0.0	c		0.0	c		0.0	c		0.0	c	
	Poland	99.5	(0.3)		0.5	(0.3)		0.0	c		-0.4	(0.3)		0.4	(0.3)		0.0	c	
	Portugal	83.0	(1.6)		17.0	(1.6)		0.0	c		-1.1	(2.2)		1.1	(2.2)		0.0	c	
	Slovak Republic	67.1	(1.0)		5.0	(0.7)		27.9	(1.1)		**7.7**	(1.7)		**-35.6**	(1.5)		**27.9**	(1.1)	
	Slovenia	42.7	(0.3)		57.3	(0.3)		0.0	c		**-4.3**	(0.5)		**4.3**	(0.5)		0.0	c	
	Spain	98.8	(0.2)		1.2	(0.2)		0.0	c		**-1.2**	(0.2)		**1.2**	(0.2)		0.0	c	
	Sweden	100.0	c		0.0	c		0.0	c		**0.5**	(0.2)		**-0.5**	(0.2)		0.0	c	
	Switzerland	88.3	(1.2)		11.7	(1.2)		0.0	c		-3.2	(1.9)		3.2	(1.9)		0.0	c	
	Turkey	67.0	(0.7)		33.0	(0.7)		0.0	c		**8.2**	(0.9)		**-8.2**	(0.9)		0.0	c	
	United Kingdom	99.8	(0.1)		0.2	(0.1)		0.0	c		**-0.2**	(0.1)		**0.2**	(0.1)		0.0	c	
	United States	100.0	c		0.0	c		0.0	c		0.0	c		0.0	c		0.0	c	
	OECD average-37	85.2	(0.1)		13.8	(0.1)		0.9	(0.0)		**2.9**	(0.2)		**-1.1**	(0.2)		**-1.8**	(0.0)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

Costa Rica, Georgia, Malta and Moldova conducted the PISA 2009 assessment in 2010 as part of PISA 2009+.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.1 [4/6] **Change between 2009 and 2018 in programme orientation**
Results based on students' reports

	Percentage of students who are enrolled in a programme whose curriculum is:																	
	PISA 2018									Change between 2009 and 2018 (PISA 2018 - PISA 2009)								
	General			Pre-vocational or vocational			Modular			General			Pre-vocational or vocational			Modular		
Partners	%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
Albania	m	m		m	m		m	m		m	m		m	m		m	m	
Argentina	84.7	(2.0)		15.3	(2.0)		0.0	c		-2.4	(3.2)		2.4	(3.2)		0.0	c	
Baku (Azerbaijan)	0.0	c		0.0	c		100.0	(0.0)		m	m		m	m		m	m	
Belarus	85.9	(0.4)		14.1	(0.4)		0.0	c		m	m		m	m		m	m	
Bosnia and Herzegovina	34.3	(2.3)		65.7	(2.3)		0.0	c		m	m		m	m		m	m	
Brazil	91.0	(1.2)		9.0	(1.2)		0.0	c		**-9.0**	(1.2)		**9.0**	(1.2)		0.0	c	
Brunei Darussalam	94.5	(0.2)		5.5	(0.2)		0.0	c		m	m		m	m		m	m	
B-S-J-Z (China)	81.9	(0.8)		18.1	(0.8)		0.0	c		m	m		m	m		m	m	
Bulgaria	50.9	(1.7)		49.1	(1.7)		0.0	c		**-11.4**	(3.1)		**11.4**	(3.1)		0.0	c	
Costa Rica	87.5	(1.0)		12.5	(1.0)		0.0	c		-3.1	(2.0)		3.1	(2.0)		0.0	c	
Croatia	32.7	(0.8)		67.3	(0.8)		0.0	c		**4.0**	(1.3)		**-4.0**	(1.3)		0.0	c	
Cyprus	87.8	(0.1)		12.2	(0.1)		0.0	c		m	m		m	m		m	m	
Dominican Republic	87.3	(2.0)		12.7	(2.0)		0.0	c		m	m		m	m		m	m	
Georgia	100.0	c		0.0	c		0.0	c		0.0	c		0.0	c		0.0	c	
Hong Kong (China)	100.0	c		0.0	c		0.0	c		0.0	c		0.0	c		0.0	c	
Indonesia	80.2	(2.4)		19.8	(2.4)		0.0	c		-4.7	(3.6)		4.7	(3.6)		0.0	c	
Jordan	100.0	c		0.0	c		0.0	c		0.0	(0.0)		0.0	c		0.0	c	
Kazakhstan	80.4	(0.6)		19.6	(0.6)		0.0	c		**-11.6**	(2.2)		**11.6**	(2.2)		0.0	c	
Kosovo	60.2	(1.1)		39.8	(1.1)		0.0	c		m	m		m	m		m	m	
Lebanon	100.0	c		0.0	c		0.0	c		m	m		m	m		m	m	
Macao (China)	99.0	(0.1)		1.0	(0.1)		0.0	c		**0.3**	(0.1)		**-0.3**	(0.1)		0.0	c	
Malaysia	89.8	(1.0)		10.2	(1.0)		0.0	c		2.2	(1.7)		-2.2	(1.7)		0.0	c	
Malta	100.0	c		0.0	c		0.0	c		0.0	(0.0)		0.0	c		0.0	c	
Moldova	96.5	(0.9)		3.5	(0.9)		0.0	c		**-3.5**	(0.9)		**3.5**	(0.9)		0.0	c	
Montenegro	35.5	(0.3)		64.5	(0.3)		0.0	c		0.7	(1.2)		-0.7	(1.2)		0.0	c	
Morocco	100.0	(0.0)		0.0	c		0.0	c		m	m		m	m		m	m	
North Macedonia	41.4	(0.2)		58.6	(0.2)		0.0	c		m	m		m	m		m	m	
Panama	73.2	(1.4)		26.8	(1.4)		0.0	c		**-26.8**	(1.4)		**26.8**	(1.4)		0.0	c	
Peru	100.0	c		0.0	c		0.0	c		0.0	c		0.0	c		0.0	c	
Philippines	100.0	(0.0)		0.0	c		0.0	c		m	m		m	m		m	m	
Qatar	100.0	c		0.0	c		0.0	c		0.0	c		0.0	c		0.0	c	
Romania	88.0	(1.7)		12.0	(1.7)		0.0	c		**9.9**	(1.8)		**-9.9**	(1.8)		0.0	c	
Russia	96.4	(1.1)		3.6	(1.1)		0.0	c		1.3	(1.9)		-1.3	(1.9)		0.0	c	
Saudi Arabia	100.0	c		0.0	c		0.0	c		m	m		m	m		m	m	
Serbia	28.1	(1.1)		71.9	(1.1)		0.0	c		2.3	(1.5)		-2.1	(1.5)		-0.2	(0.2)	
Singapore	100.0	c		0.0	c		0.0	c		0.0	c		0.0	c		0.0	c	
Chinese Taipei	66.3	(1.3)		33.7	(1.3)		0.0	c		**5.2**	(2.0)		**-5.2**	(2.0)		0.0	c	
Thailand	77.1	(0.7)		22.9	(0.7)		0.0	c		**-2.1**	(0.9)		**2.1**	(0.9)		0.0	c	
Ukraine	72.0	(2.4)		28.0	(2.4)		0.0	c		m	m		m	m		m	m	
United Arab Emirates	96.4	(0.1)		3.6	(0.1)		0.0	c		**-3.6**	(0.1)		**3.6**	(0.1)		0.0	c	
Uruguay	91.4	(1.1)		8.6	(1.1)		0.0	c		**-5.4**	(1.2)		**7.6**	(1.1)		**-2.2**	(0.6)	
Viet Nam	100.0	c		0.0	c		0.0	c		m	m		m	m		m	m	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

Costa Rica, Georgia, Malta and Moldova conducted the PISA 2009 assessment in 2010 as part of PISA 2009+.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.1 [5/6] **Change between 2009 and 2018 in programme orientation**
Results based on students' reports

		Percentage of students who are enrolled in a programme whose curriculum is:								
		Change between 2015 and 2018 (PISA 2018 - PISA 2015)								
		General			Pre-vocational or vocational			Modular		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
OECD	**Australia**	**3.1**	(1.1)		**-3.1**	(1.1)		0.0	c	
	Austria	**5.6**	(1.4)		**-5.6**	(1.4)		0.0	c	
	Belgium	-1.1	(1.7)		1.1	(1.7)		0.0	c	
	Canada	100.0	c		0.0	c		-100.0	c	
	Chile	**-1.2**	(0.2)		**1.2**	(0.2)		0.0	c	
	Colombia	1.4	(2.4)		-1.4	(2.4)		0.0	c	
	Czech Republic	-0.6	(1.8)		0.6	(1.8)		0.0	c	
	Denmark	-0.1	(0.1)		0.1	(0.1)		0.0	c	
	Estonia	0.2	(0.1)		-0.2	(0.1)		0.0	c	
	Finland	-0.1	(0.1)		0.1	(0.1)		0.0	c	
	France	-0.4	(1.4)		0.4	(1.4)		0.0	c	
	Germany	-0.2	(0.8)		0.2	(0.8)		0.0	c	
	Greece	3.5	(3.2)		-3.5	(3.2)		0.0	c	
	Hungary	-0.2	(0.7)		0.2	(0.7)		0.0	c	
	Iceland	0.0	c		0.0	c		0.0	c	
	Ireland	0.0	(0.3)		0.0	(0.3)		0.0	c	
	Israel	0.0	c		0.0	c		0.0	c	
	Italy	0.9	(1.4)		-0.9	(1.4)		0.0	c	
	Japan	1.0	(1.1)		-1.0	(1.1)		0.0	c	
	Korea	-0.3	(1.5)		0.3	(1.5)		0.0	c	
	Latvia	-0.2	(0.5)		0.2	(0.5)		0.0	c	
	Lithuania	-0.6	(0.8)		0.6	(0.8)		0.0	c	
	Luxembourg	**1.0**	(0.3)		**-0.6**	(0.2)		-0.4	(0.3)	
	Mexico	-2.8	(1.6)		2.8	(1.6)		0.0	c	
	Netherlands	0.2	(1.5)		-0.2	(1.5)		0.0	c	
	New Zealand	0.0	c		0.0	c		0.0	c	
	Norway	0.0	c		0.0	c		0.0	c	
	Poland	-0.4	(0.3)		0.4	(0.3)		0.0	c	
	Portugal	**-3.9**	(1.9)		**3.9**	(1.9)		0.0	c	
	Slovak Republic	-0.3	(1.4)		-0.7	(1.0)		1.0	(1.6)	
	Slovenia	0.1	(0.4)		-0.1	(0.4)		0.0	c	
	Spain	-0.2	(0.2)		0.2	(0.2)		0.0	c	
	Sweden	0.1	(0.1)		-0.1	(0.1)		0.0	c	
	Switzerland	-2.5	(1.7)		2.5	(1.7)		0.0	c	
	Turkey	**8.0**	(2.1)		**-8.0**	(2.1)		0.0	c	
	United Kingdom	**0.6**	(0.2)		**-0.6**	(0.2)		0.0	c	
	United States	0.0	c		0.0	c		0.0	c	
	OECD average-37	**2.6**	(0.2)		-0.1	(0.2)		**-2.6**	(0.0)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

Costa Rica, Georgia, Malta and Moldova conducted the PISA 2009 assessment in 2010 as part of PISA 2009+.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.1 [6/6] **Change between 2009 and 2018 in programme orientation**
Results based on students' reports

		Percentage of students who are enrolled in a programme whose curriculum is:								
		Change between 2015 and 2018 (PISA 2018 - PISA 2015)								
		General			Pre-vocational or vocational			Modular		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
Partners	Albania	m	m		m	m		m	m	
	Argentina	1.3	(3.3)		-1.3	(3.3)		0.0	c	
	Baku (Azerbaijan)	m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m	
	Brazil	**-4.3**	(1.5)		**4.3**	(1.5)		0.0	c	
	Brunei Darussalam	m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m	
	Bulgaria	-2.9	(2.6)		2.9	(2.6)		0.0	c	
	Costa Rica	-0.2	(1.7)		0.2	(1.7)		0.0	c	
	Croatia	0.1	(1.2)		-0.1	(1.2)		0.0	c	
	Cyprus	-0.2	(0.2)		0.2	(0.2)		0.0	c	
	Dominican Republic	**-7.9**	(2.1)		**7.9**	(2.1)		0.0	c	
	Georgia	**1.7**	(0.8)		**-1.7**	(0.8)		0.0	c	
	Hong Kong (China)	0.0	c		0.0	c		0.0	c	
	Indonesia	-3.8	(2.7)		3.8	(2.7)		0.0	c	
	Jordan	0.0	c		0.0	c		0.0	c	
	Kazakhstan	**-5.6**	(2.2)		**5.6**	(2.2)		0.0	c	
	Kosovo	**-4.6**	(1.3)		**4.6**	(1.3)		0.0	c	
	Lebanon	0.0	c		0.0	c		0.0	c	
	Macao (China)	0.2	(0.1)		-0.2	(0.1)		0.0	c	
	Malaysia	0.3	(1.6)		-0.3	(1.6)		0.0	c	
	Malta	0.0	c		0.0	c		0.0	c	
	Moldova	**-3.5**	(0.9)		**3.5**	(0.9)		0.0	c	
	Montenegro	**1.5**	(0.4)		**-1.5**	(0.4)		0.0	c	
	Morocco	m	m		m	m		m	m	
	North Macedonia	**-3.5**	(0.3)		**3.5**	(0.3)		0.0	c	
	Panama	m	m		m	m		m	m	
	Peru	0.0	(0.0)		0.0	c		0.0	c	
	Philippines	m	m		m	m		m	m	
	Qatar	0.0	c		0.0	c		0.0	c	
	Romania	**-12.0**	(1.7)		**12.0**	(1.7)		0.0	c	
	Russia	0.8	(1.9)		-0.8	(1.9)		0.0	c	
	Saudi Arabia	m	m		m	m		m	m	
	Serbia	m	m		m	m		m	m	
	Singapore	0.0	c		0.0	c		0.0	c	
	Chinese Taipei	2.6	(1.8)		-2.6	(1.8)		0.0	c	
	Thailand	**-5.2**	(1.0)		**5.2**	(1.0)		0.0	c	
	Ukraine	m	m		m	m		m	m	
	United Arab Emirates	0.3	(0.4)		-0.3	(0.4)		0.0	c	
	Uruguay	**-6.4**	(1.1)		**6.9**	(1.1)		**-0.5**	(0.3)	
	Viet Nam	**5.1**	(2.0)		0.0	c		**-5.1**	(2.0)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

Costa Rica, Georgia, Malta and Moldova conducted the PISA 2009 assessment in 2010 as part of PISA 2009+.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.7 [1/6] **Ability grouping in classes and into different classes**
Results based on principals' reports

		PISA 2006																	
		Percentage of students in schools that group students by ability into different classes									Percentage of students in schools that group students by ability in their classes								
		For all subjects			For some subjects			Not for any subject			For all subjects			For some subjects			Not for any subject		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	1.7	(0.8)		87.1	(1.8)		11.2	(1.6)		3.7	(1.2)		56.9	(3.0)		39.4	(3.1)	
	Austria	2.2	(1.2)		10.3	(2.4)		87.6	(2.7)		2.2	(0.9)		36.0	(2.7)		61.7	(2.7)	
	Belgium	18.5	(2.5)		14.7	(2.4)		66.8	(3.0)		5.8	(1.7)		17.6	(2.8)		76.6	(3.1)	
	Canada	11.3	(1.5)		75.6	(1.9)		13.1	(1.4)		4.3	(1.0)		52.2	(2.8)		43.5	(2.7)	
	Chile	19.2	(3.3)		23.1	(4.0)		57.6	(5.0)		3.6	(1.6)		53.0	(4.9)		43.5	(4.9)	
	Colombia	23.6	(6.1)	†	11.1	(3.0)	†	65.3	(6.6)	†	32.8	(4.9)		18.9	(3.7)		48.4	(5.2)	
	Czech Republic	11.1	(3.1)		15.9	(2.9)		73.0	(3.9)		0.7	(0.5)		58.5	(3.7)		40.7	(3.7)	
	Denmark	1.5	(1.0)	†	15.0	(3.4)	†	83.5	(3.5)	†	6.1	(1.8)		75.2	(3.4)		18.7	(3.3)	
	Estonia	13.9	(2.9)		16.7	(2.5)		69.3	(3.4)		3.9	(1.6)		42.1	(3.7)		54.0	(3.6)	
	Finland	0.0	c		32.9	(4.4)		67.1	(4.4)		2.2	(1.1)		33.7	(3.5)		64.1	(3.7)	
	France	m	m		m	m		m	m		m	m		m	m		m	m	
	Germany	10.2	(2.1)		11.7	(2.1)		78.1	(2.8)		1.0	(0.8)		27.3	(2.5)		71.7	(2.6)	
	Greece	0.6	(0.6)	†	8.7	(2.1)	†	90.7	(2.2)	†	0.0	c	†	10.1	(2.7)	†	89.9	(2.7)	†
	Hungary	1.7	(1.2)		19.2	(3.7)		79.1	(3.9)		0.7	(0.4)		67.0	(3.4)		32.3	(3.4)	
	Iceland	2.5	(0.1)		36.7	(0.2)		60.8	(0.2)		3.9	(0.1)		72.2	(0.2)		24.0	(0.2)	
	Ireland	5.6	(1.7)		91.0	(2.2)		3.4	(1.5)		2.2	(1.3)		65.4	(4.4)		32.4	(4.2)	
	Israel	19.1	(3.8)		76.0	(3.9)		4.9	(1.9)		2.7	(1.4)	†	61.8	(4.6)	†	35.5	(4.7)	†
	Italy	2.3	(0.9)		8.1	(1.5)		89.6	(1.7)		21.2	(2.2)		22.8	(2.3)		56.0	(2.6)	
	Japan	9.9	(2.5)		26.0	(3.3)		64.1	(3.4)		0.0	c		36.8	(3.5)		63.2	(3.5)	
	Korea	4.9	(2.5)		73.7	(4.1)		21.4	(3.5)		3.8	(1.7)		62.2	(4.4)		34.0	(4.4)	
	Latvia	15.2	(3.2)		7.5	(2.1)		77.3	(3.2)		4.5	(2.1)		39.1	(3.9)		56.3	(4.0)	
	Lithuania	5.3	(1.9)		17.9	(3.3)		76.8	(3.8)		4.2	(1.6)		57.0	(4.1)		38.8	(3.9)	
	Luxembourg	45.4	(0.1)		15.3	(0.0)		39.3	(0.1)		2.0	(0.0)		24.8	(0.1)		73.2	(0.1)	
	Mexico	14.4	(2.1)		40.2	(2.8)		45.5	(3.1)		26.0	(2.9)		42.5	(3.2)		31.5	(3.0)	
	Netherlands	46.4	(4.0)		19.7	(3.4)		33.9	(3.6)		4.1	(1.6)		62.9	(3.6)		32.9	(3.5)	
	New Zealand	1.9	(0.9)		86.7	(2.4)		11.4	(2.3)		4.3	(1.6)		77.6	(3.1)		18.1	(3.0)	
	Norway	0.0	c		8.6	(2.0)		91.4	(2.0)		2.9	(1.2)		36.5	(4.0)		60.6	(4.2)	
	Poland	2.7	(1.3)		11.9	(2.5)		85.4	(2.7)		0.7	(0.6)		42.0	(3.9)		57.3	(3.9)	
	Portugal	10.6	(2.6)		11.9	(2.9)		77.5	(3.7)		4.2	(1.6)		39.0	(4.3)		56.9	(4.4)	
	Slovak Republic	16.2	(3.3)		22.1	(3.3)		61.6	(4.4)		1.3	(0.8)		62.0	(3.7)		36.6	(3.8)	
	Slovenia	0.8	(0.4)		17.4	(0.6)		81.8	(0.4)		3.7	(0.3)		31.8	(0.3)		64.5	(0.4)	
	Spain	7.6	(1.4)		42.6	(3.6)		49.9	(3.8)		9.1	(2.3)		44.9	(3.5)		45.9	(3.6)	
	Sweden	3.2	(1.3)		37.4	(4.0)		59.4	(4.1)		2.9	(1.3)		61.2	(3.9)		35.9	(3.8)	
	Switzerland	40.6	(2.7)		24.9	(2.8)		34.5	(2.7)		1.4	(0.4)		42.1	(3.5)		56.5	(3.6)	
	Turkey	15.5	(3.4)		12.1	(3.3)		72.4	(4.6)		6.8	(2.3)		17.2	(3.6)		75.9	(4.0)	
	United Kingdom	6.8	(1.6)		92.9	(1.6)		0.3	(0.1)		1.5	(0.9)		74.6	(2.8)		23.9	(2.8)	
	United States	4.6	(1.9)		80.7	(3.6)		14.6	(3.1)		3.6	(1.3)		40.9	(4.2)		55.5	(4.5)	
	OECD average	11.5	(0.4)		33.6	(0.5)		54.9	(0.5)		5.7	(0.3)		46.1	(0.6)		48.2	(0.6)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.7 [2/6] **Ability grouping in classes and into different classes**
Results based on principals' reports

	PISA 2006																	
	Percentage of students in schools that group students by ability into different classes									Percentage of students in schools that group students by ability in their classes								
	For all subjects			For some subjects			Not for any subject			For all subjects			For some subjects			Not for any subject		
Partners	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Albania	m	m		m	m		m	m		m	m		m	m		m	m	
Argentina	8.0	(1.8)		23.7	(4.4)		68.4	(4.7)		19.2	(3.5)		37.7	(5.0)		43.1	(4.2)	
Baku (Azerbaijan)	m	m		m	m		m	m		m	m		m	m		m	m	
Belarus	m	m		m	m		m	m		m	m		m	m		m	m	
Bosnia and Herzegovina	m	m		m	m		m	m		m	m		m	m		m	m	
Brazil	25.5	(2.8)		5.7	(1.6)		68.9	(2.9)		31.5	(3.0)		14.2	(2.4)		54.3	(3.1)	
Brunei Darussalam	m	m		m	m		m	m		m	m		m	m		m	m	
B-S-J-Z (China)	m	m		m	m		m	m		m	m		m	m		m	m	
Bulgaria	7.3	(2.3)		27.4	(4.2)		65.2	(4.2)		7.7	(2.3)		31.4	(4.1)		60.9	(4.4)	
Costa Rica	m	m		m	m		m	m		m	m		m	m		m	m	
Croatia	26.0	(3.5)		4.9	(1.6)		69.1	(3.7)		4.6	(1.4)		27.5	(3.7)		67.8	(3.8)	
Cyprus	m	m		m	m		m	m		m	m		m	m		m	m	
Dominican Republic	m	m		m	m		m	m		m	m		m	m		m	m	
Georgia	m	m		m	m		m	m		m	m		m	m		m	m	
Hong Kong (China)	16.7	(3.0)		31.1	(3.7)		52.3	(4.1)		1.5	(1.1)		45.0	(4.1)		53.5	(4.1)	
Indonesia	38.7	(5.1)	†	14.0	(3.0)	†	47.3	(5.0)	†	55.5	(3.7)		12.1	(3.0)		32.4	(3.1)	
Jordan	16.0	(3.3)		44.8	(4.9)		39.2	(4.8)		25.0	(3.3)		61.7	(3.8)		13.3	(2.5)	
Kazakhstan	m	m		m	m		m	m		m	m		m	m		m	m	
Kosovo	m	m		m	m		m	m		m	m		m	m		m	m	
Lebanon	m	m		m	m		m	m		m	m		m	m		m	m	
Macao (China)	13.4	(0.1)		21.1	(0.1)		65.5	(0.1)		0.0	c		15.3	(0.1)		84.7	(0.1)	
Malaysia	m	m		m	m		m	m		m	m		m	m		m	m	
Malta	m	m		m	m		m	m		m	m		m	m		m	m	
Moldova	m	m		m	m		m	m		m	m		m	m		m	m	
Montenegro	43.4	(0.2)		11.7	(0.1)		44.8	(0.2)		53.9	(0.2)	†	6.6	(0.1)	†	39.6	(0.2)	†
Morocco	m	m		m	m		m	m		m	m		m	m		m	m	
North Macedonia	m	m		m	m		m	m		m	m		m	m		m	m	
Panama	m	m		m	m		m	m		m	m		m	m		m	m	
Peru	m	m		m	m		m	m		m	m		m	m		m	m	
Philippines	m	m		m	m		m	m		m	m		m	m		m	m	
Qatar	34.4	(0.1)		32.1	(0.2)		33.5	(0.1)		35.6	(0.2)		35.4	(0.2)		28.9	(0.1)	
Romania	27.9	(4.1)		41.3	(5.3)		30.8	(4.5)		10.4	(3.3)		54.6	(6.6)		35.0	(5.9)	
Russia	28.3	(3.4)		16.5	(3.2)		55.2	(4.8)		20.4	(3.5)		50.5	(4.8)		29.1	(4.0)	
Saudi Arabia	m	m		m	m		m	m		m	m		m	m		m	m	
Serbia	8.8	(2.4)		1.7	(1.1)		89.5	(2.7)		29.1	(3.6)		11.6	(2.6)		59.4	(3.9)	
Singapore	m	m		m	m		m	m		m	m		m	m		m	m	
Chinese Taipei	8.3	(1.7)		19.4	(2.7)		72.3	(3.0)		0.5	(0.5)		31.4	(3.0)		68.1	(3.1)	
Thailand	12.1	(2.4)		42.9	(3.7)		45.0	(3.7)		38.2	(4.1)		42.4	(3.6)		19.4	(3.3)	
Ukraine	m	m		m	m		m	m		m	m		m	m		m	m	
United Arab Emirates	m	m		m	m		m	m		m	m		m	m		m	m	
Uruguay	4.1	(1.2)		5.2	(1.3)		90.6	(1.8)		15.7	(2.3)		12.9	(2.3)		71.4	(2.8)	
Viet Nam	m	m		m	m		m	m		m	m		m	m		m	m	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.7 [3/6] **Ability grouping in classes and into different classes**
Results based on principals' reports

		PISA 2018																	
		Percentage of students in schools that group students by ability into different classes									Percentage of students in schools that group students by ability in their classes								
		For all subjects			For some subjects			Not for any subject			For all subjects			For some subjects			Not for any subject		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	**Australia**	2.4	(0.6)		81.2	(1.5)		16.4	(1.3)		4.9	(0.9)		64.8	(1.9)		30.2	(1.8)	
	Austria	3.1	(1.1)		7.6	(1.8)		89.3	(2.1)		2.1	(0.7)		29.2	(2.9)		68.7	(2.9)	
	Belgium	15.7	(2.3)		24.5	(2.3)		59.8	(2.5)		5.6	(1.3)		41.9	(3.2)		52.6	(2.8)	
	Canada	8.9	(1.4)		73.2	(1.8)		17.9	(1.4)		4.3	(1.0)		45.8	(2.4)		49.9	(2.4)	
	Chile	3.2	(1.4)		24.1	(3.3)		72.7	(3.3)		5.3	(1.8)		38.0	(3.9)		56.7	(4.0)	
	Colombia	14.2	(2.7)		20.6	(2.7)		65.3	(3.5)		11.5	(2.4)		19.4	(2.6)		69.2	(3.1)	
	Czech Republic	1.6	(0.8)		18.9	(2.6)		79.5	(2.7)		0.9	(0.5)		55.8	(3.3)		43.3	(3.3)	
	Denmark	2.5	(0.9)		21.0	(2.4)		76.6	(2.5)		11.0	(1.7)		63.4	(3.8)		25.6	(3.4)	
	Estonia	1.4	(0.6)		32.2	(1.7)		66.4	(1.7)		3.2	(0.6)		55.5	(2.0)		41.3	(1.9)	
	Finland	0.2	(0.2)		31.6	(3.5)		68.2	(3.5)		1.9	(0.9)		52.5	(3.8)		45.7	(4.0)	
	France	4.8	(1.6)		11.7	(2.4)		83.6	(3.1)		6.7	(1.7)		36.4	(3.3)		56.9	(3.5)	
	Germany	6.9	(1.5)		20.7	(3.1)		72.4	(3.4)		10.5	(2.3)		31.3	(2.7)		58.2	(3.2)	
	Greece	2.0	(1.0)		7.7	(1.6)		90.3	(1.8)		2.3	(1.1)		17.3	(2.5)		80.4	(2.6)	
	Hungary	3.2	(1.3)		26.1	(3.2)		70.6	(3.3)		0.7	(0.6)		77.4	(3.1)		21.9	(3.0)	
	Iceland	0.0	c		11.0	(0.1)		89.0	(0.1)		0.1	(0.0)		47.8	(0.2)		52.2	(0.2)	
	Ireland	0.8	(0.8)		92.0	(2.3)		7.2	(2.2)		5.3	(1.8)		47.1	(4.2)		47.6	(4.2)	
	Israel	8.8	(2.3)		89.1	(2.5)		2.1	(1.1)		4.1	(1.2)		68.8	(3.5)		27.1	(3.4)	
	Italy	5.2	(1.6)		8.7	(1.8)		86.2	(2.3)		23.2	(2.8)		26.7	(2.8)		50.1	(3.2)	
	Japan	10.8	(2.5)		38.5	(4.0)		50.7	(4.2)		0.0	c		50.3	(3.6)		49.7	(3.6)	
	Korea	4.7	(1.9)		23.7	(3.2)		71.6	(3.6)		3.3	(1.4)		54.6	(3.5)		42.1	(3.5)	
	Latvia	6.0	(0.8)		13.1	(1.0)		80.9	(1.1)		1.5	(0.5)		44.4	(1.8)		54.1	(1.9)	
	Lithuania	9.7	(0.7)		33.1	(1.5)		57.1	(1.4)		1.3	(0.4)		61.0	(1.8)		37.7	(1.8)	
	Luxembourg	31.9	(0.1)		32.4	(0.1)		35.7	(0.1)		5.0	(0.0)		40.5	(0.1)		54.5	(0.1)	
	Mexico	13.3	(2.3)		32.6	(2.9)		54.1	(3.3)		15.3	(2.3)		52.3	(3.0)		32.4	(3.0)	
	Netherlands	51.3	(4.3)		17.1	(3.6)		31.6	(3.6)		4.6	(2.0)		75.3	(4.1)		20.1	(3.6)	
	New Zealand	2.1	(0.8)		82.2	(2.8)		15.7	(2.7)		10.2	(2.3)		73.3	(3.2)		16.5	(2.3)	
	Norway	3.2	(1.3)		9.9	(2.0)		86.9	(2.3)		7.6	(1.8)		40.2	(3.6)		52.2	(3.7)	
	Poland	3.9	(1.4)		29.5	(3.1)		66.6	(3.3)		0.0	c		80.9	(2.3)		19.1	(2.3)	
	Portugal	4.0	(1.6)		7.8	(1.6)		88.2	(2.1)		2.2	(0.9)		13.8	(2.5)		84.1	(2.6)	
	Slovak Republic	9.6	(1.6)		26.1	(2.6)		64.3	(2.7)		1.5	(0.6)		58.7	(3.1)		39.8	(3.1)	
	Slovenia	0.8	(0.0)		34.2	(0.5)		65.0	(0.5)		7.9	(0.6)		48.4	(0.7)		43.7	(0.6)	
	Spain	5.4	(1.2)		33.0	(2.1)		61.6	(2.1)		11.1	(1.4)		30.5	(2.2)		58.5	(2.1)	
	Sweden	1.7	(0.9)		14.2	(2.1)		84.0	(2.1)		1.9	(0.9)		23.1	(3.0)		75.0	(3.1)	
	Switzerland	32.1	(3.3)		37.1	(3.0)		30.8	(2.8)		5.4	(1.5)		57.3	(3.4)		37.4	(3.4)	
	Turkey	18.4	(3.2)		36.0	(3.7)		45.6	(3.7)		4.1	(1.3)		40.1	(3.9)		55.8	(4.0)	
	United Kingdom	6.2	(1.6)		92.2	(1.9)		1.5	(1.0)		1.7	(0.9)	†	69.3	(3.3)	†	28.9	(3.1)	†
	United States	6.9	(2.5)		80.1	(3.5)		13.0	(2.7)		2.8	(1.8)		67.9	(3.5)		29.3	(3.7)	
	OECD average	8.3	(0.3)		34.5	(0.4)		57.3	(0.4)		5.2	(0.2)		48.7	(0.5)		46.2	(0.5)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.7 [4/6] **Ability grouping in classes and into different classes**
Results based on principals' reports

	PISA 2018																	
	Percentage of students in schools that group students by ability into different classes									Percentage of students in schools that group students by ability in their classes								
	For all subjects			For some subjects			Not for any subject			For all subjects			For some subjects			Not for any subject		
Partners	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Albania	13.4	(1.6)		36.2	(2.7)		50.4	(2.4)		33.1	(2.8)		36.2	(3.1)		30.8	(3.2)	
Argentina	3.0	(1.0)		32.2	(3.1)		64.8	(3.3)		7.9	(1.7)		47.2	(3.1)		44.8	(3.3)	
Baku (Azerbaijan)	13.6	(3.3)	†	44.0	(4.2)	†	42.4	(4.5)	†	17.4	(3.1)	†	52.5	(4.4)	†	30.1	(4.1)	†
Belarus	3.6	(1.4)		18.0	(2.5)		78.4	(2.8)		4.0	(1.5)		35.6	(3.5)		60.4	(3.6)	
Bosnia and Herzegovina	17.3	(2.6)		26.7	(2.9)		56.0	(3.2)		14.6	(2.0)		42.5	(3.6)		43.0	(3.8)	
Brazil	10.7	(1.5)		4.7	(1.1)		84.6	(1.7)		10.5	(1.4)		8.6	(1.5)		80.9	(1.9)	
Brunei Darussalam	45.6	(0.1)		45.4	(0.1)		9.0	(0.0)		17.1	(0.1)		61.7	(0.1)		21.2	(0.1)	
B-S-J-Z (China)	18.5	(2.8)		40.7	(3.3)		40.8	(3.1)		31.7	(3.7)		56.2	(3.7)		12.1	(2.2)	
Bulgaria	12.8	(2.9)		19.4	(2.8)		67.8	(3.2)		13.5	(2.7)		36.7	(3.6)		49.8	(3.7)	
Costa Rica	22.3	(3.3)		24.8	(3.1)		52.9	(3.5)		58.8	(3.6)		21.3	(2.7)		19.9	(2.8)	
Croatia	14.1	(2.4)		20.9	(3.0)		65.0	(3.4)		6.4	(1.9)		34.7	(3.5)		58.9	(3.4)	
Cyprus	4.9	(0.7)		25.3	(0.8)		69.8	(0.5)		7.3	(0.7)		39.7	(0.9)		52.9	(0.6)	
Dominican Republic	17.4	(3.0)		30.2	(4.3)		52.5	(4.4)		22.6	(3.1)		36.1	(3.9)		41.3	(3.8)	
Georgia	2.7	(1.0)		10.9	(2.1)		86.4	(2.1)		3.0	(1.2)		20.9	(2.7)		76.1	(2.9)	
Hong Kong (China)	13.0	(3.6)		77.1	(4.1)		9.9	(3.2)		4.0	(1.6)		75.2	(4.0)		20.8	(3.7)	
Indonesia	23.1	(3.5)		21.4	(3.3)		55.5	(4.2)		15.3	(3.3)		26.3	(3.8)		58.4	(4.1)	
Jordan	39.3	(3.4)		19.3	(2.8)		41.3	(3.6)		41.7	(3.3)		22.8	(3.2)		35.5	(3.3)	
Kazakhstan	24.9	(2.4)		30.0	(2.3)		45.1	(2.5)		21.1	(2.6)		55.2	(2.8)		23.7	(2.3)	
Kosovo	24.3	(1.6)		40.0	(1.9)		35.7	(1.7)		25.3	(1.8)		46.5	(1.9)		28.1	(1.4)	
Lebanon	21.0	(2.4)		19.9	(2.7)		59.1	(3.2)		16.4	(2.4)		38.2	(3.1)		45.3	(2.9)	
Macao (China)	7.8	(0.0)		44.4	(0.0)		47.8	(0.0)		5.1	(0.0)		62.4	(0.1)		32.6	(0.0)	
Malaysia	33.6	(3.6)		48.2	(4.0)		18.2	(2.8)		23.6	(3.0)		45.9	(3.5)		30.5	(3.5)	
Malta	11.9	(0.1)		67.0	(0.1)		21.1	(0.1)		2.8	(0.0)		68.0	(0.1)		29.2	(0.1)	
Moldova	11.4	(2.7)		6.2	(2.0)		82.4	(3.1)		6.7	(1.8)		25.2	(3.5)		68.1	(3.6)	
Montenegro	39.0	(0.6)		12.2	(0.4)		48.8	(0.4)		31.1	(0.5)		30.4	(0.5)		38.5	(0.2)	
Morocco	31.3	(3.5)		5.6	(1.6)		63.0	(3.7)		19.4	(3.1)		6.1	(1.8)		74.5	(3.5)	
North Macedonia	32.0	(0.1)		26.3	(0.1)		41.7	(0.1)		32.7	(0.1)		39.5	(0.1)		27.8	(0.1)	
Panama	14.7	(1.9)		20.2	(2.4)		65.1	(2.7)		14.6	(2.0)		30.6	(2.9)		54.8	(3.0)	
Peru	6.1	(1.3)		13.2	(2.1)		80.7	(2.4)		7.6	(1.5)		35.2	(2.7)		57.2	(2.7)	
Philippines	24.7	(3.1)		41.6	(4.0)		33.8	(4.1)		21.1	(2.9)		49.8	(3.6)		29.0	(3.4)	
Qatar	19.1	(0.1)		55.8	(0.1)		25.2	(0.1)		26.5	(0.1)		52.1	(0.1)		21.4	(0.1)	
Romania	28.3	(3.8)		25.9	(3.7)		45.8	(4.5)		6.4	(2.1)		46.2	(4.1)		47.5	(4.4)	
Russia	15.5	(3.1)		13.8	(2.4)		70.7	(4.1)		11.7	(2.4)		34.7	(3.3)		53.6	(2.7)	
Saudi Arabia	51.3	(4.5)		15.4	(2.8)		33.3	(4.1)		52.9	(3.7)		24.5	(3.0)		22.6	(3.4)	
Serbia	17.6	(2.8)		21.2	(2.7)		61.2	(3.5)		17.7	(3.2)		31.5	(3.3)		50.8	(3.9)	
Singapore	9.4	(0.2)		82.1	(0.8)		8.5	(0.7)		9.2	(1.2)		70.1	(1.0)		20.8	(1.1)	
Chinese Taipei	1.9	(0.9)		25.7	(3.0)		72.4	(3.1)		3.2	(1.3)		42.1	(3.6)		54.7	(3.7)	
Thailand	27.5	(3.1)		44.2	(3.6)		28.3	(2.8)		14.4	(2.7)		55.5	(3.6)		30.1	(3.5)	
Ukraine	19.7	(2.6)		26.8	(2.9)		53.5	(3.1)		14.9	(2.8)		46.8	(3.7)		38.3	(3.7)	
United Arab Emirates	9.2	(0.4)		44.4	(1.4)		46.5	(1.4)		44.1	(1.6)		42.4	(1.7)		13.5	(0.5)	
Uruguay	10.6	(1.9)		10.3	(2.3)		79.1	(3.0)		7.9	(2.2)		12.2	(2.5)		79.9	(3.2)	
Viet Nam	19.6	(3.5)		63.0	(4.9)		17.4	(3.6)		19.8	(3.7)		56.9	(4.5)		23.2	(4.0)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.7 [5/6] **Ability grouping in classes and into different classes**
Results based on principals' reports

		Change between 2006 and 2018 (PISA 2018 - PISA 2006)																	
		Percentage of students in schools that group students by ability into different classes									Percentage of students in schools that group students by ability in their classes								
		For all subjects			For some subjects			Not for any subject			For all subjects			For some subjects			Not for any subject		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
OECD	Australia	0.7	(1.0)		**-5.9**	(2.3)		**5.2**	(2.1)		1.3	(1.4)		**7.9**	(3.6)		**-9.1**	(3.6)	
	Austria	0.9	(1.7)		-2.7	(3.0)		1.7	(3.4)		-0.2	(1.1)		-6.8	(3.9)		7.0	(4.0)	
	Belgium	-2.8	(3.4)		**9.8**	(3.3)		-7.0	(3.9)		-0.2	(2.1)		**24.2**	(4.2)		**-24.0**	(4.2)	
	Canada	-2.3	(2.1)		-2.4	(2.6)		**4.8**	(2.0)		0.0	(1.5)		-6.4	(3.6)		6.4	(3.6)	
	Chile	**-16.0**	(3.6)		0.9	(5.1)		**15.1**	(6.0)		1.7	(2.4)		**-14.9**	(6.3)		**13.2**	(6.3)	
	Colombia	-9.4	(6.7)	†	**9.5**	(4.1)	†	-0.1	(7.4)	†	**-21.3**	(5.5)		0.5	(4.5)		**20.8**	(6.1)	
	Czech Republic	**-9.4**	(3.2)		2.9	(3.9)		6.5	(4.7)		0.2	(0.7)		-2.7	(4.9)		2.6	(5.0)	
	Denmark	1.0	(1.4)	†	5.9	(4.2)	†	-6.9	(4.3)	†	**4.9**	(2.5)		**-11.8**	(5.1)		6.9	(4.7)	
	Estonia	**-12.5**	(2.9)		**15.4**	(3.0)		-2.9	(3.8)		-0.7	(1.7)		**13.4**	(4.2)		**-12.7**	(4.1)	
	Finland	0.2	(0.2)		-1.3	(5.6)		1.1	(5.6)		-0.3	(1.5)		**18.8**	(5.2)		**-18.5**	(5.4)	
	France	m	m		m	m		m	m		m	m		m	m		m	m	
	Germany	-3.3	(2.6)		**9.0**	(3.8)		-5.7	(4.4)		**9.5**	(2.5)		4.0	(3.7)		**-13.5**	(4.2)	
	Greece	1.4	(1.1)	†	-1.0	(2.6)	†	-0.4	(2.9)	†	**2.3**	(1.1)	†	**7.3**	(3.7)	†	**-9.5**	(3.7)	†
	Hungary	1.5	(1.8)		6.9	(4.9)		-8.5	(5.2)		0.1	(0.7)		**10.4**	(4.6)		**-10.5**	(4.6)	
	Iceland	**-2.5**	(0.1)		**-25.8**	(0.2)		**28.2**	(0.2)		**-3.8**	(0.1)		**-24.4**	(0.3)		**28.2**	(0.3)	
	Ireland	**-4.8**	(1.8)		1.0	(3.2)		3.8	(2.6)		3.1	(2.2)		**-18.3**	(6.1)		**15.2**	(6.0)	
	Israel	**-10.3**	(4.4)		**13.1**	(4.7)		-2.8	(2.3)		1.4	(1.9)	†	7.0	(5.8)	†	-8.4	(5.8)	†
	Italy	2.9	(1.8)		0.5	(2.3)		-3.4	(2.8)		2.0	(3.5)		3.9	(3.6)		-5.9	(4.2)	
	Japan	0.9	(3.5)		**12.5**	(5.2)		**-13.4**	(5.4)		0.0	c		**13.6**	(5.0)		**-13.6**	(5.0)	
	Korea	-0.2	(3.1)		**-50.0**	(5.2)		**50.2**	(5.0)		-0.4	(2.2)		-7.6	(5.6)		8.1	(5.6)	
	Latvia	**-9.2**	(3.3)		**5.6**	(2.3)		3.6	(3.4)		-3.0	(2.1)		5.2	(4.3)		-2.2	(4.4)	
	Lithuania	**4.5**	(2.0)		**15.2**	(3.6)		**-19.7**	(4.0)		-2.9	(1.6)		3.9	(4.5)		-1.1	(4.2)	
	Luxembourg	**-13.5**	(0.1)		**17.1**	(0.1)		**-3.6**	(0.1)		**3.0**	(0.0)		**15.7**	(0.1)		**-18.7**	(0.1)	
	Mexico	-1.1	(3.1)		-7.5	(4.0)		8.6	(4.5)		**-10.7**	(3.7)		**9.8**	(4.3)		0.9	(4.3)	
	Netherlands	4.8	(5.9)		-2.5	(4.9)		-2.3	(5.1)		0.4	(2.6)		**12.4**	(5.5)		**-12.8**	(5.0)	
	New Zealand	0.2	(1.2)		-4.5	(3.7)		4.3	(3.5)		**6.0**	(2.8)		-4.3	(4.5)		-1.6	(3.8)	
	Norway	**3.2**	(1.3)		1.3	(2.8)		-4.5	(3.0)		**4.7**	(2.1)		3.6	(5.4)		-8.3	(5.6)	
	Poland	1.2	(1.9)		**17.6**	(4.0)		**-18.9**	(4.2)		-0.7	(0.6)		**38.9**	(4.5)		**-38.2**	(4.5)	
	Portugal	**-6.6**	(3.0)		-4.1	(3.3)		**10.7**	(4.2)		-2.0	(1.8)		**-25.2**	(4.9)		**27.2**	(5.1)	
	Slovak Republic	-6.6	(3.7)		3.9	(4.2)		2.7	(5.2)		0.1	(1.0)		-3.3	(4.8)		3.2	(4.9)	
	Slovenia	0.0	(0.4)		**16.8**	(0.8)		**-16.7**	(0.6)		**4.2**	(0.7)		**16.6**	(0.8)		**-20.8**	(0.7)	
	Spain	-2.1	(1.8)		**-9.6**	(4.2)		**11.7**	(4.3)		2.0	(2.7)		**-14.5**	(4.1)		**12.5**	(4.2)	
	Sweden	-1.5	(1.6)		**-23.2**	(4.5)		**24.7**	(4.6)		-1.0	(1.5)		**-38.1**	(5.0)		**39.1**	(4.9)	
	Switzerland	**-8.5**	(4.3)		**12.2**	(4.1)		-3.7	(3.9)		**4.0**	(1.5)		**15.2**	(4.9)		**-19.2**	(4.9)	
	Turkey	2.9	(4.7)		**23.9**	(5.0)		**-26.8**	(5.9)		-2.7	(2.6)		**22.9**	(5.3)		**-20.2**	(5.6)	
	United Kingdom	-0.6	(2.3)		-0.6	(2.5)		1.2	(1.0)		0.2	(1.2)	†	-5.2	(4.3)	†	5.0	(4.2)	†
	United States	2.3	(3.2)		-0.6	(5.0)		-1.6	(4.1)		-0.8	(2.2)		**27.0**	(5.5)		**-26.2**	(5.8)	
	OECD average	**-3.3**	(0.5)		0.9	(0.6)		**2.4**	(0.7)		-0.6	(0.4)		**2.6**	(0.7)		**-2.1**	(0.8)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.3.7 [6/6] **Ability grouping in classes and into different classes**
Results based on principals' reports

	Change between 2006 and 2018 (PISA 2018 - PISA 2006)																	
	Percentage of students in schools that group students by ability into different classes									Percentage of students in schools that group students by ability in their classes								
	For all subjects			For some subjects			Not for any subject			For all subjects			For some subjects			Not for any subject		
Partners	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
Albania	m	m		m	m		m	m		m	m		m	m		m	m	
Argentina	**-5.0**	(2.1)		8.5	(5.4)		-3.5	(5.7)		**-11.2**	(3.9)		9.5	(5.8)		1.7	(5.3)	
Baku (Azerbaijan)	m	m		m	m		m	m		m	m		m	m		m	m	
Belarus	m	m		m	m		m	m		m	m		m	m		m	m	
Bosnia and Herzegovina	m	m		m	m		m	m		m	m		m	m		m	m	
Brazil	**-14.8**	(3.1)		-0.9	(2.0)		**15.7**	(3.3)		**-21.0**	(3.3)		**-5.6**	(2.8)		**26.6**	(3.6)	
Brunei Darussalam	m	m		m	m		m	m		m	m		m	m		m	m	
B-S-J-Z (China)	m	m		m	m		m	m		m	m		m	m		m	m	
Bulgaria	5.5	(3.7)		-8.0	(5.0)		2.6	(5.3)		5.9	(3.5)		5.3	(5.5)		-11.1	(5.7)	
Costa Rica	m	m		m	m		m	m		m	m		m	m		m	m	
Croatia	**-11.9**	(4.2)		**16.1**	(3.4)		-4.2	(5.1)		1.8	(2.4)		7.2	(5.1)		-9.0	(5.1)	
Cyprus	m	m		m	m		m	m		m	m		m	m		m	m	
Dominican Republic	m	m		m	m		m	m		m	m		m	m		m	m	
Georgia	m	m		m	m		m	m		m	m		m	m		m	m	
Hong Kong (China)	-3.6	(4.6)		**46.0**	(5.5)		**-42.4**	(5.2)		2.5	(1.9)		**30.2**	(5.7)		**-32.7**	(5.5)	
Indonesia	**-15.6**	(6.1)	†	7.4	(4.5)	†	8.2	(6.6)	†	**-40.3**	(5.0)		**14.2**	(4.8)		**26.1**	(5.1)	
Jordan	**23.3**	(4.7)		**-25.5**	(5.7)		2.2	(6.0)		**16.7**	(4.6)		**-39.0**	(5.0)		**22.2**	(4.1)	
Kazakhstan	m	m		m	m		m	m		m	m		m	m		m	m	
Kosovo	m	m		m	m		m	m		m	m		m	m		m	m	
Lebanon	m	m		m	m		m	m		m	m		m	m		m	m	
Macao (China)	**-5.6**	(0.1)		**23.3**	(0.1)		**-17.7**	(0.1)		**5.1**	(0.0)		**47.0**	(0.1)		**-52.1**	(0.1)	
Malaysia	m	m		m	m		m	m		m	m		m	m		m	m	
Malta	m	m		m	m		m	m		m	m		m	m		m	m	
Moldova	m	m		m	m		m	m		m	m		m	m		m	m	
Montenegro	**-4.5**	(0.6)		0.4	(0.5)		**4.0**	(0.5)		**-22.7**	(0.6)	†	**23.9**	(0.5)	†	**-1.1**	(0.3)	†
Morocco	m	m		m	m		m	m		m	m		m	m		m	m	
North Macedonia	m	m		m	m		m	m		m	m		m	m		m	m	
Panama	m	m		m	m		m	m		m	m		m	m		m	m	
Peru	m	m		m	m		m	m		m	m		m	m		m	m	
Philippines	m	m		m	m		m	m		m	m		m	m		m	m	
Qatar	**-15.3**	(0.1)		**23.6**	(0.2)		**-8.3**	(0.2)		**-9.2**	(0.2)		**16.7**	(0.2)		**-7.5**	(0.2)	
Romania	0.5	(5.6)		**-15.5**	(6.4)		**15.0**	(6.3)		-4.1	(3.9)		-8.4	(7.8)		12.5	(7.3)	
Russia	**-12.9**	(4.6)		-2.7	(4.0)		**15.5**	(6.3)		**-8.7**	(4.2)		**-15.8**	(5.8)		**24.6**	(4.8)	
Saudi Arabia	m	m		m	m		m	m		m	m		m	m		m	m	
Serbia	**8.8**	(3.7)		**19.5**	(2.9)		**-28.3**	(4.4)		**-11.3**	(4.8)		**19.9**	(4.2)		-8.6	(5.5)	
Singapore	m	m		m	m		m	m		m	m		m	m		m	m	
Chinese Taipei	**-6.3**	(1.9)		6.2	(4.0)		0.1	(4.3)		2.6	(1.4)		**10.8**	(4.7)		**-13.4**	(4.8)	
Thailand	**15.4**	(3.9)		1.3	(5.2)		**-16.7**	(4.7)		**-23.9**	(4.9)		**13.2**	(5.1)		**10.7**	(4.8)	
Ukraine	m	m		m	m		m	m		m	m		m	m		m	m	
United Arab Emirates	m	m		m	m		m	m		m	m		m	m		m	m	
Uruguay	**6.5**	(2.3)		5.1	(2.7)		**-11.6**	(3.5)		**-7.8**	(3.2)		-0.7	(3.4)		**8.5**	(4.3)	
Viet Nam	m	m		m	m		m	m		m	m		m	m		m	m	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132222

Table V.B1.4.2 [1/6] **Shortage of education staff in 2015 and 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by the following factors:											
		PISA 2015											
		A lack of teaching staff			Inadequate or poorly qualified teaching staff			A lack of assisting staff			Inadequate or poorly qualified assisting staff		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	20.5	(1.4)		17.6	(1.6)		18.1	(1.5)		12.8	(1.4)	
	Austria	19.1	(2.8)		13.8	(2.6)		60.7	(3.7)		27.7	(3.4)	
	Belgium	33.9	(3.1)		30.3	(2.8)		37.4	(3.1)		19.5	(2.5)	
	Canada	18.8	(2.2)		13.2	(2.0)		32.4	(2.6)		15.1	(2.3)	
	Chile	17.2	(3.1)		19.2	(3.4)		17.2	(2.9)		14.3	(2.7)	
	Colombia	41.4	(3.3)		26.7	(3.1)		69.7	(2.9)		31.4	(3.3)	
	Czech Republic	13.2	(1.8)		17.4	(2.3)		27.0	(3.1)		9.4	(2.0)	
	Denmark	6.0	(1.6)		4.9	(1.4)		21.3	(3.1)		8.3	(1.9)	
	Estonia	34.6	(2.9)		27.3	(2.6)		37.7	(2.5)		16.1	(2.0)	
	Finland	2.8	(1.2)		3.8	(1.6)		46.1	(3.7)		24.7	(3.7)	
	France	34.7	(2.7)		20.4	(2.9)		34.3	(3.0)		17.6	(2.5)	
	Germany	55.1	(3.8)		23.5	(3.2)		53.4	(3.6)		17.7	(2.5)	†
	Greece	44.3	(3.0)		21.0	(2.9)		72.8	(3.1)		32.8	(3.5)	
	Hungary	33.8	(3.0)		18.6	(2.7)		54.9	(4.0)		6.9	(1.6)	
	Iceland	13.3	(0.2)		14.8	(0.2)		27.8	(0.3)		10.9	(0.1)	
	Ireland	55.5	(4.1)		13.3	(3.1)		40.6	(4.0)		23.9	(3.7)	
	Israel	41.1	(4.1)		40.6	(4.2)		33.2	(3.7)		26.6	(3.8)	
	Italy	31.5	(4.0)	†	40.9	(3.5)	†	45.4	(3.7)	†	32.1	(3.8)	†
	Japan	55.1	(3.3)		43.7	(3.6)		36.0	(3.4)		18.1	(2.8)	
	Korea	38.8	(3.8)		11.4	(2.4)		72.6	(3.5)		13.2	(2.6)	
	Latvia	21.5	(2.2)		15.0	(2.1)		27.5	(2.5)		14.3	(2.1)	
	Lithuania	11.3	(1.8)		15.5	(2.1)		21.2	(2.5)		12.3	(2.1)	
	Luxembourg	59.0	(0.1)		20.6	(0.1)		43.2	(0.1)		17.9	(0.1)	
	Mexico	29.1	(2.9)		14.4	(2.2)		46.7	(3.3)		19.7	(2.3)	
	Netherlands	27.1	(4.0)	†	35.6	(4.5)	†	10.0	(2.9)	†	14.9	(3.5)	†
	New Zealand	20.9	(3.1)		15.8	(3.0)		19.2	(3.5)		7.9	(2.3)	
	Norway	21.5	(3.0)		17.5	(2.4)		12.4	(2.4)		19.5	(2.7)	
	Poland	0.2	(0.2)		0.6	(0.6)		17.0	(2.9)		12.4	(2.4)	
	Portugal	39.7	(3.4)		30.9	(3.4)		73.6	(2.6)		68.0	(3.0)	
	Slovak Republic	9.9	(1.9)		6.3	(1.3)		24.9	(2.9)		8.6	(1.8)	
	Slovenia	18.9	(0.5)		10.4	(0.6)		16.4	(0.6)		7.8	(0.4)	
	Spain	55.5	(2.8)		28.2	(3.2)		60.0	(3.0)		12.0	(2.0)	
	Sweden	39.1	(3.8)		38.1	(3.7)		42.6	(3.6)		35.4	(3.8)	
	Switzerland	23.8	(2.9)		15.3	(2.9)		16.8	(2.7)		4.8	(1.7)	
	Turkey	29.3	(3.4)		26.4	(3.4)		53.2	(4.0)		50.9	(3.6)	
	United Kingdom	42.8	(4.0)	†	20.1	(3.4)	†	19.0	(2.6)	†	12.0	(2.5)	†
	United States	23.7	(3.1)		14.2	(3.0)		24.1	(3.4)		11.7	(2.2)	
	OECD average	29.3	(0.5)		20.2	(0.5)		36.9	(0.5)		19.2	(0.4)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.2 [2/6] **Shortage of education staff in 2015 and 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by the following factors:											
		PISA 2015											
		A lack of teaching staff			Inadequate or poorly qualified teaching staff			A lack of assisting staff			Inadequate or poorly qualified assisting staff		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	**Albania**	13.7	(2.7)		16.8	(2.8)		38.2	(3.8)		30.8	(3.5)	
	Argentina	m	m		m	m		m	m		m	m	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	26.0	(2.3)		19.9	(2.6)		37.3	(2.4)		25.6	(2.5)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	6.8	(1.6)		7.2	(1.8)		2.7	(0.9)		3.3	(1.4)	
	Costa Rica	46.8	(4.0)		45.0	(3.7)		58.8	(3.4)		50.2	(3.7)	
	Croatia	20.5	(3.1)		20.5	(3.5)		43.0	(4.0)		18.9	(3.3)	
	Cyprus	19.2	(0.1)		31.9	(0.1)		30.1	(0.1)		20.6	(0.1)	
	Dominican Republic	29.6	(3.0)		21.5	(3.3)		29.5	(4.5)		14.8	(2.8)	
	Georgia	6.0	(1.4)		20.7	(3.0)		27.7	(2.9)		17.6	(2.4)	
	Hong Kong (China)	22.3	(3.5)		11.5	(2.7)		24.9	(3.4)		7.4	(2.4)	
	Indonesia	32.2	(3.1)		22.0	(2.9)		30.8	(2.9)		20.9	(2.8)	
	Jordan	56.3	(3.8)		57.1	(4.1)		48.5	(3.8)		43.4	(3.8)	
	Kazakhstan	32.8	(3.8)		27.7	(3.5)		26.3	(3.2)		19.9	(3.1)	
	Kosovo	19.9	(1.0)		15.0	(1.0)		33.2	(1.3)		20.0	(1.1)	
	Lebanon	22.7	(3.1)		18.6	(2.6)		30.3	(3.4)		15.9	(2.6)	
	Macao (China)	33.8	(0.1)		45.7	(0.1)		26.3	(0.1)		22.5	(0.1)	
	Malaysia	m	m		m	m		m	m		m	m	
	Malta	12.1	(0.1)		10.6	(0.1)		48.5	(0.1)		24.1	(0.1)	
	Moldova	25.7	(3.3)		25.1	(2.9)		12.6	(2.3)		15.3	(2.8)	
	Montenegro	1.1	(0.3)		0.4	(0.3)		2.5	(0.4)		5.7	(0.2)	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	4.1	(0.1)		6.1	(0.1)		23.2	(0.2)		15.4	(0.1)	
	Panama	m	m		m	m		m	m		m	m	
	Peru	25.0	(2.6)		24.6	(2.8)		41.8	(3.1)		31.3	(3.2)	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	17.2	(0.1)		8.4	(0.0)		11.2	(0.1)		9.5	(0.1)	
	Romania	5.4	(1.5)		3.0	(1.0)		29.8	(3.6)		30.0	(3.7)	
	Russia	41.4	(3.6)		42.9	(3.3)		29.3	(4.2)		19.6	(3.5)	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	m	m		m	m		m	m		m	m	
	Singapore	10.7	(0.1)		12.5	(0.1)		12.7	(0.7)		7.8	(0.7)	
	Chinese Taipei	39.4	(3.2)		18.7	(2.5)		32.6	(3.4)		11.5	(2.5)	
	Thailand	53.0	(4.1)		29.4	(3.4)		47.9	(4.1)		25.5	(3.5)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	38.3	(2.5)		32.9	(2.4)		36.6	(2.1)		27.9	(2.0)	
	Uruguay	44.9	(3.1)		29.9	(2.4)		55.1	(2.8)		39.4	(2.8)	
	Viet Nam	28.6	(4.1)		21.1	(3.2)		34.8	(3.8)		27.6	(3.7)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.2 [3/6] **Shortage of education staff in 2015 and 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by the following factors:											
		PISA 2018											
		A lack of teaching staff			Inadequate or poorly qualified teaching staff			A lack of assisting staff			Inadequate or poorly qualified assisting staff		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	17.0	(1.2)		14.3	(1.4)		12.4	(1.2)		7.7	(1.0)	
	Austria	11.9	(1.9)		9.3	(2.3)		66.0	(3.0)		28.2	(3.3)	
	Belgium	43.5	(3.1)		25.5	(2.9)		32.8	(2.9)		16.9	(2.4)	
	Canada	19.4	(1.7)		7.1	(1.2)		27.9	(2.2)		11.3	(1.4)	
	Chile	12.6	(2.6)		18.1	(2.8)		21.5	(3.4)		16.3	(2.7)	
	Colombia	30.6	(2.9)		16.8	(2.6)		58.8	(3.2)		26.7	(2.9)	
	Czech Republic	35.2	(2.8)		19.8	(2.7)		33.4	(2.8)		15.0	(2.2)	
	Denmark	5.3	(1.3)		2.5	(1.0)		13.2	(2.2)		6.0	(1.7)	
	Estonia	43.6	(2.1)		33.2	(2.0)		37.3	(2.0)		19.7	(1.6)	
	Finland	7.3	(2.1)		6.2	(1.9)		38.0	(3.4)		22.0	(2.8)	
	France	17.1	(2.6)		11.3	(2.4)		31.7	(3.4)		13.0	(2.1)	
	Germany	56.9	(3.6)		15.6	(2.5)		48.8	(3.4)		18.2	(3.1)	
	Greece	26.3	(3.1)		12.8	(2.3)		64.4	(3.4)		27.0	(3.3)	
	Hungary	33.7	(3.4)		9.9	(2.5)		44.3	(3.6)		9.6	(2.3)	
	Iceland	9.9	(0.2)		3.7	(0.1)		17.7	(0.2)		12.2	(0.2)	
	Ireland	44.8	(4.0)		11.1	(2.6)		26.0	(3.5)		15.6	(3.2)	
	Israel	37.6	(3.5)		33.8	(3.8)		35.9	(3.7)		27.8	(3.5)	
	Italy	22.7	(2.8)		26.3	(2.8)		48.8	(3.4)		32.1	(3.0)	
	Japan	52.8	(3.7)		40.0	(3.4)		31.7	(3.4)		19.5	(2.4)	
	Korea	32.6	(3.4)		17.0	(2.9)		55.9	(3.8)		11.6	(2.4)	
	Latvia	28.2	(1.6)		10.5	(1.1)		17.3	(1.9)		9.8	(1.4)	
	Lithuania	7.2	(0.5)		3.6	(0.9)		6.7	(0.9)		4.6	(0.8)	
	Luxembourg	75.3	(0.1)		13.0	(0.1)		55.0	(0.1)		11.3	(0.1)	
	Mexico	25.3	(2.3)		9.0	(1.9)		35.2	(2.9)		14.8	(2.2)	
	Netherlands	35.7	(4.1)		23.6	(3.6)		9.9	(2.7)		8.5	(2.5)	
	New Zealand	37.2	(3.1)		16.4	(2.2)		19.4	(2.7)		8.3	(1.8)	
	Norway	11.3	(1.7)		5.0	(1.4)		7.9	(2.1)		10.2	(1.9)	
	Poland	2.6	(1.1)		1.2	(0.7)		8.7	(1.9)		5.7	(1.7)	
	Portugal	31.8	(3.1)		23.0	(3.1)		67.7	(2.9)		57.4	(3.7)	
	Slovak Republic	11.4	(1.9)		4.9	(1.1)		29.1	(2.4)		10.7	(1.5)	
	Slovenia	22.8	(0.6)		11.2	(0.2)		25.5	(0.5)		7.9	(0.1)	
	Spain	42.7	(2.4)		22.2	(1.8)		59.4	(2.3)		15.2	(1.4)	
	Sweden	30.1	(3.2)		32.0	(3.0)		29.2	(3.4)		38.6	(3.8)	
	Switzerland	11.0	(2.5)		5.1	(1.5)		11.5	(2.1)		3.8	(1.5)	
	Turkey	14.7	(2.1)		20.4	(3.2)		35.6	(3.6)		26.6	(3.5)	
	United Kingdom	28.1	(3.1)		8.6	(1.9)		21.5	(2.6)		7.8	(1.7)	
	United States	25.8	(3.6)		13.2	(2.1)		26.8	(3.7)		13.9	(2.6)	
	OECD average	27.1	(0.4)		15.1	(0.4)		32.8	(0.5)		16.5	(0.4)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.2 [4/6] **Shortage of education staff in 2015 and 2018**
Results based on principals' reports

	Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by the following factors:											
	PISA 2018											
	A lack of teaching staff			Inadequate or poorly qualified teaching staff			A lack of assisting staff			Inadequate or poorly qualified assisting staff		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners												
Albania	3.9	(1.2)		4.4	(1.0)		13.6	(1.6)		11.0	(1.4)	
Argentina	25.9	(2.7)		17.9	(2.6)		35.6	(2.8)		19.6	(2.3)	
Baku (Azerbaijan)	42.8	(4.5)	†	27.9	(4.0)	†	28.5	(3.9)	†	17.0	(2.9)	†
Belarus	9.6	(2.2)		11.8	(2.4)		8.8	(1.9)		5.3	(1.5)	
Bosnia and Herzegovina	4.6	(1.1)		4.6	(1.4)		15.3	(2.3)		3.9	(1.3)	
Brazil	17.6	(1.8)		11.3	(1.6)		34.1	(2.2)		15.2	(1.8)	
Brunei Darussalam	15.0	(0.1)		6.5	(0.0)		27.5	(0.1)		19.9	(0.1)	
B-S-J-Z (China)	41.4	(3.7)		40.7	(3.8)		26.3	(3.2)		25.9	(2.9)	
Bulgaria	8.0	(1.6)		5.9	(1.8)		4.3	(1.6)		3.0	(1.3)	
Costa Rica	39.9	(3.4)		35.7	(3.3)		47.5	(3.7)		41.5	(3.5)	
Croatia	18.3	(2.6)		15.5	(2.4)		45.1	(3.7)		18.1	(2.8)	
Cyprus	7.3	(0.1)		15.7	(0.1)		25.7	(0.1)		11.5	(0.2)	
Dominican Republic	27.6	(3.2)		19.1	(2.7)		31.7	(3.2)		11.8	(2.5)	
Georgia	4.6	(1.2)		19.9	(2.9)		29.4	(3.1)		17.4	(2.3)	
Hong Kong (China)	23.7	(4.1)		10.6	(2.9)		40.1	(4.8)		19.7	(3.7)	
Indonesia	42.4	(4.7)		24.9	(4.0)		41.7	(4.4)		31.6	(4.1)	
Jordan	40.9	(3.3)		40.3	(2.9)		50.4	(3.4)		42.5	(3.3)	
Kazakhstan	29.3	(2.4)		19.3	(2.3)		14.0	(1.6)		13.4	(2.1)	
Kosovo	19.1	(1.1)		10.3	(1.3)		29.1	(1.6)		16.6	(1.1)	
Lebanon	15.1	(2.1)		14.1	(2.0)		26.3	(2.6)		16.5	(1.9)	
Macao (China)	12.0	(0.0)		23.9	(0.0)		11.7	(0.0)		20.1	(0.0)	
Malaysia	7.5	(2.0)		12.6	(2.5)		12.7	(2.5)		9.7	(2.3)	
Malta	16.4	(0.1)		15.3	(0.1)		24.2	(0.1)		15.6	(0.1)	
Moldova	28.7	(3.5)		12.9	(2.3)		22.9	(3.3)		18.4	(2.7)	
Montenegro	1.7	(0.2)		2.9	(0.3)		7.5	(0.3)		2.9	(0.0)	
Morocco	36.9	(3.8)		31.6	(3.8)		74.1	(2.8)		49.2	(4.0)	
North Macedonia	3.6	(0.1)		1.9	(0.0)		31.0	(0.1)		7.8	(0.0)	
Panama	14.8	(2.1)		11.8	(1.8)		53.7	(2.6)		30.6	(2.4)	
Peru	16.5	(2.2)		20.6	(2.3)		41.7	(2.6)		34.9	(2.7)	
Philippines	19.5	(2.6)		8.1	(2.2)		24.1	(3.2)		14.9	(2.8)	
Qatar	11.4	(0.0)		5.5	(0.0)		11.7	(0.0)		7.9	(0.0)	
Romania	8.8	(2.3)		4.2	(1.6)		20.2	(3.2)		18.0	(2.9)	
Russia	43.1	(2.6)		37.2	(2.9)		22.8	(2.8)		12.1	(2.1)	
Saudi Arabia	49.5	(3.4)		39.6	(3.5)		47.6	(3.7)		40.9	(3.2)	
Serbia	2.3	(1.2)		3.6	(1.3)		20.8	(3.0)		2.4	(1.2)	
Singapore	5.3	(0.2)		6.3	(0.2)		7.2	(0.2)		4.3	(0.2)	
Chinese Taipei	19.6	(2.6)		15.9	(2.9)		12.9	(2.4)		7.7	(1.9)	
Thailand	37.7	(3.8)		17.4	(2.2)		33.6	(3.2)		19.8	(3.0)	
Ukraine	19.6	(2.1)		16.0	(2.5)		24.8	(3.1)		14.9	(2.5)	
United Arab Emirates	27.7	(1.4)		29.9	(1.4)		30.2	(1.2)		23.2	(1.3)	
Uruguay	28.6	(3.4)		26.7	(3.2)		53.2	(3.4)		41.1	(3.1)	
Viet Nam	23.8	(4.1)		15.0	(3.2)		30.9	(4.8)		21.9	(3.9)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.2 [5/6] **Shortage of education staff in 2015 and 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by the following factors:											
		Change between 2015 and 2018 (PISA 2018 - PISA 2015)											
		A lack of teaching staff			Inadequate or poorly qualified teaching staff			A lack of assisting staff			Inadequate or poorly qualified assisting staff		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
OECD	Australia	-3.5	(1.8)		-3.3	(2.1)		**-5.7**	(1.9)		**-5.1**	(1.7)	
	Austria	**-7.2**	(3.4)		-4.6	(3.5)		5.3	(4.8)		0.6	(4.8)	
	Belgium	**9.6**	(4.3)		-4.8	(4.1)		-4.6	(4.3)		-2.6	(3.4)	
	Canada	0.6	(2.8)		**-6.1**	(2.3)		-4.5	(3.4)		-3.8	(2.7)	
	Chile	-4.6	(4.1)		-1.1	(4.4)		4.3	(4.5)		2.0	(3.9)	
	Colombia	**-10.7**	(4.4)		**-9.9**	(4.1)		**-10.9**	(4.3)		-4.8	(4.4)	
	Czech Republic	**22.0**	(3.3)		2.4	(3.5)		6.4	(4.1)		5.6	(3.0)	
	Denmark	-0.7	(2.0)		-2.4	(1.7)		**-8.2**	(3.8)		-2.3	(2.5)	
	Estonia	**9.0**	(3.6)		5.9	(3.3)		-0.4	(3.1)		3.6	(2.5)	
	Finland	4.6	(2.4)		2.3	(2.5)		-8.1	(5.0)		-2.8	(4.7)	
	France	**-17.6**	(3.8)		**-9.1**	(3.7)		-2.5	(4.5)		-4.6	(3.3)	
	Germany	1.8	(5.2)		-7.9	(4.1)		-4.7	(4.9)		0.4	(3.9)	†
	Greece	**-18.1**	(4.4)		**-8.2**	(3.7)		-8.4	(4.6)		-5.7	(4.8)	
	Hungary	-0.2	(4.5)		**-8.7**	(3.7)		**-10.5**	(5.3)		2.7	(2.8)	
	Iceland	**-3.3**	(0.3)		**-11.1**	(0.2)		**-10.1**	(0.3)		**1.3**	(0.2)	
	Ireland	-10.7	(5.7)		-2.1	(4.0)		**-14.6**	(5.3)		-8.3	(4.9)	
	Israel	-3.5	(5.4)		-6.8	(5.6)		2.7	(5.3)		1.2	(5.2)	
	Italy	-8.8	(4.9)	†	**-14.6**	(4.5)	†	3.4	(5.1)	†	0.0	(4.8)	†
	Japan	-2.2	(5.0)		-3.7	(4.9)		-4.3	(4.9)		1.4	(3.7)	
	Korea	-6.2	(5.1)		5.6	(3.8)		**-16.7**	(5.1)		-1.6	(3.5)	
	Latvia	**6.7**	(2.7)		-4.5	(2.3)		**-10.2**	(3.2)		-4.5	(2.5)	
	Lithuania	**-4.1**	(1.9)		**-11.9**	(2.3)		**-14.5**	(2.7)		**-7.7**	(2.2)	
	Luxembourg	**16.3**	(0.1)		**-7.6**	(0.1)		**11.8**	(0.1)		**-6.6**	(0.1)	
	Mexico	-3.9	(3.7)		-5.4	(3.0)		**-11.5**	(4.3)		-4.8	(3.2)	
	Netherlands	8.6	(5.7)	†	**-12.0**	(5.8)	†	0.0	(4.0)	†	-6.4	(4.3)	†
	New Zealand	**16.2**	(4.4)		0.6	(3.7)		0.2	(4.4)		0.4	(2.9)	
	Norway	**-10.2**	(3.5)		**-12.6**	(2.8)		-4.5	(3.2)		**-9.3**	(3.3)	
	Poland	**2.5**	(1.1)		0.6	(0.9)		**-8.3**	(3.4)		**-6.8**	(2.9)	
	Portugal	-7.8	(4.6)		-7.9	(4.6)		-5.9	(3.9)		**-10.5**	(4.8)	
	Slovak Republic	1.5	(2.7)		-1.4	(1.7)		4.2	(3.8)		2.1	(2.3)	
	Slovenia	**3.9**	(0.7)		0.8	(0.6)		**9.1**	(0.8)		0.2	(0.4)	
	Spain	**-12.8**	(3.6)		-5.9	(3.7)		-0.6	(3.8)		3.2	(2.4)	
	Sweden	-9.0	(4.9)		-6.2	(4.8)		**-13.5**	(5.0)		3.2	(5.4)	
	Switzerland	**-12.8**	(3.8)		**-10.2**	(3.2)		-5.3	(3.5)		-1.0	(2.3)	
	Turkey	**-14.6**	(4.0)		-6.0	(4.6)		**-17.6**	(5.4)		**-24.3**	(5.0)	
	United Kingdom	**-14.7**	(5.0)	†	**-11.4**	(3.9)	†	2.5	(3.7)	†	-4.2	(3.0)	†
	United States	2.1	(4.7)		-1.0	(3.7)		2.7	(5.0)		2.1	(3.4)	
	OECD average	**-2.2**	(0.6)		**-5.1**	(0.6)		**-4.1**	(0.7)		**-2.6**	(0.6)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.2 [6/6] **Shortage of education staff in 2015 and 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by the following factors:											
		Change between 2015 and 2018 (PISA 2018 - PISA 2015)											
		A lack of teaching staff			Inadequate or poorly qualified teaching staff			A lack of assisting staff			Inadequate or poorly qualified assisting staff		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
Partners	Albania	**-9.8**	(3.0)		**-12.3**	(3.0)		**-24.6**	(4.2)		**-19.8**	(3.8)	
	Argentina	m	m		m	m		m	m		m	m	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	**-8.3**	(2.9)		**-8.6**	(3.0)		-3.2	(3.3)		**-10.4**	(3.1)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	1.2	(2.2)		-1.4	(2.6)		1.6	(1.8)		-0.3	(1.9)	
	Costa Rica	-6.9	(5.3)		-9.3	(4.9)		**-11.3**	(5.0)		-8.7	(5.1)	
	Croatia	-2.2	(4.1)		-5.0	(4.3)		2.1	(5.4)		-0.8	(4.3)	
	Cyprus	**-11.9**	(0.1)		**-16.2**	(0.2)		**-4.3**	(0.2)		**-9.1**	(0.2)	
	Dominican Republic	-2.0	(4.4)		-2.4	(4.3)		2.2	(5.5)		-3.0	(3.7)	
	Georgia	-1.5	(1.8)		-0.8	(4.2)		1.6	(4.3)		-0.2	(3.3)	
	Hong Kong (China)	1.4	(5.3)		-0.9	(4.0)		**15.2**	(5.9)		**12.3**	(4.4)	
	Indonesia	10.3	(5.6)		2.9	(5.0)		**10.9**	(5.2)		**10.7**	(5.0)	
	Jordan	**-15.4**	(5.0)		**-16.7**	(5.0)		1.9	(5.1)		-0.9	(5.1)	
	Kazakhstan	-3.4	(4.6)		**-8.4**	(4.1)		**-12.2**	(3.5)		-6.5	(3.7)	
	Kosovo	-0.8	(1.5)		**-4.7**	(1.7)		-4.0	(2.1)		**-3.4**	(1.6)	
	Lebanon	**-7.6**	(3.8)		-4.5	(3.3)		-4.0	(4.2)		0.6	(3.3)	
	Macao (China)	**-21.8**	(0.1)		**-21.9**	(0.1)		**-14.5**	(0.1)		**-2.4**	(0.1)	
	Malaysia	m	m		m	m		m	m		m	m	
	Malta	**4.3**	(0.2)		**4.7**	(0.1)		**-24.3**	(0.2)		**-8.5**	(0.2)	
	Moldova	3.0	(4.8)		**-12.2**	(3.7)		**10.3**	(4.0)		3.0	(3.9)	
	Montenegro	0.6	(0.4)		**2.5**	(0.4)		**5.0**	(0.5)		**-2.8**	(0.2)	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	**-0.5**	(0.1)		**-4.2**	(0.1)		**7.8**	(0.2)		**-7.6**	(0.1)	
	Panama	m	m		m	m		m	m		m	m	
	Peru	**-8.5**	(3.4)		-4.0	(3.6)		-0.2	(4.1)		3.6	(4.1)	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	**-5.9**	(0.1)		**-2.9**	(0.1)		**0.4**	(0.1)		**-1.6**	(0.1)	
	Romania	3.4	(2.7)		1.2	(1.9)		**-9.6**	(4.9)		**-12.0**	(4.7)	
	Russia	1.7	(4.4)		-5.8	(4.4)		-6.5	(5.1)		-7.5	(4.0)	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	m	m		m	m		m	m		m	m	
	Singapore	**-5.4**	(0.2)		**-6.2**	(0.2)		**-5.5**	(0.7)		**-3.5**	(0.7)	
	Chinese Taipei	**-19.8**	(4.1)		-2.8	(3.8)		**-19.7**	(4.2)		-3.8	(3.1)	
	Thailand	**-15.3**	(5.6)		**-12.0**	(4.1)		**-14.3**	(5.2)		-5.7	(4.6)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	**-10.6**	(2.8)		-3.0	(2.7)		**-6.4**	(2.4)		**-4.7**	(2.4)	
	Uruguay	**-16.3**	(4.6)		-3.2	(4.0)		-1.9	(4.5)		1.7	(4.2)	
	Viet Nam	-4.8	(5.8)		-6.0	(4.5)		-3.9	(6.1)		-5.6	(5.4)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.11 [1/8] **Language-of-instruction class size, school characteristics and reading performance**
In modal grade for 15-year-olds; results based on principals' reports

		All students						By school socio-economic profile[1]														
		Average			Variability in this index			Bottom quarter			Second quarter			Third quarter			Top quarter			Top - bottom quarter		
		Mean	S.E.	x	S.D.	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x
OECD	Australia	24.7	(0.1)		3.4	(0.1)		24.1	(0.3)		25.0	(0.3)		25.2	(0.3)		24.7	(0.3)		0.6	(0.4)	
	Austria	22.8	(0.3)		4.9	(0.2)		19.5	(0.7)		22.7	(0.7)		24.9	(0.6)		23.8	(0.5)		**4.2**	(0.8)	
	Belgium	19.8	(0.2)		3.8	(0.1)		17.7	(0.4)		18.6	(0.4)		20.7	(0.5)		22.0	(0.3)		**4.3**	(0.5)	
	Canada	27.3	(0.2)		4.7	(0.2)		27.0	(0.5)		26.5	(0.3)		27.7	(0.4)		28.0	(0.3)		1.0	(0.6)	
	Chile	34.8	(0.5)		7.2	(0.3)		33.0	(1.1)		34.7	(1.2)		36.5	(1.2)		34.9	(0.8)		1.8	(1.4)	
	Colombia	37.9	(0.8)		11.2	(0.4)		35.1	(2.0)		39.7	(2.2)		39.3	(1.7)		37.3	(1.6)		2.1	(2.6)	
	Czech Republic	24.1	(0.3)		4.8	(0.2)		21.2	(0.6)		23.8	(0.6)		25.0	(0.6)		26.3	(0.6)		**5.1**	(0.9)	
	Denmark	21.4	(0.2)		3.2	(0.2)		20.5	(0.4)		20.7	(0.5)		21.8	(0.5)		22.5	(0.4)		**2.0**	(0.6)	
	Estonia	22.6	(0.2)		7.0	(0.2)		19.0	(0.5)		22.3	(0.5)		24.6	(0.4)		24.5	(0.5)		**5.4**	(0.7)	
	Finland	19.6	(0.2)		3.2	(0.1)		18.0	(0.4)		18.8	(0.5)		20.9	(0.4)		20.7	(0.5)		**2.7**	(0.7)	
	France	29.8	(0.3)		4.9	(0.3)		26.0	(0.6)		29.0	(0.8)		30.7	(0.9)		33.2	(0.5)		**7.2**	(0.7)	
	Germany	25.0	(0.3)		4.5	(0.4)		22.0	(0.8)		25.6	(0.8)		25.9	(0.5)		26.8	(0.3)		**4.8**	(0.8)	
	Greece	23.0	(0.2)		4.0	(0.4)		21.7	(0.6)		22.6	(0.6)		24.2	(0.4)		23.7	(0.5)		**2.0**	(0.8)	
	Hungary	27.8	(0.7)		10.3	(0.7)		21.6	(1.0)		28.6	(2.0)		30.6	(1.7)		30.4	(1.3)		**8.8**	(1.6)	
	Iceland	18.9	(0.0)		3.7	(0.0)		16.7	(0.1)		18.9	(0.1)		19.0	(0.0)		20.9	(0.0)		**4.2**	(0.1)	
	Ireland	24.1	(0.3)		3.9	(0.2)		21.9	(0.7)		24.9	(0.7)		24.8	(0.5)		24.9	(0.6)		**3.1**	(1.0)	
	Israel	29.9	(0.3)		6.1	(0.3)		25.7	(0.9)		29.9	(1.0)		31.9	(0.8)		32.2	(0.9)		**6.4**	(1.2)	
	Italy	22.9	(0.3)		5.1	(0.8)		21.5	(0.7)		22.8	(0.8)		23.3	(0.5)		23.9	(0.7)		**2.4**	(1.0)	
	Japan	35.1	(0.5)		6.8	(0.4)		31.4	(1.3)		35.3	(0.8)		36.7	(1.1)		37.0	(0.8)		**5.6**	(1.4)	
	Korea	26.4	(0.3)		5.1	(0.2)		24.4	(0.7)		25.6	(0.7)		27.5	(0.9)		28.1	(0.7)		**3.7**	(1.0)	
	Latvia	22.5	(0.3)		8.3	(0.2)		17.6	(0.5)		22.2	(0.6)		23.4	(0.7)		27.1	(0.4)		**9.5**	(0.6)	
	Lithuania	23.7	(0.2)		5.8	(0.3)		19.9	(0.5)		22.6	(0.5)		25.8	(0.5)		26.6	(0.2)		**6.7**	(0.5)	
	Luxembourg	22.3	(0.0)		2.6	(0.0)		21.8	(0.0)		22.5	(0.0)		22.4	(0.0)		22.7	(0.0)		**0.8**	(0.0)	
	Mexico	41.3	(0.5)		11.1	(0.3)		34.6	(1.4)		44.7	(1.2)		44.6	(1.2)		41.2	(1.2)		**6.7**	(1.9)	
	Netherlands	24.9	(0.2)		3.9	(0.2)		21.2	(0.6)		24.8	(0.5)		27.1	(0.4)		26.9	(0.4)		**5.7**	(0.7)	
	New Zealand	25.1	(0.3)		5.1	(0.7)		23.3	(0.5)		25.7	(0.8)		26.4	(0.9)		24.8	(0.5)		**1.5**	(0.7)	
	Norway	23.8	(0.2)		4.5	(0.1)		21.6	(0.6)		23.6	(0.6)		24.5	(0.7)		25.5	(0.5)		**3.9**	(0.9)	
	Poland	24.4	(0.5)		7.4	(0.7)		22.5	(0.9)		23.6	(1.2)		25.8	(1.1)		25.5	(0.9)		**3.0**	(1.2)	
	Portugal	25.6	(0.2)		3.6	(0.1)		23.6	(0.5)		25.5	(0.4)		26.4	(0.3)		27.0	(0.3)		**3.3**	(0.6)	
	Slovak Republic	21.9	(0.3)		5.2	(0.2)		18.9	(0.6)		21.7	(0.6)		22.4	(0.6)		24.7	(0.6)		**5.9**	(0.9)	
	Slovenia	25.7	(0.1)		4.2	(0.1)		23.2	(0.3)		26.0	(0.1)		25.7	(0.2)		27.7	(0.1)		**4.5**	(0.3)	
	Spain	29.4	(0.4)		9.7	(0.4)		28.9	(0.7)		28.8	(0.8)		29.6	(1.0)		30.6	(1.1)		1.7	(1.3)	
	Sweden	24.4	(0.3)		4.0	(0.2)		23.1	(0.6)		23.6	(0.6)		24.9	(0.5)		26.0	(0.5)		**2.8**	(0.8)	
	Switzerland	19.5	(0.3)		3.9	(0.6)		18.5	(0.5)		18.7	(0.4)		19.6	(1.0)		21.2	(0.9)		**2.7**	(0.9)	
	Turkey	42.2	(1.0)		11.8	(0.4)		41.9	(2.1)		42.5	(1.9)		42.6	(1.9)		42.0	(2.2)		0.1	(3.0)	
	United Kingdom	24.9	(0.3)		4.3	(0.5)		24.8	(0.5)		25.9	(0.5)		26.3	(0.7)		23.1	(0.6)		**-1.8**	(0.7)	
	United States	26.2	(0.4)		5.4	(0.3)		26.9	(1.0)		25.4	(1.1)		26.0	(1.0)		26.4	(0.9)		-0.6	(1.3)	
	OECD average	26.1	(0.1)		5.6	(0.1)		23.8	(0.1)		26.0	(0.1)		27.2	(0.1)		27.4	(0.1)		**3.6**	(0.2)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but analysis less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.
StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.11 [2/8] **Language-of-instruction class size, school characteristics and reading performance**
In modal grade for 15-year-olds; results based on principals' reports

	All students						By school socio-economic profile[1]														
	Average			Variability in this index			Bottom quarter			Second quarter			Third quarter			Top quarter			Top - bottom quarter		
	Mean	S.E.	x	S.D.	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x
Partners																					
Albania	26.2	(0.3)		7.3	(0.3)		22.7	(0.8)		25.9	(0.8)		29.2	(0.7)		26.9	(0.6)		**4.2**	(1.0)	
Argentina	36.4	(1.0)		14.0	(0.3)		34.1	(1.7)		33.4	(1.9)		39.3	(2.3)		38.8	(1.8)		4.8	(2.6)	
Baku (Azerbaijan)	26.5	(0.8)	†	8.6	(0.9)	†	27.0	(1.2)		28.0	(2.0)		24.1	(1.4)		26.8	(1.4)		-0.2	(1.9)	
Belarus	23.3	(0.4)		6.1	(0.7)		19.3	(0.4)		25.1	(1.4)		24.0	(0.6)		24.7	(0.9)		**5.3**	(0.9)	
Bosnia and Herzegovina	23.1	(0.4)		5.3	(0.8)		21.9	(0.5)		23.4	(1.1)		23.5	(1.3)		23.7	(1.1)		1.9	(1.2)	
Brazil	35.3	(0.3)		7.9	(0.3)		34.4	(0.8)		36.0	(0.7)		35.6	(0.6)		34.9	(0.8)		0.5	(1.2)	
Brunei Darussalam	24.2	(0.0)		4.9	(0.0)		23.7	(0.0)		24.7	(0.0)		23.5	(0.0)		24.9	(0.0)		**1.2**	(0.0)	
B-S-J-Z (China)	41.7	(0.3)		7.0	(0.3)		43.5	(0.9)		41.7	(0.9)		41.8	(1.1)		39.7	(1.0)		**-3.9**	(1.4)	
Bulgaria	26.1	(0.7)		8.2	(0.8)		22.9	(0.9)		26.1	(1.3)		26.1	(1.0)		29.4	(1.8)		**6.5**	(1.9)	
Costa Rica	27.1	(0.4)		5.9	(0.3)		25.5	(0.8)		27.6	(0.8)		28.7	(0.7)		26.5	(0.9)		1.0	(1.2)	
Croatia	22.0	(0.2)		3.4	(0.2)		20.0	(0.4)		21.2	(0.5)		22.4	(0.4)		24.6	(0.3)		**4.6**	(0.5)	
Cyprus	20.2	(0.1)		4.1	(0.4)		19.9	(0.1)		19.8	(0.4)		20.1	(0.1)		21.0	(0.0)		**1.1**	(0.1)	
Dominican Republic	35.9	(0.7)		10.1	(0.4)		31.7	(1.7)		38.2	(1.7)		37.8	(1.5)		35.3	(1.6)		3.7	(2.2)	
Georgia	23.9	(0.5)		10.0	(0.6)		20.0	(1.0)		24.5	(1.4)		27.7	(1.4)		23.3	(0.9)		**3.3**	(1.3)	
Hong Kong (China)	27.6	(0.5)		5.3	(0.3)		26.3	(1.2)		27.0	(0.7)		28.7	(1.1)		28.8	(1.4)		2.5	(1.9)	
Indonesia	30.0	(1.1)		12.1	(0.7)		27.3	(1.6)		29.5	(2.1)		32.9	(2.8)		30.3	(3.3)		3.0	(3.8)	
Jordan	33.6	(0.6)		11.1	(0.4)		29.0	(1.6)		37.2	(1.2)		36.9	(1.5)		31.2	(1.8)		2.2	(2.7)	
Kazakhstan	30.0	(0.7)		13.8	(0.4)		27.4	(1.5)		30.6	(2.0)		30.4	(1.6)		31.8	(1.6)		4.4	(2.3)	
Kosovo	28.4	(0.2)		6.9	(0.2)		24.1	(0.4)		26.9	(0.6)		31.1	(0.6)		31.8	(0.5)		**7.7**	(0.7)	
Lebanon	27.6	(0.6)		9.1	(0.5)		28.5	(1.7)		26.2	(1.2)		28.4	(1.1)		27.4	(1.1)		-1.1	(1.9)	
Macao (China)	29.2	(0.0)		6.1	(0.0)		29.9	(0.0)		31.6	(0.0)		26.2	(0.0)		29.1	(0.0)		**-0.8**	(0.0)	
Malaysia	32.4	(0.7)		8.6	(0.5)		31.1	(1.3)		31.8	(1.3)		33.8	(1.9)		32.8	(2.0)		1.8	(2.2)	
Malta	19.6	(0.0)		3.3	(0.0)		18.4	(0.0)		19.5	(0.0)		19.6	(0.0)		20.9	(0.0)		**2.5**	(0.0)	
Moldova	27.3	(0.7)		11.4	(0.6)		22.7	(1.3)		24.8	(1.5)		28.5	(1.9)		33.4	(1.8)		**10.7**	(2.4)	
Montenegro	27.4	(0.0)		4.4	(0.0)		23.1	(0.2)		27.9	(0.0)		28.8	(0.1)		29.6	(0.1)		**6.4**	(0.2)	
Morocco	34.1	(0.5)		6.9	(0.4)		34.1	(1.2)		35.2	(1.1)		33.8	(1.0)		33.4	(1.2)		-0.7	(1.7)	
North Macedonia	25.0	(0.0)		7.7	(0.0)		23.0	(0.1)		23.7	(0.0)		25.2	(0.0)		28.4	(0.0)		**5.4**	(0.1)	
Panama	38.1	(0.8)		13.2	(0.3)		34.6	(2.3)		39.9	(1.6)		39.6	(1.2)		37.8	(1.7)		3.2	(2.8)	
Peru	26.0	(0.4)		7.6	(0.2)		21.6	(0.6)		26.8	(0.8)		27.2	(0.7)		28.3	(1.0)		**6.7**	(1.1)	
Philippines	43.9	(0.5)		8.0	(0.4)		44.7	(1.5)		44.8	(1.1)		45.4	(1.1)		40.8	(1.2)		**-3.9**	(1.8)	
Qatar	31.7	(0.0)		11.0	(0.0)		33.8	(0.0)		32.5	(0.1)		35.3	(0.1)		25.3	(0.0)		**-8.5**	(0.1)	
Romania	27.1	(0.4)		5.2	(0.8)		25.3	(0.7)		26.7	(1.0)		27.6	(0.9)		28.8	(0.5)		**3.5**	(0.7)	
Russia	23.7	(0.2)		5.1	(0.2)		19.4	(0.5)		24.4	(0.6)		23.9	(0.6)		26.8	(0.5)		**7.4**	(0.6)	
Saudi Arabia	38.2	(0.9)		13.2	(0.3)		35.4	(2.3)		37.7	(2.6)		40.6	(1.9)		38.2	(1.6)		2.8	(2.8)	
Serbia	28.7	(0.6)		7.1	(0.8)		27.7	(1.2)		30.6	(1.4)		27.9	(1.0)		28.7	(0.9)		1.0	(1.5)	
Singapore	33.4	(0.2)		5.7	(0.3)		33.4	(0.1)		36.1	(0.2)		34.9	(0.1)		29.3	(0.8)		**-4.0**	(0.8)	
Chinese Taipei	35.5	(0.3)		7.1	(0.2)		34.3	(1.5)		35.5	(1.3)		35.0	(1.1)		37.3	(0.8)		3.0	(1.7)	
Thailand	36.3	(0.5)		8.1	(0.3)		30.7	(1.2)		35.6	(0.9)		38.5	(1.1)		40.4	(1.1)		**9.7**	(1.7)	
Ukraine	m	m		m	m		m	m		m	m		m	m		m	m		m	m	
United Arab Emirates	31.0	(0.2)		10.6	(0.2)		34.5	(0.3)		34.3	(0.6)		29.6	(0.7)		25.7	(0.4)		**-8.8**	(0.5)	
Uruguay	27.4	(0.4)		6.5	(0.5)		26.4	(1.0)		27.2	(1.0)		28.7	(1.1)		27.3	(1.0)		0.9	(1.5)	
Viet Nam	41.9	(0.7)		9.2	(0.5)		41.6	(2.0)		41.7	(1.3)		42.7	(1.2)		41.6	(1.1)		0.0	(2.2)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but analysis less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.11 [3/8] **Language-of-instruction class size, school characteristics and reading performance**
In modal grade for 15-year-olds; results based on principals' reports

		By school location										
		Rural area or village (fewer than 3 000 people)			Town (3 000 to 100 000 people)			City (over 100 000 people)			City - rural area		
		Mean	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x
OECD	Australia	21.0	(0.7)		24.5	(0.2)		25.1	(0.2)		**4.0**	(0.7)	
	Austria	21.9	(1.4)		22.6	(0.3)		23.1	(0.5)		1.2	(1.5)	
	Belgium	c	c		19.7	(0.2)		20.3	(0.4)		c	c	
	Canada	22.8	(0.7)		26.8	(0.3)		28.0	(0.3)		**5.3**	(0.8)	
	Chile	27.5	(2.0)		34.4	(1.0)		35.6	(0.5)		**8.1**	(2.1)	
	Colombia	30.0	(2.6)		38.4	(1.4)		39.3	(1.1)		**9.3**	(2.7)	
	Czech Republic	19.6	(1.1)		24.2	(0.3)		25.3	(0.5)		**5.7**	(1.3)	
	Denmark	19.3	(0.5)		22.0	(0.2)		21.5	(0.5)		**2.2**	(0.6)	
	Estonia	17.0	(0.3)		22.8	(0.3)		26.6	(0.3)		**9.5**	(0.4)	
	Finland	17.2	(0.8)		19.3	(0.2)		20.6	(0.4)		**3.3**	(0.9)	
	France	22.6	(0.7)		29.9	(0.4)		30.2	(0.6)		**7.7**	(0.9)	
	Germany	c	c		24.4	(0.3)		25.9	(0.5)		c	c	
	Greece	20.6	(1.4)		22.8	(0.3)		23.9	(0.3)		**3.4**	(1.4)	
	Hungary	17.8	(1.0)		27.4	(1.0)		29.2	(1.2)		**11.4**	(1.4)	
	Iceland	15.1	(0.1)		19.2	(0.0)		20.4	(0.0)		**5.3**	(0.1)	
	Ireland	23.5	(0.7)		24.4	(0.3)		23.9	(0.7)		0.4	(1.0)	
	Israel	29.2	(1.0)		29.2	(0.5)		31.2	(0.7)		2.0	(1.3)	
	Italy	20.8	(1.4)		22.8	(0.4)		23.3	(0.6)		2.5	(1.5)	
	Japan	m	m		33.1	(1.0)		35.9	(0.5)		m	m	
	Korea	c	c		26.8	(1.0)		26.4	(0.3)		c	c	
	Latvia	15.1	(0.3)		23.1	(0.4)		26.5	(0.5)		**11.4**	(0.6)	
	Lithuania	18.5	(0.5)		24.3	(0.3)		25.9	(0.3)		**7.4**	(0.6)	
	Luxembourg	m	m		22.2	(0.0)		22.5	(0.0)		m	m	
	Mexico	33.0	(1.7)		43.0	(1.1)		43.0	(0.8)		**10.1**	(1.8)	
	Netherlands	c	c		25.0	(0.3)		25.4	(0.5)		c	c	
	New Zealand	19.8	(0.7)		24.0	(0.3)		26.2	(0.5)		**6.4**	(0.9)	
	Norway	19.6	(0.6)		24.3	(0.3)		25.7	(0.5)		**6.1**	(0.8)	
	Poland	22.8	(1.0)		24.6	(0.6)		26.0	(1.3)		3.1	(1.6)	
	Portugal	20.7	(1.3)		25.3	(0.2)		26.8	(0.3)		**6.2**	(1.3)	
	Slovak Republic	17.6	(0.7)		22.5	(0.4)		23.7	(0.8)		**6.1**	(1.0)	
	Slovenia	23.2	(0.4)		25.1	(0.1)		27.9	(0.1)		**4.7**	(0.4)	
	Spain	23.7	(1.2)		29.1	(0.5)		30.5	(0.8)		**6.8**	(1.6)	
	Sweden	22.3	(0.7)		24.4	(0.3)		25.1	(0.4)		**2.8**	(0.8)	
	Switzerland	16.4	(0.8)		19.6	(0.3)		20.6	(0.5)		**4.2**	(1.0)	
	Turkey	c	c		42.5	(1.5)		42.3	(1.1)		c	c	
	United Kingdom	24.4	(1.3)		25.4	(0.4)		24.2	(0.5)		-0.2	(1.4)	
	United States	21.5	(1.7)		25.6	(0.6)		27.8	(0.6)		**6.3**	(1.8)	
	OECD average	21.5	(0.2)		26.1	(0.1)		27.2	(0.1)		**5.4**	(0.2)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but analysis less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.
StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.11 [4/8] **Language-of-instruction class size, school characteristics and reading performance**
In modal grade for 15-year-olds; results based on principals' reports

		By school location										
		Rural area or village (fewer than 3 000 people)			Town (3 000 to 100 000 people)			City (over 100 000 people)			City - rural area		
		Mean	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x
Partners	Albania	20.6	(0.8)		27.9	(0.5)		28.3	(0.4)		**7.7**	(0.9)	
	Argentina	27.7	(2.8)		36.0	(1.2)		38.1	(1.5)		**10.4**	(3.1)	
	Baku (Azerbaijan)	m	m		27.9	(1.0)		24.5	(1.0)		m	m	
	Belarus	16.9	(0.7)		24.1	(0.9)		24.9	(0.5)		**8.0**	(0.9)	
	Bosnia and Herzegovina	21.1	(0.9)		22.6	(0.4)		25.4	(0.9)		**4.3**	(1.4)	
	Brazil	33.9	(2.0)	†	34.7	(0.5)		35.9	(0.5)		1.9	(2.0)	†
	Brunei Darussalam	21.8	(0.0)		24.6	(0.0)		24.3	(0.0)		**2.5**	(0.0)	
	B-S-J-Z (China)	42.9	(2.2)		43.1	(0.6)		40.3	(0.5)		-2.6	(2.2)	
	Bulgaria	24.3	(2.4)		25.7	(0.9)		27.0	(1.0)		2.7	(2.6)	
	Costa Rica	24.4	(1.0)		28.3	(0.4)		26.2	(1.0)		1.8	(1.3)	
	Croatia	c	c		21.0	(0.3)		23.5	(0.3)		c	c	
	Cyprus	16.7	(0.2)		20.4	(0.2)		20.6	(0.1)		**3.8**	(0.2)	
	Dominican Republic	31.7	(1.8)		37.4	(1.1)		35.1	(1.3)		3.4	(2.2)	
	Georgia	18.0	(0.6)		27.2	(1.4)		26.1	(0.7)		**8.2**	(0.9)	
	Hong Kong (China)	c	c		27.8	(1.0)		27.6	(0.5)		c	c	
	Indonesia	27.2	(1.7)		30.7	(1.8)		32.1	(2.1)		4.9	(2.6)	
	Jordan	22.7	(2.5)		34.3	(1.0)		35.3	(1.0)		**12.6**	(2.7)	
	Kazakhstan	29.3	(1.4)		30.1	(1.8)		30.5	(1.0)		1.2	(1.7)	
	Kosovo	21.4	(0.7)		29.2	(0.3)		30.4	(0.4)		**8.9**	(0.8)	
	Lebanon	27.3	(2.5)	†	27.6	(0.7)		27.9	(1.1)		0.6	(2.7)	†
	Macao (China)	c	c		m	m		29.2	(0.0)		c	c	
	Malaysia	33.1	(1.5)		31.3	(1.0)		33.2	(0.9)		0.1	(1.7)	
	Malta	21.1	(0.0)		19.4	(0.0)		m	m		m	m	
	Moldova	24.0	(1.0)		29.6	(1.3)		31.5	(1.7)		**7.5**	(2.1)	
	Montenegro	c	c		26.0	(0.0)		30.3	(0.0)		c	c	
	Morocco	33.3	(1.2)		34.0	(0.8)		34.8	(0.9)		1.5	(1.6)	
	North Macedonia	c	c		23.8	(0.0)		26.6	(0.0)		c	c	
	Panama	34.3	(2.8)		39.2	(0.9)		38.1	(1.2)		3.7	(3.0)	
	Peru	21.2	(0.7)		27.4	(0.5)		29.5	(1.1)		**8.2**	(1.2)	
	Philippines	37.1	(3.1)		44.1	(0.8)		44.8	(0.6)		**7.7**	(3.0)	
	Qatar	30.2	(0.1)		34.7	(0.0)		29.9	(0.0)		**-0.3**	(0.1)	
	Romania	21.3	(1.8)		27.3	(0.4)		27.8	(0.6)		**6.5**	(1.7)	
	Russia	15.3	(0.5)		24.1	(0.4)		25.8	(0.3)		**10.5**	(0.6)	
	Saudi Arabia	25.3	(2.9)		37.9	(1.9)		39.6	(1.1)		**14.3**	(3.1)	
	Serbia	m	m		28.1	(0.8)		29.4	(0.8)		m	m	
	Singapore	m	m		m	m		33.3	(0.2)		m	m	
	Chinese Taipei	27.2	(3.9)		33.9	(0.6)		36.6	(0.5)		**9.4**	(3.9)	
	Thailand	27.5	(1.5)		36.6	(0.7)		39.4	(0.9)		**11.8**	(1.7)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	32.4	(0.3)		33.0	(0.2)		29.9	(0.3)		**-2.6**	(0.5)	
	Uruguay	20.4	(1.3)		27.2	(0.7)		28.6	(0.5)		**8.2**	(1.4)	
	Viet Nam	39.9	(1.2)		43.6	(1.1)		42.1	(1.3)		2.2	(1.8)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but analysis less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.
StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.11 [5/8] **Language-of-instruction class size, school characteristics and reading performance**
In modal grade for 15-year-olds; results based on principals' reports

	By type of school									By programme orientation											
	Public			Private			Private - public			General			Modular			Pre-vocational or vocational			Pre-vocational or vocational - general		
	Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x
OECD Australia	25.0	(0.2)		24.4	(0.2)		**-0.6**	(0.3)		24.8	(0.1)		m	m		24.2	(0.4)		-0.6	(0.4)	
Austria	22.7	(0.3)		22.7	(0.8)		0.0	(0.9)		22.8	(0.4)		m	m		22.7	(0.3)		-0.1	(0.5)	
Belgium	m	m		m	m		m	m		21.4	(0.2)		m	m		17.6	(0.2)		**-3.9**	(0.3)	
Canada	27.3	(0.2)		27.0	(0.6)		-0.2	(0.6)		27.3	(0.2)		m	m		m	m		m	m	
Chile	33.3	(0.8)		35.6	(0.6)		**2.3**	(1.0)		34.8	(0.5)		m	m		35.3	(1.2)		0.5	(1.1)	
Colombia	38.6	(0.8)		34.7	(1.8)		**-3.9**	(2.0)		37.9	(0.8)		m	m		37.7	(1.6)		-0.2	(1.6)	
Czech Republic	24.1	(0.3)		24.2	(1.4)		0.1	(1.4)		23.6	(0.3)		m	m		25.0	(0.5)		**1.5**	(0.6)	
Denmark	21.6	(0.3)		21.0	(0.4)		-0.6	(0.5)		21.4	(0.2)		m	m		m	m		m	m	
Estonia	22.6	(0.2)		22.3	(1.1)		-0.3	(1.1)		22.6	(0.2)		m	m		c	c		c	c	
Finland	19.5	(0.2)		22.8	(1.8)		3.4	(1.8)		19.6	(0.2)		m	m		m	m		m	m	
France	30.2	(0.3)		28.5	(0.8)		**-1.6**	(0.8)		31.0	(0.2)		m	m		24.9	(0.7)		**-6.1**	(0.7)	
Germany	24.8	(0.3)		25.2	(1.7)		0.4	(1.7)		25.2	(0.3)		m	m		19.4	(0.9)		**-5.8**	(1.0)	
Greece	23.0	(0.2)		23.0	(1.1)		-0.1	(1.2)		23.3	(0.2)		m	m		21.1	(0.6)		**-2.2**	(0.6)	
Hungary	27.9	(0.9)		27.5	(1.0)		-0.4	(1.4)		29.0	(0.8)		m	m		21.7	(1.1)		**-7.3**	(1.4)	
Iceland	18.9	(0.0)		c	c		c	c		18.9	(0.0)		m	m		m	m		m	m	
Ireland	23.7	(0.4)		24.5	(0.4)		0.9	(0.5)		24.1	(0.3)		m	m		21.5	(1.1)		**-2.6**	(1.1)	
Israel	29.9	(0.3)		m	m		m	m		29.9	(0.3)		m	m		m	m		m	m	
Italy	22.8	(0.3)		26.0	(4.4)		3.2	(4.4)		23.5	(0.5)		m	m		22.3	(0.4)		-1.2	(0.6)	
Japan	34.9	(0.6)		35.5	(0.8)		0.5	(1.0)		35.9	(0.5)		m	m		32.7	(1.1)		**-3.1**	(1.2)	
Korea	26.8	(0.4)		25.8	(0.6)		-0.9	(0.8)		27.0	(0.4)		m	m		23.2	(0.9)		**-3.8**	(1.0)	
Latvia	22.7	(0.3)		13.7	(0.7)		**-9.0**	(0.7)		22.6	(0.3)		m	m		17.8	(2.3)		**-4.8**	(2.3)	
Lithuania	23.7	(0.2)		24.5	(0.5)		0.8	(0.5)		23.7	(0.2)		m	m		23.1	(2.6)		-0.7	(2.6)	
Luxembourg	22.4	(0.0)		22.1	(0.0)	†	**-0.3**	(0.0)	†	22.5	(0.0)		22.0	(0.1)		21.6	(0.0)		**-0.9**	(0.0)	
Mexico	42.0	(0.5)		36.2	(2.1)		**-5.9**	(2.1)		39.9	(0.6)		m	m		44.7	(0.8)		**4.8**	(1.0)	
Netherlands	25.2	(0.4)		25.0	(0.3)		-0.3	(0.6)		26.3	(0.2)		m	m		21.1	(0.5)		**-5.2**	(0.5)	
New Zealand	25.3	(0.3)		20.7	(0.7)		**-4.6**	(0.8)		25.1	(0.3)		m	m		m	m		m	m	
Norway	w	w		w	w		w	w		23.8	(0.2)		m	m		m	m		m	m	
Poland	24.5	(0.5)		20.9	(2.8)		-3.6	(2.8)		24.3	(0.5)		m	m		c	c		c	c	
Portugal	25.9	(0.1)		23.9	(0.6)		**-1.9**	(0.6)		25.9	(0.2)		m	m		24.1	(0.5)		**-1.8**	(0.5)	
Slovak Republic	21.8	(0.3)		23.1	(0.7)		1.3	(0.8)		21.3	(0.3)		23.7	(0.6)		21.1	(0.7)		-0.2	(0.7)	
Slovenia	25.6	(0.1)		30.9	(0.1)		**5.3**	(0.1)		25.9	(0.1)		m	m		25.5	(0.0)		**-0.4**	(0.1)	
Spain	28.7	(0.5)		31.1	(0.9)		**2.4**	(1.0)		29.5	(0.4)		m	m		27.6	(1.3)		-1.9	(1.2)	
Sweden	24.6	(0.3)		23.7	(0.6)		-0.9	(0.7)		24.4	(0.3)		m	m		m	m		m	m	
Switzerland	19.7	(0.3)		15.5	(0.9)		**-4.2**	(0.9)		19.4	(0.2)		m	m		20.1	(1.5)		0.7	(1.5)	
Turkey	42.7	(1.0)		38.9	(3.5)		-3.8	(3.6)		42.1	(1.2)		m	m		42.5	(1.5)		0.5	(1.8)	
United Kingdom	25.4	(0.3)		24.7	(0.4)		-0.7	(0.5)		24.9	(0.3)		m	m		27.2	(0.6)		**2.3**	(0.7)	
United States	26.6	(0.4)		21.3	(0.9)		**-5.3**	(1.0)		26.2	(0.4)		m	m		m	m		m	m	
OECD average	26.4	(0.1)		25.7	(0.2)		**-0.9**	(0.3)		26.3	(0.1)		22.9	(0.3)		25.6	(0.2)		**-1.6**	(0.2)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but analysis less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.11 [6/8] **Language-of-instruction class size, school characteristics and reading performance**
In modal grade for 15-year-olds; results based on principals' reports

	By type of school									By programme orientation											
	Public			Private			Private - public			General			Modular			Pre-vocational or vocational			Pre-vocational or vocational - general		
	Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x
Partners																					
Albania	27.0	(0.3)		19.7	(1.0)		**-7.2**	(1.0)		25.0	(0.4)		m	m		27.1	(0.4)		**2.1**	(0.6)	
Argentina	35.4	(1.3)		38.6	(1.5)		3.2	(2.0)		36.7	(1.1)		m	m		34.8	(2.3)		-1.9	(2.6)	
Baku (Azerbaijan)	26.6	(0.8)	†	c	c		c	c		m	m		26.5	(0.8)	†	m	m		m	m	
Belarus	23.3	(0.4)		c	c		c	c		23.0	(0.5)		m	m		25.0	(0.4)		**2.0**	(0.6)	
Bosnia and Herzegovina	23.1	(0.4)		c	c		c	c		23.1	(0.5)		m	m		23.1	(0.4)		0.0	(0.7)	
Brazil	35.5	(0.4)		34.0	(1.2)		-1.5	(1.3)		35.1	(0.4)		m	m		36.9	(0.8)		1.8	(0.9)	
Brunei Darussalam	23.7	(0.0)		26.7	(0.0)		**3.0**	(0.0)		24.2	(0.0)		m	m		23.8	(0.1)		**-0.4**	(0.1)	
B-S-J-Z (China)	41.5	(0.3)		42.9	(1.2)		1.4	(1.3)		42.2	(0.4)		m	m		39.3	(0.7)		**-2.8**	(0.8)	
Bulgaria	26.2	(0.7)		c	c		c	c		27.7	(1.1)		m	m		24.4	(0.7)		**-3.3**	(1.3)	
Costa Rica	27.8	(0.4)		22.8	(1.2)		**-5.0**	(1.2)		26.7	(0.4)		m	m		30.0	(0.5)		**3.3**	(0.6)	
Croatia	22.1	(0.2)		22.4	(2.3)		0.3	(2.3)		23.6	(0.3)		m	m		21.3	(0.2)		**-2.3**	(0.3)	
Cyprus	20.1	(0.1)		20.7	(0.0)		**0.6**	(0.1)		20.4	(0.1)		m	m		19.0	(0.0)		**-1.4**	(0.1)	
Dominican Republic	36.7	(0.8)		32.2	(1.8)		**-4.5**	(1.8)		36.0	(0.8)		m	m		35.0	(2.3)		-1.0	(2.4)	
Georgia	24.5	(0.5)		19.0	(1.9)		**-5.5**	(2.0)		23.9	(0.5)		m	m		m	m		m	m	
Hong Kong (China)	30.8	(0.6)		27.4	(0.5)		**-3.4**	(0.9)		27.6	(0.5)		m	m		m	m		m	m	
Indonesia	32.1	(1.1)		27.7	(2.0)		-4.4	(2.3)		30.3	(1.2)		m	m		29.0	(2.8)		-1.4	(3.0)	
Jordan	34.0	(0.7)		32.2	(1.5)		-1.8	(1.7)		33.6	(0.6)		m	m		m	m		m	m	
Kazakhstan	30.2	(0.7)		28.1	(2.8)		-2.1	(2.9)		30.6	(0.8)		m	m		27.6	(1.3)		**-3.1**	(1.4)	
Kosovo	28.6	(0.2)		c	c		c	c		29.0	(0.3)		m	m		27.4	(0.2)		**-1.6**	(0.4)	
Lebanon	27.4	(0.8)	†	27.8	(0.8)		0.4	(1.0)	†	27.6	(0.6)		m	m		m	m		m	m	
Macao (China)	24.3	(0.0)		29.5	(0.0)		**5.1**	(0.0)		29.2	(0.0)		m	m		23.7	(0.4)		**-5.6**	(0.4)	
Malaysia	32.1	(0.6)		37.5	(4.7)		5.5	(4.6)		32.7	(0.7)		m	m		29.6	(1.2)		**-3.1**	(1.1)	
Malta	19.2	(0.0)		20.2	(0.0)		**1.0**	(0.0)		19.6	(0.0)		m	m		m	m		m	m	
Moldova	27.4	(0.7)		c	c		c	c		27.1	(0.6)		m	m		34.7	(8.2)	†	7.6	(8.3)	†
Montenegro	27.4	(0.0)		c	c		c	c		27.3	(0.1)		m	m		27.4	(0.0)		0.1	(0.1)	
Morocco	34.7	(0.5)		27.5	(2.9)		**-7.2**	(2.9)		34.1	(0.5)		m	m		m	m		m	m	
North Macedonia	25.1	(0.0)		24.2	(0.3)		**-0.8**	(0.3)		25.9	(0.0)		m	m		24.5	(0.0)		**-1.4**	(0.1)	
Panama	38.9	(0.8)		34.3	(2.3)	†	-4.6	(2.4)	†	37.3	(0.9)		m	m		40.0	(0.9)		**2.7**	(1.0)	
Peru	26.2	(0.4)		25.2	(0.9)		-1.0	(0.9)		26.0	(0.4)		m	m		m	m		m	m	
Philippines	45.1	(0.6)		38.5	(1.4)		**-6.6**	(1.6)		43.9	(0.5)		m	m		m	m		m	m	
Qatar	34.9	(0.0)		27.5	(0.0)		**-7.4**	(0.0)		31.7	(0.0)		m	m		m	m		m	m	
Romania	27.1	(0.4)		c	c		c	c		27.2	(0.4)		m	m		26.2	(0.6)		-1.0	(0.6)	
Russia	23.7	(0.2)		m	m		m	m		23.7	(0.3)		m	m		23.6	(0.4)		-0.1	(0.5)	
Saudi Arabia	38.3	(1.0)		37.4	(2.2)		-0.9	(2.4)		38.2	(0.9)		m	m		m	m		m	m	
Serbia	28.9	(0.6)		23.4	(2.7)		**-5.5**	(2.8)		29.0	(0.9)		m	m		28.6	(0.6)		-0.4	(1.1)	
Singapore	34.2	(0.1)		25.9	(1.4)		**-8.3**	(1.4)		33.4	(0.2)		m	m		m	m		m	m	
Chinese Taipei	32.6	(0.3)		41.8	(0.7)		**9.2**	(0.8)		33.7	(0.4)		m	m		38.9	(0.6)		**5.2**	(0.6)	
Thailand	36.0	(0.5)		38.0	(1.0)		2.1	(1.2)		36.3	(0.6)		m	m		36.5	(1.0)		0.2	(1.3)	
Ukraine	m	m		m	m		m	m		m	m		m	m		m	m		m	m	
United Arab Emirates	34.6	(0.2)		28.8	(0.4)		**-5.7**	(0.4)		31.0	(0.2)		m	m		27.9	(0.0)	†	**-3.1**	(0.2)	†
Uruguay	28.0	(0.5)		24.4	(0.6)		**-3.6**	(0.8)		27.5	(0.4)		m	m		26.3	(1.7)		-1.3	(1.7)	
Viet Nam	41.7	(0.7)		45.8	(3.0)		4.1	(3.0)		41.9	(0.7)		m	m		m	m		m	m	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but analysis less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.11 [7/8] **Language-of-instruction class size, school characteristics and reading performance**
In modal grade for 15-year-olds; results based on principals' reports

	By education level									Before accounting for students' and schools' socio-economic profile[2]						After accounting for students' and schools' socio-economic profile[2]					
	Lower secondary (ISCED 2)			Upper secondary (ISCED 3)			ISCED 3 - ISCED 2			Change in reading performance per one-unit increase in the size of language-of-instruction class			Explained variance in student performance (r-squared x 100)			Change in reading performance per one-unit increase in the size of language-of-instruction class			Explained variance in student performance (r-squared x 100)		
	Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x	Score dif.	S.E.	x	%	S.E.	x	Score dif.	S.E.	x	%	S.E.	x
OECD																					
Australia	24.7	(0.1)		25.3	(0.2)		**0.6**	(0.2)		**2**	(0.7)		0.3	(0.2)		**1**	(0.5)		13.9	(0.8)	
Austria	20.1	(0.5)		23.0	(0.3)		**2.8**	(0.5)		**6**	(0.9)		8.3	(2.5)		**2**	(0.7)		30.0	(1.8)	
Belgium	17.5	(0.4)		20.0	(0.2)		**2.5**	(0.5)		**9**	(0.8)		10.0	(1.7)		**3**	(0.7)		31.8	(1.5)	
Canada	29.1	(0.4)		27.1	(0.2)		**-2.0**	(0.4)		**2**	(0.5)		1.0	(0.4)		**2**	(0.3)		9.1	(0.8)	
Chile	29.1	(1.3)		35.1	(0.5)		**6.0**	(1.3)		**1**	(0.5)		0.8	(0.7)		**1**	(0.4)		20.6	(1.7)	
Colombia	37.1	(0.9)		38.3	(0.8)		**1.2**	(0.6)		0	(0.4)		0.2	(0.5)		0	(0.3)		25.6	(2.5)	
Czech Republic	22.6	(0.4)		25.8	(0.3)		**3.2**	(0.5)		**7**	(0.8)		11.6	(2.5)		**3**	(0.6)		35.1	(2.5)	
Denmark	21.4	(0.2)		c	c		c	c		**2**	(0.7)		0.6	(0.4)		1	(0.6)		11.8	(1.2)	
Estonia	22.6	(0.2)		25.0	(1.4)		2.5	(1.4)		**1**	(0.3)		0.4	(0.3)		**-1**	(0.2)		9.5	(1.3)	
Finland	19.6	(0.2)		c	c		c	c		**4**	(0.7)		1.5	(0.6)		**2**	(0.6)		10.1	(1.1)	
France	25.3	(0.4)		30.7	(0.3)		**5.3**	(0.5)		**7**	(0.6)		14.6	(2.1)		**4**	(0.5)		28.3	(2.1)	
Germany	25.1	(0.3)		21.6	(0.9)		**-3.5**	(0.9)		**7**	(2.1)	†	9.4	(3.8)	†	**2**	(0.9)	†	38.1	(1.9)	†
Greece	22.8	(1.2)		23.0	(0.2)		0.3	(1.3)		**3**	(0.9)		1.8	(0.9)		**1**	(0.6)		18.1	(2.1)	
Hungary	23.1	(2.0)		28.3	(0.8)		**5.2**	(2.0)		**2**	(0.5)		4.2	(2.0)		0	(0.3)		38.7	(2.4)	
Iceland	18.9	(0.0)		m	m		m	m		**1**	(0.5)		0.3	(0.2)		-1	(0.5)		7.7	(1.0)	
Ireland	24.2	(0.3)		23.9	(0.3)		-0.3	(0.2)		**2**	(0.8)		1.1	(0.7)		0	(0.5)		14.3	(1.3)	
Israel	30.4	(0.4)		29.8	(0.4)		-0.5	(0.5)		**6**	(0.8)		8.9	(2.3)		**3**	(0.7)		31.2	(2.6)	
Italy	22.0	(0.9)		22.9	(0.3)		0.9	(1.0)		**3**	(1.2)		2.0	(1.3)		1	(0.7)		27.9	(2.0)	
Japan	m	m		35.1	(0.5)		m	m		**4**	(0.7)		6.7	(2.3)		**1**	(0.6)		23.7	(2.1)	
Korea	29.5	(0.5)		25.8	(0.3)		**-3.7**	(0.6)		**3**	(1.0)		1.7	(1.2)		0	(0.7)		17.2	(2.8)	
Latvia	22.5	(0.3)		24.5	(1.0)		**2.0**	(0.9)		**2**	(0.2)		4.2	(0.8)		**1**	(0.2)		12.6	(1.4)	
Lithuania	23.7	(0.2)		m	m		m	m		**5**	(0.6)		9.8	(1.5)		**2**	(0.4)		26.0	(1.6)	
Luxembourg	22.3	(0.0)		22.4	(0.0)		**0.1**	(0.0)		**3**	(0.5)		0.5	(0.2)		**2**	(0.5)		30.9	(1.0)	
Mexico	31.8	(1.1)		43.9	(0.5)		**12.0**	(1.2)		0	(0.3)		0.2	(0.3)		0	(0.2)		18.6	(2.7)	
Netherlands	23.9	(0.3)		27.0	(0.3)		**3.1**	(0.4)		**12**	(1.1)		18.8	(3.1)		**4**	(1.2)		37.6	(2.5)	
New Zealand	24.7	(0.3)		25.1	(0.3)		0.4	(0.4)		**1**	(0.6)		0.4	(0.4)		0	(0.5)		16.1	(1.3)	
Norway	23.8	(0.2)		m	m		m	m		**2**	(0.5)		0.7	(0.3)		1	(0.5)		8.2	(1.0)	
Poland	24.4	(0.5)		c	c		c	c		**1**	(0.4)		0.9	(0.6)		0	(0.2)		15.7	(2.0)	
Portugal	24.3	(0.3)		26.2	(0.2)		**1.9**	(0.3)		**5**	(0.9)		3.7	(1.2)		**3**	(0.6)		16.0	(1.6)	
Slovak Republic	19.5	(0.3)		24.1	(0.4)		**4.6**	(0.5)		**6**	(0.7)		11.3	(2.6)		**2**	(0.5)		32.3	(2.2)	
Slovenia	20.6	(0.6)		26.1	(0.0)		**5.4**	(0.6)		**6**	(0.3)		7.3	(0.5)		**1**	(0.3)		34.9	(1.2)	
Spain	29.4	(0.4)		c	c		c	c		m	m		m	m		m	m		m	m	
Sweden	24.3	(0.3)		28.5	(1.7)		**4.2**	(1.7)		**2**	(0.8)		0.4	(0.4)		-1	(0.6)		13.4	(1.9)	
Switzerland	19.0	(0.2)		20.8	(0.7)		**1.9**	(0.7)		**7**	(1.2)		5.4	(1.8)		**5**	(1.3)		24.2	(2.5)	
Turkey	c	c		42.3	(1.0)		c	c		0	(0.5)		0.1	(0.5)		0	(0.3)		25.3	(2.9)	
United Kingdom	c	c		24.9	(0.3)		c	c		-2	(1.0)	†	0.8	(0.7)	†	0	(0.5)	†	15.7	(1.7)	†
United States	25.8	(0.5)		26.2	(0.4)		0.4	(0.4)		1	(0.6)		0.2	(0.2)		**1**	(0.4)		15.0	(1.8)	
OECD average	24.3	(0.1)		27.4	(0.1)		**2.1**	(0.2)		**3**	(0.1)		4.2	(0.3)		**1**	(0.1)		21.8	(0.3)	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but analysis less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.
StatLink https://doi.org/10.1787/888934132241

Table V.B1.4.11 [8/8] **Language-of-instruction class size, school characteristics and reading performance**
In modal grade for 15-year-olds; results based on principals' reports

		By education level									Before accounting for students' and schools' socio-economic profile[2]						After accounting for students' and schools' socio-economic profile[2]					
		Lower secondary (ISCED 2)			Upper secondary (ISCED 3)			ISCED 3 - ISCED 2			Change in reading performance per one-unit increase in the size of language-of-instruction class			Explained variance in student performance (r-squared x 100)			Change in reading performance per one-unit increase in the size of language-of-instruction class			Explained variance in student performance (r-squared x 100)		
		Mean	S.E.	x	Mean	S.E.	x	Dif.	S.E.	x	Score dif.	S.E.	x	%	S.E.	x	Score dif.	S.E.	x	%	S.E.	x
Partners	Albania	24.2	(0.4)		27.4	(0.4)		**3.2**	(0.5)		**1**	(0.3)		0.5	(0.4)		0	(0.3)		13.2	(1.8)	
	Argentina	33.6	(1.3)		37.8	(1.0)		**4.3**	(1.0)		**1**	(0.3)		2.1	(1.2)		0	(0.2)		30.0	(2.2)	
	Baku (Azerbaijan)	26.9	(0.9)	†	26.3	(0.7)	†	-0.7	(0.5)	†	0	(0.3)	†	0.0	(0.1)	†	0	(0.2)	†	5.1	(1.3)	†
	Belarus	23.3	(0.5)		23.3	(0.4)		0.0	(0.2)		**2**	(0.6)		1.2	(0.7)		**-1**	(0.2)		28.2	(1.9)	
	Bosnia and Herzegovina	22.7	(0.5)		23.2	(0.4)		0.5	(0.7)		**2**	(0.6)		1.5	(0.7)		**1**	(0.3)		18.3	(2.7)	
	Brazil	31.1	(0.9)	†	36.2	(0.4)		**5.2**	(1.0)	†	-1	(0.5)		0.2	(0.4)		0	(0.3)		21.8	(1.7)	
	Brunei Darussalam	23.4	(0.6)		24.2	(0.0)		0.8	(0.6)		0	(0.2)		0.0	(0.0)		**1**	(0.2)		32.3	(0.8)	
	B-S-J-Z (China)	40.7	(0.6)		42.3	(0.4)		**1.6**	(0.7)		1	(0.5)		0.5	(0.7)		**2**	(0.3)		25.8	(2.3)	
	Bulgaria	c	c		26.1	(0.7)		c	c		**2**	(0.7)		3.6	(2.3)		1	(0.5)		31.8	(4.0)	
	Costa Rica	27.2	(0.4)		26.9	(0.4)		-0.3	(0.3)		0	(0.6)		0.1	(0.3)		0	(0.3)		25.9	(2.5)	
	Croatia	c	c		22.0	(0.2)		c	c		**9**	(0.9)		11.4	(2.0)		**3**	(1.0)		25.2	(2.0)	
	Cyprus	23.8	(2.3)		20.1	(0.0)		-3.7	(2.3)		**2**	(0.4)		0.8	(0.2)		0	(0.4)		14.0	(0.9)	
	Dominican Republic	35.4	(0.8)		36.2	(0.9)		0.9	(0.8)		0	(0.4)		0.1	(0.4)		0	(0.3)		21.5	(2.9)	
	Georgia	24.0	(0.6)		23.9	(0.5)		-0.1	(0.4)		0	(0.3)		0.2	(0.3)		0	(0.2)		14.6	(1.8)	
	Hong Kong (China)	27.6	(0.6)		27.7	(0.5)	†	0.1	(0.5)	†	2	(1.4)	†	1.4	(2.0)	†	1	(0.9)	†	17.7	(2.4)	†
	Indonesia	29.6	(1.5)		30.3	(1.6)		0.7	(2.2)		**1**	(0.3)		1.5	(1.3)		0	(0.3)		17.6	(3.5)	
	Jordan	33.6	(0.6)		m	m		m	m		0	(0.3)		0.0	(0.1)		0	(0.3)		9.7	(1.9)	
	Kazakhstan	29.5	(0.7)		32.1	(1.0)		**2.6**	(0.7)		**-1**	(0.2)		0.9	(0.6)		**-1**	(0.1)		12.8	(1.9)	
	Kosovo	23.8	(0.6)		29.9	(0.2)		**6.0**	(0.7)		**3**	(0.3)		7.7	(1.3)		**1**	(0.3)		22.7	(1.6)	
	Lebanon	24.6	(1.2)	‡	28.2	(0.6)		**3.5**	(1.2)	‡	1	(0.5)		0.7	(0.8)		**1**	(0.5)		17.0	(3.0)	
	Macao (China)	28.5	(0.0)		29.7	(0.0)		**1.2**	(0.0)		**2**	(0.2)		2.0	(0.4)		**3**	(0.2)		5.4	(0.6)	
	Malaysia	33.2	(1.1)		32.3	(0.7)		-0.9	(0.9)		0	(0.4)		0.1	(0.3)		0	(0.3)		21.9	(2.5)	
	Malta	c	c		19.6	(0.0)		c	c		**6**	(0.5)		2.6	(0.5)		**4**	(0.5)		13.5	(0.8)	
	Moldova	26.9	(0.6)		31.7	(2.5)		4.8	(2.5)		**1**	(0.3)		2.0	(0.9)		0	(0.2)		23.9	(2.3)	
	Montenegro	24.9	(1.0)		27.4	(0.0)		**2.6**	(1.0)		**5**	(0.2)		5.9	(0.5)		0	(0.2)		22.8	(0.9)	
	Morocco	34.0	(0.7)		34.3	(0.7)		0.3	(1.0)		0	(0.5)		0.2	(0.4)		**1**	(0.4)		19.0	(2.3)	
	North Macedonia	c	c		25.0	(0.0)		c	c		**3**	(0.2)		4.6	(0.6)		**1**	(0.2)		26.8	(1.1)	
	Panama	35.8	(1.5)	†	39.0	(0.7)		**3.3**	(1.4)	†	**1**	(0.4)		2.0	(1.6)		**1**	(0.2)		31.3	(3.9)	
	Peru	23.7	(0.5)		26.6	(0.4)		**2.9**	(0.4)		**3**	(0.4)		4.3	(1.3)		**1**	(0.3)		31.6	(2.1)	
	Philippines	44.1	(0.5)		25.2	(6.1)		**-18.8**	(6.3)		-1	(0.7)		1.1	(1.4)		0	(0.2)		29.1	(3.2)	
	Qatar	31.7	(0.1)		31.7	(0.0)		0.0	(0.1)		**-1**	(0.1)		2.2	(0.2)		**0**	(0.1)		16.7	(0.6)	
	Romania	23.8	(1.8)		27.3	(0.4)		**3.6**	(1.8)		**4**	(1.2)		4.0	(2.0)		2	(0.9)		31.7	(2.8)	
	Russia	23.8	(0.2)		22.9	(0.4)		**-0.8**	(0.4)		**3**	(0.6)		2.7	(1.0)		-1	(0.7)		14.8	(2.2)	
	Saudi Arabia	30.4	(3.5)	‡	39.0	(0.9)		**8.6**	(3.8)	‡	**1**	(0.3)		1.3	(1.0)		**1**	(0.3)		11.6	(2.3)	
	Serbia	c	c		28.7	(0.6)		c	c		1	(0.7)		0.4	(0.7)		**1**	(0.3)		24.5	(3.6)	
	Singapore	32.0	(0.5)		33.5	(0.2)		**1.4**	(0.6)		-1	(0.4)		0.1	(0.1)		**2**	(0.3)		22.0	(1.1)	
	Chinese Taipei	30.4	(0.4)		38.3	(0.4)		**8.0**	(0.4)		**1**	(0.5)		0.7	(0.6)		0	(0.3)		23.0	(2.1)	
	Thailand	32.0	(0.7)		37.4	(0.5)		**5.5**	(0.7)		**3**	(0.5)		5.7	(2.2)		0	(0.4)		27.2	(3.0)	
	Ukraine	m	m		m	m		m	m		m	m		m	m		m	m		m	m	
	United Arab Emirates	28.7	(0.4)		31.2	(0.3)		**2.5**	(0.5)		**-1**	(0.2)		1.3	(0.3)		**0**	(0.1)		21.8	(1.4)	
	Uruguay	26.5	(0.7)		27.9	(0.5)		1.5	(0.8)		**2**	(0.6)		1.3	(0.9)		**1**	(0.3)		26.6	(2.1)	
	Viet Nam	27.7	(4.5)		42.6	(0.6)		**14.9**	(4.5)		m	m		m	m		m	m		m	m	

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
2. This analysis is restricted to schools with the modal ISCED level for 15-year-old students.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but analysis less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132241

Table V.B1.5.1 [1/6] **Shortage of material resources, 2015 through 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by:											
		2015											
		A lack of educational material (e.g. textbooks, ICT equipment, library or laboratory material)			Inadequate or poor quality educational material (e.g. textbooks, ICT equipment, library or laboratory material)			A lack of physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)			Inadequate or poor quality physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	10.9	(1.3)		10.2	(1.2)		24.1	(1.8)		25.3	(1.8)	
	Austria	25.7	(3.0)		20.5	(3.2)		25.7	(2.9)		25.8	(2.7)	
	Belgium	32.0	(3.0)		20.5	(2.3)		44.5	(3.2)		42.3	(3.1)	
	Canada	16.6	(2.1)		13.2	(2.0)		16.8	(1.9)		17.6	(2.1)	
	Chile	16.4	(3.2)		13.9	(2.9)		23.3	(3.2)		22.5	(3.5)	
	Colombia	60.3	(3.4)		45.4	(3.0)		57.6	(3.7)		51.4	(3.5)	
	Czech Republic	28.6	(2.7)		22.6	(2.3)		29.9	(2.8)		28.3	(2.6)	
	Denmark	19.1	(2.7)		16.8	(2.3)		27.5	(3.3)		27.0	(3.1)	
	Estonia	48.4	(2.8)		39.5	(2.7)		34.0	(2.3)		36.8	(2.4)	
	Finland	41.2	(3.8)		39.8	(3.5)		38.2	(4.0)		41.3	(3.7)	
	France	27.3	(2.9)		19.3	(2.6)		32.5	(3.2)		28.9	(3.4)	
	Germany	36.0	(3.6)		34.7	(3.6)		39.2	(3.6)		39.8	(3.7)	
	Greece	53.9	(3.9)		49.0	(3.6)		44.9	(3.9)		38.6	(3.7)	
	Hungary	71.0	(2.9)		61.0	(3.2)		52.4	(3.2)		43.8	(2.9)	
	Iceland	37.5	(0.3)		31.5	(0.3)		17.2	(0.2)		18.3	(0.2)	
	Ireland	35.7	(4.0)		31.3	(3.7)		53.1	(4.1)		45.3	(3.7)	
	Israel	37.4	(4.0)		32.5	(3.8)		58.2	(3.9)		56.6	(3.9)	
	Italy	42.1	(3.2)	†	37.7	(3.5)	†	58.1	(3.3)	†	59.9	(3.3)	†
	Japan	65.3	(3.6)		56.8	(3.6)		69.1	(3.4)		57.5	(3.4)	
	Korea	50.3	(4.1)		43.5	(4.1)		58.1	(4.2)		52.7	(4.2)	
	Latvia	36.1	(2.9)		25.3	(2.9)		21.3	(2.2)		23.8	(2.3)	
	Lithuania	54.9	(2.6)		52.8	(2.8)		48.2	(2.7)		45.0	(2.8)	
	Luxembourg	3.3	(0.0)		6.5	(0.0)		33.6	(0.1)		19.5	(0.1)	
	Mexico	59.2	(2.9)		45.6	(3.4)		57.1	(3.3)		44.1	(3.4)	
	Netherlands	30.0	(4.5)	†	22.3	(3.8)	†	26.6	(4.5)	†	26.2	(4.2)	†
	New Zealand	12.8	(2.7)		11.1	(2.5)		39.4	(3.8)		36.4	(3.8)	
	Norway	35.6	(3.3)		36.8	(3.5)		30.1	(3.4)		36.6	(3.4)	
	Poland	33.1	(3.9)		35.0	(4.1)		21.4	(2.8)		24.0	(3.1)	
	Portugal	24.7	(3.4)		19.2	(3.1)		38.0	(3.1)		44.4	(3.2)	
	Slovak Republic	53.2	(3.0)		53.1	(3.3)		32.4	(3.1)		33.2	(2.8)	
	Slovenia	23.8	(0.6)		25.7	(0.5)		26.3	(0.3)		18.0	(0.3)	
	Spain	46.4	(3.0)		43.0	(3.6)		43.3	(3.5)		48.2	(3.5)	
	Sweden	20.4	(2.9)		23.7	(3.2)		21.7	(3.0)		27.8	(3.7)	
	Switzerland	16.3	(2.6)		15.5	(2.6)		26.6	(3.0)		20.3	(2.9)	
	Turkey	49.1	(4.2)		45.6	(4.2)		35.3	(3.7)		35.3	(4.0)	
	United Kingdom	29.1	(3.2)	†	25.7	(3.0)	†	45.5	(3.8)	†	43.9	(3.3)	†
	United States	17.6	(3.2)		16.9	(3.0)		24.4	(3.3)		21.1	(3.5)	
	OECD average	35.2	(0.5)		30.9	(0.5)		37.2	(0.5)		35.3	(0.5)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.5.1 [2/6] **Shortage of material resources, 2015 through 2018**
Results based on principals' reports

	Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by:											
	2015											
	A lack of educational material (e.g. textbooks, ICT equipment, library or laboratory material)			Inadequate or poor quality educational material (e.g. textbooks, ICT equipment, library or laboratory material)			A lack of physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)			Inadequate or poor quality physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners Albania	71.7	(3.2)		59.7	(3.8)		65.4	(3.3)		63.8	(3.5)	
Argentina	m	m		m	m		m	m		m	m	
Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
Belarus	m	m		m	m		m	m		m	m	
Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
Brazil	29.3	(2.4)		22.9	(2.2)		33.1	(2.6)		33.0	(2.6)	
Brunei Darussalam	m	m		m	m		m	m		m	m	
B-S-J-Z (China)	m	m		m	m		m	m		m	m	
Bulgaria	33.3	(4.1)		20.8	(3.3)		28.0	(3.6)		22.7	(3.0)	
Costa Rica	68.9	(2.9)		59.4	(3.3)		62.0	(3.4)		61.3	(3.5)	
Croatia	67.1	(3.8)		64.9	(4.1)		73.7	(3.4)		67.5	(3.8)	
Cyprus	32.6	(0.1)		22.6	(0.1)		31.4	(0.1)		22.9	(0.1)	
Dominican Republic	56.3	(3.8)		49.2	(4.3)		38.6	(3.8)		35.0	(3.4)	
Georgia	34.7	(3.0)		39.6	(3.4)		58.3	(3.4)		53.6	(3.4)	
Hong Kong (China)	14.8	(3.1)		20.0	(3.6)		21.7	(3.5)		22.2	(3.5)	
Indonesia	68.7	(3.4)		62.5	(3.3)		62.3	(3.3)		59.1	(3.3)	
Jordan	45.0	(3.8)		46.0	(3.5)		60.6	(3.3)		65.2	(3.0)	
Kazakhstan	47.9	(4.0)		54.8	(3.6)		49.1	(3.8)		42.4	(3.3)	
Kosovo	85.8	(1.2)		72.1	(1.5)		50.8	(1.2)		50.2	(1.3)	
Lebanon	35.7	(3.4)		36.6	(3.1)		41.5	(3.5)		36.8	(3.2)	
Macao (China)	27.8	(0.1)		31.4	(0.1)		41.0	(0.1)		44.2	(0.1)	
Malaysia	m	m		m	m		m	m		m	m	
Malta	7.3	(0.1)		13.6	(0.1)		34.5	(0.1)		31.4	(0.1)	
Moldova	77.3	(2.9)		67.2	(3.1)		34.5	(3.5)		37.7	(3.7)	
Montenegro	59.5	(0.5)		57.3	(0.3)		47.3	(0.5)		56.3	(0.5)	
Morocco	m	m		m	m		m	m		m	m	
North Macedonia	58.3	(0.2)		41.9	(0.2)		25.6	(0.2)		20.8	(0.1)	
Panama	m	m		m	m		m	m		m	m	
Peru	66.9	(2.8)		57.5	(3.0)		46.4	(3.0)		47.4	(2.9)	
Philippines	m	m		m	m		m	m		m	m	
Qatar	11.4	(0.1)		8.9	(0.1)		17.4	(0.1)		15.7	(0.1)	
Romania	45.9	(4.0)		49.3	(4.3)		32.9	(4.1)		29.2	(3.8)	
Russia	51.3	(4.0)		46.8	(3.9)		49.5	(3.7)		50.2	(3.9)	
Saudi Arabia	m	m		m	m		m	m		m	m	
Serbia	m	m		m	m		m	m		m	m	
Singapore	0.0	c		0.0	c		11.4	(0.1)		10.5	(0.1)	
Chinese Taipei	14.6	(2.5)		11.6	(2.3)		35.4	(3.4)		25.5	(3.3)	
Thailand	55.5	(4.0)		46.8	(4.1)		55.6	(3.5)		44.3	(4.0)	
Ukraine	m	m		m	m		m	m		m	m	
United Arab Emirates	29.5	(2.3)		25.8	(2.0)		35.5	(2.4)		33.9	(2.4)	
Uruguay	28.5	(2.5)		29.7	(2.5)		53.4	(3.0)		49.0	(3.0)	
Viet Nam	46.8	(4.4)		41.3	(4.3)		61.3	(4.0)		52.6	(4.1)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.5.1 [3/6] **Shortage of material resources, 2015 through 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by:											
		2018											
		A lack of educational material (e.g. textbooks, ICT equipment, library or laboratory material)			Inadequate or poor quality educational material (e.g. textbooks, ICT equipment, library or laboratory material)			A lack of physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)			Inadequate or poor quality physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	9.8	(1.2)		8.7	(1.0)		24.9	(1.8)		25.0	(1.6)	
	Austria	29.5	(2.9)		27.6	(3.2)		28.4	(2.9)		28.9	(3.0)	
	Belgium	24.5	(2.6)		17.9	(2.4)		41.2	(3.0)		41.3	(3.3)	
	Canada	10.7	(1.5)		8.8	(1.2)		16.0	(1.8)		14.3	(1.8)	
	Chile	19.8	(2.9)		19.9	(2.8)		33.7	(3.7)		25.3	(3.0)	
	Colombia	61.6	(3.2)		47.6	(3.6)		59.6	(3.1)		54.5	(3.4)	
	Czech Republic	30.7	(2.9)		23.4	(2.7)		38.1	(2.6)		41.3	(2.9)	
	Denmark	12.8	(2.3)		10.1	(2.2)		19.7	(3.0)		23.6	(3.1)	
	Estonia	27.7	(1.8)		22.4	(1.6)		37.6	(2.1)		37.0	(1.7)	
	Finland	27.5	(3.3)		27.9	(3.2)		25.8	(2.9)		34.0	(3.0)	
	France	16.6	(2.4)		12.0	(2.4)		29.3	(3.1)		27.6	(3.2)	
	Germany	39.4	(3.7)		41.0	(3.2)		36.9	(3.7)		41.5	(3.7)	
	Greece	58.9	(3.5)		50.6	(3.4)		46.1	(3.9)		47.9	(4.0)	
	Hungary	46.7	(3.9)		45.4	(3.7)		44.5	(3.6)		36.7	(3.8)	
	Iceland	22.7	(0.2)		19.8	(0.2)		17.6	(0.2)		10.8	(0.2)	
	Ireland	31.2	(3.9)		26.4	(3.8)		44.6	(4.1)		40.7	(4.3)	
	Israel	32.2	(3.6)		31.2	(4.1)		57.3	(4.1)		51.6	(3.5)	
	Italy	28.3	(2.7)		26.1	(3.0)		53.0	(3.9)		54.9	(3.6)	
	Japan	53.5	(3.7)		43.0	(3.4)		55.2	(3.8)		50.5	(3.5)	
	Korea	39.4	(3.5)		34.7	(3.6)		51.9	(4.0)		58.4	(3.9)	
	Latvia	23.0	(1.8)		21.9	(1.7)		15.5	(1.7)		16.6	(1.7)	
	Lithuania	23.7	(1.6)		23.3	(1.5)		21.8	(1.4)		21.5	(1.5)	
	Luxembourg	12.1	(0.1)		3.7	(0.1)		34.7	(0.1)		30.1	(0.1)	
	Mexico	50.6	(2.7)		44.2	(3.1)		44.9	(2.8)		39.4	(3.3)	
	Netherlands	11.9	(2.9)		11.6	(2.9)		22.4	(4.2)		25.8	(3.9)	
	New Zealand	13.2	(2.2)		10.5	(1.9)		37.8	(2.9)		34.8	(3.0)	
	Norway	22.6	(3.0)		28.5	(3.5)		21.6	(2.8)		26.3	(3.1)	
	Poland	26.2	(3.1)		27.3	(3.0)		14.7	(2.1)		20.1	(2.8)	
	Portugal	41.6	(3.1)		42.0	(3.0)		43.5	(3.5)		47.5	(2.9)	
	Slovak Republic	56.7	(2.9)		56.3	(3.0)		29.0	(2.9)		31.7	(2.8)	
	Slovenia	24.5	(0.4)		19.4	(0.3)		31.6	(0.7)		23.3	(0.5)	
	Spain	38.7	(2.2)		28.6	(2.0)		42.4	(2.3)		39.0	(2.2)	
	Sweden	14.4	(2.3)		16.0	(2.8)		20.2	(2.8)		21.3	(3.2)	
	Switzerland	13.9	(2.4)		11.5	(2.4)		19.0	(3.0)		19.9	(3.0)	
	Turkey	13.3	(2.4)		11.4	(2.3)		12.5	(2.6)		10.3	(2.3)	
	United Kingdom	27.3	(3.1)		23.5	(3.0)		33.6	(3.1)		33.2	(3.3)	
	United States	15.1	(3.5)		12.2	(3.3)		18.0	(3.5)		16.9	(3.2)	
	OECD average	28.4	(0.5)		25.3	(0.5)		33.1	(0.5)		32.5	(0.5)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.5.1 [4/6] **Shortage of material resources, 2015 through 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by:											
		2018											
		A lack of educational material (e.g. textbooks, ICT equipment, library or laboratory material)			Inadequate or poor quality educational material (e.g. textbooks, ICT equipment, library or laboratory material)			A lack of physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)			Inadequate or poor quality physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	49.6	(2.7)		38.1	(2.4)		40.3	(2.7)		38.9	(2.6)	
	Argentina	47.5	(3.1)		38.9	(3.2)		58.2	(3.2)		50.5	(3.3)	
	Baku (Azerbaijan)	24.2	(3.4)	†	53.3	(4.4)	†	47.1	(4.5)	†	37.7	(4.3)	†
	Belarus	42.7	(3.6)		23.5	(3.1)		23.3	(2.7)		27.2	(3.3)	
	Bosnia and Herzegovina	67.0	(3.1)		65.4	(3.0)		47.5	(3.0)		52.5	(3.2)	
	Brazil	31.9	(2.2)		23.3	(1.6)		32.5	(2.1)		35.1	(2.4)	
	Brunei Darussalam	37.6	(0.1)		32.1	(0.1)		36.5	(0.1)		46.6	(0.1)	
	B-S-J-Z (China)	20.4	(2.9)		21.2	(3.0)		27.8	(3.2)		23.7	(3.2)	
	Bulgaria	22.0	(3.4)		11.7	(2.5)		30.8	(3.4)		21.2	(2.9)	
	Costa Rica	52.7	(3.7)		50.1	(3.3)		55.2	(3.9)		58.2	(3.5)	
	Croatia	52.6	(3.5)		53.5	(4.0)		64.0	(3.6)		55.5	(3.6)	
	Cyprus	24.0	(0.4)		20.7	(0.3)		23.8	(0.3)		23.5	(0.5)	
	Dominican Republic	46.0	(3.4)		43.1	(3.8)		41.2	(3.8)		30.6	(3.4)	
	Georgia	37.9	(3.2)		35.2	(3.2)		46.4	(2.9)		49.5	(2.9)	
	Hong Kong (China)	17.5	(3.1)		15.7	(3.0)		31.8	(4.4)		29.4	(4.7)	
	Indonesia	59.2	(4.3)		60.3	(4.3)		61.5	(4.3)		56.4	(4.7)	
	Jordan	45.1	(3.6)		45.9	(3.1)		55.0	(2.9)		57.1	(3.0)	
	Kazakhstan	43.1	(3.0)		36.7	(2.9)		37.7	(2.7)		39.8	(2.8)	
	Kosovo	85.9	(1.3)		80.5	(1.6)		50.4	(1.8)		48.5	(1.8)	
	Lebanon	33.9	(2.5)		25.3	(2.1)		35.5	(2.7)		30.9	(2.6)	
	Macao (China)	13.0	(0.0)		16.1	(0.0)		37.5	(0.0)		34.6	(0.0)	
	Malaysia	13.4	(2.4)		19.1	(2.7)		27.0	(3.2)		29.5	(3.6)	
	Malta	10.1	(0.1)		6.1	(0.0)		28.7	(0.2)		30.8	(0.1)	
	Moldova	58.3	(3.7)		44.0	(3.6)		31.3	(3.8)		31.4	(3.5)	
	Montenegro	36.8	(0.6)		32.0	(0.6)		40.4	(0.4)		41.8	(0.3)	
	Morocco	68.8	(3.5)		64.0	(3.4)		57.0	(3.5)		51.6	(3.6)	
	North Macedonia	65.4	(0.1)		48.1	(0.1)		36.6	(0.1)		34.2	(0.1)	
	Panama	51.6	(2.8)		33.9	(2.3)		57.8	(2.6)		46.0	(2.8)	
	Peru	54.2	(2.5)		52.6	(2.6)		38.3	(2.8)		39.9	(2.8)	
	Philippines	51.1	(3.5)		51.6	(3.1)		53.0	(3.5)		52.0	(3.5)	
	Qatar	3.3	(0.0)		2.3	(0.0)		10.2	(0.0)		8.4	(0.0)	
	Romania	47.3	(4.2)		48.7	(4.1)		29.1	(4.0)		26.4	(3.5)	
	Russia	48.4	(3.4)		42.6	(3.7)		41.6	(3.8)		42.1	(3.6)	
	Saudi Arabia	44.4	(3.4)		37.0	(3.1)		51.7	(3.3)		50.9	(3.4)	
	Serbia	49.2	(3.6)		49.8	(3.7)		46.7	(3.5)		46.6	(3.5)	
	Singapore	0.7	(0.0)		0.8	(0.1)		6.5	(0.2)		5.8	(0.4)	
	Chinese Taipei	11.2	(2.4)		7.9	(2.1)		32.2	(3.7)		25.0	(3.2)	
	Thailand	56.6	(3.2)		45.6	(4.1)		39.1	(3.2)		31.9	(2.9)	
	Ukraine	73.7	(2.8)		53.1	(3.7)		37.9	(3.5)		41.8	(3.4)	
	United Arab Emirates	22.3	(1.0)		18.6	(0.8)		25.5	(1.2)		24.4	(1.3)	
	Uruguay	30.7	(3.5)		28.8	(3.2)		44.3	(3.7)		46.7	(3.5)	
	Viet Nam	43.8	(5.1)		33.5	(4.5)		51.7	(4.4)		45.9	(5.0)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.5.1 [5/6] **Shortage of material resources, 2015 through 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by:											
		Change between 2015 and 2018 (PISA 2018 - PISA 2015)											
		A lack of educational material (e.g. textbooks, ICT equipment, library or laboratory material)			Inadequate or poor quality educational material (e.g. textbooks, ICT equipment, library or laboratory material)			A lack of physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)			Inadequate or poor quality physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
OECD	Australia	-1.1	(1.7)		-1.5	(1.6)		0.8	(2.5)		-0.3	(2.4)	
	Austria	3.8	(4.2)		7.2	(4.5)		2.7	(4.1)		3.1	(4.0)	
	Belgium	-7.5	(3.9)		-2.6	(3.4)		-3.3	(4.4)		-1.0	(4.5)	
	Canada	**-5.8**	(2.5)		-4.4	(2.4)		-0.8	(2.6)		-3.3	(2.8)	
	Chile	3.3	(4.3)		6.0	(4.0)		**10.3**	(4.9)		2.8	(4.7)	
	Colombia	1.3	(4.7)		2.2	(4.7)		2.0	(4.8)		3.2	(4.9)	
	Czech Republic	2.2	(4.0)		0.8	(3.6)		**8.1**	(3.8)		**12.9**	(3.9)	
	Denmark	-6.3	(3.6)		**-6.7**	(3.2)		-7.8	(4.5)		-3.4	(4.4)	
	Estonia	**-20.7**	(3.4)		**-17.1**	(3.1)		3.6	(3.1)		0.2	(2.9)	
	Finland	**-13.7**	(5.1)		**-11.9**	(4.8)		**-12.5**	(5.0)		-7.4	(4.8)	
	France	**-10.7**	(3.7)		**-7.3**	(3.5)		-3.2	(4.5)		-1.3	(4.7)	
	Germany	3.4	(5.1)		6.3	(4.8)		-2.4	(5.1)		1.7	(5.2)	
	Greece	5.0	(5.3)		1.6	(5.0)		1.2	(5.5)		9.3	(5.5)	
	Hungary	**-24.4**	(4.9)		**-15.6**	(4.9)		-7.9	(4.9)		-7.1	(4.8)	
	Iceland	**-14.8**	(0.3)		**-11.6**	(0.4)		0.4	(0.3)		**-7.5**	(0.3)	
	Ireland	-4.5	(5.6)		-4.9	(5.3)		-8.5	(5.8)		-4.6	(5.7)	
	Israel	-5.1	(5.4)		-1.3	(5.5)		-0.9	(5.7)		-5.0	(5.2)	
	Italy	**-13.8**	(4.2)	†	**-11.5**	(4.6)	†	-5.1	(5.1)	†	-5.0	(4.8)	†
	Japan	**-11.8**	(5.2)		**-13.8**	(4.9)		**-13.9**	(5.0)		-7.0	(4.9)	
	Korea	**-11.0**	(5.4)		-8.8	(5.5)		-6.2	(5.8)		5.7	(5.7)	
	Latvia	**-13.1**	(3.4)		-3.4	(3.4)		**-5.8**	(2.8)		**-7.2**	(2.9)	
	Lithuania	**-31.2**	(3.1)		**-29.5**	(3.2)		**-26.4**	(3.0)		**-23.5**	(3.1)	
	Luxembourg	**8.8**	(0.1)		**-2.7**	(0.1)		**1.1**	(0.2)		**10.6**	(0.1)	
	Mexico	**-8.6**	(3.9)		-1.4	(4.6)		**-12.2**	(4.3)		-4.6	(4.7)	
	Netherlands	**-18.1**	(5.4)	†	**-10.6**	(4.8)	†	-4.2	(6.1)	†	-0.4	(5.7)	†
	New Zealand	0.4	(3.5)		-0.5	(3.1)		-1.6	(4.8)		-1.6	(4.9)	
	Norway	**-13.0**	(4.4)		-8.2	(4.9)		-8.5	(4.4)		**-10.3**	(4.6)	
	Poland	-6.9	(5.0)		-7.7	(5.1)		-6.7	(3.6)		-3.9	(4.2)	
	Portugal	**16.9**	(4.6)		**22.8**	(4.4)		5.4	(4.7)		3.0	(4.3)	
	Slovak Republic	3.5	(4.2)		3.2	(4.5)		-3.5	(4.2)		-1.5	(4.0)	
	Slovenia	0.8	(0.7)		**-6.4**	(0.6)		**5.3**	(0.8)		**5.3**	(0.6)	
	Spain	**-7.6**	(3.7)		**-14.4**	(4.1)		-0.8	(4.2)		**-9.2**	(4.1)	
	Sweden	-6.0	(3.7)		-7.7	(4.3)		-1.4	(4.1)		-6.4	(4.9)	
	Switzerland	-2.5	(3.5)		-4.0	(3.5)		-7.5	(4.2)		-0.4	(4.2)	
	Turkey	**-35.8**	(4.8)		**-34.1**	(4.8)		**-22.7**	(4.5)		**-25.1**	(4.6)	
	United Kingdom	-1.9	(4.5)	†	-2.2	(4.2)	†	**-11.9**	(4.9)	†	**-10.7**	(4.7)	†
	United States	-2.6	(4.7)		-4.7	(4.5)		-6.4	(4.8)		-4.2	(4.7)	
	OECD average	**-6.7**	(0.7)		**-5.6**	(0.7)		**-4.1**	(0.7)		**-2.8**	(0.7)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.5.1 [6/6] **Shortage of material resources, 2015 through 2018**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the school's capacity to provide instruction is hindered to some extent or a lot by:											
		Change between 2015 and 2018 (PISA 2018 - PISA 2015)											
		A lack of educational material (e.g. textbooks, ICT equipment, library or laboratory material)			Inadequate or poor quality educational material (e.g. textbooks, ICT equipment, library or laboratory material)			A lack of physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)			Inadequate or poor quality physical infrastructure (e.g. building, grounds, heating/ cooling systems, lighting and acoustic systems)		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
Partners	**Albania**	**-22.0**	(4.2)		**-21.5**	(4.5)		**-25.1**	(4.3)		**-24.9**	(4.4)	
	Argentina	m	m		m	m		m	m		m	m	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	2.7	(3.2)		0.4	(2.7)		-0.6	(3.3)		2.0	(3.5)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	**-11.3**	(5.3)		**-9.1**	(4.1)		2.8	(5.0)		-1.5	(4.2)	
	Costa Rica	**-16.3**	(4.7)		**-9.4**	(4.7)		-6.8	(5.1)		-3.1	(5.0)	
	Croatia	**-14.5**	(5.2)		**-11.4**	(5.7)		-9.6	(5.0)		**-12.0**	(5.3)	
	Cyprus	**-8.6**	(0.4)		**-1.9**	(0.3)		**-7.5**	(0.4)		0.6	(0.5)	
	Dominican Republic	**-10.4**	(5.1)		-6.2	(5.7)		2.6	(5.4)		-4.4	(4.8)	
	Georgia	3.2	(4.4)		-4.4	(4.7)		**-11.9**	(4.5)		-4.2	(4.5)	
	Hong Kong (China)	2.7	(4.4)		-4.3	(4.7)		10.1	(5.7)		7.2	(5.9)	
	Indonesia	-9.5	(5.5)		-2.3	(5.4)		-0.8	(5.5)		-2.7	(5.8)	
	Jordan	0.1	(5.3)		-0.1	(4.7)		-5.6	(4.4)		-8.0	(4.2)	
	Kazakhstan	-4.8	(5.0)		**-18.2**	(4.6)		**-11.4**	(4.7)		-2.6	(4.3)	
	Kosovo	0.2	(1.7)		**8.4**	(2.2)		-0.4	(2.1)		-1.7	(2.2)	
	Lebanon	-1.8	(4.3)		**-11.3**	(3.7)		-6.0	(4.4)		-5.8	(4.1)	
	Macao (China)	**-14.9**	(0.1)		**-15.2**	(0.1)		**-3.5**	(0.1)		**-9.5**	(0.1)	
	Malaysia	m	m		m	m		m	m		m	m	
	Malta	**2.8**	(0.1)		**-7.5**	(0.1)		**-5.8**	(0.2)		**-0.6**	(0.2)	
	Moldova	**-19.1**	(4.7)		**-23.2**	(4.7)		-3.2	(5.2)		-6.3	(5.1)	
	Montenegro	**-22.7**	(0.7)		**-25.3**	(0.7)		**-6.9**	(0.6)		**-14.5**	(0.6)	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	**7.0**	(0.2)		**6.2**	(0.2)		**11.0**	(0.2)		**13.4**	(0.2)	
	Panama	m	m		m	m		m	m		m	m	
	Peru	**-12.7**	(3.7)		-4.9	(4.0)		**-8.1**	(4.1)		-7.5	(4.1)	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	**-8.2**	(0.1)		**-6.6**	(0.1)		**-7.2**	(0.1)		**-7.2**	(0.1)	
	Romania	1.4	(5.8)		-0.6	(5.9)		-3.8	(5.8)		-2.8	(5.2)	
	Russia	-2.9	(5.3)		-4.2	(5.3)		-7.9	(5.3)		-8.1	(5.3)	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	m	m		m	m		m	m		m	m	
	Singapore	**0.7**	(0.0)		**0.8**	(0.1)		**-4.9**	(0.2)		**-4.8**	(0.4)	
	Chinese Taipei	-3.4	(3.5)		-3.7	(3.1)		-3.2	(5.0)		-0.5	(4.6)	
	Thailand	1.1	(5.1)		-1.3	(5.8)		**-16.5**	(4.8)		**-12.5**	(4.9)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	**-7.2**	(2.5)		**-7.1**	(2.1)		**-10.0**	(2.7)		**-9.5**	(2.7)	
	Uruguay	2.2	(4.3)		-0.8	(4.0)		-9.1	(4.7)		-2.2	(4.6)	
	Viet Nam	-3.0	(6.8)		-7.9	(6.2)		-9.5	(5.9)		-6.7	(6.5)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.5.15 [1/4] **School's capacity to enhance teaching and learning using digital devices**
Results based on principals' reports

		Percentage of students in schools whose principal agreed or strongly agreed with the following statements:																	
		The number of digital devices connected to the Internet is sufficient			The school's Internet bandwidth or speed is sufficient			The number of digital devices for instruction is sufficient			Digital devices at the school are sufficiently powerful in terms of computing capacity			The availability of appropriate software is sufficient			Teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	80.8	(1.6)		72.4	(1.8)		76.8	(1.7)		84.3	(1.6)		92.6	(1.1)		67.7	(1.8)	
	Austria	82.0	(2.9)		67.9	(3.0)		72.0	(2.9)		79.1	(3.1)		85.3	(2.7)		83.3	(2.6)	
	Belgium	65.4	(2.4)		69.3	(2.4)		63.4	(2.6)		71.8	(2.8)		75.1	(2.2)		55.1	(2.8)	
	Canada	81.2	(1.7)		81.4	(2.1)		74.6	(2.2)		84.2	(1.7)		87.3	(1.4)		69.0	(2.3)	
	Chile	64.3	(3.9)		57.7	(3.6)		55.6	(3.9)		55.5	(3.8)		50.7	(4.1)		62.2	(3.7)	
	Colombia	28.6	(3.1)		25.2	(2.8)		36.7	(2.9)		28.4	(3.1)		27.8	(2.9)		55.5	(3.7)	
	Czech Republic	74.2	(2.5)		71.6	(2.6)		61.2	(3.0)		54.3	(3.2)		68.6	(2.7)		63.4	(2.9)	
	Denmark	84.8	(2.4)		89.9	(2.0)		76.0	(2.7)		83.7	(2.4)		83.5	(2.3)		80.2	(2.6)	
	Estonia	81.5	(1.7)		74.8	(1.6)		64.4	(1.9)		77.3	(1.8)		82.0	(1.6)		63.6	(2.1)	
	Finland	49.2	(2.8)		72.9	(3.5)		39.7	(3.2)		77.9	(3.0)		75.3	(3.1)		50.1	(3.1)	
	France	74.3	(3.3)		56.6	(3.4)		69.9	(3.1)		73.2	(3.2)		79.0	(2.7)		56.5	(3.2)	
	Germany	44.1	(3.6)		31.7	(3.7)		33.0	(3.5)		58.8	(3.8)		59.2	(4.0)		56.7	(3.8)	
	Greece	49.9	(3.1)		62.7	(2.7)		32.9	(3.2)		47.4	(3.0)		49.7	(3.1)		62.8	(3.1)	
	Hungary	50.7	(3.8)		48.0	(3.7)		42.4	(3.7)		42.2	(3.5)		62.9	(3.8)		55.5	(4.0)	
	Iceland	59.1	(0.2)		78.1	(0.2)		58.5	(0.2)		84.1	(0.2)		78.4	(0.2)		40.8	(0.3)	
	Ireland	56.5	(3.9)		75.9	(3.8)		45.3	(4.1)		73.2	(3.7)		71.9	(3.9)		49.3	(4.4)	
	Israel	47.3	(3.9)		45.6	(3.8)		38.8	(3.6)		48.1	(3.6)		55.7	(3.8)		55.6	(3.5)	
	Italy	71.4	(2.9)		60.4	(3.1)		63.2	(3.0)		70.8	(3.0)		70.7	(3.0)		50.2	(3.4)	
	Japan	36.5	(3.9)		45.2	(3.8)		27.2	(3.7)		46.1	(4.2)		39.7	(3.9)		27.3	(3.5)	
	Korea	76.4	(3.2)		83.4	(2.9)		65.9	(3.4)		75.6	(3.3)		69.7	(3.5)		83.2	(3.0)	
	Latvia	77.2	(2.0)		79.1	(1.4)		51.4	(2.1)		65.5	(2.2)		80.7	(1.7)		79.8	(1.7)	
	Lithuania	86.5	(1.2)		91.3	(0.9)		74.6	(1.7)		77.3	(1.6)		71.5	(1.7)		84.1	(1.4)	
	Luxembourg	75.8	(0.1)		78.8	(0.1)		59.6	(0.1)		89.4	(0.1)		89.6	(0.1)		59.3	(0.1)	
	Mexico	34.2	(2.8)		31.7	(2.9)		33.7	(3.1)		37.1	(3.3)		41.9	(3.3)		76.5	(3.0)	
	Netherlands	76.4	(3.2)		87.1	(3.0)		68.9	(3.7)		84.1	(3.0)		87.3	(2.7)		51.6	(4.3)	
	New Zealand	81.0	(2.9)		87.9	(2.4)		69.7	(3.4)		94.3	(1.6)		93.1	(1.4)		60.5	(3.2)	
	Norway	71.1	(3.0)		79.9	(2.5)		65.8	(3.1)		81.0	(2.5)		82.3	(2.6)		74.5	(2.6)	
	Poland	68.0	(3.4)		58.9	(3.4)		56.1	(3.6)		51.1	(3.7)		54.4	(3.3)		78.5	(2.5)	
	Portugal	47.5	(3.4)		32.0	(3.4)		39.7	(3.2)		30.7	(2.8)		44.3	(3.2)		62.5	(3.2)	
	Slovak Republic	68.4	(2.6)		61.0	(2.7)		62.7	(2.8)		58.9	(2.8)		76.4	(2.6)		82.6	(2.0)	
	Slovenia	89.3	(0.3)		90.0	(0.3)		85.7	(0.4)		81.6	(0.4)		86.4	(0.5)		77.2	(0.6)	
	Spain	53.3	(2.4)		52.9	(2.3)		43.6	(2.0)		49.4	(1.9)		53.5	(2.1)		53.3	(2.3)	
	Sweden	86.1	(2.6)		89.1	(2.3)		80.8	(3.0)		93.0	(1.8)		87.2	(2.4)		72.0	(3.1)	
	Switzerland	78.9	(3.3)		73.8	(3.6)		68.4	(3.7)		86.0	(2.4)		89.7	(2.2)		70.0	(3.0)	
	Turkey	82.0	(3.1)		76.6	(3.0)		78.3	(3.1)		82.1	(2.9)		68.1	(3.4)		74.9	(3.2)	
	United Kingdom	69.1	(3.6)		75.2	(2.7)		66.7	(3.1)		66.8	(3.2)		80.8	(2.4)		72.3	(3.3)	
	United States	84.5	(3.3)		82.4	(3.3)		78.3	(3.5)		89.3	(2.7)		86.7	(2.9)		73.6	(3.5)	
	OECD average	67.2	(0.5)		67.5	(0.5)		59.0	(0.5)		68.5	(0.5)		71.3	(0.5)		64.6	(0.5)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.5.15 [2/4] **School's capacity to enhance teaching and learning using digital devices**
Results based on principals' reports

		Percentage of students in schools whose principal agreed or strongly agreed with the following statements:																
		The number of digital devices connected to the Internet is sufficient			The school's Internet bandwidth or speed is sufficient			The number of digital devices for instruction is sufficient			Digital devices at the school are sufficiently powerful in terms of computing capacity			The availability of appropriate software is sufficient			Teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	43.9	(2.2)		66.5	(2.8)		38.0	(2.5)		34.3	(2.5)		46.8	(2.7)		89.3	(1.8)	
	Argentina	29.4	(2.6)		21.7	(2.2)		23.3	(2.6)		29.6	(2.6)		33.7	(2.8)		40.9	(2.9)	
	Baku (Azerbaijan)	57.3	(4.0)	†	52.3	(4.3)	†	39.3	(3.9)	†	46.1	(4.3)	†	70.5	(3.7)	†	64.8	(4.0)	†
	Belarus	62.9	(3.5)		79.8	(3.0)		57.8	(3.8)		57.1	(3.8)		65.0	(3.3)		85.7	(2.5)	
	Bosnia and Herzegovina	46.5	(3.6)		49.7	(3.0)		37.5	(3.3)		36.5	(3.1)		35.0	(3.2)		66.8	(3.3)	
	Brazil	27.5	(1.6)		26.0	(1.8)		23.0	(1.9)		27.4	(2.0)		24.7	(1.8)		50.6	(2.2)	
	Brunei Darussalam	50.1	(0.1)		32.2	(0.1)		31.1	(0.1)		47.8	(0.1)		55.9	(0.1)		70.7	(0.1)	
	B-S-J-Z (China)	91.1	(2.3)		95.8	(1.2)		93.6	(1.5)		85.9	(2.6)		79.4	(2.9)		91.7	(1.8)	
	Bulgaria	53.4	(3.9)		79.4	(3.1)		42.4	(4.0)		66.5	(4.0)		70.2	(3.7)		79.5	(2.9)	
	Costa Rica	39.4	(3.4)		34.3	(3.0)		32.5	(3.5)		47.7	(3.6)		40.5	(3.5)		54.5	(3.5)	
	Croatia	76.4	(3.2)		69.9	(3.3)		65.0	(3.6)		53.1	(3.6)		57.8	(3.6)		61.9	(3.3)	
	Cyprus	90.1	(0.7)		71.3	(0.5)		71.6	(0.8)		82.2	(0.7)		77.2	(0.7)		80.7	(0.2)	
	Dominican Republic	44.0	(3.1)		44.4	(3.4)		43.2	(3.4)		56.7	(3.4)		45.6	(4.0)		59.4	(3.8)	
	Georgia	61.1	(3.0)		72.2	(3.1)		50.2	(3.3)		76.9	(2.6)		89.8	(1.8)		72.7	(2.8)	
	Hong Kong (China)	72.8	(4.4)		86.8	(3.3)		65.3	(4.8)		69.4	(4.3)		68.3	(4.3)		53.2	(4.9)	
	Indonesia	78.6	(3.5)		79.6	(3.7)		62.9	(4.0)		64.4	(4.3)		65.2	(3.9)		81.6	(3.3)	
	Jordan	49.8	(3.2)		52.0	(3.5)		37.5	(3.2)		39.9	(2.9)		57.5	(2.9)		65.4	(3.3)	
	Kazakhstan	63.2	(2.4)		64.5	(2.2)		56.9	(2.6)		52.7	(2.8)		73.4	(2.4)		90.1	(1.6)	
	Kosovo	22.1	(1.4)		28.7	(1.3)		14.5	(1.2)		20.7	(1.2)		17.3	(1.2)		72.2	(1.8)	
	Lebanon	51.7	(3.0)		46.6	(3.0)		55.9	(3.3)		61.0	(2.7)		58.4	(2.7)		63.9	(2.7)	
	Macao (China)	91.1	(0.0)		68.0	(0.0)		73.0	(0.0)		65.6	(0.0)		80.9	(0.1)		67.8	(0.1)	
	Malaysia	41.7	(3.6)		36.0	(3.6)		31.4	(3.0)		34.4	(3.0)		48.7	(3.8)		73.2	(3.0)	
	Malta	72.0	(0.2)		61.3	(0.2)		71.8	(0.1)		74.1	(0.2)		69.5	(0.2)		59.6	(0.2)	
	Moldova	51.5	(3.5)		60.3	(3.1)		41.7	(3.4)		47.6	(3.7)		22.0	(3.1)		72.8	(3.3)	
	Montenegro	42.8	(0.4)		75.2	(0.5)		39.7	(0.7)		32.2	(0.4)		56.7	(0.6)		75.6	(0.3)	
	Morocco	27.7	(3.3)		25.8	(3.2)		18.6	(2.8)		24.9	(3.1)		26.5	(3.4)		41.0	(3.6)	
	North Macedonia	34.3	(0.1)		31.6	(0.1)		37.5	(0.1)		36.8	(0.1)		43.7	(0.1)		78.6	(0.1)	
	Panama	33.7	(2.7)		25.2	(2.7)		28.8	(2.8)		31.6	(2.8)		26.4	(2.8)		72.2	(2.4)	
	Peru	32.0	(2.0)		26.9	(2.2)		31.0	(2.3)		35.0	(2.7)		31.8	(2.2)		54.1	(3.1)	
	Philippines	43.0	(3.4)		41.2	(3.5)		42.3	(3.0)		48.3	(3.2)		49.6	(3.0)		90.3	(2.3)	
	Qatar	88.0	(0.1)		78.9	(0.1)		84.5	(0.1)		91.2	(0.1)		82.2	(0.1)		90.3	(0.1)	
	Romania	60.2	(3.7)		76.2	(3.5)		47.2	(3.7)		49.3	(3.6)		44.4	(3.5)		78.7	(3.4)	
	Russia	75.3	(2.4)		76.7	(2.5)		62.4	(3.4)		52.7	(3.2)		69.4	(2.8)		88.0	(2.2)	
	Saudi Arabia	60.6	(3.4)		43.8	(3.2)		49.2	(3.1)		51.9	(2.9)		49.7	(3.0)		85.4	(2.5)	
	Serbia	53.2	(4.1)		61.0	(3.5)		42.9	(3.5)		48.7	(3.4)		49.4	(3.7)		70.6	(3.5)	
	Singapore	95.2	(0.1)		90.3	(0.6)		93.7	(0.1)		97.3	(0.0)		97.1	(0.0)		89.3	(0.8)	
	Chinese Taipei	87.8	(2.6)		82.0	(3.0)		78.2	(3.2)		82.5	(3.0)		77.6	(3.3)		70.8	(3.4)	
	Thailand	68.7	(3.2)		69.3	(3.2)		56.1	(3.7)		63.0	(3.0)		66.1	(3.4)		86.2	(2.9)	
	Ukraine	39.0	(3.4)		58.7	(3.4)		25.3	(3.1)		30.0	(3.7)		27.8	(3.3)		81.0	(2.9)	
	United Arab Emirates	85.0	(1.9)		79.8	(1.8)		85.6	(0.5)		86.4	(1.9)		85.2	(1.9)		91.0	(0.9)	
	Uruguay	40.3	(3.6)		32.8	(3.0)		35.6	(3.6)		35.8	(3.7)		38.7	(3.6)		49.5	(3.7)	
	Viet Nam	74.8	(3.8)		79.7	(3.5)		62.8	(4.1)		65.5	(4.0)		77.7	(3.2)		77.6	(4.0)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.5.15 [3/4] **School's capacity to enhance teaching and learning using digital devices**
Results based on principals' reports

		Percentage of students in schools whose principal agreed or strongly agreed with the following statements:														
		Teachers have sufficient time to prepare lessons integrating digital devices			Effective professional resources for teachers to learn how to use digital devices are available			An effective online learning support platform is available			Teachers are provided with incentives to integrate digital devices in their teaching			The school has sufficient qualified technical assistant staff		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	56.6	(2.0)		72.3	(1.9)		75.9	(1.7)		35.9	(1.8)		76.2	(1.7)	
	Austria	80.6	(2.5)		79.3	(2.7)		67.3	(2.9)		72.0	(3.2)		72.9	(2.9)	
	Belgium	70.8	(2.9)		65.4	(2.8)		46.9	(2.7)		59.6	(3.3)		54.3	(2.8)	
	Canada	68.3	(2.3)		77.6	(1.9)		65.1	(1.7)		34.5	(2.4)		61.9	(2.6)	
	Chile	66.5	(3.7)		67.6	(3.7)		38.7	(3.7)		21.7	(2.9)		68.3	(3.6)	
	Colombia	70.1	(3.0)		49.8	(3.8)		36.2	(3.5)		23.5	(2.9)		27.1	(3.0)	
	Czech Republic	62.0	(2.5)		88.6	(2.1)		57.0	(3.1)		82.6	(2.2)		48.2	(3.3)	
	Denmark	64.1	(3.4)		82.2	(2.6)		90.9	(2.1)		88.8	(2.2)		79.5	(2.6)	
	Estonia	49.8	(2.4)		79.3	(1.8)		66.5	(2.0)		64.1	(1.9)		63.3	(2.0)	
	Finland	44.5	(3.6)		61.9	(3.5)		80.0	(2.6)		37.4	(2.9)		64.8	(3.3)	
	France	81.1	(2.9)		70.9	(3.3)		35.2	(3.3)		71.8	(3.1)		49.1	(3.6)	
	Germany	44.3	(3.5)		40.7	(3.8)		32.7	(3.7)		45.4	(4.1)		34.4	(3.3)	
	Greece	60.5	(3.5)		44.0	(2.9)		34.2	(3.6)		33.8	(3.3)		13.8	(2.2)	
	Hungary	30.8	(3.3)		28.8	(3.4)		35.4	(3.0)		78.9	(2.8)		66.7	(3.5)	
	Iceland	60.0	(0.2)		63.7	(0.2)		42.8	(0.3)		90.6	(0.1)		75.9	(0.2)	
	Ireland	51.1	(4.3)		47.4	(4.1)		45.4	(4.0)		36.2	(4.2)		20.7	(3.1)	
	Israel	50.5	(3.9)		51.3	(3.7)		68.2	(2.9)		27.8	(3.8)		55.7	(3.8)	
	Italy	57.5	(3.3)		74.5	(3.0)		46.3	(3.3)		49.4	(3.3)		44.0	(3.5)	
	Japan	11.7	(2.1)		19.1	(2.8)		24.0	(3.5)		43.5	(3.6)		10.2	(2.3)	
	Korea	52.8	(3.8)		51.9	(3.8)		55.8	(3.7)		19.1	(3.3)		36.9	(3.6)	
	Latvia	29.9	(2.0)		57.3	(2.1)		51.3	(2.0)		69.5	(2.0)		42.7	(2.3)	
	Lithuania	69.1	(1.5)		77.8	(1.3)		66.8	(1.8)		96.0	(0.7)		71.1	(1.4)	
	Luxembourg	67.2	(0.1)		65.4	(0.1)		23.9	(0.1)		88.3	(0.1)		46.9	(0.1)	
	Mexico	62.3	(3.0)		55.3	(3.0)		33.8	(3.0)		18.8	(2.5)		44.7	(3.4)	
	Netherlands	70.3	(3.9)		70.7	(4.1)		50.4	(4.5)		90.5	(2.6)		78.1	(3.5)	
	New Zealand	41.5	(3.5)		73.9	(3.5)		76.5	(2.9)		31.3	(2.7)		77.2	(2.6)	
	Norway	74.3	(2.7)		72.7	(2.7)		76.1	(2.8)		72.7	(3.1)		90.1	(2.1)	
	Poland	77.0	(2.6)		66.9	(2.9)		34.7	(3.0)		95.1	(1.4)		31.4	(3.0)	
	Portugal	49.0	(3.7)		53.4	(3.4)		34.9	(3.4)		41.6	(3.3)		27.9	(2.7)	
	Slovak Republic	75.5	(2.8)		77.1	(2.4)		41.5	(3.0)		67.5	(2.4)		45.3	(3.0)	
	Slovenia	87.9	(0.5)		78.0	(0.4)		77.4	(0.5)		95.7	(0.3)		61.1	(0.6)	
	Spain	33.1	(2.2)		55.2	(2.0)		51.5	(2.6)		11.5	(1.3)		38.2	(2.2)	
	Sweden	82.3	(2.9)		83.2	(2.6)		80.0	(2.8)		89.0	(2.2)		76.6	(2.9)	
	Switzerland	74.5	(3.2)		72.6	(3.8)		48.5	(3.8)		65.2	(3.5)		75.0	(3.2)	
	Turkey	84.7	(2.9)		75.7	(3.0)		65.5	(3.3)		91.9	(2.2)		42.5	(3.2)	
	United Kingdom	63.0	(3.9)		64.5	(3.5)		65.9	(3.8)		26.0	(3.4)		69.3	(3.2)	
	United States	78.5	(3.6)		77.5	(3.0)		77.1	(2.9)		30.6	(4.3)		60.4	(3.7)	
	OECD average	60.9	(0.5)		64.7	(0.5)		54.1	(0.5)		56.7	(0.5)		54.1	(0.5)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.5.15 [4/4] **School's capacity to enhance teaching and learning using digital devices**
Results based on principals' reports

		Percentage of students in schools whose principal agreed or strongly agreed with the following statements:														
		Teachers have sufficient time to prepare lessons integrating digital devices			Effective professional resources for teachers to learn how to use digital devices are available			An effective online learning support platform is available			Teachers are provided with incentives to integrate digital devices in their teaching			The school has sufficient qualified technical assistant staff		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	79.8	(2.8)		70.9	(2.9)		32.2	(2.4)		66.2	(3.1)		75.9	(2.1)	
	Argentina	34.8	(2.9)		48.7	(3.5)		18.9	(2.2)		27.4	(3.0)		30.5	(2.8)	
	Baku (Azerbaijan)	84.2	(2.8)	†	62.5	(4.1)	†	41.3	(4.0)	†	82.8	(3.0)	†	59.4	(4.0)	†
	Belarus	85.0	(2.5)		61.5	(3.6)		27.4	(3.4)		92.4	(1.7)		68.2	(3.2)	
	Bosnia and Herzegovina	81.7	(2.4)		56.0	(4.1)		33.6	(3.7)		52.5	(4.3)		54.4	(3.4)	
	Brazil	52.2	(2.2)		42.3	(2.2)		35.0	(2.2)		56.0	(2.2)		20.1	(2.1)	
	Brunei Darussalam	64.4	(0.1)		60.6	(0.1)		34.4	(0.1)		27.1	(0.1)		48.3	(0.1)	
	B-S-J-Z (China)	89.6	(2.1)		89.1	(2.3)		94.6	(1.7)		89.4	(2.1)		87.0	(2.3)	
	Bulgaria	64.2	(3.9)		77.9	(3.0)		40.4	(3.5)		90.4	(2.2)		67.7	(3.5)	
	Costa Rica	42.5	(3.5)		48.2	(3.3)		20.0	(2.9)		24.6	(3.0)		40.2	(3.1)	
	Croatia	79.2	(2.6)		72.8	(3.1)		48.6	(3.4)		94.9	(1.5)		41.7	(3.5)	
	Cyprus	69.5	(0.4)		75.3	(0.4)		44.5	(0.5)		45.2	(0.5)		48.6	(0.5)	
	Dominican Republic	72.3	(3.2)		69.3	(3.3)		46.7	(3.7)		91.7	(2.1)		57.7	(3.7)	
	Georgia	85.6	(2.4)		86.0	(2.2)		60.4	(3.1)		76.1	(2.7)		85.5	(1.9)	
	Hong Kong (China)	32.4	(5.0)		68.9	(4.2)		67.4	(4.2)		28.0	(4.1)		60.8	(4.6)	
	Indonesia	79.6	(3.4)		65.2	(4.0)		59.1	(4.7)		50.2	(4.7)		71.2	(4.1)	
	Jordan	40.9	(3.4)		44.4	(3.4)		43.4	(3.7)		38.3	(3.7)		59.9	(3.3)	
	Kazakhstan	80.6	(1.8)		78.6	(2.0)		69.9	(2.6)		90.4	(1.4)		81.0	(2.0)	
	Kosovo	80.4	(1.2)		66.0	(1.5)		22.0	(1.3)		56.0	(1.7)		72.3	(1.6)	
	Lebanon	59.3	(3.0)		61.1	(3.2)		35.2	(3.2)		59.4	(2.6)		56.4	(2.9)	
	Macao (China)	71.9	(0.1)		87.0	(0.0)		68.8	(0.1)		86.6	(0.0)		92.4	(0.0)	
	Malaysia	48.2	(3.5)		69.3	(3.3)		68.2	(3.3)		40.0	(3.4)		37.0	(3.9)	
	Malta	67.5	(0.2)		63.4	(0.1)		58.5	(0.1)		47.8	(0.1)		64.6	(0.1)	
	Moldova	54.4	(3.3)		60.8	(3.4)		40.5	(3.5)		84.5	(2.8)		44.8	(3.3)	
	Montenegro	88.4	(0.3)		70.5	(0.3)		49.3	(0.6)		78.3	(0.2)		73.1	(0.2)	
	Morocco	53.2	(4.0)		40.8	(3.7)		27.8	(3.2)		64.5	(3.4)		24.3	(3.3)	
	North Macedonia	80.4	(0.1)		58.5	(0.1)		24.5	(0.1)		81.9	(0.1)		61.4	(0.1)	
	Panama	78.1	(2.1)		63.1	(2.6)		23.9	(2.6)		29.0	(3.0)		51.3	(2.6)	
	Peru	60.8	(2.8)		48.5	(2.6)		24.0	(2.3)		22.2	(2.1)		43.9	(2.7)	
	Philippines	86.6	(2.5)		84.7	(2.7)		54.3	(3.5)		42.3	(3.4)		64.9	(3.9)	
	Qatar	86.7	(0.1)		90.3	(0.1)		80.4	(0.1)		77.3	(0.1)		92.5	(0.1)	
	Romania	62.8	(3.9)		65.5	(3.8)		31.3	(3.8)		18.2	(3.1)		63.4	(4.4)	
	Russia	78.4	(2.6)		78.4	(2.6)		42.8	(2.8)		88.4	(2.1)		82.8	(2.4)	
	Saudi Arabia	72.3	(2.9)		65.7	(3.1)		48.6	(3.7)		49.4	(3.5)		49.1	(3.5)	
	Serbia	79.5	(2.8)		70.1	(3.3)		40.0	(3.5)		63.1	(3.5)		52.4	(4.0)	
	Singapore	75.8	(0.9)		93.7	(0.4)		95.8	(0.6)		56.4	(1.2)		92.8	(0.4)	
	Chinese Taipei	68.7	(3.9)		77.3	(3.3)		76.7	(3.3)		98.5	(0.9)		71.1	(3.5)	
	Thailand	72.3	(3.0)		76.2	(2.9)		76.8	(3.0)		86.3	(2.3)		66.2	(3.5)	
	Ukraine	74.7	(2.9)		81.3	(2.3)		64.5	(3.9)		82.6	(3.0)		38.3	(3.7)	
	United Arab Emirates	88.8	(1.0)		88.9	(0.8)		71.6	(1.7)		78.6	(1.3)		84.6	(1.2)	
	Uruguay	39.5	(3.9)		48.3	(3.6)		47.4	(3.6)		26.8	(3.5)		63.7	(3.3)	
	Viet Nam	74.8	(3.7)		54.5	(4.6)		43.4	(4.5)		23.7	(3.6)		60.5	(4.8)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132260

Table V.B1.6.1 [1/2] **Learning time per week in regular school lessons, by subject**
In hours; results based on students' reports

	Regular language-of-instruction lessons			Regular mathematics lessons			Regular science lessons			Foreign language lessons			Total learning time in regular lessons[1]			Difference between language-of-instruction lessons and foreign language lessons		
	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Dif.	S.E.	x
OECD																		
Australia	3.9	(0.0)	†	3.9	(0.0)	†	3.5	(0.0)	†	1.2	(0.0)	†	25.8	(0.1)	†	**2.7**	(0.0)	†
Austria	2.6	(0.0)		2.6	(0.0)		3.5	(0.1)	†	3.6	(0.1)		28.8	(0.2)	†	**-1.0**	(0.1)	†
Belgium	3.6	(0.0)		3.5	(0.0)		3.1	(0.0)		4.7	(0.1)		27.8	(0.1)		**-1.2**	(0.1)	
Canada	5.4	(0.1)		5.2	(0.0)		5.1	(0.0)		2.9	(0.1)		28.2	(0.1)	†	**2.4**	(0.1)	
Chile	6.8	(0.1)	†	7.3	(0.1)	†	5.8	(0.1)	†	4.3	(0.1)	†	31.1	(0.3)	‡	**2.5**	(0.1)	†
Colombia	3.7	(0.1)	†	4.0	(0.1)	†	3.3	(0.1)	†	3.2	(0.1)	†	27.6	(0.3)	‡	**0.5**	(0.1)	†
Czech Republic	3.1	(0.0)		3.2	(0.0)		4.0	(0.1)		3.9	(0.0)		25.6	(0.1)		**-0.8**	(0.0)	
Denmark	5.8	(0.1)	†	4.5	(0.0)	†	3.7	(0.0)	†	4.8	(0.1)	†	27.6	(0.2)	†	**1.0**	(0.1)	†
Estonia	3.1	(0.0)		3.5	(0.0)		3.6	(0.0)		4.0	(0.0)		26.1	(0.1)		**-0.9**	(0.0)	
Finland	2.5	(0.0)		2.8	(0.0)		2.5	(0.0)		3.8	(0.0)		24.7	(0.2)		**-1.2**	(0.0)	
France	3.7	(0.0)	†	3.6	(0.0)	†	2.8	(0.0)	†	4.5	(0.1)	†	27.4	(0.2)	†	**-0.8**	(0.1)	†
Germany	3.3	(0.0)	‡	3.4	(0.1)	‡	3.7	(0.1)	‡	4.4	(0.1)	‡	26.7	(0.2)	‡	**-1.1**	(0.1)	‡
Greece	2.8	(0.0)		3.4	(0.0)		3.6	(0.0)		1.8	(0.0)		27.7	(0.1)	†	**1.0**	(0.0)	
Hungary	2.8	(0.0)		2.5	(0.0)		2.9	(0.1)		4.7	(0.1)		26.4	(0.1)	†	**-1.9**	(0.1)	
Iceland	4.1	(0.0)	†	4.1	(0.0)	†	2.4	(0.0)	†	4.7	(0.0)	†	27.3	(0.2)	†	**-0.5**	(0.0)	†
Ireland	3.1	(0.0)		3.2	(0.0)		2.4	(0.0)		2.5	(0.0)		28.8	(0.1)	†	**0.6**	(0.0)	
Israel	3.3	(0.0)		4.2	(0.0)		3.4	(0.1)		3.8	(0.1)		29.2	(0.2)	†	**-0.5**	(0.1)	
Italy	4.6	(0.0)	†	3.8	(0.0)	†	2.3	(0.0)	†	3.8	(0.1)	†	29.0	(0.1)	†	**0.7**	(0.1)	†
Japan	3.6	(0.0)		4.1	(0.0)		2.9	(0.1)		4.0	(0.0)		28.0	(0.1)		**-0.4**	(0.0)	
Korea	3.1	(0.0)		3.0	(0.0)		3.0	(0.1)		3.2	(0.1)		29.6	(0.2)		**-0.2**	(0.1)	
Latvia	2.7	(0.0)		3.8	(0.0)		4.0	(0.0)		3.7	(0.0)		25.9	(0.1)		**-0.9**	(0.0)	
Lithuania	3.5	(0.0)		3.0	(0.0)		4.4	(0.0)		3.7	(0.0)		25.2	(0.0)		**-0.2**	(0.0)	
Luxembourg	3.5	(0.0)		3.5	(0.0)		3.2	(0.0)		6.2	(0.0)		27.4	(0.1)		**-2.7**	(0.0)	
Mexico	3.9	(0.0)	†	4.0	(0.0)	†	3.9	(0.1)	†	2.9	(0.0)	†	28.4	(0.3)	‡	**0.9**	(0.0)	†
Netherlands	2.8	(0.0)		2.6	(0.0)		4.4	(0.1)		3.8	(0.1)		27.2	(0.2)		**-1.0**	(0.1)	
New Zealand	4.1	(0.0)		4.0	(0.0)		4.1	(0.1)		1.2	(0.0)		25.6	(0.1)	†	**2.9**	(0.1)	
Norway	3.8	(0.0)		3.3	(0.0)		2.4	(0.0)		2.8	(0.0)		25.6	(0.2)		**1.0**	(0.0)	
Poland	3.8	(0.0)		3.6	(0.0)		2.9	(0.0)		3.6	(0.0)		28.3	(0.1)		**0.3**	(0.0)	
Portugal	4.1	(0.1)		4.5	(0.1)		3.5	(0.1)		3.8	(0.0)		29.3	(0.2)	†	**0.3**	(0.0)	
Slovak Republic	3.4	(0.0)		3.2	(0.0)		2.6	(0.1)		4.3	(0.1)		25.3	(0.1)	†	**-0.9**	(0.1)	
Slovenia	3.0	(0.0)		2.8	(0.0)		3.3	(0.0)		3.0	(0.0)		28.1	(0.1)	†	**-0.1**	(0.0)	
Spain	3.6	(0.0)	†	3.8	(0.0)	†	3.2	(0.0)	†	3.9	(0.0)	†	29.0	(0.1)	†	**-0.4**	(0.0)	†
Sweden	3.1	(0.0)		3.3	(0.0)		3.1	(0.0)		3.8	(0.1)		27.2	(0.2)		**-0.7**	(0.1)	
Switzerland	3.3	(0.1)	†	3.4	(0.1)	†	2.5	(0.1)	†	4.2	(0.1)	†	26.1	(0.2)	†	**-0.9**	(0.1)	†
Turkey	3.5	(0.0)		3.9	(0.0)		3.4	(0.1)		3.2	(0.1)		26.2	(0.2)		**0.3**	(0.1)	
United Kingdom	4.3	(0.0)		4.2	(0.0)		5.1	(0.0)		1.7	(0.0)		26.9	(0.1)		**2.6**	(0.1)	
United States	4.2	(0.1)		4.1	(0.1)		4.1	(0.1)		2.9	(0.1)		30.4	(0.2)	†	**1.3**	(0.1)	
OECD average	3.7	(0.0)		3.7	(0.0)		3.4	(0.0)		3.6	(0.0)		27.5	(0.0)		**0.1**	(0.0)	

1. Total learning time includes all school subjects.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132279

Table V.B1.6.1 [2/2] **Learning time per week in regular school lessons, by subject**
In hours; results based on students' reports

	Regular language-of-instruction lessons			Regular mathematics lessons			Regular science lessons			Foreign language lessons			Total learning time in regular lessons[1]			Difference between language-of-instruction lessons and foreign language lessons		
Partners	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Dif.	S.E.	x
Albania	2.9	(0.0)		3.2	(0.0)		4.9	(0.1)		3.3	(0.1)		25.2	(0.1)		**-0.4**	(0.1)	
Argentina	3.0	(0.0)	‡	3.2	(0.0)	‡	3.4	(0.1)	‡	2.4	(0.1)	‡	26.0	(0.4)	‡	**0.6**	(0.1)	‡
Baku (Azerbaijan)	3.4	(0.1)	†	4.7	(0.1)	†	5.7	(0.1)	†	3.3	(0.1)	†	26.3	(0.2)	‡	0.0	(0.0)	†
Belarus	2.3	(0.0)		3.3	(0.0)		3.7	(0.1)		2.6	(0.0)		25.8	(0.1)		**-0.2**	(0.0)	
Bosnia and Herzegovina	2.6	(0.0)		2.6	(0.0)		2.8	(0.1)		2.6	(0.1)		26.1	(0.2)	†	0.0	(0.0)	
Brazil	3.8	(0.0)	†	3.8	(0.0)	†	2.9	(0.1)	†	1.8	(0.0)	†	25.7	(0.2)	‡	**1.9**	(0.0)	†
Brunei Darussalam	3.4	(0.0)	†	3.7	(0.0)	†	4.5	(0.1)	†	1.6	(0.0)	†	24.1	(0.2)	‡	**1.8**	(0.0)	†
B-S-J-Z (China)	4.6	(0.1)		5.0	(0.1)		5.5	(0.1)		4.6	(0.1)		31.8	(0.2)		0.0	(0.1)	
Bulgaria	2.9	(0.1)	†	2.7	(0.1)	†	4.9	(0.1)	†	4.2	(0.1)	†	25.2	(0.2)	†	**-1.3**	(0.1)	†
Costa Rica	4.0	(0.0)		4.3	(0.0)		4.7	(0.1)		5.4	(0.2)		30.8	(0.3)	†	**-1.4**	(0.1)	
Croatia	2.9	(0.0)		2.6	(0.0)		3.4	(0.1)		2.6	(0.0)		26.9	(0.1)	†	**0.3**	(0.0)	
Cyprus	4.3	(0.0)	†	3.8	(0.0)	†	3.8	(0.0)	†	3.2	(0.0)	†	28.1	(0.2)	‡	**1.2**	(0.0)	†
Dominican Republic	4.4	(0.1)	‡	4.4	(0.1)	‡	4.1	(0.1)	‡	3.7	(0.1)	‡	25.8	(0.5)	‡	**0.6**	(0.1)	‡
Georgia	4.0	(0.0)		3.9	(0.0)		3.0	(0.1)		2.7	(0.1)		25.7	(0.2)	†	**1.2**	(0.1)	
Hong Kong (China)	5.1	(0.1)		4.7	(0.1)		4.0	(0.1)		4.2	(0.1)		28.8	(0.1)		**0.9**	(0.1)	
Indonesia	4.0	(0.1)		4.2	(0.1)		3.7	(0.1)		3.5	(0.1)		27.3	(0.3)	‡	**0.6**	(0.1)	
Jordan	4.4	(0.0)		3.8	(0.0)		4.2	(0.0)		3.5	(0.0)		25.5	(0.1)		**0.9**	(0.0)	
Kazakhstan	2.8	(0.0)		3.4	(0.0)		2.7	(0.0)		2.2	(0.0)		26.7	(0.1)	†	**0.6**	(0.0)	
Kosovo	2.9	(0.0)		2.5	(0.0)		3.0	(0.0)		2.3	(0.0)		24.5	(0.2)	†	**0.5**	(0.0)	
Lebanon	m	m		m	m		m	m		m	m		m	m		m	m	
Macao (China)	4.2	(0.0)		4.4	(0.0)		3.8	(0.0)		3.9	(0.0)		28.6	(0.1)		**0.3**	(0.0)	
Malaysia	4.3	(0.1)		4.0	(0.1)		4.4	(0.1)		1.7	(0.1)		28.5	(0.2)	†	**2.6**	(0.1)	
Malta	4.2	(0.0)		4.0	(0.0)		3.8	(0.0)		2.9	(0.0)		28.5	(0.1)	†	**1.4**	(0.0)	
Moldova	3.9	(0.0)		3.2	(0.0)		3.9	(0.1)		3.0	(0.0)		22.8	(0.1)		**0.9**	(0.0)	
Montenegro	2.8	(0.0)		2.6	(0.0)		1.7	(0.0)		2.7	(0.0)		26.8	(0.2)	†	**0.1**	(0.0)	
Morocco	3.9	(0.1)	‡	5.8	(0.1)	‡	3.7	(0.1)	‡	4.9	(0.2)	‡	29.0	(0.3)	‡	**-1.0**	(0.2)	‡
North Macedonia	m	m		m	m		m	m		m	m		m	m		m	m	
Panama	3.8	(0.1)	‡	4.0	(0.1)	‡	3.7	(0.1)	‡	3.5	(0.1)	‡	25.4	(0.4)	‡	**0.4**	(0.1)	‡
Peru	5.4	(0.1)	‡	6.6	(0.2)	‡	4.6	(0.1)	‡	2.9	(0.1)	‡	30.4	(0.3)	‡	**2.6**	(0.2)	‡
Philippines	5.2	(0.1)		5.2	(0.1)		5.2	(0.1)		2.4	(0.1)	†	32.5	(0.2)	‡	**2.8**	(0.1)	†
Qatar	4.5	(0.0)		4.8	(0.0)		5.3	(0.0)		3.7	(0.0)		28.6	(0.1)	†	**0.9**	(0.0)	
Romania	3.0	(0.0)		2.7	(0.0)		3.4	(0.1)		2.7	(0.1)		25.0	(0.1)	†	**0.3**	(0.0)	
Russia	2.6	(0.1)		4.0	(0.0)		4.4	(0.1)		2.5	(0.0)		26.6	(0.2)	†	**0.1**	(0.1)	
Saudi Arabia	3.9	(0.0)		3.6	(0.0)		3.5	(0.0)		3.3	(0.0)		26.5	(0.1)		**0.6**	(0.1)	
Serbia	2.7	(0.0)	†	2.6	(0.0)	†	3.5	(0.1)	†	2.3	(0.0)	†	27.3	(0.2)	†	**0.3**	(0.0)	†
Singapore	4.4	(0.0)		5.2	(0.0)		5.4	(0.0)		4.6	(0.1)		28.7	(0.1)		**-0.3**	(0.1)	
Chinese Taipei	4.2	(0.0)		3.9	(0.0)		3.1	(0.0)		3.9	(0.0)		32.2	(0.2)		**0.3**	(0.0)	
Thailand	2.9	(0.1)		3.8	(0.1)		4.3	(0.1)		3.9	(0.1)		32.0	(0.2)	‡	**-1.0**	(0.1)	
Ukraine	4.3	(0.1)		3.3	(0.1)		4.0	(0.1)		2.8	(0.1)		24.6	(0.2)	†	**1.4**	(0.1)	
United Arab Emirates	4.5	(0.0)		5.1	(0.0)		5.0	(0.1)		3.7	(0.1)		29.4	(0.1)	†	**0.7**	(0.0)	
Uruguay	2.6	(0.0)	†	2.8	(0.0)	†	2.8	(0.1)	†	2.2	(0.1)	†	23.2	(0.3)	‡	**0.4**	(0.1)	†
Viet Nam	3.1	(0.0)		3.3	(0.0)		5.4	(0.0)		2.7	(0.0)		22.4	(0.1)		**0.4**	(0.0)	

1. Total learning time includes all school subjects.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132279

Table V.B1.6.19 [1/6] **Schools providing study help**
Results based on principals' reports

	Percentage of students in schools where the following study help is provided:											
	Room(s) where students can do their homework											
	All students			Socio-economically disadvantaged schools[1]			Socio-economically advantaged schools			Difference between advantaged and disadvantaged schools		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
OECD												
Australia	86.6	(1.4)		83.8	(2.9)		89.2	(2.7)		5.4	(3.8)	
Austria	76.4	(3.1)		73.1	(6.0)		72.2	(6.2)		-0.9	(9.1)	
Belgium	83.6	(1.9)		75.7	(4.3)		91.0	(3.6)		**15.3**	(6.0)	
Canada	91.0	(1.4)		91.5	(2.4)		94.4	(2.9)		2.9	(3.4)	
Chile	75.3	(3.6)		71.8	(7.6)		77.3	(5.4)		5.6	(9.2)	
Colombia	45.0	(3.6)		39.1	(7.1)		65.8	(6.7)		**26.7**	(9.4)	
Czech Republic	56.8	(2.7)		38.5	(5.5)		78.5	(4.3)		**40.1**	(7.6)	
Denmark	79.0	(3.1)	†	80.9	(5.3)		76.1	(6.5)		-4.8	(8.7)	
Estonia	67.8	(1.8)		80.5	(4.4)		63.7	(4.0)		**-16.8**	(6.0)	
Finland	64.0	(3.6)		56.2	(7.0)		72.3	(6.9)		16.1	(9.4)	
France	91.5	(2.1)		90.8	(3.8)		91.7	(4.0)		0.9	(5.6)	
Germany	71.6	(3.2)		68.5	(6.4)		82.4	(5.5)		13.9	(8.6)	
Greece	41.4	(3.7)		35.4	(7.5)		54.9	(7.1)		19.5	(10.1)	
Hungary	68.3	(3.5)		75.4	(5.8)		74.1	(6.6)		-1.2	(8.9)	
Iceland	86.1	(0.2)		80.5	(0.5)		88.3	(0.3)		**7.8**	(0.7)	
Ireland	88.1	(2.7)		89.5	(4.5)		80.8	(6.5)		-8.7	(7.8)	
Israel	48.2	(4.2)		46.3	(9.4)		55.6	(6.5)		9.3	(11.3)	
Italy	46.1	(3.4)		35.5	(6.4)		49.5	(6.8)		14.0	(9.7)	
Japan	91.7	(1.7)		88.0	(4.7)		95.6	(3.1)		7.6	(5.6)	
Korea	86.3	(2.3)		82.7	(6.1)		80.4	(6.1)		-2.3	(9.0)	
Latvia	67.3	(1.6)		80.1	(3.6)		61.4	(2.8)		**-18.7**	(4.1)	
Lithuania	84.0	(1.4)		79.7	(3.8)		82.6	(2.0)		3.0	(4.3)	
Luxembourg	97.8	(0.0)		100.0	c		100.0	c		0.0	c	
Mexico	65.1	(3.3)		61.9	(6.1)		76.3	(6.0)		14.4	(8.0)	
Netherlands	84.0	(2.9)		70.1	(6.6)		87.0	(6.2)		16.9	(9.1)	
New Zealand	89.5	(2.4)		84.0	(5.6)		93.3	(3.8)		9.3	(6.6)	
Norway	75.3	(2.7)		78.6	(4.7)		80.4	(5.3)		1.8	(7.3)	
Poland	78.3	(2.4)		85.2	(4.9)		70.7	(6.1)		-14.5	(7.8)	
Portugal	83.2	(2.4)		79.2	(5.9)		84.4	(5.0)		5.2	(7.7)	
Slovak Republic	41.6	(3.0)		36.0	(6.0)		42.6	(6.7)		6.6	(9.2)	
Slovenia	90.2	(0.3)		85.9	(0.8)		94.7	(0.2)		**8.8**	(0.9)	
Spain	71.3	(2.0)		77.3	(3.7)		79.2	(2.9)		1.9	(4.6)	
Sweden	97.7	(1.0)		96.0	(2.7)		99.5	(0.4)		3.5	(2.7)	
Switzerland	83.8	(2.8)		78.6	(6.3)		98.5	(0.2)		**19.9**	(6.3)	
Turkey	68.9	(3.0)		55.1	(6.8)		83.7	(6.1)		**28.6**	(10.2)	
United Kingdom	95.5	(1.4)		98.7	(0.6)		96.8	(2.1)		-1.9	(2.2)	
United States	80.9	(3.0)		74.2	(6.9)		87.4	(5.4)		13.2	(8.8)	
OECD average	75.7	(0.4)		73.1	(0.9)		79.8	(0.8)		**6.7**	(1.2)	

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

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132279

Table V.B1.6.19 [2/6] **Schools providing study help**
Results based on principals' reports

	Percentage of students in schools where the following study help is provided:											
	Room(s) where students can do their homework											
	All students			Socio-economically disadvantaged schools[1]			Socio-economically advantaged schools			Difference between advantaged and disadvantaged schools		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
Partners												
Albania	27.0	(2.2)		15.3	(3.7)		35.5	(4.9)		**20.2**	(6.3)	
Argentina	35.5	(3.2)		39.0	(6.1)		44.1	(6.1)		5.1	(7.8)	
Baku (Azerbaijan)	58.5	(4.4)	‡	51.8	(7.8)	‡	77.2	(7.6)	†	**25.4**	(10.7)	‡
Belarus	71.1	(3.0)		81.1	(5.4)		72.9	(5.8)		-8.2	(8.1)	
Bosnia and Herzegovina	46.0	(3.2)		36.1	(7.6)		55.2	(5.2)		**19.1**	(9.5)	
Brazil	49.9	(2.3)		36.8	(4.4)		73.6	(4.1)		**36.7**	(5.9)	
Brunei Darussalam	72.0	(0.1)		67.8	(0.2)		65.2	(0.2)		**-2.6**	(0.3)	
B-S-J-Z (China)	50.8	(3.8)		35.6	(7.5)		62.4	(5.8)		**26.8**	(8.7)	
Bulgaria	47.4	(3.9)		57.2	(7.1)		37.4	(7.4)		-19.8	(10.4)	
Costa Rica	56.5	(3.9)		58.9	(7.7)		54.3	(8.5)		-4.7	(10.7)	
Croatia	69.3	(3.4)		72.1	(6.3)		70.0	(6.2)		-2.1	(9.1)	
Cyprus	40.5	(0.5)		33.8	(2.0)		44.0	(0.3)		**10.1**	(2.0)	
Dominican Republic	48.1	(3.7)		37.8	(6.1)		62.4	(8.5)		**24.6**	(10.5)	
Georgia	47.8	(2.6)		43.8	(4.3)		64.5	(6.0)		**20.7**	(8.5)	
Hong Kong (China)	88.4	(2.8)		87.9	(6.0)		93.6	(1.3)		5.7	(6.2)	
Indonesia	42.1	(4.3)		23.1	(6.7)		56.6	(9.8)		**33.5**	(11.6)	
Jordan	11.1	(2.4)		11.4	(5.1)		18.2	(5.8)		6.7	(7.7)	
Kazakhstan	48.1	(2.2)		50.8	(4.5)		40.5	(4.8)		-10.3	(7.0)	
Kosovo	25.3	(1.5)		19.1	(3.8)		36.0	(2.2)		**16.9**	(4.4)	
Lebanon	36.9	(3.2)		34.9	(5.2)		46.3	(6.8)		11.4	(9.1)	
Macao (China)	91.6	(0.0)		92.5	(0.1)		90.2	(0.1)		**-2.3**	(0.1)	
Malaysia	59.6	(3.6)		63.2	(7.6)		66.0	(7.5)		2.7	(11.4)	
Malta	42.4	(0.1)		37.5	(0.3)		45.6	(0.3)		**8.0**	(0.4)	
Moldova	68.0	(3.2)		70.4	(6.3)		61.2	(6.8)		-9.3	(8.7)	
Montenegro	48.2	(0.4)		47.9	(1.4)		38.7	(0.5)		**-9.2**	(1.5)	
Morocco	67.5	(3.6)		64.7	(6.3)		78.9	(5.5)		14.2	(8.7)	
North Macedonia	41.4	(0.1)		23.6	(0.2)		63.3	(0.2)		**39.7**	(0.3)	
Panama	56.2	(2.6)		37.7	(6.4)		58.5	(7.3)	†	**20.7**	(9.9)	†
Peru	69.6	(2.8)		79.8	(4.5)		66.5	(5.9)		-13.3	(7.9)	
Philippines	74.4	(3.2)		75.4	(6.6)		76.4	(7.1)		1.1	(10.0)	
Qatar	43.6	(0.1)		20.9	(0.2)		77.1	(0.2)		**56.2**	(0.3)	
Romania	61.0	(4.1)		65.9	(6.3)		58.5	(8.3)		-7.4	(10.1)	
Russia	46.8	(3.9)		35.0	(4.0)		49.3	(7.4)		**14.2**	(6.9)	
Saudi Arabia	61.6	(3.9)		61.2	(8.0)		63.5	(7.3)		2.4	(10.7)	
Serbia	52.4	(4.1)		51.1	(7.9)		54.0	(8.8)		2.9	(11.8)	
Singapore	95.8	(1.2)		95.6	(0.1)		91.9	(4.3)		-3.7	(4.3)	
Chinese Taipei	91.0	(2.2)		88.1	(4.9)		97.4	(2.6)		9.3	(5.5)	
Thailand	78.7	(3.3)		72.1	(7.0)		76.6	(6.8)		4.5	(9.4)	
Ukraine	49.1	(2.9)		62.3	(6.1)		31.1	(6.7)		**-31.2**	(9.2)	
United Arab Emirates	38.5	(1.5)		26.7	(1.1)		62.2	(3.6)		**35.5**	(3.6)	
Uruguay	78.0	(2.9)		60.2	(6.2)		92.7	(4.4)		**32.5**	(7.9)	
Viet Nam	39.6	(4.1)		32.6	(7.9)		51.7	(9.4)		19.1	(12.2)	

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

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132279

Table V.B1.6.19 [3/6] **Schools providing study help**
Results based on principals' reports

		Percentage of students in schools where the following study help is provided:											
		Staff provides help with homework											
		All students			Socio-economically disadvantaged schools			Socio-economically advantaged schools			Difference between advantaged and disadvantaged schools		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
OECD	Australia	92.6	(1.2)		94.6	(1.4)		86.3	(3.6)		**-8.3**	(3.8)	
	Austria	28.8	(2.9)		34.5	(5.6)		21.8	(6.7)		-12.6	(9.3)	
	Belgium	57.4	(2.8)		57.7	(5.8)		60.0	(5.8)		2.2	(8.0)	
	Canada	89.7	(1.2)		94.2	(1.5)		86.3	(2.9)		**-7.9**	(3.3)	
	Chile	39.1	(3.8)		57.8	(8.2)		17.3	(5.5)		**-40.5**	(9.7)	
	Colombia	19.2	(2.8)		13.6	(6.9)		37.6	(6.8)		**24.0**	(9.8)	
	Czech Republic	56.2	(3.1)		60.3	(5.4)		47.0	(5.4)		-13.4	(7.7)	
	Denmark	81.8	(3.2)		79.5	(5.9)		81.2	(6.4)		1.7	(8.6)	
	Estonia	56.5	(2.0)		68.2	(5.1)		40.5	(3.1)		**-27.7**	(5.9)	
	Finland	78.3	(3.0)		77.0	(5.7)		87.9	(4.6)		10.9	(7.8)	
	France	69.9	(3.1)		91.5	(3.3)		56.1	(7.7)		**-35.5**	(8.5)	
	Germany	50.6	(3.7)		53.1	(6.8)		41.0	(7.9)		-12.1	(10.7)	
	Greece	44.3	(3.5)		47.2	(7.2)		46.7	(6.9)		-0.5	(10.1)	
	Hungary	66.0	(3.4)		79.7	(4.8)		51.5	(7.4)		**-28.2**	(8.8)	
	Iceland	79.5	(0.2)		85.4	(0.4)		67.1	(0.4)		**-18.3**	(0.6)	
	Ireland	55.9	(4.3)		70.7	(7.3)		53.3	(9.3)		-17.5	(11.8)	
	Israel	66.2	(3.5)		73.3	(7.1)		57.0	(8.1)		-16.2	(10.7)	
	Italy	38.5	(2.9)		38.7	(7.4)		36.3	(5.5)		-2.4	(9.4)	
	Japan	m	m		m	m		m	m		m	m	
	Korea	34.8	(3.9)		30.9	(7.3)		40.3	(7.1)		9.4	(10.0)	
	Latvia	71.9	(1.6)		80.8	(3.7)		59.2	(2.8)		**-21.6**	(4.7)	
	Lithuania	82.6	(1.5)		88.4	(3.1)		79.6	(2.4)		**-8.7**	(3.8)	
	Luxembourg	81.6	(0.1)		87.2	(0.2)		80.8	(0.2)		**-6.3**	(0.2)	
	Mexico	41.0	(3.2)		37.4	(6.2)		52.6	(5.3)		15.3	(8.1)	
	Netherlands	62.7	(4.0)		63.6	(6.3)		54.4	(9.0)		-9.3	(11.1)	
	New Zealand	87.2	(2.1)		87.0	(5.1)		89.3	(2.6)		2.3	(5.7)	
	Norway	54.3	(2.6)		62.4	(5.6)		60.3	(6.5)		-2.1	(9.4)	
	Poland	73.4	(2.6)		76.1	(5.5)		73.8	(6.4)		-2.4	(9.2)	
	Portugal	64.4	(2.9)		60.7	(7.1)		64.6	(6.9)		3.9	(10.4)	
	Slovak Republic	47.7	(2.8)		45.0	(5.5)		45.5	(6.4)		0.6	(8.7)	
	Slovenia	50.5	(0.5)		54.1	(1.4)		58.0	(0.6)		**3.8**	(1.5)	
	Spain	42.9	(2.3)		51.8	(5.3)		46.1	(4.3)		-5.6	(6.8)	
	Sweden	93.3	(1.3)		96.5	(2.4)		91.1	(3.7)		-5.4	(4.5)	
	Switzerland	56.7	(3.7)		56.4	(7.4)		39.6	(7.9)		-16.7	(11.6)	
	Turkey	36.9	(3.7)		30.7	(6.8)		51.4	(7.5)		**20.7**	(9.9)	
	United Kingdom	92.6	(1.7)		88.4	(4.8)		89.0	(4.7)		0.6	(7.1)	
	United States	92.4	(2.3)		88.3	(6.4)		97.0	(3.3)		8.7	(7.2)	
	OECD average	62.2	(0.5)		65.6	(0.9)		59.7	(1.0)		**-6.0**	(1.4)	

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

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132279

Table V.B1.6.19 [4/6] **Schools providing study help**
Results based on principals' reports

		Percentage of students in schools where the following study help is provided:											
		Staff provides help with homework											
		All students			Socio-economically disadvantaged schools			Socio-economically advantaged schools			Difference between advantaged and disadvantaged schools		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
Partners	Albania	55.3	(3.2)		49.7	(6.2)		51.1	(6.3)		1.5	(9.1)	
	Argentina	51.9	(3.4)		55.4	(6.6)		54.2	(6.5)		-1.2	(8.5)	
	Baku (Azerbaijan)	82.1	(3.6)	†	72.0	(7.7)	‡	85.3	(6.6)	†	13.3	(10.0)	‡
	Belarus	90.7	(2.2)		92.7	(3.7)		88.3	(5.4)		-4.4	(6.5)	
	Bosnia and Herzegovina	32.7	(3.0)		36.4	(5.5)		34.1	(5.8)		-2.3	(8.3)	
	Brazil	12.4	(1.3)		5.6	(1.9)		25.9	(4.1)		**20.3**	(4.5)	
	Brunei Darussalam	64.8	(0.1)		69.7	(0.2)		73.7	(0.1)		**4.0**	(0.2)	
	B-S-J-Z (China)	67.3	(3.1)		73.0	(6.0)		71.1	(5.4)		-1.9	(8.4)	
	Bulgaria	35.5	(3.4)		45.1	(6.6)		27.3	(7.7)		-17.8	(10.4)	
	Costa Rica	32.8	(3.4)		35.3	(6.2)		29.7	(7.0)		-5.5	(9.0)	
	Croatia	19.7	(2.7)		25.1	(5.7)		17.8	(4.2)		-7.3	(7.1)	
	Cyprus	39.2	(0.4)		58.5	(1.6)		32.2	(0.2)		**-26.3**	(1.7)	
	Dominican Republic	34.0	(3.4)		30.3	(6.6)		39.0	(8.2)		8.7	(10.3)	
	Georgia	65.5	(2.9)		73.6	(4.4)		68.4	(5.1)		-5.2	(6.4)	
	Hong Kong (China)	83.1	(3.4)		86.4	(6.0)		71.8	(8.7)		-14.6	(10.5)	
	Indonesia	40.8	(4.2)		36.0	(8.3)		44.0	(9.8)		8.0	(12.6)	
	Jordan	31.3	(3.5)		35.3	(7.2)		24.5	(6.0)		-10.9	(9.4)	
	Kazakhstan	91.4	(1.3)		94.0	(2.0)		89.7	(3.2)		-4.3	(4.0)	
	Kosovo	44.7	(1.8)		36.3	(4.2)		58.1	(3.1)		**21.7**	(5.3)	
	Lebanon	34.3	(2.7)		31.0	(5.9)		44.7	(6.6)		13.8	(9.9)	
	Macao (China)	61.6	(0.0)		47.8	(0.4)		83.2	(0.1)		**35.4**	(0.4)	
	Malaysia	26.7	(3.5)		27.7	(7.0)		31.0	(7.9)		3.3	(10.7)	
	Malta	50.9	(0.1)		69.0	(0.5)		38.3	(0.3)		**-30.7**	(0.5)	
	Moldova	79.4	(2.8)		73.2	(5.8)		78.5	(6.3)		5.3	(8.8)	
	Montenegro	20.9	(0.2)		32.6	(0.8)		1.1	(0.1)		**-31.5**	(0.8)	
	Morocco	45.2	(4.0)		52.7	(7.1)		35.4	(7.2)		-17.3	(10.1)	
	North Macedonia	41.8	(0.1)		36.9	(0.2)		41.9	(0.3)		**5.0**	(0.4)	
	Panama	37.1	(2.7)		36.4	(6.6)		47.0	(7.0)	†	10.6	(9.5)	†
	Peru	34.4	(3.0)		36.8	(5.8)		53.0	(6.6)		16.3	(8.8)	
	Philippines	54.5	(3.7)		49.8	(8.0)		47.9	(6.7)		-1.9	(10.5)	
	Qatar	76.5	(0.1)		63.0	(0.2)		86.2	(0.2)		**23.2**	(0.3)	
	Romania	54.6	(4.5)		59.0	(7.3)		45.6	(9.8)		-13.3	(12.4)	
	Russia	63.2	(2.9)		66.8	(4.7)		55.6	(7.1)		-11.2	(8.8)	
	Saudi Arabia	57.5	(3.4)		65.7	(5.4)		54.3	(6.3)		-11.5	(8.6)	
	Serbia	49.9	(4.1)		53.9	(7.3)		49.7	(8.3)		-4.3	(11.1)	
	Singapore	88.8	(0.8)		90.1	(0.1)		78.6	(4.1)		**-11.6**	(4.1)	
	Chinese Taipei	53.8	(3.6)		61.8	(7.2)		45.8	(7.3)		-16.0	(10.5)	
	Thailand	66.0	(3.5)		66.4	(5.8)		71.6	(6.3)		5.2	(9.2)	
	Ukraine	54.8	(3.5)		61.2	(6.7)		47.6	(8.3)		-13.6	(10.3)	
	United Arab Emirates	61.5	(1.8)		64.0	(1.5)		69.9	(4.1)		5.9	(4.3)	
	Uruguay	63.8	(3.7)		61.4	(6.2)		58.1	(7.5)		-3.3	(9.4)	
	Viet Nam	55.5	(4.6)		61.7	(9.5)		45.9	(9.0)		-15.8	(12.7)	

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

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132279

Table V.B1.6.19 [5/6] **Schools providing study help**
Results based on principals' reports

	Percentage of students in schools where the following study help is provided:											
	Peer-to-peer tutoring											
	All students			Socio-economically disadvantaged schools			Socio-economically advantaged schools			Difference between advantaged and disadvantaged schools		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
OECD												
Australia	40.6	(1.8)		36.0	(3.8)		52.2	(3.7)		**16.1**	(5.8)	
Austria	41.7	(3.6)		30.4	(5.9)		43.4	(7.4)		13.0	(9.6)	
Belgium	30.3	(3.2)		24.3	(5.2)		32.8	(6.2)		8.5	(8.4)	
Canada	73.0	(2.4)		68.9	(3.8)		81.4	(3.6)		**12.5**	(5.3)	
Chile	42.5	(3.8)		23.2	(6.9)		50.0	(5.7)		**26.8**	(9.2)	
Colombia	51.9	(3.6)		30.8	(7.3)		77.8	(5.5)		**47.0**	(8.5)	
Czech Republic	41.8	(2.7)		37.9	(5.6)		48.3	(5.4)		10.4	(7.5)	
Denmark	26.4	(3.4)	†	31.5	(5.8)	†	27.7	(7.4)		-3.7	(8.9)	†
Estonia	51.5	(2.3)		55.8	(5.7)		55.1	(3.7)		-0.7	(6.8)	
Finland	25.0	(3.1)		16.5	(5.6)		30.4	(6.5)		14.0	(9.2)	
France	51.1	(3.4)		36.9	(5.5)		66.2	(6.8)		**29.2**	(8.4)	
Germany	33.7	(3.0)		11.0	(4.9)		49.2	(7.2)		**38.2**	(8.8)	
Greece	44.6	(3.4)		38.2	(5.9)		51.7	(7.1)		13.5	(8.8)	
Hungary	47.2	(3.6)		35.0	(6.2)		65.7	(7.2)		**30.7**	(9.5)	
Iceland	36.9	(0.3)		26.2	(0.5)		47.4	(0.4)		**21.2**	(0.6)	
Ireland	30.9	(4.0)		34.2	(7.9)		37.2	(8.6)		3.0	(11.8)	
Israel	60.9	(4.0)		59.9	(7.0)		55.5	(7.5)		-4.5	(10.3)	
Italy	65.4	(3.2)		59.2	(7.2)		76.0	(6.0)		16.8	(9.6)	
Japan	21.6	(3.3)		20.6	(6.2)		22.6	(6.7)		2.0	(8.6)	
Korea	71.6	(3.3)		50.9	(9.1)		72.8	(6.7)		22.0	(11.4)	
Latvia	51.0	(1.9)		65.2	(4.6)		30.3	(2.9)		**-34.9**	(5.1)	
Lithuania	64.2	(1.7)		69.3	(4.1)		62.5	(2.1)		-6.9	(4.7)	
Luxembourg	37.4	(0.1)		36.0	(0.2)		48.6	(0.3)		**12.6**	(0.4)	
Mexico	75.0	(3.0)		71.6	(6.8)		76.2	(5.2)		4.6	(8.6)	
Netherlands	43.4	(3.9)		24.5	(7.3)		54.4	(8.9)		**29.9**	(11.5)	
New Zealand	78.9	(2.5)		59.6	(5.6)		93.1	(3.6)		**33.6**	(6.4)	
Norway	38.5	(3.5)		42.4	(6.5)		44.0	(6.2)		1.6	(9.4)	
Poland	87.1	(2.2)		92.7	(3.6)		86.5	(4.8)		-6.2	(6.0)	
Portugal	37.9	(3.2)		42.9	(6.0)		27.8	(7.1)		-15.1	(9.8)	
Slovak Republic	43.6	(3.0)		35.1	(5.7)		49.7	(6.6)		14.6	(8.8)	
Slovenia	54.0	(0.6)		48.8	(2.5)		70.6	(0.6)		**21.8**	(2.6)	
Spain	39.5	(2.2)		31.4	(4.3)		49.1	(4.9)		**17.7**	(6.7)	
Sweden	21.2	(4.1)		27.3	(7.6)		28.8	(7.3)		1.5	(8.8)	
Switzerland	21.9	(3.1)		13.0	(5.0)		41.8	(7.5)		**28.8**	(9.4)	
Turkey	53.1	(4.0)		60.3	(7.0)		60.7	(9.0)		0.3	(11.7)	
United Kingdom	60.8	(4.5)		49.9	(7.7)	†	69.7	(7.5)		19.8	(10.4)	†
United States	74.2	(4.0)		58.6	(9.4)		89.3	(5.2)		**30.7**	(9.6)	
OECD average	47.9	(0.5)		42.1	(1.0)		54.8	(1.0)		**12.7**	(1.4)	

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

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132279

Table V.B1.6.19 [6/6] **Schools providing study help**
Results based on principals' reports

	Percentage of students in schools where the following study help is provided:											
	Peer-to-peer tutoring											
	All students			Socio-economically disadvantaged schools			Socio-economically advantaged schools			Difference between advantaged and disadvantaged schools		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	% dif.	S.E.	x
Partners												
Albania	79.0	(2.4)		81.1	(4.7)		85.4	(4.8)		4.3	(6.6)	
Argentina	78.3	(2.7)		81.7	(4.8)		89.3	(2.7)		7.6	(5.8)	
Baku (Azerbaijan)	75.5	(3.9)	‡	69.0	(7.6)	‡	82.6	(7.3)	†	13.6	(10.7)	‡
Belarus	86.3	(2.6)		84.0	(5.3)		91.0	(4.5)		6.9	(7.0)	
Bosnia and Herzegovina	64.7	(3.0)		59.8	(7.3)		72.2	(6.3)		12.4	(10.0)	
Brazil	35.3	(2.0)		32.9	(3.8)		49.6	(4.6)		**16.7**	(6.2)	
Brunei Darussalam	74.0	(0.1)		86.2	(0.2)		78.3	(0.1)		**-7.9**	(0.2)	
B-S-J-Z (China)	89.9	(2.4)		87.3	(5.9)		92.8	(3.5)		5.4	(7.1)	
Bulgaria	52.6	(3.7)		63.2	(7.1)		42.2	(8.2)		**-21.0**	(10.2)	
Costa Rica	50.4	(4.2)		48.5	(7.7)		62.2	(7.8)		13.7	(11.0)	
Croatia	48.2	(3.7)		56.6	(6.8)		57.6	(8.1)		1.0	(10.4)	
Cyprus	12.0	(0.4)		8.5	(0.3)		17.6	(0.2)		**9.1**	(0.3)	
Dominican Republic	64.6	(3.2)		60.0	(7.2)		72.7	(6.6)		12.7	(10.3)	
Georgia	80.3	(2.7)		84.6	(3.4)		83.8	(5.6)		-0.8	(5.9)	
Hong Kong (China)	73.6	(4.5)		68.9	(9.6)		66.6	(10.2)	†	-2.4	(13.9)	†
Indonesia	79.2	(3.8)		67.6	(8.8)		92.0	(4.3)		**24.5**	(9.7)	
Jordan	64.5	(3.7)		64.9	(6.9)		62.5	(6.9)		-2.4	(9.3)	
Kazakhstan	88.4	(1.7)		90.7	(2.7)		91.3	(2.7)		0.7	(3.9)	
Kosovo	79.3	(1.3)		68.4	(3.5)		92.5	(2.0)		**24.1**	(4.3)	
Lebanon	42.2	(3.0)		33.1	(6.0)		64.2	(6.6)		**31.0**	(9.0)	
Macao (China)	85.7	(0.0)		99.4	(0.0)		63.7	(0.2)		**-35.8**	(0.2)	
Malaysia	90.8	(1.9)		95.5	(3.0)		83.6	(5.8)		-11.9	(6.3)	
Malta	19.5	(0.1)		32.0	(0.4)		22.0	(0.3)		**-9.9**	(0.5)	
Moldova	81.2	(2.6)		75.6	(5.8)		78.3	(6.4)		2.8	(8.8)	
Montenegro	61.0	(0.6)		85.5	(1.3)		21.7	(0.7)		**-63.8**	(1.5)	
Morocco	83.9	(2.6)		86.2	(4.9)		90.3	(4.6)		4.1	(6.8)	
North Macedonia	40.9	(0.1)		40.9	(0.2)		52.5	(0.3)		**11.6**	(0.4)	
Panama	37.9	(2.8)		35.9	(6.7)		55.7	(6.7)	†	**19.8**	(9.5)	†
Peru	55.5	(3.1)		67.5	(5.4)		57.7	(6.2)		-9.8	(8.2)	
Philippines	89.7	(2.2)		83.8	(6.0)		85.6	(5.6)		1.8	(8.1)	
Qatar	77.6	(0.1)		73.7	(0.2)		63.9	(0.2)		**-9.8**	(0.3)	
Romania	44.9	(4.1)		38.0	(7.4)		56.4	(9.3)		18.4	(11.7)	
Russia	71.1	(3.1)		57.0	(7.0)		72.5	(6.0)		15.5	(9.4)	
Saudi Arabia	86.1	(2.3)		86.7	(5.0)		86.3	(4.9)		-0.4	(7.0)	
Serbia	69.6	(3.4)		70.1	(6.3)		74.1	(6.9)		4.0	(9.4)	
Singapore	57.9	(1.3)		64.6	(0.2)		59.0	(4.6)		-5.5	(4.6)	
Chinese Taipei	81.5	(3.0)		76.0	(6.3)		78.9	(6.9)		2.9	(9.3)	
Thailand	95.2	(1.6)		95.6	(2.9)		93.9	(3.7)		-1.7	(4.8)	
Ukraine	91.2	(2.3)		93.3	(2.9)		92.5	(5.1)		-0.8	(5.7)	
United Arab Emirates	57.6	(1.5)		41.3	(1.6)		70.3	(4.1)		**28.9**	(4.6)	
Uruguay	36.1	(3.5)		31.3	(7.1)		35.7	(9.2)		4.4	(11.5)	
Viet Nam	62.6	(4.3)		71.1	(7.9)		64.0	(9.5)		-7.1	(11.9)	

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

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132279

Table V.B1.7.1 [1/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

	Percentage of students enrolled in:											
	PISA 2000											
				Private schools								
	Government or public schools¹			Total			Government-dependent private schools²			Government-independent private schools³		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD												
Australia	m	m		m	m		m	m		m	m	
Austria	87.3	(2.7)		12.7	(2.7)		5.8	(1.9)		6.8	(2.1)	
Belgium	26.2	(2.5)		73.8	(2.5)		58.1	(3.4)		15.7	(2.5)	
Canada	m	m		m	m		m	m		m	m	
Chile	54.5	(1.5)		45.5	(1.5)		31.4	(2.3)		14.1	(1.7)	
Colombia	m	m		m	m		m	m		m	m	
Czech Republic	94.0	(1.6)		6.0	(1.6)		4.2	(1.3)		1.8	(0.9)	
Denmark	75.3	(2.3)		24.7	(2.3)		24.0	(2.2)		0.7	(0.5)	
Estonia	m	m		m	m		m	m		m	m	
Finland	97.2	(1.3)		2.8	(1.3)		2.8	(1.3)		0.0	c	
France	78.4	(3.4)		21.6	(3.4)		13.9	(2.7)		7.7	(2.3)	
Germany	95.6	(1.4)		4.4	(1.4)		4.0	(1.3)		0.4	(0.4)	
Greece	92.8	(1.5)		7.2	(1.5)		0.0	c		7.2	(1.5)	
Hungary	94.7	(1.8)		5.3	(1.8)		4.4	(1.6)		1.0	(0.7)	
Iceland	99.2	(0.0)		0.8	(0.0)		0.0	c		0.8	(0.0)	
Ireland	39.1	(2.0)		60.9	(2.0)		57.2	(2.5)		3.7	(1.6)	
Israel	77.7	(4.5)		22.3	(4.5)		15.0	(4.1)		7.4	(2.2)	
Italy	94.2	(1.4)		5.8	(1.4)		0.0	c		5.8	(1.4)	
Japan	69.8	(0.9)		30.2	(0.9)		1.5	(0.9)		28.7	(1.2)	
Korea	47.7	(4.3)		52.3	(4.3)		0.0	c		52.3	(4.3)	
Latvia	99.3	(0.7)		0.7	(0.7)		0.7	(0.7)		0.0	c	
Lithuania	m	m		m	m		m	m		m	m	
Luxembourg	87.9	(0.0)		12.1	(0.0)		12.1	(0.0)		0.0	c	
Mexico	84.6	(2.9)		15.4	(2.9)		0.0	c		15.4	(2.9)	
Netherlands	26.5	(4.9)		73.5	(4.9)		58.8	(5.1)		14.6	(4.4)	
New Zealand	95.4	(0.5)		4.6	(0.5)		0.1	(0.1)		4.5	(0.5)	
Norway	98.6	(0.9)		1.4	(0.9)		1.0	(0.7)		0.5	(0.5)	
Poland	97.1	(1.3)		2.9	(1.3)		0.0	c		2.9	(1.3)	
Portugal	92.7	(0.8)		7.3	(0.8)		5.8	(0.9)		1.4	(0.7)	
Slovak Republic	m	m		m	m		m	m		m	m	
Slovenia	m	m		m	m		m	m		m	m	
Spain	60.7	(1.7)		39.3	(1.7)		27.5	(3.2)		11.8	(2.4)	
Sweden	96.6	(0.7)		3.4	(0.7)		1.2	(0.0)		2.2	(0.7)	
Switzerland	93.6	(1.7)		6.4	(1.7)		1.8	(0.8)		4.6	(1.5)	
Turkey	m	m		m	m		m	m		m	m	
United Kingdom	m	m		m	m		m	m		m	m	
United States	93.4	(2.7)		6.6	(2.7)		0.0	c		6.6	(2.7)	
OECD average-28	82.8	(0.4)		17.2	(0.4)		9.7	(0.3)		7.6	(0.3)	
OECD average-30	82.8	(0.4)		17.2	(0.4)		9.7	(0.3)		7.6	(0.3)	
OECD average-37	81.0	(0.4)		19.0	(0.4)		11.5	(0.3)		7.5	(0.3)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [2/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:										
		PISA 2000										
					Private schools							
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	96.2	(0.7)		3.8	(0.7)		0.0	c		3.8	(0.7)	
	Argentina	61.6	(7.5)		38.4	(7.5)		20.6	(8.3)		17.9	(5.1)	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	86.9	(1.6)		13.1	(1.6)		0.0	c		13.1	(1.6)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	99.4	(0.6)		0.6	(0.6)		0.0	c		0.6	(0.6)	
	Costa Rica	m	m		m	m		m	m		m	m	
	Croatia	m	m		m	m		m	m		m	m	
	Cyprus	m	m		m	m		m	m		m	m	
	Dominican Republic	m	m		m	m		m	m		m	m	
	Georgia	m	m		m	m		m	m		m	m	
	Hong Kong (China)	95.1	(1.0)		4.9	(1.0)		4.4	(0.7)		0.5	(0.4)	
	Indonesia	53.6	(5.4)		46.4	(5.4)		0.2	(0.1)		46.3	(5.4)	
	Jordan	m	m		m	m		m	m		m	m	
	Kazakhstan	m	m		m	m		m	m		m	m	
	Kosovo	m	m		m	m		m	m		m	m	
	Lebanon	m	m		m	m		m	m		m	m	
	Macao (China)	m	m		m	m		m	m		m	m	
	Malaysia	m	m		m	m		m	m		m	m	
	Malta	m	m		m	m		m	m		m	m	
	Moldova	m	m		m	m		m	m		m	m	
	Montenegro	m	m		m	m		m	m		m	m	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	99.6	(0.0)		0.4	(0.0)		0.0	c		0.4	(0.0)	
	Panama	m	m		m	m		m	m		m	m	
	Peru	85.0	(1.5)		15.0	(1.5)		0.0	c		15.0	(1.5)	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	m	m		m	m		m	m		m	m	
	Romania	m	m		m	m		m	m		m	m	
	Russia	100.0	c		0.0	c		0.0	c		0.0	c	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	m	m		m	m		m	m		m	m	
	Singapore	m	m		m	m		m	m		m	m	
	Chinese Taipei	m	m		m	m		m	m		m	m	
	Thailand	80.7	(2.2)		19.3	(2.2)		1.8	(1.0)		17.5	(2.7)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	m	m		m	m		m	m		m	m	
	Uruguay	m	m		m	m		m	m		m	m	
	Viet Nam	m	m		m	m		m	m		m	m	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [3/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

	Percentage of students enrolled in:											
	PISA 2003											
	Government or public schools[1]			Private schools								
				Total			Government-dependent private schools[2]			Government-independent private schools[3]		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD												
Australia	m	m		m	m		m	m		m	m	
Austria	92.0	(1.9)		8.0	(1.9)		8.0	(1.9)		0.0	c	
Belgium	31.1	(1.0)		68.9	(1.0)		68.1	(1.2)		0.9	(0.5)	
Canada	93.2	(0.9)		6.8	(0.9)		5.0	(1.0)		1.8	(0.3)	
Chile	m	m		m	m		m	m		m	m	
Colombia	m	m		m	m		m	m		m	m	
Czech Republic	93.3	(1.7)		6.7	(1.7)		5.8	(1.6)		0.9	(0.5)	
Denmark	78.3	(2.5)		21.7	(2.5)		21.3	(2.5)		0.5	(0.5)	
Estonia	m	m		m	m		m	m		m	m	
Finland	93.4	(1.6)		6.6	(1.6)		6.6	(1.6)		0.0	c	
France	m	m		m	m		m	m		m	m	
Germany	92.3	(1.7)		7.7	(1.7)		7.3	(1.8)		0.4	(0.4)	
Greece	95.9	(2.0)		4.1	(2.0)		1.5	(1.3)		2.6	(1.9)	
Hungary	88.5	(2.5)		11.5	(2.5)		10.3	(2.4)		1.2	(0.8)	
Iceland	99.5	(0.1)		0.5	(0.1)		0.0	c		0.5	(0.1)	
Ireland	39.0	(0.5)		61.0	(0.5)		60.3	(0.9)		0.7	(0.8)	
Israel	m	m		m	m		m	m		m	m	
Italy	95.3	(1.2)		4.7	(1.2)		1.3	(0.6)		3.4	(1.3)	
Japan	72.7	(1.5)		27.3	(1.5)		1.2	(0.8)		26.1	(1.8)	
Korea	44.1	(3.6)		55.9	(3.6)		35.2	(3.9)		20.7	(3.2)	
Latvia	99.0	(0.7)		1.0	(0.7)		0.0	c		1.0	(0.7)	
Lithuania	m	m		m	m		m	m		m	m	
Luxembourg	85.9	(0.1)		14.1	(0.1)		14.1	(0.1)		0.0	c	
Mexico	84.5	(2.4)		15.5	(2.4)		3.9	(1.9)		11.6	(1.7)	
Netherlands	22.9	(4.1)		77.1	(4.1)		77.1	(4.1)		0.0	c	
New Zealand	95.3	(0.2)		4.7	(0.2)		0.4	(0.4)		4.3	(0.5)	
Norway	99.1	(0.7)		0.9	(0.7)		0.9	(0.7)		0.0	c	
Poland	99.3	(0.4)		0.7	(0.4)		0.4	(0.4)		0.4	(0.3)	
Portugal	93.8	(1.3)		6.2	(1.3)		4.2	(1.2)		2.0	(1.2)	
Slovak Republic	87.6	(2.7)		12.4	(2.7)		12.4	(2.7)		0.0	c	
Slovenia	m	m		m	m		m	m		m	m	
Spain	62.1	(1.5)		37.9	(1.5)		30.4	(2.1)		7.4	(1.7)	
Sweden	95.6	(0.6)		4.4	(0.6)		4.4	(0.6)		0.0	c	
Switzerland	94.4	(1.4)		5.6	(1.4)		1.9	(1.1)		3.8	(0.7)	
Turkey	96.6	(1.5)		3.4	(1.5)		2.4	(1.6)		1.0	(1.0)	
United Kingdom	m	m		m	m		m	m		m	m	
United States	94.0	(1.0)		6.0	(1.0)		0.7	(0.4)		5.3	(0.9)	
OECD average-28	85.5	(0.3)		14.5	(0.3)		10.8	(0.3)		3.7	(0.2)	
OECD average-30	85.5	(0.3)		14.5	(0.3)		10.8	(0.3)		3.7	(0.2)	
OECD average-37	83.4	(0.3)		16.6	(0.3)		13.3	(0.3)		3.3	(0.2)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [4/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		PISA 2003											
					Private schools								
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	m	m		m	m		m	m		m	m	
	Argentina	m	m		m	m		m	m		m	m	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	84.6	(2.0)		15.4	(2.0)		4.3	(1.6)		11.1	(2.1)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	m	m		m	m		m	m		m	m	
	Costa Rica	m	m		m	m		m	m		m	m	
	Croatia	m	m		m	m		m	m		m	m	
	Cyprus	m	m		m	m		m	m		m	m	
	Dominican Republic	m	m		m	m		m	m		m	m	
	Georgia	m	m		m	m		m	m		m	m	
	Hong Kong (China)	9.5	(0.4)		90.5	(0.4)		89.5	(0.9)		1.0	(0.7)	
	Indonesia	53.8	(2.4)		46.2	(2.4)		4.4	(1.5)		41.8	(2.6)	
	Jordan	m	m		m	m		m	m		m	m	
	Kazakhstan	m	m		m	m		m	m		m	m	
	Kosovo	m	m		m	m		m	m		m	m	
	Lebanon	m	m		m	m		m	m		m	m	
	Macao (China)	4.8	(0.1)		95.2	(0.1)		51.5	(0.2)		43.8	(0.2)	
	Malaysia	m	m		m	m		m	m		m	m	
	Malta	m	m		m	m		m	m		m	m	
	Moldova	m	m		m	m		m	m		m	m	
	Montenegro	m	m		m	m		m	m		m	m	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	m	m		m	m		m	m		m	m	
	Panama	m	m		m	m		m	m		m	m	
	Peru	m	m		m	m		m	m		m	m	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	m	m		m	m		m	m		m	m	
	Romania	m	m		m	m		m	m		m	m	
	Russia	99.8	(0.2)		0.2	(0.2)		0.0	c		0.2	(0.2)	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	m	m		m	m		m	m		m	m	
	Singapore	m	m		m	m		m	m		m	m	
	Chinese Taipei	m	m		m	m		m	m		m	m	
	Thailand	88.0	(1.2)		12.0	(1.2)		6.0	(1.1)		6.0	(1.6)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	m	m		m	m		m	m		m	m	
	Uruguay	85.9	(0.8)		14.1	(0.8)		0.0	c		14.1	(0.8)	
	Viet Nam	m	m		m	m		m	m		m	m	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [5/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

	Percentage of students enrolled in:											
	PISA 2006											
	Government or public schools[1]			Private schools								
				Total			Government-dependent private schools[2]			Government-independent private schools[3]		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD Australia	m	m		m	m		m	m		m	m	
Austria	90.7	(2.2)		9.3	(2.2)		9.3	(2.2)		0.0	c	
Belgium	31.3	(1.3)		68.7	(1.3)		66.4	(1.5)		2.3	(0.9)	
Canada	92.7	(0.6)		7.3	(0.6)		4.6	(0.4)		2.7	(0.7)	
Chile	43.4	(2.4)		56.6	(2.4)		49.1	(2.9)		7.5	(1.9)	
Colombia	80.7	(2.6)		19.3	(2.6)		7.3	(2.4)		12.0	(2.1)	
Czech Republic	93.4	(2.7)		6.6	(2.7)		6.4	(2.7)		0.2	(0.2)	
Denmark	76.0	(3.1)		24.0	(3.1)		22.9	(3.1)		1.1	(0.8)	
Estonia	98.1	(0.9)		1.9	(0.9)		1.4	(0.8)		0.6	(0.4)	
Finland	97.0	(1.2)		3.0	(1.2)		3.0	(1.2)		0.0	c	
France	m	m		m	m		m	m		m	m	
Germany	94.3	(1.8)		5.7	(1.8)		5.5	(1.8)		0.2	(0.2)	
Greece	94.8	(1.2)		5.2	(1.2)		0.1	(0.1)		5.1	(1.2)	
Hungary	83.7	(3.3)		16.3	(3.3)		13.6	(3.0)		2.7	(1.6)	
Iceland	98.9	(0.1)		1.1	(0.1)		1.0	(0.1)		0.1	(0.1)	
Ireland	39.7	(1.3)		60.3	(1.3)		57.1	(1.9)		3.2	(1.4)	
Israel	69.4	(3.7)		30.6	(3.7)		24.7	(3.4)		5.9	(1.8)	
Italy	96.1	(0.7)		3.9	(0.7)		1.5	(0.4)		2.4	(0.6)	
Japan	69.1	(1.3)		30.9	(1.3)		2.4	(1.3)		28.5	(1.7)	
Korea	53.7	(3.9)		46.3	(3.9)		31.5	(3.7)		14.8	(2.5)	
Latvia	100.0	c		0.0	c		0.0	c		0.0	c	
Lithuania	99.3	(0.7)		0.7	(0.7)		0.7	(0.7)		0.0	c	
Luxembourg	85.6	(0.0)		14.4	(0.0)		14.4	(0.0)		0.0	c	
Mexico	85.0	(2.1)		15.0	(2.1)		5.2	(1.8)		9.7	(1.4)	
Netherlands	32.3	(4.3)		67.7	(4.3)		67.7	(4.3)		0.0	c	
New Zealand	94.3	(0.3)		5.7	(0.3)		1.3	(0.8)		4.4	(0.6)	
Norway	98.1	(0.9)		1.9	(0.9)		1.9	(0.9)		0.0	c	
Poland	98.4	(0.1)		1.6	(0.1)		1.0	(0.2)		0.6	(0.2)	
Portugal	89.8	(1.3)		10.2	(1.3)		8.1	(1.3)		2.0	(0.3)	
Slovak Republic	92.3	(1.9)		7.7	(1.9)		7.2	(1.8)		0.5	(0.5)	
Slovenia	97.7	(0.0)		2.3	(0.0)		2.3	(0.0)		0.1	(0.0)	
Spain	64.6	(0.9)		35.4	(0.9)		25.3	(1.4)		10.0	(1.5)	
Sweden	91.7	(0.8)		8.3	(0.8)		8.3	(0.8)		0.0	c	
Switzerland	95.0	(0.6)		5.0	(0.6)		1.4	(0.5)		3.6	(0.4)	
Turkey	97.7	(1.4)		2.3	(1.4)		1.8	(1.3)		0.5	(0.5)	
United Kingdom	92.4	(0.7)		7.6	(0.7)		1.6	(0.9)		6.0	(1.0)	
United States	92.2	(1.1)		7.8	(1.1)		1.2	(0.9)		6.6	(0.9)	
OECD average-28	83.2	(0.3)		16.8	(0.3)		12.7	(0.3)		4.1	(0.2)	
OECD average-30	83.2	(0.3)		16.8	(0.3)		12.7	(0.3)		4.1	(0.2)	
OECD average-37	83.5	(0.3)		16.5	(0.3)		12.7	(0.3)		3.7	(0.2)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.
StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [6/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		PISA 2006											
					Private schools								
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	m	m		m	m		m	m		m	m	
	Argentina	65.9	(3.7)		34.1	(3.7)		26.6	(3.1)		7.5	(2.6)	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	86.4	(1.2)		13.6	(1.2)		6.4	(0.9)		7.1	(1.3)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	m	m		m	m		m	m		m	m	
	Costa Rica	m	m		m	m		m	m		m	m	
	Croatia	98.6	(1.0)		1.4	(1.0)		0.6	(0.4)		0.7	(0.5)	
	Cyprus	m	m		m	m		m	m		m	m	
	Dominican Republic	m	m		m	m		m	m		m	m	
	Georgia	m	m		m	m		m	m		m	m	
	Hong Kong (China)	7.5	(0.2)		92.5	(0.2)		90.7	(1.4)		1.9	(1.4)	
	Indonesia	60.1	(3.5)		39.9	(3.5)		14.4	(3.0)		25.5	(2.9)	
	Jordan	80.0	(1.6)		20.0	(1.6)		2.0	(1.1)		18.0	(1.5)	
	Kazakhstan	m	m		m	m		m	m		m	m	
	Kosovo	m	m		m	m		m	m		m	m	
	Lebanon	m	m		m	m		m	m		m	m	
	Macao (China)	3.8	(0.0)		96.2	(0.0)		68.8	(0.1)		27.4	(0.1)	
	Malaysia	m	m		m	m		m	m		m	m	
	Malta	m	m		m	m		m	m		m	m	
	Moldova	m	m		m	m		m	m		m	m	
	Montenegro	99.8	(0.0)		0.2	(0.0)		0.0	c		0.2	(0.0)	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	m	m		m	m		m	m		m	m	
	Panama	m	m		m	m		m	m		m	m	
	Peru	m	m		m	m		m	m		m	m	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	83.5	(0.1)		16.5	(0.1)		8.4	(0.1)		8.1	(0.1)	
	Romania	100.0	c		0.0	c		0.0	c		0.0	c	
	Russia	100.0	c		0.0	c		0.0	c		0.0	c	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	99.4	(0.7)		0.6	(0.7)		0.6	(0.7)		0.0	c	
	Singapore	m	m		m	m		m	m		m	m	
	Chinese Taipei	64.9	(2.4)		35.1	(2.4)		0.2	(0.2)		35.0	(2.4)	
	Thailand	83.5	(0.7)		16.5	(0.7)		6.1	(1.7)		10.5	(1.7)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	m	m		m	m		m	m		m	m	
	Uruguay	84.9	(0.8)		15.1	(0.8)		0.0	c		15.1	(0.8)	
	Viet Nam	m	m		m	m		m	m		m	m	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [7/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:										
		PISA 2009										
					Private schools							
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]	
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	59.7	(0.8)		40.3	(0.8)		25.5	(1.6)		14.7	(1.4)	
	Austria	87.4	(2.4)		12.6	(2.4)		12.6	(2.4)		0.0	c	
	Belgium	30.5	(0.7)		69.5	(0.7)		67.3	(1.0)		2.2	(0.8)	
	Canada	92.5	(0.7)		7.5	(0.7)		4.6	(0.4)		2.9	(0.7)	
	Chile	42.0	(1.7)		58.0	(1.7)		54.8	(2.1)		3.2	(1.4)	
	Colombia	80.5	(2.4)		19.5	(2.4)		6.7	(1.6)		12.8	(2.5)	
	Czech Republic	96.4	(1.0)		3.6	(1.0)		3.6	(1.0)		0.0	c	
	Denmark	77.2	(2.8)		22.8	(2.8)		20.3	(2.8)		2.5	(1.1)	
	Estonia	96.7	(1.2)		3.3	(1.2)		2.6	(1.0)		0.6	(0.6)	
	Finland	96.1	(1.2)		3.9	(1.2)		3.9	(1.2)		0.0	c	
	France	m	m		m	m		m	m		m	m	
	Germany	94.9	(1.5)		5.1	(1.5)		5.1	(1.5)		0.0	c	
	Greece	94.8	(0.8)		5.2	(0.8)		1.9	(0.8)		3.3	(0.8)	
	Hungary	87.0	(2.5)		13.0	(2.5)		12.9	(2.5)		0.0	(0.0)	
	Iceland	99.1	(0.1)		0.9	(0.1)		0.9	(0.1)		0.0	c	
	Ireland	38.5	(0.4)		61.5	(0.4)		55.2	(1.8)		6.3	(1.8)	
	Israel	82.1	(2.6)		17.9	(2.6)		14.1	(2.5)		3.8	(1.4)	
	Italy	94.1	(0.6)		5.9	(0.6)		2.5	(0.6)		3.3	(0.6)	
	Japan	70.7	(1.3)		29.3	(1.3)		2.9	(1.4)		26.4	(1.6)	
	Korea	62.6	(4.3)		37.4	(4.3)		20.7	(3.4)		16.7	(3.0)	
	Latvia	99.2	(0.5)		0.8	(0.5)		0.5	(0.4)		0.2	(0.2)	
	Lithuania	99.0	(0.7)		1.0	(0.7)		1.0	(0.7)		0.0	c	
	Luxembourg	85.2	(0.1)		14.8	(0.1)		13.2	(0.1)		1.6	(0.0)	
	Mexico	88.5	(1.1)		11.5	(1.1)		1.1	(0.6)		10.4	(1.1)	
	Netherlands	34.0	(3.9)		66.0	(3.9)		66.0	(3.9)		0.0	c	
	New Zealand	94.3	(0.4)		5.7	(0.4)		0.8	(0.8)		4.9	(0.5)	
	Norway	98.6	(0.4)		1.4	(0.4)		1.4	(0.4)		0.0	c	
	Poland	97.9	(0.1)		2.1	(0.1)		0.7	(0.2)		1.5	(0.2)	
	Portugal	85.5	(2.7)		14.5	(2.7)		9.4	(2.7)		5.1	(1.3)	
	Slovak Republic	91.0	(2.4)		9.0	(2.4)		9.0	(2.4)		0.0	c	
	Slovenia	97.3	(0.1)		2.7	(0.1)		2.7	(0.1)		0.0	c	
	Spain	65.9	(0.9)		34.1	(0.9)		29.1	(1.3)		5.0	(1.1)	
	Sweden	90.0	(0.8)		10.0	(0.8)		10.0	(0.8)		0.0	c	
	Switzerland	93.6	(1.6)		6.4	(1.6)		2.7	(1.0)		3.7	(1.4)	
	Turkey	99.2	(0.6)		0.8	(0.6)		0.0	c		0.8	(0.6)	
	United Kingdom	93.7	(1.1)		6.3	(1.1)		0.0	c		6.3	(1.1)	
	United States	91.2	(1.4)		8.8	(1.4)		2.1	(1.4)		6.7	(2.0)	
	OECD average-28	82.2	(0.3)		17.8	(0.3)		13.1	(0.3)		4.7	(0.2)	
	OECD average-30	82.2	(0.3)		17.8	(0.3)		13.1	(0.3)		4.7	(0.2)	
	OECD average-37	82.7	(0.3)		17.3	(0.3)		13.0	(0.3)		4.3	(0.2)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.
StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [8/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

	Percentage of students enrolled in:											
	PISA 2009											
				Private schools								
	Government or public schools¹			Total			Government-dependent private schools²			Government-independent private schools³		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners												
Albania	88.9	(2.1)		11.1	(2.1)		0.0	c		11.1	(2.1)	
Argentina	63.9	(2.1)		36.1	(2.1)		20.9	(2.9)		15.2	(2.8)	
Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
Belarus	m	m		m	m		m	m		m	m	
Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
Brazil	87.7	(0.6)		12.3	(0.6)		4.5	(0.9)		7.8	(1.1)	
Brunei Darussalam	m	m		m	m		m	m		m	m	
B-S-J-Z (China)	m	m		m	m		m	m		m	m	
Bulgaria	98.1	(0.8)		1.9	(0.8)		0.0	c		1.9	(0.8)	
Costa Rica	84.6	(1.4)		15.4	(1.4)		7.6	(1.9)		7.8	(1.5)	
Croatia	98.1	(1.1)		1.9	(1.1)		0.0	c		1.9	(1.1)	
Cyprus	m	m		m	m		m	m		m	m	
Dominican Republic	m	m		m	m		m	m		m	m	
Georgia	94.8	(0.7)		5.2	(0.7)		2.5	(0.7)		2.7	(0.4)	
Hong Kong (China)	7.4	(0.2)		92.6	(0.2)		90.0	(1.2)		2.6	(1.2)	
Indonesia	57.2	(2.8)		42.8	(2.8)		15.7	(2.3)		27.1	(3.1)	
Jordan	81.4	(0.7)		18.6	(0.7)		0.1	(0.0)		18.5	(0.7)	
Kazakhstan	96.8	(1.4)		3.2	(1.4)		0.0	c		3.2	(1.4)	
Kosovo	m	m		m	m		m	m		m	m	
Lebanon	m	m		m	m		m	m		m	m	
Macao (China)	4.0	(0.0)		96.0	(0.0)		83.8	(0.0)		12.2	(0.0)	
Malaysia	98.0	(0.3)		2.0	(0.3)		1.2	(0.3)		0.8	(0.0)	
Malta	64.2	(0.1)		35.8	(0.1)		25.9	(0.2)		9.9	(0.1)	
Moldova	100.0	c		0.0	c		0.0	c		0.0	c	
Montenegro	99.5	(0.0)		0.5	(0.0)		0.0	c		0.5	(0.0)	
Morocco	m	m		m	m		m	m		m	m	
North Macedonia	m	m		m	m		m	m		m	m	
Panama	76.7	(2.6)		23.3	(2.6)		7.8	(2.2)		15.5	(3.1)	
Peru	77.9	(2.3)		22.1	(2.3)		5.9	(1.5)		16.2	(2.5)	
Philippines	m	m		m	m		m	m		m	m	
Qatar	68.9	(0.1)		31.1	(0.1)		11.5	(0.1)		19.5	(0.1)	
Romania	99.5	(0.5)		0.5	(0.5)		0.0	c		0.5	(0.5)	
Russia	99.9	(0.1)		0.1	(0.1)		0.0	c		0.1	(0.1)	
Saudi Arabia	m	m		m	m		m	m		m	m	
Serbia	98.8	(0.9)		1.2	(0.9)		0.0	c		1.2	(0.9)	
Singapore	98.2	(0.9)		1.8	(0.9)		0.3	(0.2)		1.5	(1.1)	
Chinese Taipei	63.7	(1.1)		36.3	(1.1)		5.9	(1.7)		30.4	(1.9)	
Thailand	82.9	(0.7)		17.1	(0.7)		12.9	(1.5)		4.1	(1.5)	
Ukraine	m	m		m	m		m	m		m	m	
United Arab Emirates	51.6	(1.2)		48.4	(1.2)		18.0	(1.5)		30.4	(1.7)	
Uruguay	82.1	(0.8)		17.9	(0.8)		0.5	(0.5)		17.4	(0.9)	
Viet Nam	m	m		m	m		m	m		m	m	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [9/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

	Percentage of students enrolled in:											
	PISA 2012											
	Government or public schools[1]			Private schools								
				Total			Government-dependent private schools[2]			Government-independent private schools[3]		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD												
Australia	58.7	(0.5)		41.3	(0.5)		29.2	(0.9)		12.1	(0.9)	
Austria	91.4	(2.3)		8.6	(2.3)		8.6	(2.3)		0.0	c	
Belgium	31.6	(2.1)		68.4	(2.1)		67.2	(2.3)		1.2	(0.8)	
Canada	91.9	(0.7)		8.1	(0.7)		4.7	(0.6)		3.5	(0.8)	
Chile	36.2	(1.5)		63.8	(1.5)		49.8	(2.7)		14.0	(2.2)	
Colombia	84.5	(1.3)		15.5	(1.3)		5.6	(1.0)		9.9	(1.4)	
Czech Republic	91.4	(1.9)		8.6	(1.9)		7.3	(1.6)		1.3	(0.9)	
Denmark	75.6	(1.8)		24.4	(1.8)		20.3	(2.0)		4.1	(1.5)	
Estonia	96.1	(1.1)		3.9	(1.1)		3.3	(1.1)		0.5	(0.0)	
Finland	96.8	(0.7)		3.2	(0.7)		3.2	(0.7)		0.0	c	
France	80.4	(1.3)		19.6	(1.3)		19.6	(1.3)		0.0	c	
Germany	93.6	(1.6)		6.4	(1.6)		6.0	(1.6)		0.4	(0.4)	
Greece	93.9	(1.0)		6.1	(1.0)		3.9	(1.3)		2.2	(0.7)	
Hungary	83.5	(2.9)		16.5	(2.9)		16.5	(2.9)		0.0	c	
Iceland	99.5	(0.1)		0.5	(0.1)		0.5	(0.1)		0.0	c	
Ireland	41.9	(0.4)		58.1	(0.4)		56.0	(1.1)		2.1	(1.1)	
Israel	100.0	c		0.0	c		0.0	c		0.0	c	
Italy	94.6	(0.8)		5.4	(0.8)		2.6	(0.6)		2.8	(0.5)	
Japan	70.1	(1.2)		29.9	(1.2)		0.0	c		29.9	(1.2)	
Korea	52.5	(4.1)		47.5	(4.1)		31.6	(3.8)		15.9	(3.1)	
Latvia	97.6	(1.5)		2.4	(1.5)		0.5	(0.4)		1.9	(1.3)	
Lithuania	98.6	(0.7)		1.4	(0.7)		1.1	(0.6)		0.4	(0.4)	
Luxembourg	84.6	(0.1)		15.4	(0.1)		13.6	(0.1)		1.8	(0.0)	
Mexico	88.0	(0.8)		12.0	(0.8)		3.4	(0.5)		8.6	(0.8)	
Netherlands	32.4	(4.2)		67.6	(4.2)		67.6	(4.2)		0.0	c	
New Zealand	93.8	(1.5)		6.2	(1.5)		0.9	(0.6)		5.3	(1.4)	
Norway	98.3	(1.0)		1.7	(1.0)		1.7	(1.0)		0.0	c	
Poland	97.1	(0.4)		2.9	(0.4)		1.9	(0.4)		1.0	(0.2)	
Portugal	89.9	(2.0)		10.1	(2.0)		5.8	(1.9)		4.2	(1.4)	
Slovak Republic	91.0	(2.4)		9.0	(2.4)		8.6	(2.5)		0.5	(0.3)	
Slovenia	97.6	(0.1)		2.4	(0.1)		2.4	(0.1)		0.0	c	
Spain	67.2	(0.8)		32.8	(0.8)		25.5	(1.0)		7.3	(1.0)	
Sweden	86.0	(0.7)		14.0	(0.7)		14.0	(0.7)		0.0	c	
Switzerland	93.7	(1.3)		6.3	(1.3)		1.5	(0.8)		4.8	(1.0)	
Turkey	98.7	(0.8)		1.3	(0.8)		1.3	(0.8)		0.0	c	
United Kingdom	54.8	(3.1)		45.2	(3.1)		37.6	(3.2)		7.6	(0.7)	
United States	93.0	(0.9)		7.0	(0.9)		2.0	(0.9)		5.0	(0.9)	
OECD average-28	82.8	(0.3)		17.2	(0.3)		12.9	(0.3)		4.4	(0.2)	
OECD average-30	82.8	(0.3)		17.2	(0.3)		12.9	(0.3)		4.4	(0.2)	
OECD average-37	82.2	(0.3)		17.8	(0.3)		13.8	(0.3)		4.0	(0.2)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [10/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		PISA 2012											
					Private schools								
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	91.7	(2.1)		8.3	(2.1)		0.0	c		8.3	(2.1)	
	Argentina	66.4	(2.1)		33.6	(2.1)		27.0	(2.9)		6.6	(2.1)	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	82.9	(0.9)		17.1	(0.9)		5.4	(1.3)		11.7	(1.3)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	98.8	(0.9)		1.2	(0.9)		0.0	c		1.2	(0.9)	
	Costa Rica	84.9	(1.3)		15.1	(1.3)		5.8	(1.4)		9.3	(1.5)	
	Croatia	98.2	(1.1)		1.8	(1.1)		0.8	(0.8)		0.9	(0.7)	
	Cyprus	82.5	(0.0)		17.5	(0.0)		1.6	(0.0)		15.9	(0.0)	
	Dominican Republic	m	m		m	m		m	m		m	m	
	Georgia	m	m		m	m		m	m		m	m	
	Hong Kong (China)	6.7	(0.2)		93.3	(0.2)		92.1	(0.7)		1.1	(0.7)	
	Indonesia	58.1	(2.6)		41.9	(2.6)		18.5	(2.4)		23.4	(2.7)	
	Jordan	83.3	(1.5)		16.7	(1.5)		0.9	(0.6)		15.8	(1.2)	
	Kazakhstan	97.2	(1.0)		2.8	(1.0)		0.7	(0.5)		2.1	(0.9)	
	Kosovo	m	m		m	m		m	m		m	m	
	Lebanon	m	m		m	m		m	m		m	m	
	Macao (China)	4.2	(0.0)		95.8	(0.0)		81.3	(0.0)		14.5	(0.0)	
	Malaysia	95.9	(1.0)		4.1	(1.0)		0.7	(0.7)		3.3	(0.7)	
	Malta	m	m		m	m		m	m		m	m	
	Moldova	m	m		m	m		m	m		m	m	
	Montenegro	99.6	(0.0)		0.4	(0.0)		0.0	c		0.4	(0.0)	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	m	m		m	m		m	m		m	m	
	Panama	m	m		m	m		m	m		m	m	
	Peru	76.5	(1.8)		23.5	(1.8)		10.3	(2.2)		13.2	(1.8)	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	61.9	(0.1)		38.1	(0.1)		0.9	(0.0)		37.2	(0.1)	
	Romania	99.4	(0.6)		0.6	(0.6)		0.0	c		0.6	(0.6)	
	Russia	99.4	(0.6)		0.6	(0.6)		0.0	c		0.6	(0.6)	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	99.6	(0.4)		0.4	(0.4)		0.0	c		0.4	(0.4)	
	Singapore	97.6	(0.7)		2.4	(0.7)		0.0	c		2.4	(0.7)	
	Chinese Taipei	64.8	(0.8)		35.2	(0.8)		8.5	(1.7)		26.7	(2.0)	
	Thailand	83.5	(0.6)		16.5	(0.6)		11.6	(1.5)		4.9	(1.3)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	44.1	(0.8)		55.9	(0.8)		19.6	(2.1)		36.3	(2.2)	
	Uruguay	83.3	(1.2)		16.7	(1.2)		0.0	c		16.7	(1.2)	
	Viet Nam	91.8	(1.3)		8.2	(1.3)		0.8	(0.6)		7.4	(1.1)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [11/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

	Percentage of students enrolled in:											
	PISA 2015											
				Private schools								
	Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD												
Australia	56.3	(0.8)		43.7	(0.8)		28.8	(1.3)		14.9	(1.0)	
Austria	87.4	(2.2)		12.6	(2.2)		12.6	(2.2)		0.0	c	
Belgium	45.5	(5.0)	‡	54.5	(5.0)	‡	54.5	(5.0)	‡	0.0	c	‡
Canada	90.3	(1.0)		9.7	(1.0)		4.8	(1.2)		4.9	(1.0)	
Chile	36.9	(1.6)		63.1	(1.6)		53.1	(2.3)		10.0	(1.8)	
Colombia	75.9	(1.8)		24.1	(1.8)		5.9	(1.7)		18.2	(2.0)	
Czech Republic	91.8	(1.4)		8.2	(1.4)		7.6	(1.4)		0.5	(0.4)	
Denmark	76.8	(2.3)		23.2	(2.3)		20.5	(2.5)		2.7	(1.2)	
Estonia	95.8	(1.0)		4.2	(1.0)		3.3	(1.0)		0.9	(0.4)	
Finland	95.5	(1.5)		4.5	(1.5)		4.5	(1.5)		0.0	c	
France	79.0	(1.3)		21.0	(1.3)		14.8	(1.6)		6.2	(1.4)	
Germany	92.7	(1.6)		7.3	(1.6)		6.8	(1.6)		0.5	(0.5)	
Greece	95.1	(0.7)		4.9	(0.7)		0.8	(0.8)		4.1	(0.4)	
Hungary	82.0	(2.3)		18.0	(2.3)		15.7	(2.1)		2.3	(1.2)	
Iceland	99.4	(0.1)		0.6	(0.1)		0.6	(0.1)		0.0	c	
Ireland	42.7	(1.0)		57.3	(1.0)		54.7	(1.3)		2.7	(1.1)	
Israel	m	m		m	m		m	m		m	m	
Italy	95.9	(1.1)	†	4.1	(1.1)	†	1.5	(0.7)	†	2.6	(0.9)	†
Japan	68.2	(1.0)		31.8	(1.0)		3.7	(1.2)		28.1	(1.4)	
Korea	65.3	(3.8)		34.7	(3.8)		23.2	(3.3)		11.4	(2.6)	
Latvia	98.0	(0.7)		2.0	(0.7)		0.7	(0.4)		1.2	(0.5)	
Lithuania	97.7	(1.1)		2.3	(1.1)		1.7	(0.7)		0.6	(0.8)	
Luxembourg	84.4	(0.1)		15.6	(0.1)		13.3	(0.1)		2.3	(0.0)	
Mexico	87.5	(1.4)		12.5	(1.4)		3.1	(1.1)		9.4	(1.5)	
Netherlands	39.9	(4.6)	†	60.1	(4.6)	†	60.1	(4.6)	†	0.0	(0.0)	†
New Zealand	93.4	(1.2)		6.6	(1.2)		0.1	(0.1)		6.5	(1.3)	
Norway	98.1	(1.0)		1.9	(1.0)		1.9	(1.0)		0.0	c	
Poland	96.5	(1.0)		3.5	(1.0)		2.3	(1.0)		1.2	(0.8)	
Portugal	94.5	(0.6)		5.5	(0.6)		1.8	(0.7)		3.7	(0.6)	
Slovak Republic	88.4	(2.1)		11.6	(2.1)		11.6	(2.1)		0.0	c	
Slovenia	97.4	(0.0)		2.6	(0.0)		2.6	(0.0)		0.0	c	
Spain	68.7	(1.2)		31.3	(1.2)		25.5	(1.6)		5.7	(1.3)	
Sweden	m	m		m	m		m	m		m	m	
Switzerland	93.9	(1.0)		6.1	(1.0)		2.7	(0.8)		3.3	(0.9)	
Turkey	95.2	(2.1)		4.8	(2.1)		1.7	(1.6)		3.1	(1.4)	
United Kingdom	44.0	(2.5)		56.0	(2.5)		50.6	(2.5)		5.5	(1.7)	
United States	92.3	(1.3)		7.7	(1.3)		0.1	(0.1)		7.5	(1.3)	
OECD average-28	82.5	(0.3)		17.5	(0.3)		12.5	(0.3)		5.0	(0.2)	
OECD average-30	82.5	(0.3)		17.5	(0.3)		12.5	(0.3)		5.0	(0.2)	
OECD average-37	81.5	(0.3)		18.5	(0.3)		13.8	(0.3)		4.7	(0.2)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [12/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		PISA 2015											
					Private schools								
		Government or public schools¹			Total			Government-dependent private schools²			Government-independent private schools³		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	88.4	(1.8)		11.6	(1.8)		1.9	(1.1)		9.8	(2.6)	
	Argentina	78.5	(1.7)		21.5	(1.7)		16.0	(2.0)		5.5	(1.6)	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	85.5	(1.4)		14.5	(1.4)		3.8	(1.0)		10.7	(1.3)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	98.8	(0.8)		1.2	(0.8)		0.2	(0.2)		1.0	(0.7)	
	Costa Rica	87.6	(2.3)		12.4	(2.3)		3.7	(1.2)		8.7	(1.9)	
	Croatia	97.7	(1.1)		2.3	(1.1)		2.2	(1.2)		0.1	(0.1)	
	Cyprus	84.0	(0.1)		16.0	(0.1)		5.8	(0.1)		10.3	(0.1)	
	Dominican Republic	77.7	(1.8)		22.3	(1.8)		6.1	(2.1)		16.2	(1.8)	
	Georgia	92.6	(0.8)		7.4	(0.8)		3.5	(0.9)		4.0	(1.1)	
	Hong Kong (China)	6.5	(0.3)		93.5	(0.3)		93.5	(0.3)		0.0	c	
	Indonesia	59.2	(1.5)		40.8	(1.5)		26.8	(2.1)		14.0	(2.5)	
	Jordan	80.0	(1.1)		20.0	(1.1)		1.5	(0.8)		18.5	(1.3)	
	Kazakhstan	96.0	(1.3)		4.0	(1.3)		1.2	(0.8)		2.9	(1.1)	
	Kosovo	97.5	(0.5)		2.5	(0.5)		0.2	(0.3)		2.2	(0.4)	
	Lebanon	49.7	(1.6)		50.3	(1.6)		15.3	(2.4)		35.0	(2.4)	
	Macao (China)	2.7	(0.0)		97.3	(0.0)		83.2	(0.1)		14.0	(0.0)	
	Malaysia	94.4	(0.7)		5.6	(0.7)		1.2	(0.9)		4.5	(0.7)	
	Malta	58.2	(0.1)		41.8	(0.1)		28.0	(0.1)		13.8	(0.1)	
	Moldova	98.5	(0.9)		1.5	(0.9)		0.4	(0.4)		1.1	(0.7)	
	Montenegro	99.4	(0.0)		0.6	(0.0)		0.0	c		0.6	(0.0)	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	98.1	(0.0)		1.9	(0.0)		1.0	(0.0)		0.9	(0.0)	
	Panama	m	m		m	m		m	m		m	m	
	Peru	68.6	(1.8)		31.4	(1.8)		7.3	(1.5)		24.1	(1.7)	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	58.2	(0.1)		41.8	(0.1)		7.3	(0.0)		34.5	(0.1)	
	Romania	98.9	(0.8)		1.1	(0.8)		0.0	c		1.1	(0.8)	
	Russia	99.0	(0.7)		1.0	(0.7)		0.6	(0.6)		0.5	(0.3)	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	m	m		m	m		m	m		m	m	
	Singapore	91.6	(0.7)		8.4	(0.7)		3.1	(0.8)		5.2	(1.3)	
	Chinese Taipei	66.2	(0.9)		33.8	(0.9)		8.0	(1.8)		25.8	(2.1)	
	Thailand	85.2	(0.7)		14.8	(0.7)		10.4	(1.2)		4.4	(1.4)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	42.6	(1.3)		57.4	(1.3)		10.6	(2.4)		46.8	(2.4)	
	Uruguay	84.6	(0.8)		15.4	(0.8)		0.0	c		15.4	(0.8)	
	Viet Nam	95.9	(1.0)		4.1	(1.0)		0.0	c		4.1	(1.0)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.
StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [13/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		PISA 2018											
		Government or public schools[1]			Private schools								
					Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	57.6	(0.6)		42.4	(0.6)		28.2	(1.1)		14.2	(1.0)	
	Austria	87.6	(2.4)		12.4	(2.4)		10.8	(2.3)		1.6	(0.7)	
	Belgium	m	m		m	m		m	m		m	m	
	Canada	91.8	(0.6)		8.2	(0.6)		3.4	(0.6)		4.8	(0.6)	
	Chile	34.0	(1.5)		66.0	(1.5)		56.2	(2.3)		9.8	(1.9)	
	Colombia	81.4	(1.4)		18.6	(1.4)		1.4	(0.7)		17.2	(1.3)	
	Czech Republic	93.6	(1.2)		6.4	(1.2)		5.8	(1.1)		0.6	(0.4)	
	Denmark	72.0	(1.9)		28.0	(1.9)		21.7	(2.2)		6.3	(1.5)	
	Estonia	96.1	(1.2)		3.9	(1.2)		2.3	(0.8)		1.6	(0.8)	
	Finland	95.9	(0.9)		4.1	(0.9)		4.1	(0.9)		0.0	c	
	France	80.0	(1.3)		20.0	(1.3)		11.7	(1.6)		8.3	(1.4)	
	Germany	96.1	(1.6)		3.9	(1.6)		3.4	(1.5)		0.6	(0.6)	
	Greece	94.9	(0.7)		5.1	(0.7)		1.4	(0.5)		3.7	(0.9)	
	Hungary	79.4	(2.5)		20.6	(2.5)		19.3	(2.5)		1.2	(0.8)	
	Iceland	99.2	(0.0)		0.8	(0.0)		0.8	(0.0)		0.0	c	
	Ireland	m	m		m	m		m	m		m	m	
	Israel	m	m		m	m		m	m		m	m	
	Italy	96.4	(0.9)		3.6	(0.9)		1.7	(0.7)		1.9	(0.6)	
	Japan	66.3	(0.6)		33.7	(0.6)		3.6	(1.3)		30.1	(1.5)	
	Korea	60.6	(3.6)		39.4	(3.6)		35.5	(3.6)		3.9	(1.5)	
	Latvia	98.5	(0.5)		1.5	(0.5)		0.8	(0.5)		0.7	(0.4)	
	Lithuania	95.8	(0.4)		4.2	(0.4)		3.0	(0.4)		1.2	(0.4)	
	Luxembourg	82.3	(0.1)		17.7	(0.1)		15.1	(0.1)		2.6	(0.0)	
	Mexico	87.9	(1.0)		12.1	(1.0)		4.2	(1.0)		7.9	(1.3)	
	Netherlands	36.5	(4.4)		63.5	(4.4)		63.4	(4.4)		0.1	(0.2)	
	New Zealand	94.2	(0.5)		5.8	(0.5)		0.0	c		5.8	(0.5)	
	Norway	w	w		w	w		w	w		w	w	
	Poland	95.5	(0.7)		4.5	(0.7)		3.6	(0.9)		0.9	(0.5)	
	Portugal	86.6	(1.8)		13.4	(1.8)		8.8	(1.6)		4.6	(1.3)	
	Slovak Republic	87.7	(2.2)		12.3	(2.2)		11.8	(2.1)		0.5	(0.5)	
	Slovenia	97.5	(0.1)		2.5	(0.1)		2.5	(0.1)		0.0	c	
	Spain	67.7	(0.8)		32.3	(0.8)		27.0	(1.0)		5.3	(0.8)	
	Sweden	80.7	(1.5)		19.3	(1.5)		19.2	(1.6)		0.1	(0.1)	
	Switzerland	95.5	(1.0)		4.5	(1.0)		0.7	(0.4)		3.8	(1.0)	
	Turkey	87.9	(2.8)		12.1	(2.8)		1.1	(1.1)		11.0	(2.6)	
	United Kingdom	34.0	(2.2)		66.0	(2.2)		59.8	(2.6)		6.2	(1.4)	
	United States	93.0	(1.3)		7.0	(1.3)		2.2	(1.5)		4.8	(1.6)	
	OECD average-28	83.7	(0.3)		16.3	(0.3)		11.0	(0.3)		5.3	(0.2)	
	OECD average-30	83.7	(0.3)		16.3	(0.3)		11.0	(0.3)		5.3	(0.2)	
	OECD average-37	81.9	(0.3)		18.1	(0.3)		13.2	(0.3)		4.9	(0.2)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [14/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:										
		PISA 2018										
					Private schools							
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]	
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	88.8	(0.8)		11.2	(0.8)		1.5	(0.8)		9.7	(1.0)	
	Argentina	68.4	(1.2)		31.6	(1.2)		24.8	(1.9)		6.8	(1.6)	
	Baku (Azerbaijan)	99.5	(0.2)	†	0.5	(0.2)	†	0.3	(0.0)	†	0.2	(0.2)	†
	Belarus	99.6	(0.4)		0.4	(0.4)		0.0	c		0.4	(0.4)	
	Bosnia and Herzegovina	99.0	(0.6)		1.0	(0.6)		0.3	(0.3)		0.7	(0.5)	
	Brazil	85.0	(1.0)		15.0	(1.0)		4.1	(1.0)		10.9	(1.3)	
	Brunei Darussalam	84.3	(0.0)		15.7	(0.0)		3.5	(0.0)		12.1	(0.0)	
	B-S-J-Z (China)	85.7	(2.1)		14.3	(2.1)		0.3	(0.2)		14.0	(2.2)	
	Bulgaria	99.0	(0.7)		1.0	(0.7)		0.0	c		1.0	(0.7)	
	Costa Rica	86.2	(1.1)		13.8	(1.1)		0.7	(0.5)		13.1	(1.1)	
	Croatia	97.6	(1.0)		2.4	(1.0)		1.5	(0.9)		0.9	(0.5)	
	Cyprus	83.3	(0.1)		16.7	(0.1)		0.0	c		16.7	(0.1)	
	Dominican Republic	83.1	(1.6)		16.9	(1.6)		6.0	(1.8)		10.9	(1.4)	
	Georgia	89.3	(0.9)		10.7	(0.9)		1.1	(0.5)		9.5	(1.0)	
	Hong Kong (China)	8.6	(0.4)		91.4	(0.4)		91.1	(0.5)		0.3	(0.3)	
	Indonesia	53.5	(3.0)		46.5	(3.0)		30.0	(3.7)		16.6	(3.9)	
	Jordan	78.9	(1.1)		21.1	(1.1)		1.4	(0.6)		19.6	(1.2)	
	Kazakhstan	91.7	(1.3)		8.3	(1.3)		2.3	(0.9)		6.0	(1.2)	
	Kosovo	99.2	(0.4)		0.8	(0.4)		0.0	c		0.8	(0.4)	
	Lebanon	48.4	(1.3)		51.6	(1.3)		31.2	(2.2)		20.4	(2.3)	
	Macao (China)	5.7	(0.0)		94.3	(0.0)		85.3	(0.0)		9.0	(0.0)	
	Malaysia	93.8	(0.8)		6.2	(0.8)		0.5	(0.7)		5.7	(0.8)	
	Malta	54.9	(0.1)		45.1	(0.1)		31.4	(0.1)		13.7	(0.1)	
	Moldova	99.3	(0.6)		0.7	(0.6)		0.0	(0.0)		0.7	(0.6)	
	Montenegro	99.8	(0.0)		0.2	(0.0)		0.0	c		0.2	(0.0)	
	Morocco	92.7	(1.5)		7.3	(1.5)		3.0	(1.3)		4.3	(1.2)	
	North Macedonia	98.7	(0.0)		1.3	(0.0)		0.6	(0.0)		0.7	(0.0)	
	Panama	81.9	(2.2)		18.1	(2.2)		7.2	(1.8)		10.8	(2.5)	
	Peru	75.2	(1.4)		24.8	(1.4)		0.3	(0.3)		24.6	(1.4)	
	Philippines	82.3	(1.7)		17.7	(1.7)		10.6	(1.8)		7.1	(1.6)	
	Qatar	57.3	(0.1)		42.7	(0.1)		1.5	(0.0)		41.2	(0.1)	
	Romania	98.0	(1.4)		2.0	(1.4)		1.4	(1.2)		0.7	(0.7)	
	Russia	100.0	(0.0)		0.0	c		0.0	c		0.0	c	
	Saudi Arabia	86.7	(1.4)		13.3	(1.4)		5.8	(1.6)		7.5	(1.7)	
	Serbia	96.8	(1.7)		3.2	(1.7)		0.0	c		3.2	(1.7)	
	Singapore	90.5	(0.7)		9.5	(0.7)		3.0	(0.4)		6.6	(0.9)	
	Chinese Taipei	68.4	(0.9)		31.6	(0.9)		14.0	(2.2)		17.6	(2.1)	
	Thailand	84.0	(1.5)		16.0	(1.5)		8.5	(1.8)		7.4	(1.6)	
	Ukraine	99.2	(0.6)		0.8	(0.6)		0.4	(0.5)		0.4	(0.4)	
	United Arab Emirates	38.0	(0.6)		62.0	(0.6)		23.8	(1.5)		38.2	(1.6)	
	Uruguay	84.1	(1.1)		15.9	(1.1)		0.5	(0.6)		15.3	(1.3)	
	Viet Nam	95.0	(1.1)		5.0	(1.1)		1.0	(0.9)		4.0	(0.7)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [15/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		Change between 2000 and 2018 (PISA 2018 - PISA 2000)											
		Government or public schools[1]			Private schools								
					Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
OECD	Australia	m	m		m	m		m	m		m	m	
	Austria	0.2	(3.6)		-0.2	(3.6)		5.0	(3.0)		**-5.2**	(2.2)	
	Belgium	m	m		m	m		m	m		m	m	
	Canada	m	m		m	m		m	m		m	m	
	Chile	**-20.5**	(2.1)		**20.5**	(2.1)		**24.8**	(3.3)		-4.3	(2.5)	
	Colombia	m	m		m	m		m	m		m	m	
	Czech Republic	-0.4	(2.0)		0.4	(2.0)		1.6	(1.7)		-1.2	(1.0)	
	Denmark	-3.3	(3.0)		3.3	(3.0)		-2.3	(3.2)		**5.6**	(1.6)	
	Estonia	m	m		m	m		m	m		m	m	
	Finland	-1.3	(1.6)		1.3	(1.6)		1.3	(1.6)		0.0	c	
	France	1.6	(3.6)		-1.6	(3.6)		-2.1	(3.2)		0.5	(2.7)	
	Germany	0.5	(2.1)		-0.5	(2.1)		-0.6	(2.0)		0.1	(0.7)	
	Greece	2.1	(1.7)		-2.1	(1.7)		**1.4**	(0.5)		**-3.5**	(1.8)	
	Hungary	**-15.2**	(3.1)		**15.2**	(3.1)		**15.0**	(2.9)		0.3	(1.1)	
	Iceland	0.0	(0.1)		0.0	(0.1)		**0.8**	(0.0)		**-0.8**	(0.0)	
	Ireland	m	m		m	m		m	m		m	m	
	Israel	m	m		m	m		m	m		m	m	
	Italy	2.1	(1.7)		-2.1	(1.7)		**1.7**	(0.7)		**-3.9**	(1.6)	
	Japan	**-3.5**	(1.1)		**3.5**	(1.1)		2.2	(1.6)		1.4	(2.0)	
	Korea	**12.9**	(5.6)		**-12.9**	(5.6)		**35.5**	(3.6)		**-48.4**	(4.5)	
	Latvia	-0.8	(0.9)		0.8	(0.9)		0.1	(0.9)		**0.7**	(0.4)	
	Lithuania	m	m		m	m		m	m		m	m	
	Luxembourg	**-5.6**	(0.1)		**5.6**	(0.1)		**3.0**	(0.1)		**2.6**	(0.0)	
	Mexico	3.4	(3.0)		-3.4	(3.0)		**4.2**	(1.0)		**-7.5**	(3.1)	
	Netherlands	10.0	(6.5)		-10.0	(6.5)		4.6	(6.7)		**-14.5**	(4.4)	
	New Zealand	-1.2	(0.7)		1.2	(0.7)		-0.1	(0.1)		1.3	(0.7)	
	Norway	w	w		w	w		w	w		w	w	
	Poland	-1.6	(1.5)		1.6	(1.5)		**3.6**	(0.9)		-2.0	(1.4)	
	Portugal	**-6.1**	(1.9)		**6.1**	(1.9)		3.0	(1.9)		**3.2**	(1.5)	
	Slovak Republic	m	m		m	m		m	m		m	m	
	Slovenia	m	m		m	m		m	m		m	m	
	Spain	**7.0**	(1.8)		**-7.0**	(1.8)		-0.5	(3.4)		**-6.5**	(2.6)	
	Sweden	**-15.9**	(1.7)		**15.9**	(1.7)		**18.0**	(1.6)		**-2.1**	(0.7)	
	Switzerland	1.9	(2.0)		-1.9	(2.0)		-1.0	(0.9)		-0.9	(1.8)	
	Turkey	m	m		m	m		m	m		m	m	
	United Kingdom	m	m		m	m		m	m		m	m	
	United States	-0.4	(3.0)		0.4	(3.0)		2.2	(1.5)		-1.8	(3.2)	
	OECD average-28	**-1.8**	(0.5)		**1.8**	(0.5)		**5.2**	(0.4)		**-3.4**	(0.4)	
	OECD average-30	**-1.8**	(0.5)		**1.8**	(0.5)		**5.2**	(0.4)		**-3.4**	(0.4)	
	OECD average-37	**-1.4**	(0.6)		**1.4**	(0.6)		**5.0**	(0.5)		**-3.6**	(0.4)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [16/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		Change between 2000 and 2018 (PISA 2018 - PISA 2000)											
					Private schools								
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
Partners	Albania	**-7.4**	(1.1)		**7.4**	(1.1)		1.5	(0.8)		**5.9**	(1.3)	
	Argentina	6.8	(7.6)		-6.8	(7.6)		4.3	(8.5)		**-11.1**	(5.3)	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	-1.9	(1.9)		1.9	(1.9)		**4.1**	(1.0)		-2.2	(2.1)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	-0.5	(0.9)		0.5	(0.9)		0.0	c		0.5	(0.9)	
	Costa Rica	m	m		m	m		m	m		m	m	
	Croatia	m	m		m	m		m	m		m	m	
	Cyprus	m	m		m	m		m	m		m	m	
	Dominican Republic	m	m		m	m		m	m		m	m	
	Georgia	m	m		m	m		m	m		m	m	
	Hong Kong (China)	**-86.5**	(1.0)		**86.5**	(1.0)		**86.7**	(0.8)		-0.2	(0.5)	
	Indonesia	-0.1	(6.2)		0.1	(6.2)		**29.8**	(3.7)		**-29.7**	(6.6)	
	Jordan	m	m		m	m		m	m		m	m	
	Kazakhstan	m	m		m	m		m	m		m	m	
	Kosovo	m	m		m	m		m	m		m	m	
	Lebanon	m	m		m	m		m	m		m	m	
	Macao (China)	m	m		m	m		m	m		m	m	
	Malaysia	m	m		m	m		m	m		m	m	
	Malta	m	m		m	m		m	m		m	m	
	Moldova	m	m		m	m		m	m		m	m	
	Montenegro	m	m		m	m		m	m		m	m	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	**-0.9**	(0.0)		**0.9**	(0.0)		**0.6**	(0.0)		**0.3**	(0.0)	
	Panama	m	m		m	m		m	m		m	m	
	Peru	**-9.8**	(2.1)		**9.8**	(2.1)		0.3	(0.3)		**9.5**	(2.0)	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	m	m		m	m		m	m		m	m	
	Romania	m	m		m	m		m	m		m	m	
	Russia	0.0	(0.0)		0.0	c		0.0	c		0.0	c	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	m	m		m	m		m	m		m	m	
	Singapore	m	m		m	m		m	m		m	m	
	Chinese Taipei	m	m		m	m		m	m		m	m	
	Thailand	3.3	(2.6)		-3.3	(2.6)		**6.7**	(2.0)		**-10.0**	(3.2)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	m	m		m	m		m	m		m	m	
	Uruguay	m	m		m	m		m	m		m	m	
	Viet Nam	m	m		m	m		m	m		m	m	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [17/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		Change between 2003 and 2018 (PISA 2018 - PISA 2003)											
					Private schools								
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
OECD	Australia	m	m		m	m		m	m		m	m	
	Austria	-4.4	(3.0)		4.4	(3.0)		2.8	(3.0)		**1.6**	(0.7)	
	Belgium	m	m		m	m		m	m		m	m	
	Canada	-1.4	(1.1)		1.4	(1.1)		-1.6	(1.1)		**3.0**	(0.7)	
	Chile	m	m		m	m		m	m		m	m	
	Colombia	m	m		m	m		m	m		m	m	
	Czech Republic	0.3	(2.1)		-0.3	(2.1)		0.0	(2.0)		-0.3	(0.7)	
	Denmark	**-6.3**	(3.1)		**6.3**	(3.1)		0.5	(3.4)		**5.8**	(1.6)	
	Estonia	m	m		m	m		m	m		m	m	
	Finland	2.6	(1.8)		-2.6	(1.8)		-2.6	(1.8)		0.0	c	
	France	m	m		m	m		m	m		m	m	
	Germany	3.8	(2.3)		-3.8	(2.3)		-4.0	(2.3)		0.2	(0.7)	
	Greece	-1.0	(2.2)		1.0	(2.2)		-0.1	(1.4)		1.1	(2.1)	
	Hungary	**-9.1**	(3.5)		**9.1**	(3.5)		**9.0**	(3.4)		0.0	(1.1)	
	Iceland	**-0.4**	(0.1)		**0.4**	(0.1)		**0.8**	(0.0)		**-0.5**	(0.1)	
	Ireland	m	m		m	m		m	m		m	m	
	Israel	m	m		m	m		m	m		m	m	
	Italy	1.1	(1.6)		-1.1	(1.6)		0.4	(0.9)		-1.5	(1.4)	
	Japan	**-6.4**	(1.6)		**6.4**	(1.6)		2.4	(1.5)		4.0	(2.4)	
	Korea	**16.5**	(5.1)		**-16.5**	(5.1)		0.3	(5.3)		**-16.8**	(3.5)	
	Latvia	-0.6	(0.9)		0.6	(0.9)		0.8	(0.5)		-0.2	(0.8)	
	Lithuania	m	m		m	m		m	m		m	m	
	Luxembourg	**-3.5**	(0.1)		**3.5**	(0.1)		**0.9**	(0.1)		**2.6**	(0.0)	
	Mexico	3.4	(2.6)		-3.4	(2.6)		0.3	(2.1)		-3.7	(2.1)	
	Netherlands	**13.6**	(6.0)		**-13.6**	(6.0)		**-13.7**	(6.0)		0.1	(0.2)	
	New Zealand	**-1.1**	(0.5)		**1.1**	(0.5)		-0.4	(0.4)		**1.5**	(0.7)	
	Norway	w	w		w	w		w	w		w	w	
	Poland	**-3.7**	(0.8)		**3.7**	(0.8)		**3.2**	(1.0)		0.5	(0.6)	
	Portugal	**-7.2**	(2.2)		**7.2**	(2.2)		**4.6**	(2.0)		2.5	(1.8)	
	Slovak Republic	0.1	(3.5)		-0.1	(3.5)		-0.6	(3.4)		0.5	(0.5)	
	Slovenia	m	m		m	m		m	m		m	m	
	Spain	**5.5**	(1.7)		**-5.5**	(1.7)		-3.4	(2.3)		-2.1	(1.9)	
	Sweden	**-14.8**	(1.6)		**14.8**	(1.6)		**14.8**	(1.7)		0.1	(0.1)	
	Switzerland	1.1	(1.7)		-1.1	(1.7)		-1.1	(1.2)		0.0	(1.2)	
	Turkey	**-8.7**	(3.1)		**8.7**	(3.1)		-1.3	(2.0)		**10.0**	(2.8)	
	United Kingdom	m	m		m	m		m	m		m	m	
	United States	-1.0	(1.7)		1.0	(1.7)		1.5	(1.6)		-0.6	(1.9)	
	OECD average-28	**-1.4**	(0.5)		**1.4**	(0.5)		**1.2**	(0.5)		0.2	(0.3)	
	OECD average-30	**-1.4**	(0.5)		**1.4**	(0.5)		**1.2**	(0.5)		0.2	(0.3)	
	OECD average-37	-0.9	(0.5)		0.9	(0.5)		0.5	(0.5)		0.3	(0.3)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [18/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		Change between 2003 and 2018 (PISA 2018 - PISA 2003)											
		Government or public schools[1]			Private schools								
					Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
Partners	Albania	m	m		m	m		m	m		m	m	
	Argentina	m	m		m	m		m	m		m	m	
	Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
	Belarus	m	m		m	m		m	m		m	m	
	Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
	Brazil	0.4	(2.3)		-0.4	(2.3)		-0.2	(1.8)		-0.2	(2.5)	
	Brunei Darussalam	m	m		m	m		m	m		m	m	
	B-S-J-Z (China)	m	m		m	m		m	m		m	m	
	Bulgaria	m	m		m	m		m	m		m	m	
	Costa Rica	m	m		m	m		m	m		m	m	
	Croatia	m	m		m	m		m	m		m	m	
	Cyprus	m	m		m	m		m	m		m	m	
	Dominican Republic	m	m		m	m		m	m		m	m	
	Georgia	m	m		m	m		m	m		m	m	
	Hong Kong (China)	-0.9	(0.5)		0.9	(0.5)		1.6	(1.0)		-0.7	(0.8)	
	Indonesia	-0.3	(3.8)		0.3	(3.8)		**25.6**	(4.0)		**-25.2**	(4.7)	
	Jordan	m	m		m	m		m	m		m	m	
	Kazakhstan	m	m		m	m		m	m		m	m	
	Kosovo	m	m		m	m		m	m		m	m	
	Lebanon	m	m		m	m		m	m		m	m	
	Macao (China)	**1.0**	(0.1)		**-1.0**	(0.1)		**33.8**	(0.2)		**-34.8**	(0.2)	
	Malaysia	m	m		m	m		m	m		m	m	
	Malta	m	m		m	m		m	m		m	m	
	Moldova	m	m		m	m		m	m		m	m	
	Montenegro	m	m		m	m		m	m		m	m	
	Morocco	m	m		m	m		m	m		m	m	
	North Macedonia	m	m		m	m		m	m		m	m	
	Panama	m	m		m	m		m	m		m	m	
	Peru	m	m		m	m		m	m		m	m	
	Philippines	m	m		m	m		m	m		m	m	
	Qatar	m	m		m	m		m	m		m	m	
	Romania	m	m		m	m		m	m		m	m	
	Russia	0.2	(0.2)		-0.2	(0.2)		0.0	c		-0.2	(0.2)	
	Saudi Arabia	m	m		m	m		m	m		m	m	
	Serbia	m	m		m	m		m	m		m	m	
	Singapore	m	m		m	m		m	m		m	m	
	Chinese Taipei	m	m		m	m		m	m		m	m	
	Thailand	**-4.0**	(1.9)		**4.0**	(1.9)		2.6	(2.1)		1.4	(2.2)	
	Ukraine	m	m		m	m		m	m		m	m	
	United Arab Emirates	m	m		m	m		m	m		m	m	
	Uruguay	-1.8	(1.4)		1.8	(1.4)		0.5	(0.6)		1.2	(1.5)	
	Viet Nam	m	m		m	m		m	m		m	m	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
Information on data for Cyprus: https://oe.cd/cyprus-disclaimer
Notes: Values that are statistically significant are indicated in bold (see Annex A3).
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [19/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
		Change between 2015 and 2018 (PISA 2018 - PISA 2015)											
					Private schools								
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
OECD	Australia	1.4	(1.0)		-1.4	(1.0)		-0.6	(1.7)		-0.7	(1.4)	
	Austria	0.1	(3.2)		-0.1	(3.2)		-1.8	(3.2)		**1.6**	(0.7)	
	Belgium	m	m		m	m		m	m		m	m	
	Canada	1.4	(1.2)		-1.4	(1.2)		-1.3	(1.3)		-0.1	(1.2)	
	Chile	-2.9	(2.1)		2.9	(2.1)		3.1	(3.3)		-0.3	(2.6)	
	Colombia	**5.4**	(2.2)		**-5.4**	(2.2)		**-4.4**	(1.9)		-1.0	(2.4)	
	Czech Republic	1.8	(1.9)		-1.8	(1.9)		-1.9	(1.8)		0.1	(0.6)	
	Denmark	-4.8	(3.0)		4.8	(3.0)		1.2	(3.3)		3.6	(1.9)	
	Estonia	0.3	(1.5)		-0.3	(1.5)		-1.0	(1.3)		0.7	(0.9)	
	Finland	0.4	(1.8)		-0.4	(1.8)		-0.4	(1.8)		0.0	c	
	France	1.0	(1.8)		-1.0	(1.8)		-3.1	(2.3)		2.1	(1.9)	
	Germany	3.4	(2.3)		-3.4	(2.3)		-3.4	(2.2)		0.0	(0.8)	
	Greece	-0.2	(1.0)		0.2	(1.0)		0.6	(1.0)		-0.4	(1.0)	
	Hungary	-2.6	(3.4)		2.6	(3.4)		3.6	(3.3)		-1.0	(1.4)	
	Iceland	**-0.3**	(0.1)		**0.3**	(0.1)		**0.3**	(0.1)		0.0	c	
	Ireland	m	m		m	m		m	m		m	m	
	Israel	m	m		m	m		m	m		m	m	
	Italy	0.5	(1.5)	†	-0.5	(1.5)	†	0.3	(1.0)	†	-0.7	(1.1)	†
	Japan	-1.9	(1.1)		1.9	(1.1)		-0.1	(1.7)		2.0	(2.0)	
	Korea	-4.7	(5.2)		4.7	(5.2)		**12.2**	(4.9)		**-7.6**	(3.0)	
	Latvia	0.4	(0.8)		-0.4	(0.8)		0.1	(0.6)		-0.5	(0.6)	
	Lithuania	-1.8	(1.2)		1.8	(1.2)		1.2	(0.8)		0.6	(0.9)	
	Luxembourg	**-2.0**	(0.1)		**2.0**	(0.1)		**1.8**	(0.1)		**0.3**	(0.1)	
	Mexico	0.4	(1.7)		-0.4	(1.7)		1.1	(1.5)		-1.5	(2.0)	
	Netherlands	-3.4	(6.3)	†	3.4	(6.3)	†	3.3	(6.3)	†	0.1	(0.2)	†
	New Zealand	0.8	(1.3)		-0.8	(1.3)		-0.1	(0.1)		-0.7	(1.4)	
	Norway	w	w		w	w		w	w		w	w	
	Poland	-1.0	(1.2)		1.0	(1.2)		1.3	(1.4)		-0.3	(1.0)	
	Portugal	**-7.9**	(1.9)		**7.9**	(1.9)		**7.0**	(1.8)		0.9	(1.5)	
	Slovak Republic	-0.7	(3.0)		0.7	(3.0)		0.2	(3.0)		0.5	(0.5)	
	Slovenia	0.0	(0.1)		0.0	(0.1)		0.0	(0.1)		0.0	c	
	Spain	-1.0	(1.4)		1.0	(1.4)		1.4	(1.9)		-0.4	(1.6)	
	Sweden	m	m		m	m		m	m		m	m	
	Switzerland	1.6	(1.4)		-1.6	(1.4)		**-2.0**	(0.9)		0.4	(1.3)	
	Turkey	**-7.3**	(3.5)		**7.3**	(3.5)		-0.5	(2.0)		**7.9**	(2.9)	
	United Kingdom	**-9.9**	(3.3)		**9.9**	(3.3)		**9.2**	(3.6)		0.7	(2.2)	
	United States	0.7	(1.8)		-0.7	(1.8)		2.1	(1.5)		-2.8	(2.1)	
	OECD average-28	-0.9	(0.4)		0.9	(0.4)		0.8	(0.4)		0.1	(0.3)	
	OECD average-30	-0.9	(0.4)		0.9	(0.4)		0.8	(0.4)		0.1	(0.3)	
	OECD average-37	**-1.0**	(0.4)		**1.0**	(0.4)		**0.9**	(0.4)		0.1	(0.3)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.

2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.7.1 [20/20] **Enrolment in public and private schools, 2000 through 2018**
Results based on principals' reports about school management and the school's sources of funding

	Percentage of students enrolled in:											
	Change between 2015 and 2018 (PISA 2018 - PISA 2015)											
	Government or public schools[1]			Private schools								
				Total			Government-dependent private schools[2]			Government-independent private schools[3]		
Partners	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x	% dif.	S.E.	x
Albania	0.4	(2.0)		-0.4	(2.0)		-0.4	(1.4)		-0.1	(2.8)	
Argentina	**-10.1**	(2.1)		**10.1**	(2.1)		**8.8**	(2.8)		1.3	(2.2)	
Baku (Azerbaijan)	m	m		m	m		m	m		m	m	
Belarus	m	m		m	m		m	m		m	m	
Bosnia and Herzegovina	m	m		m	m		m	m		m	m	
Brazil	-0.5	(1.7)		0.5	(1.7)		0.2	(1.4)		0.2	(1.9)	
Brunei Darussalam	m	m		m	m		m	m		m	m	
B-S-J-Z (China)	m	m		m	m		m	m		m	m	
Bulgaria	0.2	(1.1)		-0.2	(1.1)		-0.2	(0.2)		0.0	(1.0)	
Costa Rica	-1.3	(2.6)		1.3	(2.6)		**-3.0**	(1.3)		**4.4**	(2.2)	
Croatia	-0.1	(1.6)		0.1	(1.6)		-0.7	(1.5)		0.8	(0.5)	
Cyprus	**-0.7**	(0.1)		**0.7**	(0.1)		**-5.8**	(0.1)		**6.5**	(0.1)	
Dominican Republic	**5.4**	(2.4)		**-5.4**	(2.4)		-0.1	(2.7)		**-5.3**	(2.3)	
Georgia	**-3.2**	(1.2)		**3.2**	(1.2)		**-2.3**	(1.0)		**5.6**	(1.5)	
Hong Kong (China)	**2.1**	(0.5)		**-2.1**	(0.5)		**-2.4**	(0.6)		0.3	(0.3)	
Indonesia	-5.7	(3.3)		5.7	(3.3)		3.1	(4.2)		2.6	(4.6)	
Jordan	-1.1	(1.6)		1.1	(1.6)		0.0	(1.0)		1.1	(1.7)	
Kazakhstan	**-4.3**	(1.8)		**4.3**	(1.8)		1.1	(1.2)		**3.2**	(1.6)	
Kosovo	**1.7**	(0.6)		**-1.7**	(0.6)		-0.2	(0.3)		**-1.4**	(0.6)	
Lebanon	-1.3	(2.0)		1.3	(2.0)		**16.0**	(3.3)		**-14.6**	(3.3)	
Macao (China)	**3.0**	(0.0)		**-3.0**	(0.0)		**2.0**	(0.1)		**-5.0**	(0.1)	
Malaysia	-0.5	(1.0)		0.5	(1.0)		-0.7	(1.2)		1.2	(1.0)	
Malta	**-3.3**	(0.1)		**3.3**	(0.1)		**3.3**	(0.1)		-0.1	(0.1)	
Moldova	0.8	(1.1)		-0.8	(1.1)		-0.4	(0.4)		-0.4	(1.0)	
Montenegro	**0.4**	(0.0)		**-0.4**	(0.0)		0.0	c		**-0.4**	(0.0)	
Morocco	m	m		m	m		m	m		m	m	
North Macedonia	**0.6**	(0.0)		**-0.6**	(0.0)		**-0.4**	(0.0)		**-0.2**	(0.0)	
Panama	m	m		m	m		m	m		m	m	
Peru	**6.5**	(2.3)		**-6.5**	(2.3)		**-7.0**	(1.5)		0.5	(2.2)	
Philippines	m	m		m	m		m	m		m	m	
Qatar	**-0.9**	(0.1)		**0.9**	(0.1)		**-5.8**	(0.0)		**6.7**	(0.1)	
Romania	-1.0	(1.6)		1.0	(1.6)		1.4	(1.2)		-0.4	(1.0)	
Russia	1.0	(0.7)		-1.0	(0.7)		-0.6	(0.6)		-0.5	(0.3)	
Saudi Arabia	m	m		m	m		m	m		m	m	
Serbia	m	m		m	m		m	m		m	m	
Singapore	-1.1	(0.9)		1.1	(0.9)		-0.2	(0.9)		1.3	(1.6)	
Chinese Taipei	2.2	(1.3)		-2.2	(1.3)		**6.0**	(2.9)		**-8.2**	(3.0)	
Thailand	-1.2	(1.6)		1.2	(1.6)		-1.9	(2.1)		3.1	(2.1)	
Ukraine	m	m		m	m		m	m		m	m	
United Arab Emirates	**-4.6**	(1.4)		**4.6**	(1.4)		**13.2**	(2.8)		**-8.6**	(2.9)	
Uruguay	-0.5	(1.4)		0.5	(1.4)		0.5	(0.6)		0.0	(1.5)	
Viet Nam	-0.9	(1.4)		0.9	(1.4)		1.0	(0.9)		0.0	(1.2)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Notes: Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132298

Table V.B1.8.11 [1/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																	
		Internal evaluation/Self-evaluation									External evaluation								
		Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	54.6	(2.0)		44.6	(2.0)		0.8	(0.3)		82.4	(1.5)		9.1	(1.2)		8.4	(1.1)	
	Austria	44.0	(3.6)		51.6	(3.4)		4.4	(1.3)		29.2	(3.0)		16.4	(2.4)		54.4	(3.1)	
	Belgium	29.2	(2.7)		63.9	(2.8)		6.9	(2.0)		77.3	(2.7)		11.9	(2.2)		10.8	(2.1)	
	Canada	45.0	(2.4)		44.9	(2.6)		10.1	(1.5)		56.1	(2.2)		12.4	(1.8)		31.5	(2.2)	
	Chile	23.5	(3.4)		72.1	(3.5)		4.4	(1.4)		63.8	(3.9)		20.8	(3.0)		15.4	(2.8)	
	Colombia	62.2	(3.8)		37.2	(3.7)		0.6	(0.4)		77.7	(3.1)		16.4	(3.0)		5.9	(1.7)	
	Czech Republic	18.6	(2.4)		77.2	(2.4)		4.1	(1.3)		31.8	(2.6)		31.2	(3.4)		37.0	(3.2)	
	Denmark	57.3	(3.3)		33.5	(3.4)		9.2	(2.1)		63.1	(3.7)		10.8	(2.2)		26.0	(3.4)	
	Estonia	78.4	(1.7)		21.6	(1.7)		0.0	c		80.8	(1.8)		7.7	(1.0)		11.5	(1.5)	
	Finland	54.1	(3.5)		39.9	(3.5)		6.0	(1.8)		43.5	(3.4)		10.4	(2.2)		46.1	(2.9)	
	France	32.8	(3.0)		54.4	(3.4)		12.8	(2.4)		49.6	(3.6)		7.5	(1.7)		43.0	(3.4)	
	Germany	25.9	(3.1)		61.1	(3.8)		13.0	(2.4)		68.2	(3.1)		9.7	(2.2)		22.0	(3.1)	
	Greece	11.1	(2.2)		34.9	(2.9)		53.9	(3.1)		3.8	(1.3)		4.8	(1.3)		91.5	(1.8)	
	Hungary	88.1	(2.3)		10.8	(2.3)		1.0	(0.6)		71.4	(3.4)		11.7	(2.4)		16.8	(2.7)	
	Iceland	84.5	(0.2)		15.5	(0.2)		0.0	c		84.0	(0.2)		6.1	(0.2)		9.9	(0.1)	
	Ireland	80.9	(3.2)		18.4	(3.1)		0.8	(0.7)		81.2	(2.9)		7.2	(2.2)		11.7	(2.3)	
	Israel	51.9	(3.5)		45.6	(3.6)		2.5	(1.2)		81.4	(2.9)		7.7	(2.1)		10.9	(2.3)	
	Italy	69.5	(2.7)		27.5	(2.6)		3.0	(1.0)		51.2	(3.2)		12.8	(2.0)		36.0	(3.0)	
	Japan	61.8	(2.9)		36.0	(3.1)		2.1	(1.3)		51.1	(3.2)		15.4	(2.5)		33.5	(3.6)	
	Korea	56.7	(3.9)		42.8	(3.9)		0.5	(0.5)		41.9	(3.4)		26.1	(2.9)		32.0	(3.5)	
	Latvia	76.1	(1.8)		23.9	(1.8)		0.0	c		88.7	(1.5)		6.2	(1.3)		5.1	(0.9)	
	Lithuania	56.5	(2.0)		43.4	(2.0)		0.1	(0.0)		87.1	(1.5)		5.6	(1.0)		7.3	(1.1)	
	Luxembourg	70.6	(0.1)		18.5	(0.1)		10.9	(0.1)		91.8	(0.1)		2.7	(0.0)		5.5	(0.1)	
	Mexico	39.5	(3.0)		55.4	(3.1)		5.1	(1.5)		79.5	(2.7)		6.7	(1.6)		13.8	(2.3)	
	Netherlands	21.8	(3.7)		77.1	(3.8)		1.0	(0.9)		50.3	(4.4)		37.5	(4.5)		12.2	(3.1)	
	New Zealand	52.9	(3.4)		46.7	(3.4)		0.4	(0.4)		97.3	(1.3)		2.7	(1.3)		0.0	c	
	Norway	49.1	(3.0)		49.0	(3.1)		2.0	(0.9)		70.4	(3.0)		3.3	(1.0)		26.3	(2.9)	
	Poland	70.8	(3.1)		28.7	(3.1)		0.5	(0.5)		95.0	(1.3)		1.7	(0.9)		3.3	(1.1)	
	Portugal	43.3	(3.8)		56.7	(3.8)		0.0	c		88.4	(1.7)		4.6	(1.2)		7.0	(1.4)	
	Slovak Republic	53.5	(2.8)		40.8	(2.8)		5.7	(1.3)		41.1	(3.3)		17.9	(2.8)		41.0	(2.7)	
	Slovenia	37.9	(0.5)		60.7	(0.6)		1.3	(0.2)		25.0	(0.7)		21.8	(0.6)		53.1	(0.7)	
	Spain	40.1	(1.8)		50.0	(2.0)		9.9	(1.1)		64.2	(2.1)		14.4	(1.5)		21.4	(2.0)	
	Sweden	66.5	(3.2)		31.8	(3.3)		1.7	(0.8)		55.9	(4.0)		10.3	(2.7)		33.7	(3.9)	
	Switzerland	35.7	(3.4)		53.2	(4.1)		11.0	(2.5)		58.5	(3.5)		11.0	(2.0)		30.5	(3.0)	
	Turkey	62.1	(3.8)		34.9	(3.9)		3.0	(1.3)		60.6	(4.3)		15.4	(2.9)		24.1	(3.5)	
	United Kingdom	45.8	(3.7)		54.1	(3.6)		0.1	(0.1)		67.6	(3.5)		30.1	(3.5)		2.3	(1.1)	
	United States	61.1	(3.9)		32.4	(4.0)		6.5	(2.5)		68.1	(3.7)		17.0	(3.1)		14.8	(2.6)	
	OECD average	51.7	(0.5)		43.0	(0.5)		5.3	(0.2)		64.3	(0.5)		12.6	(0.4)		23.1	(0.4)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

Table V.B1.8.11 [2/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																	
		Internal evaluation/Self-evaluation									External evaluation								
		Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	85.7	(2.1)		14.3	(2.1)		0.0	c		87.2	(2.2)		9.9	(2.1)		2.9	(1.1)	
	Argentina	38.9	(2.8)		52.4	(3.1)		8.7	(1.8)		49.3	(3.0)		6.6	(1.6)		44.1	(3.0)	
	Baku (Azerbaijan)	46.6	(4.3)	†	52.6	(4.3)	†	0.8	(0.8)	†	49.8	(4.4)	†	19.4	(3.1)	†	30.8	(4.3)	†
	Belarus	36.0	(3.2)		64.0	(3.2)		0.0	c		88.5	(2.3)		6.3	(1.7)		5.2	(1.5)	
	Bosnia and Herzegovina	45.7	(3.5)		44.1	(3.4)		10.2	(2.4)		61.8	(2.6)		9.6	(2.1)		28.6	(2.7)	
	Brazil	39.4	(2.4)		56.8	(2.4)		3.9	(0.8)		74.0	(1.9)		13.6	(1.3)		12.3	(1.4)	
	Brunei Darussalam	40.5	(0.1)		59.4	(0.1)		0.1	(0.0)		86.6	(0.0)		5.7	(0.0)		7.7	(0.0)	
	B-S-J-Z (China)	22.0	(2.9)		76.5	(3.1)		1.5	(1.1)		77.0	(3.1)		13.8	(2.2)		9.3	(2.1)	
	Bulgaria	59.4	(3.6)		33.8	(3.7)		6.7	(1.8)		92.7	(2.0)		4.8	(1.7)		2.5	(1.2)	
	Costa Rica	69.2	(3.0)		26.4	(3.0)		4.3	(1.5)		58.4	(3.5)		13.8	(2.5)		27.8	(3.0)	
	Croatia	72.9	(2.2)		22.7	(2.4)		4.4	(1.3)		68.9	(3.2)		11.8	(2.2)		19.4	(2.9)	
	Cyprus	19.3	(0.3)		75.3	(0.3)		5.4	(0.2)		72.5	(0.5)		6.9	(0.7)		20.6	(0.8)	
	Dominican Republic	46.5	(3.7)		50.4	(3.9)		3.1	(1.3)		65.0	(3.4)		19.1	(2.6)		15.9	(2.9)	
	Georgia	48.7	(3.1)		51.0	(3.1)		0.3	(0.2)		58.9	(3.2)		24.2	(2.6)		16.8	(2.4)	
	Hong Kong (China)	38.2	(4.4)		61.8	(4.4)		0.0	c		93.5	(2.3)		6.5	(2.3)		0.0	c	
	Indonesia	50.7	(4.8)		48.0	(4.8)		1.3	(0.7)		44.9	(4.9)		43.5	(4.8)		11.6	(2.7)	
	Jordan	64.3	(3.1)		33.7	(3.0)		2.0	(0.9)		59.5	(3.4)		20.8	(2.8)		19.7	(2.8)	
	Kazakhstan	34.7	(2.4)		65.1	(2.4)		0.2	(0.1)		79.6	(2.0)		16.6	(1.7)		3.8	(1.0)	
	Kosovo	83.1	(1.5)		16.2	(1.4)		0.7	(0.4)		82.0	(1.4)		8.3	(0.9)		9.7	(1.0)	
	Lebanon	31.9	(2.9)		62.2	(2.9)		5.9	(1.3)		35.5	(3.0)		29.2	(2.9)		35.4	(2.9)	
	Macao (China)	43.5	(0.0)		50.1	(0.1)		6.4	(0.0)		90.5	(0.1)		7.3	(0.0)		2.2	(0.0)	
	Malaysia	66.9	(3.3)		33.1	(3.3)		0.0	c		64.9	(3.5)		24.8	(3.2)		10.3	(2.1)	
	Malta	68.1	(0.1)		31.9	(0.1)		0.0	c		97.4	(0.0)		2.6	(0.0)		0.0	c	
	Moldova	58.2	(3.7)		41.4	(3.7)		0.5	(0.5)		92.9	(1.7)		4.1	(1.6)		3.0	(1.2)	
	Montenegro	80.3	(0.6)		19.7	(0.6)		0.0	c		100.0	c		0.0	c		0.0	c	
	Morocco	59.7	(3.9)		37.2	(3.6)		3.1	(1.3)		75.8	(3.2)		9.3	(2.3)		14.9	(2.8)	
	North Macedonia	90.6	(0.1)		9.4	(0.1)		0.0	c		91.7	(0.0)		1.8	(0.0)		6.5	(0.0)	
	Panama	74.7	(2.4)		21.5	(2.3)		3.8	(1.3)		46.6	(2.8)		26.1	(3.0)		27.3	(2.8)	
	Peru	21.9	(2.7)		73.8	(2.9)		4.3	(1.2)		74.1	(2.6)		10.4	(1.7)		15.4	(2.1)	
	Philippines	56.6	(4.1)		41.3	(4.1)		2.1	(0.7)		55.7	(3.6)		37.1	(3.7)		7.2	(1.9)	
	Qatar	71.6	(0.1)		28.1	(0.1)		0.2	(0.0)		83.6	(0.1)		15.4	(0.1)		1.0	(0.0)	
	Romania	90.6	(2.5)		9.4	(2.5)		0.0	c		81.4	(3.2)		17.1	(3.0)		1.5	(1.0)	
	Russia	56.1	(3.0)		43.9	(3.0)		0.0	c		89.5	(1.9)		9.3	(1.8)		1.2	(0.7)	
	Saudi Arabia	66.1	(3.0)		33.4	(3.1)		0.5	(0.5)		82.1	(2.6)		12.9	(2.2)		5.0	(1.6)	
	Serbia	77.5	(3.0)		21.7	(3.0)		0.9	(0.5)		97.6	(1.1)		2.0	(1.1)		0.5	(0.4)	
	Singapore	67.9	(0.8)		31.5	(0.9)		0.6	(0.0)		90.8	(1.4)		6.8	(1.4)		2.4	(0.0)	
	Chinese Taipei	53.4	(3.4)		38.8	(3.4)		7.8	(2.0)		80.0	(3.3)		12.8	(2.5)		7.1	(2.1)	
	Thailand	83.3	(2.7)		16.7	(2.7)		0.0	c		94.1	(1.8)		5.4	(1.8)		0.5	(0.5)	
	Ukraine	49.6	(3.2)		49.1	(3.2)		1.4	(0.7)		88.6	(2.2)		3.4	(1.4)		8.0	(1.9)	
	United Arab Emirates	78.8	(1.4)		21.2	(1.4)		0.0	c		86.8	(1.1)		9.5	(0.8)		3.7	(0.7)	
	Uruguay	32.3	(3.7)		55.0	(3.7)		12.7	(2.6)		51.1	(3.1)		9.2	(1.8)		39.7	(3.4)	
	Viet Nam	85.1	(3.6)		14.9	(3.6)		0.0	c		82.8	(4.0)		4.9	(2.0)		12.3	(3.4)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

Table V.B1.8.11 [3/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																	
		Written specification of the school's curricular profile and education goals									Written specification of student performance standards								
		Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	**Australia**	61.3	(2.0)		35.5	(1.8)		3.2	(0.7)		63.9	(1.9)		29.0	(1.6)		7.1	(1.2)	
	Austria	45.5	(3.6)		37.7	(3.4)		16.8	(2.1)		39.4	(3.7)		25.9	(3.4)		34.7	(3.2)	
	Belgium	61.5	(2.9)		30.3	(2.6)		8.2	(1.9)		30.2	(2.9)		28.8	(2.8)		41.0	(3.2)	
	Canada	66.4	(2.4)		23.1	(2.3)		10.5	(1.7)		53.9	(2.4)		29.3	(2.1)		16.8	(1.8)	
	Chile	48.9	(3.9)		38.9	(3.6)		12.1	(3.0)		40.6	(4.2)		42.5	(4.1)		16.9	(3.2)	
	Colombia	40.5	(3.5)		52.3	(3.5)		7.2	(2.1)		53.7	(4.0)		41.3	(3.6)		5.0	(1.7)	
	Czech Republic	73.2	(2.7)		26.7	(2.6)		0.1	(0.1)		63.9	(3.3)		22.9	(2.7)		13.2	(2.4)	
	Denmark	49.3	(3.9)		36.0	(3.9)		14.6	(2.6)		57.6	(3.5)		22.8	(3.0)		19.7	(2.9)	
	Estonia	60.8	(2.1)		37.1	(2.1)		2.1	(0.8)		28.8	(1.7)		36.9	(1.9)		34.3	(2.1)	
	Finland	57.2	(3.8)		23.3	(2.6)		19.4	(2.9)		52.9	(3.6)		11.7	(2.5)		35.4	(3.3)	
	France	66.0	(3.5)		18.0	(2.7)		15.9	(2.8)		35.0	(3.8)		11.8	(2.3)		53.1	(3.5)	
	Germany	47.4	(3.5)		39.4	(3.8)		13.2	(2.6)		33.2	(3.5)		35.1	(3.4)		31.8	(3.6)	
	Greece	33.1	(3.2)		26.3	(3.0)		40.5	(3.3)		27.0	(3.3)		18.9	(2.8)		54.1	(3.8)	
	Hungary	90.6	(2.0)		9.4	(2.0)		0.0	c		67.2	(3.5)		26.5	(3.6)		6.3	(1.7)	
	Iceland	38.2	(0.2)		51.1	(0.3)		10.7	(0.2)		36.4	(0.2)		55.2	(0.2)		8.5	(0.2)	
	Ireland	41.0	(3.8)		43.1	(4.0)		15.9	(3.1)		15.7	(2.9)		47.3	(4.2)		37.0	(3.9)	
	Israel	48.4	(3.8)		46.8	(3.8)		4.8	(1.7)		31.5	(3.6)		45.7	(4.3)		22.8	(3.3)	
	Italy	33.5	(3.2)		58.7	(3.4)		7.7	(1.6)		13.7	(2.5)		49.5	(3.5)		36.8	(3.2)	
	Japan	46.8	(3.2)		48.2	(3.4)		4.9	(2.0)		23.0	(3.4)		41.5	(4.1)		35.5	(3.9)	
	Korea	50.3	(4.3)		48.8	(4.1)		0.9	(0.7)		53.7	(3.8)		44.4	(3.8)		1.9	(1.1)	
	Latvia	71.5	(1.9)		25.2	(1.9)		3.3	(0.9)		51.3	(2.2)		33.5	(2.1)		15.3	(1.6)	
	Lithuania	61.6	(2.0)		35.7	(1.9)		2.7	(0.7)		36.2	(1.9)		46.7	(1.9)		17.1	(1.1)	
	Luxembourg	58.2	(0.1)		28.3	(0.1)		13.5	(0.1)		54.3	(0.1)		8.0	(0.1)		37.7	(0.1)	
	Mexico	67.0	(2.7)		26.2	(2.5)		6.8	(1.3)		58.6	(3.1)		33.0	(2.8)		8.4	(2.0)	
	Netherlands	38.5	(4.0)		53.8	(4.3)		7.6	(2.3)		25.7	(3.3)		44.4	(4.2)		29.9	(4.2)	
	New Zealand	54.1	(2.9)		44.4	(3.0)		1.5	(0.8)		38.5	(3.5)		52.4	(3.8)		9.0	(2.3)	
	Norway	56.2	(3.4)		29.4	(2.9)		14.5	(2.1)		29.3	(2.7)		59.3	(3.2)		11.5	(2.0)	
	Poland	23.6	(2.7)		36.0	(3.5)		40.4	(3.7)		21.1	(3.0)		55.2	(3.2)		23.7	(3.2)	
	Portugal	41.3	(3.0)		49.8	(3.0)		8.9	(1.6)		31.3	(2.8)		46.1	(3.6)		22.6	(3.0)	
	Slovak Republic	65.9	(2.9)		26.6	(2.7)		7.5	(1.7)		65.8	(2.7)		22.0	(2.3)		12.2	(1.9)	
	Slovenia	69.1	(0.6)		23.7	(0.7)		7.2	(0.3)		77.1	(0.6)		17.0	(0.6)		5.9	(0.3)	
	Spain	64.0	(2.3)		25.4	(1.9)		10.6	(1.4)		42.7	(2.2)		30.1	(1.9)		27.2	(2.1)	
	Sweden	51.5	(3.0)		30.6	(3.4)		17.8	(2.4)		71.9	(3.6)		25.3	(3.4)		2.8	(1.1)	
	Switzerland	52.8	(3.3)		26.2	(3.2)		21.0	(3.4)		34.5	(3.1)		18.6	(2.8)		46.9	(3.6)	
	Turkey	66.8	(3.5)		21.9	(3.1)		11.3	(2.6)		46.8	(3.8)		36.5	(4.1)		16.8	(2.9)	
	United Kingdom	54.7	(3.5)		44.1	(3.5)		1.2	(0.8)		50.1	(3.4)		40.3	(3.4)		9.6	(2.3)	
	United States	70.8	(4.0)		24.7	(4.0)		4.5	(1.8)		62.3	(4.4)		27.6	(4.2)		10.1	(2.6)	
	OECD average	54.8	(0.5)		34.7	(0.5)		10.5	(0.3)		43.7	(0.5)		34.1	(0.5)		22.1	(0.4)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

Table V.B1.8.11 [4/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

	Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																	
	Written specification of the school's curricular profile and education goals									Written specification of student performance standards								
	Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
Partners	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Albania	70.4	(2.9)		28.8	(2.9)		0.8	(0.4)		81.1	(2.3)		18.5	(2.3)		0.4	(0.4)	
Argentina	43.6	(2.7)		42.7	(2.8)		13.7	(2.0)		33.4	(3.0)		40.3	(3.2)		26.4	(2.5)	
Baku (Azerbaijan)	58.2	(4.5)	†	30.5	(4.3)	†	11.3	(2.7)	†	53.8	(4.7)	†	38.7	(4.4)	†	7.5	(3.0)	†
Belarus	52.5	(3.6)		40.2	(3.5)		7.3	(1.8)		80.2	(2.7)		10.6	(2.1)		9.2	(2.1)	
Bosnia and Herzegovina	54.2	(3.6)		29.3	(3.0)		16.5	(2.5)		45.7	(3.8)		27.6	(3.3)		26.7	(3.5)	
Brazil	65.7	(2.2)		33.5	(2.1)		0.8	(0.6)		61.9	(2.2)		27.2	(2.2)		10.9	(1.5)	
Brunei Darussalam	51.3	(0.1)		46.1	(0.1)		2.6	(0.0)		53.3	(0.1)		40.9	(0.1)		5.8	(0.0)	
B-S-J-Z (China)	54.3	(3.2)		45.1	(3.2)		0.6	(0.5)		21.5	(3.2)		68.7	(3.9)		9.8	(2.4)	
Bulgaria	70.1	(3.5)		22.2	(3.0)		7.7	(2.1)		64.3	(3.4)		20.5	(2.8)		15.2	(2.8)	
Costa Rica	61.6	(3.3)		28.1	(3.0)		10.3	(1.9)		47.1	(3.3)		34.0	(3.4)		18.9	(2.8)	
Croatia	78.7	(3.0)		13.7	(2.6)		7.7	(1.8)		50.8	(3.6)		25.5	(3.2)		23.6	(2.9)	
Cyprus	62.3	(0.7)		25.6	(0.7)		12.2	(0.2)		49.0	(0.7)		33.5	(0.4)		17.4	(0.7)	
Dominican Republic	60.9	(3.5)		30.4	(3.1)		8.6	(1.9)		55.2	(4.1)		34.2	(3.2)		10.7	(2.2)	
Georgia	46.1	(3.2)		50.9	(3.2)		3.0	(1.2)		29.4	(2.5)		59.9	(3.0)		10.7	(2.2)	
Hong Kong (China)	31.0	(3.9)		67.4	(4.2)		1.6	(1.4)		15.8	(3.5)		67.7	(4.4)		16.5	(3.8)	
Indonesia	50.8	(4.6)		46.9	(4.6)		2.2	(0.9)		41.6	(4.6)		50.8	(4.3)		7.7	(2.0)	
Jordan	80.9	(2.9)		16.3	(2.7)		2.8	(1.1)		61.6	(3.6)		34.3	(3.5)		4.1	(1.4)	
Kazakhstan	53.3	(2.7)		45.4	(2.7)		1.3	(0.6)		50.2	(2.4)		48.9	(2.4)		0.9	(0.2)	
Kosovo	63.2	(1.5)		28.2	(1.4)		8.6	(1.0)		60.1	(1.9)		29.4	(1.8)		10.5	(0.9)	
Lebanon	41.5	(3.0)		51.4	(3.4)		7.1	(1.5)		27.7	(2.7)		61.3	(2.8)		11.0	(1.6)	
Macao (China)	36.3	(0.0)		60.7	(0.1)		3.0	(0.1)		32.2	(0.0)		65.8	(0.0)		2.0	(0.0)	
Malaysia	74.5	(3.2)		23.0	(3.2)		2.5	(1.1)		73.7	(3.0)		24.6	(3.1)		1.7	(1.0)	
Malta	54.4	(0.1)		38.6	(0.1)		7.0	(0.1)		25.9	(0.1)		47.4	(0.1)		26.8	(0.1)	
Moldova	63.0	(3.6)		32.1	(3.6)		4.9	(1.8)		60.7	(3.6)		30.7	(3.0)		8.6	(2.1)	
Montenegro	89.9	(0.3)		8.2	(0.3)		1.9	(0.0)		71.4	(0.5)		22.7	(0.5)		5.9	(0.0)	
Morocco	59.4	(3.7)		20.4	(3.4)		20.2	(3.0)		46.7	(3.9)		35.1	(3.3)		18.2	(2.7)	
North Macedonia	80.7	(0.1)		12.7	(0.1)		6.6	(0.0)		55.8	(0.1)		27.6	(0.1)		16.6	(0.1)	
Panama	55.6	(3.2)		37.6	(3.1)		6.8	(1.5)		53.6	(3.3)		37.7	(3.0)		8.7	(1.8)	
Peru	55.0	(3.0)		42.0	(3.1)		3.0	(0.9)		62.8	(3.3)		27.7	(3.0)		9.5	(1.5)	
Philippines	89.3	(2.2)		10.1	(2.3)		0.6	(0.4)		85.7	(2.8)		13.7	(2.6)		0.6	(0.4)	
Qatar	75.9	(0.1)		22.7	(0.1)		1.4	(0.0)		64.5	(0.1)		34.1	(0.1)		1.4	(0.0)	
Romania	73.9	(3.7)		23.1	(3.7)		3.0	(1.2)		58.3	(3.9)		33.4	(3.6)		8.3	(2.1)	
Russia	77.8	(3.4)		21.8	(3.1)		0.5	(0.5)		80.9	(2.3)		17.6	(2.2)		1.5	(0.9)	
Saudi Arabia	77.0	(2.9)		14.3	(2.4)		8.7	(1.9)		54.1	(3.6)		42.3	(3.3)		3.6	(1.2)	
Serbia	85.7	(2.8)		12.9	(2.5)		1.3	(1.2)		79.3	(2.8)		15.2	(2.7)		5.4	(1.7)	
Singapore	44.1	(1.1)		53.7	(1.3)		2.2	(0.9)		40.4	(1.2)		50.2	(1.3)		9.3	(0.9)	
Chinese Taipei	74.0	(2.8)		25.2	(2.7)		0.8	(0.8)		37.8	(3.9)		54.1	(3.8)		8.1	(2.1)	
Thailand	55.0	(3.6)		44.4	(3.4)		0.6	(0.5)		72.8	(3.8)		25.4	(3.5)		1.8	(1.1)	
Ukraine	74.2	(2.9)		13.0	(2.4)		12.8	(2.1)		57.2	(3.1)		36.8	(3.4)		6.0	(1.7)	
United Arab Emirates	66.9	(1.6)		32.5	(1.6)		0.6	(0.2)		61.9	(1.6)		37.4	(1.6)		0.7	(0.0)	
Uruguay	30.4	(3.4)		49.2	(3.9)		20.3	(3.3)		33.4	(3.6)		29.2	(3.1)		37.3	(4.0)	
Viet Nam	71.0	(3.7)		28.7	(3.7)		0.2	(0.2)		64.7	(4.7)		30.0	(4.4)		5.2	(1.9)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

Table V.B1.8.11 [5/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

	Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																	
	Systematic recording of data, such as teacher or student attendance, and professional development									Systematic recording of students' test results and graduation rates								
	Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD																		
Australia	80.4	(1.3)		18.9	(1.3)		0.7	(0.4)		68.9	(2.1)		29.7	(2.1)		1.3	(0.5)	
Austria	56.9	(3.2)		31.3	(3.0)		11.8	(2.0)		59.5	(2.9)		22.1	(2.6)		18.5	(2.4)	
Belgium	52.5	(3.0)		35.1	(2.8)		12.4	(2.1)		35.9	(3.1)		51.1	(3.2)		13.0	(1.9)	
Canada	61.7	(2.0)		24.6	(2.1)		13.7	(1.5)		74.4	(2.2)		20.4	(2.0)		5.3	(1.2)	
Chile	33.8	(3.7)		60.2	(3.8)		6.0	(1.7)		31.4	(3.9)		57.6	(4.2)		11.0	(2.5)	
Colombia	26.8	(2.9)		68.8	(3.1)		4.5	(1.5)		26.4	(3.3)		67.6	(3.7)		6.0	(1.8)	
Czech Republic	41.9	(3.1)		54.1	(3.1)		4.0	(1.4)		26.4	(2.3)		66.7	(2.6)		6.9	(1.7)	
Denmark	57.6	(2.8)		33.2	(3.4)		9.1	(2.0)		76.3	(2.6)		18.2	(2.5)		5.5	(1.4)	
Estonia	30.1	(1.9)		63.7	(1.9)		6.3	(1.2)		29.7	(2.0)		66.8	(2.1)		3.5	(0.8)	
Finland	55.7	(3.9)		21.2	(3.0)		23.1	(3.2)		59.2	(3.4)		22.8	(3.2)		18.0	(2.7)	
France	35.0	(3.3)		42.5	(3.8)		22.4	(3.0)		44.6	(3.6)		44.4	(3.7)		11.0	(2.5)	
Germany	44.8	(3.5)		39.8	(3.5)		15.3	(2.7)		68.4	(3.3)		24.7	(2.9)		6.9	(2.0)	
Greece	52.6	(3.5)		25.0	(3.2)		22.4	(3.0)		37.2	(3.4)		33.4	(3.4)		29.4	(2.9)	
Hungary	66.8	(3.4)		31.4	(3.4)		1.8	(1.0)		55.7	(3.9)		44.0	(3.8)		0.3	(0.3)	
Iceland	41.2	(0.2)		54.7	(0.2)		4.1	(0.1)		48.2	(0.3)		43.0	(0.3)		8.8	(0.2)	
Ireland	51.1	(4.1)		45.0	(4.2)		3.8	(1.2)		31.1	(3.5)		68.4	(3.5)		0.5	(0.5)	
Israel	46.3	(3.6)		51.9	(3.7)		1.7	(1.0)		59.3	(3.5)		37.4	(3.7)		3.3	(1.4)	
Italy	26.1	(3.1)		58.9	(4.0)		15.1	(2.7)		25.9	(2.8)		70.8	(2.8)		3.3	(1.0)	
Japan	54.1	(3.6)		30.3	(3.5)		15.6	(2.7)		34.2	(3.5)		55.3	(3.8)		10.5	(2.3)	
Korea	52.3	(3.9)		42.7	(3.8)		5.0	(1.7)		49.8	(3.9)		44.4	(3.8)		5.8	(1.8)	
Latvia	71.2	(1.9)		28.4	(1.9)		0.4	(0.3)		65.4	(1.9)		34.6	(1.9)		0.0	c	
Lithuania	19.6	(1.9)		79.4	(1.8)		1.0	(0.4)		20.8	(1.9)		73.9	(1.8)		5.3	(0.7)	
Luxembourg	61.6	(0.1)		30.9	(0.1)		7.5	(0.1)		50.9	(0.1)		21.4	(0.1)		27.8	(0.1)	
Mexico	54.0	(3.1)		43.4	(3.0)		2.6	(1.1)		59.3	(3.1)		38.8	(3.0)		1.9	(1.0)	
Netherlands	31.7	(4.0)		60.3	(4.2)		8.0	(2.4)		49.0	(4.2)		50.2	(4.2)		0.8	(0.8)	
New Zealand	48.5	(3.2)		50.5	(3.2)		0.9	(0.6)		43.2	(3.3)		56.0	(3.3)		0.8	(0.5)	
Norway	42.6	(3.4)		43.9	(3.4)		13.5	(2.4)		65.0	(3.4)		31.9	(3.3)		3.1	(1.1)	
Poland	43.5	(3.2)		55.9	(3.3)		0.5	(0.5)		39.1	(3.4)		58.2	(3.5)		2.7	(1.1)	
Portugal	29.7	(3.1)		52.8	(3.4)		17.4	(2.6)		30.2	(3.1)		67.9	(3.0)		1.9	(0.7)	
Slovak Republic	72.5	(2.8)		26.1	(2.7)		1.4	(0.6)		61.3	(2.7)		37.1	(2.7)		1.6	(0.6)	
Slovenia	54.1	(0.6)		41.6	(0.7)		4.3	(0.5)		54.4	(0.6)		41.2	(0.5)		4.4	(0.3)	
Spain	59.2	(1.8)		32.8	(1.7)		8.1	(1.2)		57.3	(2.0)		36.7	(1.8)		6.1	(0.9)	
Sweden	74.2	(3.1)		18.8	(2.7)		6.9	(1.5)		59.5	(4.1)		28.7	(3.5)		11.9	(2.3)	
Switzerland	41.6	(3.6)		42.1	(3.3)		16.3	(2.8)		40.6	(3.6)		33.5	(3.5)		25.9	(3.1)	
Turkey	83.1	(3.0)		12.6	(2.6)		4.3	(1.7)		90.2	(2.6)		9.4	(2.6)		0.4	(0.3)	
United Kingdom	56.4	(4.1)		43.5	(4.0)		0.1	(0.1)		49.2	(3.9)		48.7	(3.9)		2.1	(1.1)	
United States	72.5	(3.9)		26.2	(3.8)		1.3	(0.9)		86.1	(3.0)		13.9	(3.0)		0.0	c	
OECD average	50.9	(0.5)		41.2	(0.5)		7.9	(0.3)		50.4	(0.5)		42.5	(0.5)		7.2	(0.3)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

Table V.B1.8.11 [6/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																	
		Systematic recording of data, such as teacher or student attendance, and professional development									Systematic recording of students' test results and graduation rates								
		Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	Albania	69.4	(2.6)		28.7	(2.6)		1.8	(0.6)		58.1	(2.7)		41.4	(2.7)		0.5	(0.4)	
	Argentina	45.4	(2.9)		39.9	(3.0)		14.6	(2.3)		51.1	(3.5)		38.3	(3.2)		10.6	(2.1)	
	Baku (Azerbaijan)	32.1	(4.2)	†	63.6	(4.3)	†	4.3	(1.7)	†	59.7	(4.6)	†	38.5	(4.6)	†	1.8	(1.2)	†
	Belarus	65.4	(3.4)		34.6	(3.4)		0.0	c		72.6	(3.3)		24.2	(3.1)		3.2	(1.3)	
	Bosnia and Herzegovina	53.8	(3.4)		41.6	(3.5)		4.6	(1.5)		50.5	(3.7)		39.1	(3.5)		10.3	(1.8)	
	Brazil	53.1	(2.3)		35.0	(2.2)		11.9	(1.5)		47.2	(2.4)		31.4	(2.0)		21.4	(2.1)	
	Brunei Darussalam	61.1	(0.1)		36.7	(0.1)		2.1	(0.0)		51.3	(0.1)		47.0	(0.1)		1.7	(0.0)	
	B-S-J-Z (China)	16.0	(2.7)		81.9	(2.8)		2.1	(0.9)		28.2	(2.7)		70.4	(2.8)		1.3	(0.8)	
	Bulgaria	61.0	(3.4)		35.7	(3.3)		3.3	(1.3)		63.1	(3.3)		35.2	(3.0)		1.7	(1.0)	
	Costa Rica	65.3	(3.3)		30.1	(3.3)		4.6	(1.1)		71.2	(3.0)		24.3	(2.7)		4.5	(1.3)	
	Croatia	65.9	(3.1)		31.9	(3.0)		2.3	(1.1)		45.0	(3.2)		47.1	(3.4)		7.9	(1.7)	
	Cyprus	67.0	(0.4)		30.7	(0.5)		2.2	(0.0)		55.2	(0.5)		38.3	(0.5)		6.5	(0.1)	
	Dominican Republic	72.4	(3.5)		26.7	(3.5)		0.9	(0.7)		55.0	(3.4)		40.3	(3.5)		4.8	(1.5)	
	Georgia	39.5	(3.1)		57.1	(3.2)		3.4	(1.2)		33.8	(2.9)		62.5	(2.9)		3.6	(1.3)	
	Hong Kong (China)	43.8	(5.1)		56.2	(5.1)		0.0	c		21.4	(4.3)		78.6	(4.3)		0.0	c	
	Indonesia	51.8	(4.0)		47.1	(4.0)		1.1	(0.5)		52.0	(4.1)		47.3	(4.0)		0.7	(0.4)	
	Jordan	74.9	(3.1)		23.9	(3.0)		1.2	(0.8)		75.8	(3.0)		23.4	(3.1)		0.7	(0.5)	
	Kazakhstan	27.0	(2.3)		69.8	(2.4)		3.2	(1.0)		56.0	(2.6)		43.9	(2.6)		0.1	(0.0)	
	Kosovo	68.3	(1.6)		29.1	(1.6)		2.6	(0.2)		69.1	(1.5)		29.6	(1.5)		1.3	(0.2)	
	Lebanon	39.2	(3.0)		56.0	(3.0)		4.8	(1.2)		44.8	(2.8)		54.1	(2.9)		1.1	(0.5)	
	Macao (China)	40.8	(0.0)		59.2	(0.0)		0.0	c		27.3	(0.0)		72.7	(0.0)		0.0	c	
	Malaysia	75.3	(3.1)		24.7	(3.1)		0.0	c		64.4	(3.1)		35.1	(3.0)		0.5	(0.5)	
	Malta	57.6	(0.1)		37.0	(0.1)		5.4	(0.1)		54.7	(0.1)		38.9	(0.1)		6.4	(0.1)	
	Moldova	55.9	(3.5)		44.1	(3.5)		0.0	c		48.6	(3.5)		51.4	(3.5)		0.0	c	
	Montenegro	55.0	(0.6)		45.0	(0.6)		0.0	c		63.1	(0.6)		36.7	(0.6)		0.3	(0.3)	
	Morocco	68.2	(3.8)		25.8	(3.3)		6.0	(1.9)		83.5	(3.0)		16.5	(3.0)		0.0	c	
	North Macedonia	66.9	(0.1)		31.1	(0.1)		2.0	(0.0)		68.6	(0.1)		30.4	(0.1)		1.0	(0.0)	
	Panama	69.5	(3.0)		27.9	(2.9)		2.5	(1.0)		63.8	(3.1)		32.3	(2.9)		3.9	(1.5)	
	Peru	29.0	(2.6)		66.5	(2.7)		4.5	(1.2)		32.9	(2.6)		59.1	(2.5)		8.0	(1.6)	
	Philippines	73.7	(3.0)		25.4	(3.0)		0.9	(0.6)		82.6	(2.6)		17.1	(2.6)		0.3	(0.4)	
	Qatar	68.3	(0.1)		30.2	(0.1)		1.5	(0.0)		75.8	(0.1)		24.2	(0.1)		0.0	c	
	Romania	72.4	(3.7)		27.6	(3.7)		0.0	c		82.3	(3.1)		17.7	(3.1)		0.0	c	
	Russia	51.6	(3.2)		46.4	(3.4)		2.0	(1.0)		53.8	(3.0)		43.8	(2.8)		2.4	(1.0)	
	Saudi Arabia	75.8	(3.0)		23.3	(2.9)		0.9	(0.6)		85.3	(2.6)		12.9	(2.5)		1.8	(0.9)	
	Serbia	64.9	(3.1)		33.2	(3.2)		1.9	(1.0)		53.1	(3.5)		44.0	(3.5)		2.8	(1.2)	
	Singapore	61.6	(1.3)		38.4	(1.3)		0.0	c		73.9	(1.3)		26.1	(1.3)		0.0	c	
	Chinese Taipei	46.5	(3.9)		51.3	(3.8)		2.2	(1.3)		51.5	(3.8)		46.6	(3.8)		1.8	(1.1)	
	Thailand	36.9	(3.5)		61.1	(3.7)		2.0	(1.1)		62.2	(3.7)		37.8	(3.7)		0.0	c	
	Ukraine	53.2	(3.6)		45.7	(3.5)		1.1	(0.7)		44.1	(3.5)		46.0	(3.6)		9.8	(2.1)	
	United Arab Emirates	59.5	(1.4)		40.1	(1.4)		0.4	(0.2)		72.5	(1.8)		27.3	(1.8)		0.2	(0.2)	
	Uruguay	65.4	(3.6)		29.1	(3.5)		5.5	(1.8)		71.3	(3.5)		22.3	(3.2)		6.4	(2.1)	
	Viet Nam	62.6	(4.3)		36.4	(4.2)		1.0	(0.8)		62.7	(4.7)		37.3	(4.7)		0.0	c	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

Table V.B1.8.11 [7/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

		Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																
		Seeking written feedback from students									Teacher mentoring							
		Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD	Australia	8.8	(1.0)		76.8	(1.7)		14.3	(1.4)		19.7	(1.5)		76.9	(1.4)		3.4	(0.6)	
	Austria	28.5	(2.5)		61.8	(2.8)		9.7	(1.7)		9.6	(2.0)		68.3	(3.5)		22.1	(2.8)	
	Belgium	5.3	(1.5)		46.4	(2.5)		48.3	(2.5)		11.6	(1.7)		76.6	(2.4)		11.8	(1.9)	
	Canada	13.7	(1.6)		45.1	(2.2)		41.2	(2.2)		39.8	(2.1)		45.5	(2.4)		14.6	(1.6)	
	Chile	8.2	(2.1)		64.6	(3.6)		27.2	(3.3)		7.4	(2.2)		46.9	(3.8)		45.8	(4.2)	
	Colombia	7.2	(2.0)		78.1	(3.3)		14.7	(2.5)		10.8	(2.4)		70.3	(3.2)		18.8	(2.7)	
	Czech Republic	2.0	(0.9)		60.0	(2.8)		38.0	(2.7)		1.0	(0.5)		95.3	(1.3)		3.6	(1.2)	
	Denmark	17.6	(2.8)		42.6	(4.0)		39.7	(3.7)		8.9	(1.9)		61.1	(3.9)		30.0	(3.6)	
	Estonia	7.4	(0.8)		78.0	(1.7)		14.6	(1.7)		8.4	(1.3)		86.6	(1.6)		5.0	(0.9)	
	Finland	11.9	(2.4)		60.7	(3.4)		27.4	(3.5)		8.9	(2.1)		61.1	(3.4)		30.0	(3.0)	
	France	5.0	(1.7)		13.0	(2.3)		82.1	(2.8)		19.7	(2.8)		54.2	(3.7)		26.1	(3.4)	
	Germany	3.4	(1.4)		49.6	(3.7)		47.0	(3.7)		1.9	(1.1)		26.0	(3.2)		72.1	(3.4)	
	Greece	5.3	(1.7)		35.9	(3.6)		58.8	(3.8)		27.2	(2.9)		52.2	(3.4)		20.6	(2.7)	
	Hungary	14.0	(2.7)		46.4	(3.9)		39.5	(3.9)		35.8	(3.7)		45.0	(3.7)		19.2	(2.9)	
	Iceland	5.8	(0.1)		32.2	(0.2)		62.0	(0.2)		3.1	(0.1)		33.1	(0.2)		63.8	(0.2)	
	Ireland	4.7	(1.7)		54.9	(4.1)		40.4	(4.3)		12.4	(3.0)		73.7	(3.6)		13.9	(2.4)	
	Israel	9.5	(2.4)		57.8	(3.8)		32.6	(3.3)		32.2	(3.6)		65.0	(3.7)		2.8	(1.2)	
	Italy	3.8	(1.4)		40.8	(3.1)		55.5	(3.2)		9.6	(2.0)		27.3	(2.8)		63.1	(3.0)	
	Japan	24.9	(2.8)		60.2	(3.9)		14.9	(2.8)		21.5	(2.7)		64.6	(3.5)		13.9	(2.5)	
	Korea	49.2	(3.6)		36.9	(3.6)		13.9	(2.8)		12.4	(2.5)		82.5	(3.1)		5.1	(1.9)	
	Latvia	15.1	(1.2)		75.0	(1.7)		9.9	(1.4)		9.3	(1.2)		72.8	(1.9)		17.8	(1.7)	
	Lithuania	1.0	(0.5)		73.7	(1.6)		25.3	(1.6)		2.7	(0.4)		54.8	(1.7)		42.5	(1.8)	
	Luxembourg	0.0	c		9.3	(0.1)		90.7	(0.1)		14.7	(0.1)		44.9	(0.1)		40.3	(0.1)	
	Mexico	28.7	(3.1)		46.6	(3.2)		24.7	(2.8)		35.4	(3.0)		28.8	(2.9)		35.8	(3.2)	
	Netherlands	12.0	(2.9)		75.9	(3.6)		12.1	(2.6)		4.9	(1.9)		89.0	(2.6)		6.1	(1.8)	
	New Zealand	9.5	(1.7)		87.5	(1.9)		2.9	(0.9)		17.2	(2.5)		79.8	(2.7)		3.1	(1.1)	
	Norway	27.2	(2.9)		39.1	(3.4)		33.8	(2.7)		16.5	(2.8)		72.5	(3.3)		11.0	(2.2)	
	Poland	3.6	(1.3)		73.9	(3.0)		22.4	(2.9)		8.7	(2.0)		85.0	(2.6)		6.3	(1.7)	
	Portugal	4.0	(1.4)		66.1	(3.0)		29.9	(3.0)		9.5	(2.1)		68.4	(3.0)		22.0	(2.4)	
	Slovak Republic	6.2	(1.4)		62.1	(3.1)		31.7	(2.8)		49.9	(2.8)		27.6	(2.6)		22.5	(2.5)	
	Slovenia	3.4	(0.1)		78.0	(0.4)		18.6	(0.4)		21.1	(0.4)		61.8	(0.5)		17.1	(0.4)	
	Spain	7.5	(1.1)		66.5	(2.1)		26.0	(1.9)		8.3	(1.2)		25.6	(1.7)		66.1	(2.0)	
	Sweden	20.6	(3.2)		59.3	(4.0)		20.1	(2.8)		18.5	(3.3)		71.3	(3.4)		10.2	(2.3)	
	Switzerland	12.7	(2.5)		57.8	(3.7)		29.6	(3.4)		12.8	(2.4)		66.3	(3.7)		20.9	(3.0)	
	Turkey	45.4	(3.9)		42.5	(3.8)		12.1	(2.6)		15.3	(2.5)		57.7	(3.7)		27.0	(3.5)	
	United Kingdom	5.5	(1.6)		75.7	(3.1)		18.8	(3.0)		11.4	(2.2)		85.5	(2.5)		3.1	(1.2)	
	United States	23.9	(3.2)		39.5	(4.5)		36.6	(4.4)		58.5	(4.1)		34.9	(3.9)		6.6	(1.7)	
	OECD average	12.5	(0.3)		56.0	(0.5)		31.6	(0.5)		16.7	(0.4)		60.5	(0.5)		22.8	(0.4)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

Table V.B1.8.11 [8/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

	Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																	
	Seeking written feedback from students									Teacher mentoring								
	Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
Partners	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Albania	18.7	(2.1)		76.6	(2.5)		4.7	(1.5)		36.5	(2.6)		63.5	(2.6)		0.0	c	
Argentina	5.6	(1.5)		42.0	(3.2)		52.4	(3.4)		31.2	(2.5)		32.0	(2.8)		36.8	(2.8)	
Baku (Azerbaijan)	8.6	(2.6)	†	77.1	(3.8)	†	14.3	(3.2)	†	28.4	(3.9)	†	55.7	(4.2)	†	15.9	(2.9)	†
Belarus	4.1	(1.3)		72.7	(3.1)		23.2	(3.0)		26.4	(3.0)		73.4	(3.0)		0.2	(0.2)	
Bosnia and Herzegovina	7.4	(2.2)		53.1	(4.3)		39.5	(4.0)		54.7	(3.9)		39.4	(3.3)		5.9	(1.9)	
Brazil	13.5	(1.5)		58.1	(2.2)		28.4	(2.1)		13.9	(1.7)		77.4	(2.0)		8.8	(1.3)	
Brunei Darussalam	7.7	(0.1)		78.5	(0.1)		13.7	(0.1)		24.6	(0.1)		74.0	(0.1)		1.4	(0.0)	
B-S-J-Z (China)	8.3	(2.1)		88.9	(2.3)		2.8	(1.1)		7.4	(2.1)		90.0	(2.4)		2.6	(1.2)	
Bulgaria	17.0	(2.7)		53.6	(3.5)		29.4	(3.4)		28.3	(3.1)		46.0	(3.6)		25.7	(3.0)	
Costa Rica	27.2	(3.3)		44.0	(3.6)		28.7	(3.6)		14.6	(2.6)		55.6	(3.8)		29.7	(3.1)	
Croatia	12.2	(2.4)		55.9	(3.7)		31.9	(3.5)		55.6	(3.8)		39.8	(3.6)		4.6	(1.5)	
Cyprus	9.0	(0.1)		36.8	(0.8)		54.2	(0.8)		47.2	(0.7)		47.3	(0.7)		5.4	(0.1)	
Dominican Republic	20.8	(3.2)		72.8	(3.5)		6.4	(2.0)		28.6	(3.6)		52.6	(3.9)		18.8	(3.3)	
Georgia	9.4	(2.0)		76.1	(2.6)		14.5	(2.1)		31.5	(3.2)		32.2	(2.8)		36.3	(3.4)	
Hong Kong (China)	5.3	(2.2)		76.3	(3.3)		18.4	(3.4)		1.4	(1.4)		81.9	(3.7)		16.7	(3.4)	
Indonesia	27.0	(4.1)		65.2	(4.0)		7.8	(2.3)		47.9	(4.5)		50.8	(4.5)		1.3	(0.6)	
Jordan	26.6	(2.8)		62.4	(3.2)		11.0	(2.0)		49.3	(3.5)		50.0	(3.4)		0.7	(0.6)	
Kazakhstan	9.8	(1.4)		83.8	(1.7)		6.5	(1.2)		16.6	(1.7)		82.6	(1.7)		0.7	(0.4)	
Kosovo	21.3	(1.3)		63.6	(1.6)		15.1	(1.3)		27.6	(1.6)		67.5	(1.7)		4.8	(0.6)	
Lebanon	13.8	(2.1)		50.1	(3.2)		36.2	(3.2)		25.5	(2.8)		60.1	(3.1)		14.4	(2.3)	
Macao (China)	7.5	(0.0)		71.8	(0.1)		20.7	(0.1)		17.9	(0.0)		77.7	(0.1)		4.4	(0.0)	
Malaysia	17.7	(3.0)		66.8	(3.4)		15.5	(2.8)		40.7	(3.4)		58.3	(3.4)		1.1	(0.9)	
Malta	10.4	(0.1)		51.9	(0.1)		37.8	(0.2)		37.7	(0.1)		51.9	(0.1)		10.4	(0.1)	
Moldova	11.6	(2.4)		78.9	(3.2)		9.5	(2.3)		19.8	(3.1)		77.0	(3.2)		3.2	(1.2)	
Montenegro	13.0	(0.3)		56.2	(0.4)		30.8	(0.2)		61.1	(0.4)		37.4	(0.4)		1.5	(0.0)	
Morocco	12.5	(2.6)		51.9	(4.1)		35.6	(3.3)		60.7	(3.8)		33.1	(3.8)		6.1	(1.8)	
North Macedonia	25.7	(0.1)		65.7	(0.1)		8.6	(0.1)		83.9	(0.1)		14.7	(0.1)		1.4	(0.0)	
Panama	27.1	(2.8)		61.6	(2.8)		11.3	(2.3)		60.5	(2.7)		37.2	(2.6)		2.3	(1.1)	
Peru	10.7	(1.5)		54.8	(2.9)		34.5	(2.7)		46.8	(2.1)		51.1	(2.2)		2.1	(0.9)	
Philippines	17.3	(2.7)		72.4	(3.3)		10.3	(1.9)		48.2	(3.3)		51.8	(3.3)		0.0	c	
Qatar	43.8	(0.1)		52.3	(0.1)		4.0	(0.0)		65.5	(0.1)		33.1	(0.1)		1.4	(0.0)	
Romania	17.8	(3.5)		74.8	(4.1)		7.4	(2.2)		24.6	(3.6)		63.4	(4.2)		12.0	(2.6)	
Russia	6.0	(1.3)		67.8	(2.9)		26.2	(3.0)		35.1	(3.0)		64.9	(3.0)		0.0	c	
Saudi Arabia	34.6	(3.2)		60.0	(3.5)		5.4	(1.7)		68.8	(3.2)		31.2	(3.2)		0.0	c	
Serbia	14.3	(2.4)		60.9	(3.2)		24.8	(3.1)		69.3	(3.3)		26.1	(3.2)		4.6	(1.3)	
Singapore	9.6	(0.5)		83.3	(1.0)		7.1	(0.9)		31.7	(0.4)		67.7	(0.4)		0.5	(0.0)	
Chinese Taipei	14.5	(2.7)		63.7	(3.4)		21.8	(3.3)		17.7	(3.0)		64.5	(3.3)		17.8	(3.2)	
Thailand	16.9	(3.0)		61.1	(3.6)		21.9	(3.4)		19.6	(2.7)		79.0	(2.7)		1.4	(0.7)	
Ukraine	4.0	(1.3)		57.0	(3.7)		39.0	(3.5)		23.1	(2.9)		72.3	(3.0)		4.6	(1.5)	
United Arab Emirates	24.6	(0.9)		65.4	(1.1)		10.0	(0.6)		39.0	(1.0)		57.3	(1.1)		3.8	(0.3)	
Uruguay	8.2	(2.0)		44.1	(3.5)		47.7	(3.5)		15.3	(2.6)		55.7	(3.6)		29.0	(3.5)	
Viet Nam	26.1	(3.4)		69.0	(3.7)		4.9	(1.8)		30.2	(4.0)		65.9	(4.1)		3.9	(1.8)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

Table V.B1.8.11 [9/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

	Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																	
	Regular consultation aimed at school improvement with one or more experts over a period of at least six months									Implementation of a standardised policy for reading subjects								
	Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD																		
Australia	20.2	(1.8)		58.3	(2.1)		21.6	(2.0)		27.6	(2.2)		41.2	(1.9)		31.2	(2.1)	
Austria	18.2	(3.0)		43.4	(3.8)		38.5	(3.7)		20.9	(2.7)		24.4	(3.1)		54.7	(3.4)	
Belgium	7.4	(1.8)		41.2	(3.0)		51.4	(3.2)		11.2	(1.9)		33.6	(3.0)		55.1	(3.1)	
Canada	35.6	(2.3)		32.4	(2.5)		31.9	(2.1)		36.2	(2.4)		28.8	(2.4)		35.1	(2.1)	
Chile	6.4	(1.7)		46.2	(4.2)		47.5	(4.3)		10.3	(2.4)		61.1	(3.6)		28.6	(3.4)	
Colombia	9.4	(2.1)		45.0	(3.6)		45.6	(3.3)		22.0	(2.6)		47.0	(4.0)		31.1	(3.5)	
Czech Republic	0.6	(0.4)		27.0	(2.5)		72.4	(2.6)		28.4	(3.0)		57.5	(2.8)		14.1	(2.1)	
Denmark	18.0	(2.8)		30.6	(3.3)		51.3	(3.7)		16.0	(2.7)		55.7	(3.3)		28.3	(3.3)	
Estonia	3.8	(0.9)		44.9	(2.0)		51.3	(2.0)		12.1	(1.2)		65.0	(1.8)		23.0	(1.6)	
Finland	1.0	(0.7)		5.4	(1.6)		93.6	(1.8)		19.9	(2.9)		17.9	(2.9)		62.1	(3.7)	
France	3.3	(1.1)		10.2	(2.1)		86.6	(2.1)		7.6	(1.9)		8.5	(1.7)		84.0	(2.3)	
Germany	3.8	(1.4)		25.2	(3.3)		71.0	(3.2)		28.1	(3.4)		31.2	(3.5)		40.7	(3.6)	
Greece	26.6	(2.6)		53.1	(3.4)		20.3	(2.7)		39.3	(2.7)		24.9	(3.1)		35.8	(3.3)	
Hungary	4.4	(1.5)		16.8	(2.7)		78.8	(2.9)		29.5	(3.1)		20.7	(2.9)		49.8	(3.6)	
Iceland	3.1	(0.1)		28.5	(0.3)		68.3	(0.3)		29.3	(0.2)		62.4	(0.2)		8.4	(0.2)	
Ireland	9.0	(2.3)		60.9	(3.8)		30.1	(3.6)		16.3	(3.0)		41.2	(4.3)		42.5	(4.0)	
Israel	17.0	(2.8)		37.4	(4.0)		45.7	(3.6)		50.3	(4.1)		35.9	(4.0)		13.9	(2.8)	
Italy	0.1	(0.0)		13.3	(2.4)		86.5	(2.4)		2.6	(1.0)		42.8	(2.8)		54.6	(2.6)	
Japan	4.7	(1.6)		9.7	(2.3)		85.6	(2.9)		4.8	(1.4)		28.9	(2.9)		66.3	(3.1)	
Korea	14.3	(2.8)		54.1	(3.6)		31.6	(3.6)		24.8	(3.1)		54.1	(3.9)		21.1	(3.4)	
Latvia	6.6	(1.2)		29.3	(1.8)		64.1	(1.9)		9.4	(0.9)		20.8	(1.6)		69.8	(1.7)	
Lithuania	2.2	(0.6)		21.4	(1.6)		76.4	(1.7)		5.2	(0.9)		25.3	(1.4)		69.4	(1.7)	
Luxembourg	4.7	(0.0)		34.5	(0.1)		60.8	(0.1)		17.9	(0.1)		27.3	(0.1)		54.8	(0.1)	
Mexico	19.1	(2.8)		35.1	(3.2)		45.9	(2.9)		37.7	(2.8)		39.2	(3.0)		23.2	(2.7)	
Netherlands	2.6	(1.4)		63.7	(4.2)		33.7	(4.1)		4.7	(2.3)		48.5	(4.2)		46.7	(3.9)	
New Zealand	7.3	(1.4)		67.5	(3.2)		25.2	(3.0)		9.2	(2.0)		58.6	(3.0)		32.1	(2.8)	
Norway	42.5	(3.4)		37.8	(3.2)		19.7	(2.5)		28.4	(2.9)		30.2	(3.0)		41.4	(2.5)	
Poland	6.8	(1.6)		44.9	(3.4)		48.3	(3.3)		14.2	(2.2)		37.5	(3.4)		48.2	(3.4)	
Portugal	4.5	(1.1)		32.5	(3.5)		63.0	(3.2)		10.5	(2.3)		36.1	(2.9)		53.4	(2.8)	
Slovak Republic	6.4	(1.4)		45.8	(2.9)		47.8	(2.8)		45.4	(3.5)		43.6	(3.5)		11.0	(1.8)	
Slovenia	3.4	(0.1)		22.6	(0.7)		74.0	(0.7)		18.3	(0.4)		32.4	(0.6)		49.3	(0.7)	
Spain	4.8	(0.9)		24.3	(1.7)		70.9	(1.8)		11.7	(1.6)		34.6	(2.1)		53.7	(2.3)	
Sweden	9.7	(2.1)		30.4	(4.0)		59.9	(4.5)		20.6	(3.0)		11.2	(2.1)		68.2	(3.3)	
Switzerland	5.1	(1.3)		28.4	(3.5)		66.6	(3.8)		22.4	(3.0)		19.2	(2.6)		58.4	(3.3)	
Turkey	10.9	(2.1)		44.9	(3.8)		44.2	(3.9)		54.4	(3.9)		31.0	(3.7)		14.5	(2.7)	
United Kingdom	14.6	(2.2)		67.7	(2.9)		17.7	(2.3)		10.1	(2.0)		58.9	(4.0)		31.1	(3.6)	
United States	38.0	(4.3)		32.0	(3.7)		30.0	(3.9)		55.5	(4.8)		34.7	(4.3)		9.8	(2.9)	
OECD average	10.7	(0.3)		36.4	(0.5)		52.9	(0.5)		22.0	(0.4)		37.1	(0.5)		41.0	(0.5)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

Table V.B1.8.11 [10/10] **Quality assurance and improvement actions at school**
Results based on principals' reports

	Percentage of students in schools whose principal reported that the following arrangements aimed at quality assurance and improvement are in place in the school:																	
	Regular consultation aimed at school improvement with one or more experts over a period of at least six months									Implementation of a standardised policy for reading subjects								
	Yes, this is mandatory			Yes, on the school's initiative			No			Yes, this is mandatory			Yes, on the school's initiative			No		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners																		
Albania	24.4	(2.6)		61.1	(2.9)		14.6	(1.9)		78.8	(2.0)		18.5	(2.0)		2.8	(0.6)	
Argentina	7.4	(1.4)		32.0	(2.9)		60.6	(2.9)		34.7	(2.8)		39.2	(2.9)		26.1	(2.4)	
Baku (Azerbaijan)	14.3	(3.0)	†	48.1	(4.5)	†	37.6	(4.5)	†	45.8	(4.3)	†	45.0	(4.4)	†	9.2	(2.3)	†
Belarus	31.6	(3.3)		37.7	(3.6)		30.7	(3.1)		65.5	(3.4)		15.7	(2.7)		18.8	(3.0)	
Bosnia and Herzegovina	24.8	(3.0)		44.0	(3.0)		31.2	(3.5)		40.7	(3.7)		33.3	(3.4)		26.0	(3.5)	
Brazil	14.4	(1.4)		38.4	(2.4)		47.2	(2.5)		30.4	(2.1)		42.3	(2.5)		27.3	(2.3)	
Brunei Darussalam	46.2	(0.1)		46.4	(0.1)		7.4	(0.0)		52.7	(0.1)		43.6	(0.1)		3.8	(0.1)	
B-S-J-Z (China)	7.6	(2.2)		66.7	(3.5)		25.7	(3.0)		61.4	(4.2)		35.0	(4.1)		3.6	(2.1)	
Bulgaria	20.7	(2.8)		45.8	(3.3)		33.5	(3.5)		60.4	(3.5)		24.1	(3.1)		15.5	(2.6)	
Costa Rica	15.7	(2.7)		34.0	(2.9)		50.3	(3.3)		42.3	(3.5)		22.2	(2.8)		35.5	(3.4)	
Croatia	9.1	(2.1)		34.7	(3.8)		56.2	(3.8)		47.7	(3.7)		23.9	(2.8)		28.4	(3.4)	
Cyprus	17.4	(0.7)		52.9	(0.7)		29.6	(0.3)		74.8	(0.2)		21.5	(0.2)		3.7	(0.0)	
Dominican Republic	29.6	(3.5)		35.8	(3.7)		34.6	(3.3)		49.3	(3.7)		36.7	(3.2)		14.0	(2.6)	
Georgia	15.2	(2.4)		33.8	(3.1)		50.9	(3.2)		30.5	(2.7)		49.5	(3.0)		20.1	(2.7)	
Hong Kong (China)	4.7	(2.4)		37.5	(4.4)		57.8	(4.6)		3.9	(2.0)		75.9	(4.1)		20.2	(4.1)	
Indonesia	26.5	(4.2)		63.2	(4.8)		10.3	(2.8)		40.5	(4.6)		53.4	(4.4)		6.2	(1.8)	
Jordan	35.8	(3.3)		31.1	(2.9)		33.1	(3.1)		48.0	(3.8)		37.2	(3.5)		14.9	(2.4)	
Kazakhstan	20.4	(1.9)		58.8	(2.5)		20.8	(1.9)		66.7	(2.2)		29.1	(2.1)		4.2	(0.9)	
Kosovo	27.3	(1.5)		51.7	(1.8)		21.0	(1.5)		60.9	(1.6)		24.1	(1.4)		15.0	(0.8)	
Lebanon	25.6	(2.3)		46.1	(2.5)		28.3	(2.4)		28.5	(2.6)		53.4	(2.9)		18.1	(2.1)	
Macao (China)	6.6	(0.0)		68.6	(0.0)		24.8	(0.0)		10.4	(0.1)		57.5	(0.1)		32.1	(0.1)	
Malaysia	34.2	(3.4)		54.1	(3.8)		11.7	(2.3)		69.7	(3.6)		26.5	(3.5)		3.8	(1.4)	
Malta	21.8	(0.1)		56.1	(0.2)		22.1	(0.1)		28.0	(0.1)		35.9	(0.1)		36.1	(0.2)	
Moldova	18.5	(2.5)		51.0	(3.5)		30.5	(3.2)		52.3	(3.9)		34.3	(3.2)		13.4	(2.2)	
Montenegro	25.5	(0.3)		37.4	(0.5)		37.0	(0.6)		85.9	(0.4)		13.8	(0.4)		0.3	(0.3)	
Morocco	14.7	(2.7)		23.9	(3.7)		61.5	(3.9)		45.2	(3.4)		12.3	(2.7)		42.5	(3.5)	
North Macedonia	38.9	(0.1)		32.7	(0.1)		28.5	(0.1)		51.0	(0.1)		16.9	(0.1)		32.1	(0.1)	
Panama	28.9	(2.6)		38.6	(3.0)		32.6	(2.7)		30.1	(2.8)		48.3	(2.8)		21.6	(2.4)	
Peru	10.1	(1.6)		35.4	(2.4)		54.5	(2.9)		30.9	(2.6)		35.9	(2.7)		33.2	(2.8)	
Philippines	41.9	(3.3)		55.4	(3.5)		2.7	(1.0)		70.6	(3.6)		26.5	(3.6)		2.9	(1.1)	
Qatar	58.6	(0.1)		33.3	(0.1)		8.1	(0.0)		63.7	(0.1)		31.5	(0.1)		4.8	(0.0)	
Romania	5.8	(1.7)		40.8	(3.8)		53.4	(3.7)		35.9	(3.9)		41.3	(4.0)		22.8	(3.0)	
Russia	20.3	(2.5)		56.2	(3.5)		23.4	(2.8)		74.5	(3.0)		19.8	(2.3)		5.6	(1.8)	
Saudi Arabia	33.5	(3.3)		42.5	(3.0)		24.0	(2.6)		54.4	(3.1)		24.7	(2.9)		20.9	(2.8)	
Serbia	17.2	(2.9)		44.7	(3.8)		38.1	(3.1)		48.7	(3.7)		23.3	(3.3)		27.9	(3.4)	
Singapore	8.1	(0.5)		55.4	(0.7)		36.5	(0.3)		35.8	(0.8)		51.1	(0.9)		13.1	(0.7)	
Chinese Taipei	11.9	(2.6)		41.1	(3.4)		47.1	(3.6)		15.4	(2.5)		57.6	(3.4)		27.0	(3.2)	
Thailand	21.4	(3.1)		63.8	(3.8)		14.8	(2.4)		53.6	(3.8)		37.2	(3.7)		9.2	(2.2)	
Ukraine	31.8	(2.9)		46.4	(3.1)		21.8	(2.4)		59.6	(2.9)		19.8	(2.5)		20.6	(2.8)	
United Arab Emirates	30.9	(0.7)		48.8	(1.5)		20.3	(1.1)		41.8	(0.9)		50.0	(1.3)		8.2	(1.1)	
Uruguay	6.9	(2.2)		19.4	(3.1)		73.7	(3.6)		14.5	(2.9)		26.4	(3.3)		59.1	(4.0)	
Viet Nam	13.6	(2.9)		48.1	(4.6)		38.3	(3.9)		45.4	(4.5)		36.6	(4.6)		18.0	(3.1)	

Information on data for Cyprus: https://oe.cd/cyprus-disclaimer

Note: Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132317

ANNEX B2
Results for regions within countries

Table V.B2.2.9 [1/4] **Grade repetition**
Results based on students' reports

	Percentage of students who had repeated a grade in:																	
	PISA 2018																	
	Primary school									Lower secondary school								
	Never			Once			Twice or more			Never			Once			Twice or more		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD																		
Belgium																		
*Flemish community**	83.2	(0.8)		15.7	(0.7)		1.2	(0.1)		95.4	(0.5)		4.3	(0.5)		0.3	(0.1)	
French community	80.9	(0.7)		15.9	(0.8)		3.2	(0.3)		79.8	(0.8)		19.1	(0.8)		1.1	(0.2)	
German-speaking community	87.0	(1.2)		10.7	(1.3)		2.4	(0.5)		87.4	(1.5)		11.7	(1.5)		0.9	(0.5)	
Canada																		
Alberta	96.4	(0.6)		3.5	(0.6)		0.1	(0.1)		99.4	(0.2)		0.5	(0.2)		0.1	(0.1)	
British Columbia	98.3	(0.3)		1.4	(0.3)		0.3	(0.1)		98.0	(0.3)		1.6	(0.3)		0.5	(0.2)	
Manitoba	97.6	(0.5)		2.2	(0.5)		0.3	(0.1)		98.0	(0.3)		1.5	(0.3)		0.5	(0.2)	
New Brunswick	95.5	(0.5)		4.2	(0.5)		0.3	(0.1)		97.5	(0.6)		2.2	(0.5)		0.4	(0.3)	
Newfoundland and Labrador	99.2	(0.2)		0.6	(0.2)		0.2	(0.1)		99.7	(0.2)		0.2	(0.1)		0.2	(0.1)	
Nova Scotia	99.5	(0.2)		0.4	(0.2)		0.1	(0.1)		99.5	(0.2)		0.4	(0.1)		0.1	(0.1)	
Ontario	98.7	(0.2)		1.1	(0.2)		0.2	(0.1)		98.9	(0.2)		0.7	(0.2)		0.3	(0.1)	
Prince Edward Island	97.9	(1.7)		2.1	(1.7)		0.0	c		99.6	(0.2)		0.2	(0.2)		0.1	(0.1)	
Quebec	91.2	(0.7)		8.2	(0.7)		0.6	(0.2)		92.4	(0.6)		7.1	(0.5)		0.5	(0.1)	
Saskatchewan	96.4	(0.7)		3.3	(0.6)		0.3	(0.2)		98.9	(0.3)		1.0	(0.3)		0.1	(0.1)	
Colombia																		
Bogotá	84.0	(1.2)		13.0	(1.2)		3.0	(0.5)		72.3	(1.5)		20.8	(1.2)		6.9	(0.6)	
Italy																		
Bolzano	98.6	(0.3)		1.2	(0.3)		0.2	(0.1)		95.8	(0.7)		3.8	(0.6)		0.5	(0.2)	
Sardegna	98.4	(0.4)		1.2	(0.3)		0.4	(0.1)		90.4	(1.2)		8.3	(0.9)		1.3	(0.6)	
Toscana	99.0	(0.3)		0.9	(0.3)		0.0	(0.0)		95.0	(0.6)		4.7	(0.6)		0.3	(0.2)	
Trento	98.3	(0.4)		1.6	(0.4)		0.1	(0.1)		95.5	(0.7)		4.3	(0.6)		0.2	(0.1)	
Spain																		
Andalusia	88.2	(1.2)		11.2	(1.1)		0.6	(0.2)		72.3	(1.4)		25.0	(1.2)		2.7	(0.5)	
Aragon	87.1	(0.9)		12.5	(0.8)		0.4	(0.1)		77.2	(1.7)		21.4	(1.6)		1.4	(0.4)	
Asturias	89.4	(0.9)		10.3	(0.9)		0.3	(0.2)		80.2	(1.3)		19.0	(1.2)		0.8	(0.3)	
Balearic Islands	86.6	(1.1)		12.8	(1.1)		0.6	(0.2)		76.8	(1.9)		21.3	(1.7)		1.8	(0.5)	
Basque Country	90.5	(0.7)		9.2	(0.7)		0.3	(0.1)		85.6	(0.9)		13.4	(0.9)		1.0	(0.2)	
Canary Islands	83.3	(1.2)		16.3	(1.2)		0.3	(0.2)		73.3	(1.2)		25.6	(1.1)		1.1	(0.3)	
Cantabria	90.5	(1.0)		9.5	(1.0)		0.1	(0.1)		79.1	(1.3)		20.3	(1.2)		0.6	(0.2)	
Castile and Leon	87.1	(1.3)		12.4	(1.2)		0.5	(0.2)		76.6	(1.4)		21.9	(1.3)		1.5	(0.4)	
Castile-La Mancha	85.7	(1.2)		13.7	(1.1)		0.6	(0.2)		73.1	(1.6)		24.4	(1.5)		2.5	(0.5)	
Catalonia	94.3	(0.7)		5.4	(0.7)		0.3	(0.2)		89.5	(1.2)		9.9	(1.2)		0.6	(0.2)	
Ceuta	77.7	(2.5)		21.9	(2.5)		0.5	(0.3)		55.9	(2.4)		38.9	(2.4)		5.1	(1.4)	
Comunidad Valenciana	88.5	(1.0)		10.9	(0.9)		0.6	(0.3)		73.1	(1.5)		24.6	(1.4)		2.3	(0.4)	
Extremadura	89.0	(1.3)		10.6	(1.2)		0.4	(0.2)		70.9	(1.5)		27.5	(1.3)		1.6	(0.3)	
Galicia	89.5	(1.0)		9.9	(1.0)		0.6	(0.2)		77.0	(1.5)		20.8	(1.2)		2.1	(0.5)	
La Rioja	90.5	(0.7)		9.0	(0.7)		0.4	(0.2)		70.4	(0.7)		27.9	(0.8)		1.7	(0.4)	
Madrid	86.4	(0.7)		13.2	(0.7)		0.4	(0.1)		77.0	(1.3)		21.5	(1.2)		1.5	(0.2)	
Melilla	84.5	(2.2)		14.6	(2.2)		0.9	(0.6)		58.0	(2.1)		37.4	(2.0)		4.6	(1.5)	
Murcia	83.9	(1.6)		15.6	(1.5)		0.5	(0.2)		72.7	(1.9)		26.3	(1.8)		1.1	(0.3)	
Navarre	90.5	(0.8)		9.3	(0.8)		0.2	(0.1)		81.9	(1.3)		16.9	(1.2)		1.2	(0.3)	
United Kingdom																		
England	98.2	(0.2)		1.5	(0.2)		0.3	(0.1)		99.2	(0.1)		0.7	(0.1)		0.1	(0.0)	
Northern Ireland	98.7	(0.3)		1.2	(0.3)		0.2	(0.1)		99.2	(0.2)		0.5	(0.2)		0.3	(0.1)	
*Scotland**	98.0	(0.3)		1.8	(0.3)		0.1	(0.1)		99.1	(0.2)		0.8	(0.2)		0.2	(0.1)	
Wales	97.2	(0.3)		2.4	(0.3)		0.3	(0.1)		99.3	(0.1)		0.3	(0.1)		0.3	(0.1)	

* PISA adjudicated region.
Note: see Table V.B1.2.9 for national data.
StatLink https://doi.org/10.1787/888934132184

Table V.B2.2.9 [2/4] **Grade repetition**
Results based on students' reports

	Percentage of students who had repeated a grade in:																	
	PISA 2018																	
	Primary school									Lower secondary school								
	Never			Once			Twice or more			Never			Once			Twice or more		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners																		
Argentina																		
*CABA**	92.8	(0.8)		6.4	(0.7)		0.8	(0.2)		85.4	(1.2)		13.7	(1.1)		0.9	(0.3)	
*Cordoba**	89.3	(1.1)		8.8	(0.9)		2.0	(0.4)		83.1	(1.3)		14.2	(1.1)		2.7	(0.5)	
*PBA**	86.7	(1.3)		11.2	(1.0)		2.1	(0.5)		76.9	(2.1)		17.3	(1.6)		5.8	(0.8)	
*Tucuman**	91.4	(0.8)		7.1	(0.7)		1.5	(0.3)		78.0	(1.7)		17.0	(1.5)		5.0	(0.5)	
Brazil																		
North	73.4	(2.6)		18.5	(1.9)		8.2	(1.3)		75.0	(2.8)		17.4	(2.0)		7.5	(1.4)	
Northeast	76.0	(1.5)		16.9	(1.1)		7.1	(0.7)		73.9	(1.4)		17.5	(1.0)		8.6	(0.7)	
South	84.6	(1.9)		12.2	(1.4)		3.2	(0.8)		77.9	(2.3)		14.8	(1.6)		7.3	(1.0)	
Southeast	87.5	(0.8)		9.6	(0.7)		2.9	(0.4)		82.4	(1.1)		12.3	(0.9)		5.2	(0.5)	
Middle-West	84.1	(2.4)		12.3	(1.9)		3.5	(1.1)		81.0	(3.2)		14.8	(2.4)		4.2	(1.3)	
Indonesia																		
DI Yogyakarta	87.6	(1.7)		10.5	(1.4)		1.8	(0.4)		97.9	(0.3)		1.9	(0.3)		0.2	(0.1)	
DKI Jakarta	92.1	(1.3)		7.2	(1.2)		0.7	(0.2)		96.8	(0.5)		2.8	(0.5)		0.4	(0.2)	
Kazakhstan																		
Akmola region	95.1	(0.8)		4.3	(0.7)		0.6	(0.2)		97.4	(0.7)		1.9	(0.7)		0.6	(0.2)	
Aktobe region	98.3	(0.3)		1.5	(0.4)		0.2	(0.1)		98.2	(0.4)		1.0	(0.3)		0.8	(0.3)	
Almaty	99.2	(0.3)		0.7	(0.2)		0.1	(0.1)		99.2	(0.3)		0.6	(0.3)		0.2	(0.1)	
Almaty region	97.6	(0.4)		1.9	(0.4)		0.5	(0.2)		97.8	(0.5)		1.6	(0.3)		0.6	(0.2)	
Astana	98.2	(0.2)		1.6	(0.2)		0.2	(0.1)		99.1	(0.2)		0.4	(0.1)		0.5	(0.2)	
Atyrau region	98.0	(0.3)		1.7	(0.2)		0.4	(0.2)		98.2	(0.5)		1.4	(0.4)		0.4	(0.2)	
East-Kazakhstan region	96.7	(0.8)		3.0	(0.7)		0.3	(0.2)		98.7	(0.5)		1.0	(0.4)		0.4	(0.2)	
Karagandy region	97.8	(0.6)		2.2	(0.6)		0.0	(0.0)		99.2	(0.3)		0.8	(0.3)		0.0	(0.0)	
Kostanay region	98.6	(0.5)		1.2	(0.4)		0.2	(0.1)		99.3	(0.3)		0.6	(0.3)		0.1	(0.1)	
Kyzyl-Orda region	98.2	(0.6)		1.7	(0.6)		0.2	(0.1)		98.4	(0.3)		1.1	(0.2)		0.5	(0.2)	
Mangistau region	97.5	(0.8)		2.2	(0.7)		0.3	(0.2)		97.7	(0.5)		1.9	(0.5)		0.4	(0.2)	
North-Kazakhstan region	95.3	(0.7)		3.9	(0.6)		0.7	(0.4)		98.1	(0.5)		1.6	(0.4)		0.3	(0.2)	
Pavlodar region	98.7	(0.4)		1.2	(0.4)		0.1	(0.1)		99.4	(0.2)		0.5	(0.2)		0.2	(0.1)	
South-Kazakhstan region	95.2	(0.7)		4.1	(0.6)		0.6	(0.2)		96.4	(0.7)		2.9	(0.5)		0.8	(0.3)	
West-Kazakhstan region	97.1	(0.7)		2.4	(0.5)		0.5	(0.4)		98.1	(0.6)		1.0	(0.4)		0.9	(0.4)	
Zhambyl region	99.2	(0.3)		0.8	(0.3)		0.0	c		99.5	(0.2)		0.4	(0.2)		0.1	(0.1)	
Russia																		
Moscow city	99.2	(0.1)		0.5	(0.1)		0.3	(0.1)		99.0	(0.2)		0.7	(0.1)		0.3	(0.1)	
*Moscow region**	99.3	(0.2)		0.4	(0.2)		0.3	(0.1)		99.1	(0.2)		0.9	(0.2)		0.0	(0.0)	
*Republic of Tatarstan**	99.0	(0.2)		0.7	(0.1)		0.3	(0.1)		99.2	(0.1)		0.5	(0.1)		0.3	(0.1)	

* PISA adjudicated region.
Note: see Table V.B1.2.9 for national data.
StatLink https://doi.org/10.1787/888934132184

Table V.B2.2.9 [3/4] **Grade repetition**
Results based on students' reports

	Percentage of students who had repeated a grade in:											
	PISA 2018											
	Upper secondary school									At least once in primary, lower secondary or upper secondary school		
	Never			Once			Twice or more					
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD												
Belgium												
*Flemish community**	95.9	(0.3)		4.0	(0.3)		0.1	(0.0)		76.8	(1.0)	
French community	87.2	(0.8)		12.7	(0.7)		0.2	(0.1)		58.9	(0.9)	
German-speaking community	94.1	(1.2)		5.9	(1.2)		0.0	c		71.6	(1.3)	
Canada												
Alberta	99.6	(0.2)		0.4	(0.1)		0.1	(0.1)		95.9	(0.6)	
British Columbia	98.9	(0.2)		0.8	(0.2)		0.4	(0.1)		96.4	(0.4)	
Manitoba	98.6	(0.3)		1.0	(0.3)		0.4	(0.1)		95.1	(0.7)	
New Brunswick	99.3	(0.2)		0.4	(0.2)		0.3	(0.1)		92.8	(0.8)	
Newfoundland and Labrador	99.6	(0.2)		0.2	(0.2)		0.2	(0.1)		98.8	(0.3)	
Nova Scotia	100.0	(0.0)		0.0	(0.0)		0.0	(0.0)		99.1	(0.2)	
Ontario	99.2	(0.2)		0.4	(0.1)		0.4	(0.1)		97.9	(0.3)	
Prince Edward Island	99.1	(0.6)		0.9	(0.6)		0.0	c		96.9	(1.3)	
Quebec	99.7	(0.1)		0.3	(0.1)		0.0	(0.0)		85.4	(1.0)	
Saskatchewan	99.4	(0.2)		0.5	(0.1)		0.1	(0.1)		95.1	(0.8)	
Colombia												
Bogotá	98.7	(0.3)		1.3	(0.3)		0.0	c		63.5	(1.4)	
Italy												
Bolzano	86.0	(0.9)		13.5	(0.8)		0.5	(0.2)		81.7	(0.9)	
Sardegna	87.3	(1.1)		12.0	(1.1)		0.7	(0.2)		79.3	(1.5)	
Toscana	90.1	(1.0)		9.7	(1.0)		0.1	(0.1)		85.2	(1.1)	
Trento	90.4	(0.8)		9.6	(0.8)		0.1	(0.1)		85.3	(0.9)	
Spain												
Andalusia	m	m		m	m		m	m		66.7	(1.7)	
Aragon	m	m		m	m		m	m		69.6	(1.7)	
Asturias	m	m		m	m		m	m		73.3	(1.3)	
Balearic Islands	m	m		m	m		m	m		68.3	(1.9)	
Basque Country	m	m		m	m		m	m		80.0	(1.0)	
Canary Islands	m	m		m	m		m	m		64.4	(1.2)	
Cantabria	m	m		m	m		m	m		73.1	(1.4)	
Castile and Leon	m	m		m	m		m	m		70.5	(1.8)	
Castile-La Mancha	m	m		m	m		m	m		65.9	(1.8)	
Catalonia	m	m		m	m		m	m		84.9	(1.3)	
Ceuta	m	m		m	m		m	m		50.9	(2.3)	
Comunidad Valenciana	m	m		m	m		m	m		67.8	(1.8)	
Extremadura	m	m		m	m		m	m		65.3	(1.9)	
Galicia	m	m		m	m		m	m		72.5	(1.7)	
La Rioja	m	m		m	m		m	m		65.9	(0.7)	
Madrid	m	m		m	m		m	m		70.1	(1.3)	
Melilla	m	m		m	m		m	m		54.4	(1.8)	
Murcia	m	m		m	m		m	m		65.4	(1.8)	
Navarre	m	m		m	m		m	m		76.1	(1.5)	
United Kingdom												
England	99.3	(0.1)		0.5	(0.1)		0.1	(0.0)		97.5	(0.3)	
Northern Ireland	98.8	(0.2)		1.1	(0.2)		0.2	(0.1)		97.7	(0.3)	
*Scotland**	99.2	(0.2)		0.6	(0.1)		0.2	(0.1)		97.1	(0.4)	
Wales	99.3	(0.2)		0.4	(0.1)		0.3	(0.1)		96.8	(0.4)	

* PISA adjudicated region.
Note: see Table V.B1.2.9 for national data.
StatLink https://doi.org/10.1787/888934132184

Table V.B2.2.9 [4/4] **Grade repetition**
Results based on students' reports

	Percentage of students who had repeated a grade in:											
	PISA 2018											
	Upper secondary school									At least once in primary, lower secondary or upper secondary school		
	Never			Once			Twice or more					
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners												
Argentina												
*CABA**	99.1	(0.3)		0.5	(0.2)		0.4	(0.2)		81.7	(1.4)	
*Cordoba**	98.7	(0.3)		1.1	(0.3)		0.2	(0.1)		77.4	(1.4)	
*PBA**	98.4	(0.3)	†	1.4	(0.3)	†	0.2	(0.1)	†	71.9	(2.2)	
*Tucuman**	97.0	(0.4)	†	2.4	(0.4)	†	0.6	(0.2)	†	75.4	(1.4)	
Brazil												
North	97.4	(0.8)	†	2.6	(0.8)	†	0.0	c	†	58.8	(3.5)	
Northeast	96.2	(0.4)	†	3.8	(0.4)	†	0.1	(0.0)	†	58.1	(1.7)	
South	96.8	(0.5)		3.1	(0.5)		0.1	(0.1)		66.9	(2.8)	
Southeast	94.6	(0.5)		5.1	(0.4)		0.4	(0.1)		71.6	(1.3)	
Middle-West	94.1	(1.6)		5.7	(1.5)		0.2	(0.2)		68.5	(3.5)	
Indonesia												
DI Yogyakarta	99.6	(0.2)		0.4	(0.2)		0.1	(0.1)		86.8	(1.7)	
DKI Jakarta	99.3	(0.2)		0.6	(0.2)		0.1	(0.1)		90.7	(1.3)	
Kazakhstan												
Akmola region	m	m		m	m		m	m		94.2	(0.9)	
Aktobe region	m	m		m	m		m	m		97.8	(0.4)	
Almaty	m	m		m	m		m	m		98.8	(0.4)	
Almaty region	m	m		m	m		m	m		96.9	(0.4)	
Astana	m	m		m	m		m	m		98.1	(0.2)	
Atyrau region	m	m		m	m		m	m		97.5	(0.5)	
East-Kazakhstan region	m	m		m	m		m	m		96.3	(0.8)	
Karagandy region	m	m		m	m		m	m		97.5	(0.6)	
Kostanay region	m	m		m	m		m	m		98.5	(0.5)	
Kyzyl-Orda region	m	m		m	m		m	m		97.6	(0.6)	
Mangistau region	m	m		m	m		m	m		96.7	(0.8)	
North-Kazakhstan region	m	m		m	m		m	m		94.7	(0.8)	
Pavlodar region	m	m		m	m		m	m		98.5	(0.5)	
South-Kazakhstan region	m	m		m	m		m	m		94.6	(0.7)	
West-Kazakhstan region	m	m		m	m		m	m		96.4	(0.8)	
Zhambyl region	m	m		m	m		m	m		99.1	(0.4)	
Russia												
Moscow city	m	m		m	m		m	m		98.6	(0.2)	
*Moscow region**	m	m		m	m		m	m		98.6	(0.3)	
*Republic of Tatarstan**	m	m		m	m		m	m		98.7	(0.2)	

* PISA adjudicated region.
Note: see Table V.B1.2.9 for national data.
StatLink https://doi.org/10.1787/888934132184

Table V.B2.5.15 [1/4] **School capacity to enhance teaching and learning using digital devices**
Results based on principals' reports

	Percentage of students in schools whose principal agreed or strongly agreed with the following statements:																	
	The number of digital devices connected to the Internet is sufficient			The school's Internet bandwidth or speed is sufficient			The number of digital devices for instruction is sufficient			Digital devices at the school are sufficiently powerful in terms of computing capacity			The availability of adequate software is sufficient			Teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD																		
Belgium																		
*Flemish community**	86.8	(2.9)		90.3	(2.4)		85.8	(2.7)		85.3	(2.9)		95.6	(1.5)		71.3	(4.0)	
French community	36.2	(4.7)		41.0	(4.3)		32.9	(4.7)		53.6	(5.2)		47.5	(4.9)		33.3	(4.6)	
German-speaking community	100.0	(0.0)		72.1	(0.5)		81.3	(0.6)		75.0	(0.5)		84.6	(0.4)		55.7	(0.7)	
Canada																		
Alberta	87.7	(3.6)		84.7	(3.8)		88.1	(3.3)		89.1	(2.9)		94.4	(2.2)		86.3	(4.4)	
British Columbia	80.3	(4.2)		83.9	(3.8)		70.8	(5.2)		80.3	(4.1)		87.8	(4.2)		67.6	(6.1)	
Manitoba	85.2	(2.3)		89.5	(1.9)		75.3	(2.5)		86.4	(2.5)		89.8	(1.9)		70.4	(2.9)	
New Brunswick	51.4	(2.2)		88.9	(1.7)		57.4	(1.7)		70.8	(1.4)		65.4	(1.6)		60.8	(1.5)	
Newfoundland and Labrador	80.0	(2.5)		72.1	(3.1)		76.3	(2.6)		88.6	(2.2)		79.3	(2.1)		66.1	(2.9)	
Nova Scotia	81.5	(3.6)		78.4	(3.2)		69.1	(3.4)		82.9	(3.4)		75.5	(3.0)		75.5	(3.8)	
Ontario	86.1	(3.4)		82.7	(3.8)		73.9	(4.5)		87.4	(3.0)		88.0	(2.7)		70.2	(4.6)	
Prince Edward Island	61.6	(2.3)		32.6	(19.9)		62.5	(3.0)		66.4	(4.6)		59.8	(6.6)		38.8	(17.5)	
Quebec	71.8	(4.4)		77.7	(4.1)		73.3	(4.0)		78.2	(3.8)		84.8	(3.4)		57.9	(4.4)	
Saskatchewan	73.6	(2.9)		62.6	(3.7)		67.9	(3.3)		86.2	(2.7)		88.9	(2.1)		66.1	(3.1)	
Colombia																		
Bogotá	48.3	(6.7)		39.4	(6.5)		48.2	(6.2)		44.4	(5.9)		47.8	(5.3)		67.1	(7.0)	
Italy																		
Bolzano	61.4	(1.0)		42.6	(0.8)		54.5	(1.0)		50.2	(0.9)		80.3	(0.8)		72.0	(0.9)	
Sardegna	56.0	(5.4)		46.3	(5.1)		45.0	(5.1)		56.0	(4.5)		54.4	(4.9)		46.5	(4.5)	
Toscana	79.2	(5.2)		64.1	(5.9)		71.4	(6.3)		72.8	(5.1)		71.4	(5.7)		31.3	(5.2)	
Trento	85.9	(0.7)		83.7	(1.0)		91.2	(0.5)		95.1	(0.6)		95.2	(0.3)		44.8	(1.4)	
Spain																		
Andalusia	39.7	(7.1)		52.5	(7.7)		33.4	(6.2)		32.2	(5.6)		43.8	(6.5)		47.4	(7.7)	
Aragon	59.1	(7.6)		52.1	(7.4)		53.2	(7.9)		64.8	(7.0)		61.6	(5.7)		57.3	(6.9)	
Asturias	66.5	(5.4)		54.9	(7.1)		55.9	(6.6)		61.2	(6.4)		60.7	(6.8)		55.9	(6.0)	
Balearic Islands	31.5	(7.3)		44.9	(6.5)		20.8	(6.3)		29.1	(7.4)		60.6	(7.2)		51.3	(7.0)	
Basque Country	65.2	(5.4)		71.3	(4.6)		54.0	(5.9)		55.8	(4.9)		69.1	(4.8)		66.0	(5.4)	
Canary Islands	59.5	(6.2)		48.1	(6.6)		35.8	(5.7)		56.8	(6.5)		48.7	(6.8)		40.9	(6.6)	
Cantabria	58.9	(6.3)		68.7	(5.5)		45.8	(6.4)		62.0	(5.9)		63.1	(5.9)		53.5	(5.9)	
Castile and Leon	48.8	(6.5)		60.8	(6.5)		37.3	(6.4)		50.5	(5.7)		43.1	(6.0)		53.5	(6.6)	
Castile-La Mancha	42.4	(7.5)		47.9	(8.4)		22.0	(6.0)		28.8	(6.0)		40.3	(6.2)		49.3	(7.8)	
Catalonia	64.7	(6.6)		50.3	(6.2)		58.9	(6.6)		61.6	(6.2)		64.0	(7.6)		59.9	(6.5)	
Ceuta	86.7	(0.8)	†	86.6	(0.5)	†	19.0	(0.9)	†	19.0	(0.9)	†	53.5	(1.4)	†	45.3	(1.5)	†
Comunidad Valenciana	43.2	(7.1)		42.7	(5.3)		38.4	(7.8)		55.0	(6.9)		44.1	(5.9)		58.8	(7.9)	
Extremadura	63.2	(6.6)		55.4	(7.0)		46.6	(7.5)		47.8	(7.5)		58.7	(7.3)		50.2	(6.8)	
Galicia	56.0	(7.3)		59.2	(6.4)		46.3	(7.6)		51.2	(5.5)		67.3	(6.1)		48.4	(6.0)	
La Rioja	72.8	(0.4)		78.8	(0.4)		65.2	(0.4)		34.7	(0.4)		58.0	(0.4)		43.6	(0.4)	
Madrid	63.9	(4.4)		49.2	(3.9)		52.0	(4.5)		57.9	(4.4)		62.0	(4.9)		56.9	(4.3)	
Melilla	45.2	(1.6)		74.4	(1.2)		45.2	(1.6)		63.1	(1.6)		78.9	(1.2)		64.1	(1.5)	
Murcia	51.3	(6.5)		67.8	(7.2)		40.2	(5.9)		39.1	(6.1)		29.6	(6.4)		46.9	(7.6)	
Navarre	63.4	(5.6)		64.7	(4.5)		51.3	(5.7)		69.1	(4.1)		69.7	(5.9)		38.4	(5.8)	
United Kingdom																		
England	71.7	(4.4)		79.4	(3.2)		69.8	(3.7)		69.5	(3.8)		82.3	(3.0)		73.8	(3.9)	
Northern Ireland	58.7	(5.0)		68.5	(5.6)		42.9	(6.5)		54.3	(5.7)		71.2	(4.9)		63.0	(6.6)	
*Scotland**	57.4	(5.8)		47.9	(5.8)		58.3	(6.0)		56.1	(5.1)	†	74.5	(5.0)		68.7	(5.1)	
Wales	50.2	(4.6)		50.6	(4.5)		46.0	(4.5)		47.8	(4.6)		72.2	(4.5)		60.0	(4.4)	

* PISA adjudicated region.

Notes: see Table V.B1.5.15 for national data.

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132184

Table V.B2.5.15 [2/4] **School capacity to enhance teaching and learning using digital devices**
Results based on principals' reports

	Percentage of students in schools whose principal agreed or strongly agreed with the following statements:																	
	The number of digital devices connected to the Internet is sufficient			The school's Internet bandwidth or speed is sufficient			The number of digital devices for instruction is sufficient			Digital devices at the school are sufficiently powerful in terms of computing capacity			The availability of adequate software is sufficient			Teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners																		
Argentina																		
*CABA**	43.5	(5.7)		32.4	(5.3)		34.8	(5.7)		48.5	(5.2)		57.4	(6.0)		47.7	(5.4)	
*Cordoba**	31.9	(5.2)		29.1	(5.1)		23.2	(4.6)		32.5	(5.0)		33.4	(4.8)		44.0	(5.0)	
*PBA**	31.4	(4.7)		26.4	(4.8)		32.1	(5.9)		31.4	(5.1)		33.6	(5.1)		40.2	(5.7)	
*Tucuman**	24.9	(5.3)		17.1	(4.0)		20.4	(4.7)		30.2	(5.0)		26.8	(4.5)		55.0	(5.2)	
Brazil																		
North	19.6	(7.1)		19.5	(7.1)		10.1	(4.7)		16.4	(6.6)		10.2	(4.6)		58.3	(9.0)	
Northeast	19.8	(2.8)		16.4	(2.9)		18.6	(2.7)		20.9	(3.3)		21.0	(3.2)		61.4	(3.9)	
South	35.9	(5.5)		35.4	(5.4)		33.7	(5.8)		37.1	(5.4)		32.5	(5.7)		43.7	(7.1)	
Southeast	31.9	(2.8)		32.5	(2.5)		25.5	(3.4)		30.8	(3.7)		28.6	(3.2)		42.7	(3.7)	
Middle-West	24.6	(6.5)		15.4	(4.2)		21.2	(5.5)		27.2	(3.8)		18.7	(4.7)		60.4	(8.8)	
Indonesia																		
DI Yogyakarta	87.9	(5.3)		79.4	(6.4)		70.5	(7.4)		82.0	(6.6)		77.0	(6.4)		91.7	(4.1)	
DKI Jakarta	83.9	(5.2)		84.5	(5.8)		83.3	(5.8)		84.9	(5.6)		81.3	(6.3)		84.3	(5.6)	
Kazakhstan																		
Akmola region	43.0	(7.9)		54.5	(7.4)		43.9	(9.0)		27.8	(7.8)		53.2	(8.8)		95.7	(3.4)	
Aktobe region	44.0	(7.5)		41.3	(6.5)		39.4	(7.8)		35.9	(6.8)		60.0	(7.6)		78.9	(6.4)	
Almaty	68.6	(7.4)		68.4	(9.4)		64.5	(8.0)		64.2	(9.9)		80.4	(8.4)		77.9	(8.6)	
Almaty region	67.7	(10.0)		55.0	(7.6)		56.5	(9.6)		49.2	(7.7)		71.1	(7.0)		91.3	(5.0)	
Astana	62.4	(9.1)		70.3	(8.2)		48.1	(6.7)		46.4	(9.6)		63.8	(7.7)		92.4	(5.4)	
Atyrau region	61.3	(9.1)		51.4	(10.1)		61.3	(10.4)		53.4	(9.9)		72.3	(5.9)		90.8	(5.0)	
East-Kazakhstan region	62.6	(7.4)		64.5	(7.4)		44.1	(8.3)		36.7	(8.0)		66.9	(8.2)		90.2	(4.8)	
Karagandy region	84.3	(6.8)		82.2	(5.9)		73.4	(6.0)		68.9	(8.5)		91.2	(5.2)		95.6	(3.1)	
Kostanay region	53.2	(8.6)		61.3	(6.4)		42.3	(7.8)		36.2	(8.6)		53.4	(7.8)		83.1	(5.7)	
Kyzyl-Orda region	65.5	(7.4)		66.1	(8.8)		56.3	(8.2)		57.1	(8.7)		56.4	(9.4)		86.8	(6.1)	
Mangistau region	78.3	(8.9)		79.1	(9.5)		58.5	(8.3)		49.4	(13.2)		84.7	(7.6)		92.1	(5.6)	
North-Kazakhstan region	67.2	(7.3)		73.3	(7.0)		57.7	(6.5)		49.4	(7.5)		72.7	(6.5)		86.0	(5.7)	
Pavlodar region	77.4	(6.5)		76.8	(5.5)		53.8	(9.7)		65.5	(8.0)		84.0	(7.0)		93.3	(4.4)	
South-Kazakhstan region	51.0	(8.2)		58.9	(7.1)		56.7	(10.0)		59.9	(10.3)		72.6	(8.8)		93.4	(4.5)	
West-Kazakhstan region	58.1	(6.4)		71.4	(5.1)		66.3	(6.5)		50.5	(8.7)		87.5	(4.9)		96.6	(3.1)	
Zhambyl region	76.0	(8.8)		72.5	(7.6)		70.3	(7.6)		55.3	(7.4)		89.5	(5.6)		95.1	(2.8)	
Russia																		
Moscow city	88.5	(2.6)		94.1	(2.0)		77.3	(3.5)		76.8	(3.4)		89.5	(2.3)		92.8	(2.2)	
*Moscow region**	83.0	(4.0)		91.8	(2.4)		62.4	(6.4)		53.8	(6.3)		71.0	(6.1)		97.4	(1.9)	
*Republic of Tatarstan**	78.0	(3.0)		75.0	(3.0)		54.6	(3.5)		35.1	(3.6)		55.0	(3.8)		84.8	(2.8)	

* PISA adjudicated region.

Notes: see Table V.B1.5.15 for national data.

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132184

Table V.B2.5.15 [3/4] **School capacity to enhance teaching and learning using digital devices**
Results based on principals' reports

	Percentage of students in schools whose principal agreed or strongly agreed with the following statements:														
	Teachers have sufficient time to prepare lessons integrating digital devices			Effective professional resources for teachers to learn how to use digital devices are available			An effective online learning support platform is available			Teachers are provided with incentives to integrate digital devices in their teaching			The school has sufficient qualified technical assistant staff		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD															
Belgium															
*Flemish community**	82.0	(3.2)		74.0	(3.6)		69.9	(3.6)		60.8	(4.2)		79.2	(2.9)	
French community	55.8	(5.6)		53.6	(5.1)		16.4	(3.9)		57.5	(5.4)		20.8	(4.7)	
German-speaking community	68.9	(0.7)		84.6	(0.4)		0.0	c		93.3	(0.6)		55.7	(0.7)	
Canada															
Alberta	66.9	(5.9)		80.0	(4.1)		79.6	(4.6)		23.3	(4.9)		85.1	(3.6)	
British Columbia	59.6	(5.6)		73.7	(5.3)		63.7	(5.0)		27.9	(4.9)		57.8	(6.3)	
Manitoba	75.9	(2.7)		72.2	(2.9)		57.3	(3.2)		32.7	(2.6)		76.2	(2.3)	
New Brunswick	51.8	(2.0)		52.5	(1.9)		40.0	(1.9)		25.1	(1.1)		31.5	(1.8)	
Newfoundland and Labrador	45.5	(2.7)		51.9	(3.4)		52.8	(3.2)		12.1	(2.9)		36.4	(3.4)	
Nova Scotia	33.5	(3.5)		56.7	(4.6)		52.8	(3.7)		10.3	(1.8)		49.6	(3.1)	
Ontario	76.5	(4.1)		84.2	(3.7)		79.5	(3.4)		29.7	(4.7)		57.1	(5.5)	
Prince Edward Island	55.3	(18.4)		17.1	(14.5)		1.7	(1.7)		23.0	(11.5)		35.3	(3.6)	
Quebec	66.7	(4.3)		75.9	(3.9)		35.3	(4.3)		65.0	(4.2)		65.4	(4.2)	
Saskatchewan	54.1	(3.6)		66.9	(3.4)		61.6	(3.8)		12.9	(1.9)		54.5	(2.4)	
Colombia															
Bogotá	66.6	(6.9)		63.4	(6.6)		48.4	(5.8)		27.6	(6.1)		37.4	(5.0)	
Italy															
Bolzano	71.8	(0.7)		61.6	(0.9)		52.4	(0.8)		53.8	(0.9)		61.1	(0.8)	
Sardegna	59.6	(5.7)		68.2	(4.5)		30.1	(4.6)		58.4	(4.3)		45.8	(5.2)	
Toscana	58.5	(6.1)		60.7	(6.3)		49.1	(6.2)		32.9	(5.6)		46.8	(6.5)	
Trento	74.7	(1.0)		78.0	(1.2)		67.1	(1.9)		25.8	(1.8)		75.9	(1.3)	
Spain															
Andalusia	32.6	(6.6)		45.0	(7.8)		41.1	(8.3)		4.5	(3.3)		30.4	(6.1)	
Aragon	31.1	(6.6)		66.5	(6.7)		35.1	(6.3)		8.3	(4.2)		47.4	(8.1)	
Asturias	25.7	(4.8)		63.3	(6.7)		37.6	(7.5)		12.1	(4.1)		47.3	(6.7)	
Balearic Islands	34.7	(7.3)		67.4	(6.3)		70.1	(6.4)		13.8	(4.2)		39.6	(6.3)	
Basque Country	52.2	(4.8)		68.2	(5.1)		61.6	(4.9)		20.8	(4.4)		60.0	(4.3)	
Canary Islands	28.2	(6.1)		46.5	(6.9)		66.7	(6.9)		10.5	(3.9)		41.5	(7.3)	
Cantabria	36.9	(6.9)		64.0	(6.4)		42.3	(7.0)		5.8	(3.4)		43.1	(5.8)	
Castile and Leon	31.7	(6.3)		55.0	(6.5)		70.7	(6.5)		9.4	(4.3)		34.9	(5.7)	
Castile-La Mancha	23.6	(4.9)		31.8	(5.8)		48.9	(7.0)		7.5	(3.8)		31.7	(6.2)	
Catalonia	34.4	(6.4)		56.8	(4.9)		62.9	(8.2)		20.8	(4.7)		34.9	(6.5)	
Ceuta	19.7	(0.8)	†	52.8	(1.3)	†	68.4	(1.3)	†	5.8	(0.3)	†	19.7	(0.8)	†
Comunidad Valenciana	27.7	(7.2)		51.7	(7.0)		40.2	(7.3)		15.2	(5.3)		40.4	(6.2)	
Extremadura	16.0	(5.5)		51.8	(7.9)		39.9	(7.0)		13.5	(4.4)		60.9	(5.9)	
Galicia	55.5	(6.4)		67.3	(6.1)		54.1	(7.0)		11.5	(4.4)		44.1	(7.0)	
La Rioja	37.7	(0.4)		43.4	(0.5)		54.2	(0.4)		8.1	(0.2)		51.2	(0.4)	
Madrid	35.3	(3.3)		69.7	(3.9)		51.1	(4.8)		10.8	(2.8)		38.1	(4.6)	
Melilla	35.9	(1.7)		64.1	(1.5)		49.9	(1.6)		0.0	c		29.2	(2.0)	
Murcia	23.1	(6.1)		52.9	(5.5)		59.0	(8.2)		2.3	(2.2)		33.3	(6.1)	
Navarre	26.6	(4.6)		50.7	(4.6)		44.2	(5.2)		13.7	(3.4)		41.3	(4.9)	
United Kingdom															
England	64.4	(4.7)		63.4	(4.1)		66.6	(4.5)		25.5	(4.0)		71.0	(3.9)	
Northern Ireland	50.4	(6.5)		70.3	(5.0)		58.9	(5.6)		32.5	(5.1)		67.8	(5.1)	
*Scotland**	62.6	(5.4)		74.7	(5.3)		67.3	(5.6)	†	24.2	(4.5)	†	54.3	(5.5)	
Wales	49.3	(4.2)		64.1	(4.7)		58.9	(4.6)		32.9	(4.0)		63.0	(5.1)	

* PISA adjudicated region.

Notes: see Table V.B1.5.15 for national data.

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132184

Table V.B2.5.15 [4/4] **School capacity to enhance teaching and learning using digital devices**
Results based on principals' reports

	Percentage of students in schools whose principal agreed or strongly agreed with the following statements:														
	Teachers have sufficient time to prepare lessons integrating digital devices			Effective professional resources for teachers to learn how to use digital devices are available			An effective online learning support platform is available			Teachers are provided with incentives to integrate digital devices in their teaching			The school has sufficient qualified technical assistant staff		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners															
Argentina															
*CABA**	26.4	(5.2)		47.5	(5.9)		31.9	(4.8)		26.6	(4.2)		46.0	(5.9)	
*Cordoba**	52.3	(5.5)		56.9	(6.2)		19.0	(4.0)		32.6	(5.7)		24.3	(4.8)	
*PBA**	36.6	(5.9)		47.0	(6.6)		18.0	(4.1)		25.8	(5.2)		31.1	(5.8)	
*Tucuman**	56.3	(5.8)		63.3	(5.0)		24.4	(4.8)		32.0	(5.3)		35.5	(5.6)	
Brazil															
North	56.3	(8.4)		27.9	(6.8)		30.1	(8.2)		59.0	(8.1)		16.1	(6.0)	
Northeast	63.4	(3.5)		44.6	(4.0)		29.0	(3.7)		54.1	(4.4)		18.8	(3.1)	
South	46.7	(7.6)		45.9	(6.5)		29.5	(4.3)		50.2	(5.8)		26.1	(5.1)	
Southeast	41.6	(3.3)		42.2	(3.8)		43.2	(3.9)		59.1	(3.7)		19.9	(3.4)	
Middle-West	75.1	(6.9)		45.0	(8.8)		28.3	(7.5)		52.4	(8.7)		19.9	(5.8)	
Indonesia															
DI Yogyakarta	77.5	(6.6)		68.3	(7.9)		68.9	(6.3)		42.1	(6.6)		78.2	(4.9)	
DKI Jakarta	80.1	(5.8)		70.3	(7.2)		63.6	(7.8)		40.8	(8.4)		72.6	(6.7)	
Kazakhstan															
Akmola region	67.4	(7.1)		59.4	(6.6)		56.2	(8.9)		90.4	(5.4)		63.4	(7.4)	
Aktobe region	72.9	(9.0)		63.9	(8.1)		51.9	(9.0)		83.4	(7.0)		65.8	(5.6)	
Almaty	72.5	(8.5)		76.7	(9.2)		68.5	(10.0)		88.0	(6.6)		78.7	(8.7)	
Almaty region	89.0	(6.3)		79.4	(6.5)		76.0	(5.1)		94.5	(4.0)		81.6	(7.1)	
Astana	62.6	(8.7)		73.3	(8.7)		63.3	(9.9)		81.9	(8.1)		89.3	(3.5)	
Atyrau region	83.3	(6.8)		82.3	(8.5)		83.6	(8.3)		93.1	(4.7)		90.5	(2.1)	
East-Kazakhstan region	79.2	(7.8)		76.4	(6.1)		77.9	(6.7)		93.2	(3.9)		79.6	(5.8)	
Karagandy region	81.9	(5.9)		87.4	(5.9)		74.6	(8.6)		90.6	(5.0)		76.2	(8.7)	
Kostanay region	79.1	(6.5)		72.2	(8.5)		62.2	(8.4)		81.8	(6.8)		62.1	(7.6)	
Kyzyl-Orda region	88.5	(4.3)		76.8	(7.5)		60.7	(6.1)		91.3	(5.1)		91.7	(4.3)	
Mangistau region	88.1	(6.8)		77.4	(7.4)		67.6	(10.4)		100.0	(0.0)		82.0	(8.2)	
North-Kazakhstan region	61.6	(7.8)		71.8	(7.3)		67.2	(6.0)		81.4	(5.7)		83.9	(5.1)	
Pavlodar region	67.8	(6.3)		69.4	(8.7)		84.0	(6.6)		85.5	(6.4)		76.1	(8.5)	
South-Kazakhstan region	88.6	(5.6)		85.3	(6.5)		66.9	(8.6)		92.7	(3.2)		88.9	(5.5)	
West-Kazakhstan region	87.3	(6.1)		74.9	(7.6)		69.3	(7.8)		92.7	(3.7)		88.0	(5.2)	
Zhambyl region	83.8	(4.8)		93.4	(0.3)		83.3	(6.6)		91.9	(4.4)		78.5	(7.0)	
Russia															
Moscow city	90.1	(2.4)		95.1	(1.7)		92.4	(2.2)		98.7	(0.9)		98.7	(0.9)	
*Moscow region**	74.6	(4.5)		86.3	(5.0)		54.0	(6.9)		88.9	(3.3)		90.7	(4.1)	
*Republic of Tatarstan**	75.8	(3.3)		78.0	(3.2)		41.2	(3.3)		81.2	(2.8)		76.2	(3.0)	

* PISA adjudicated region.
Notes: see Table V.B1.5.15 for national data.
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.
StatLink https://doi.org/10.1787/888934132184

Table V.B2.6.1 [1/2] **Average student learning time per week in regular school lessons, by subject**
Results based on students' reports; in hours

OECD

	Regular language-of-instruction lessons			Regular mathematics lessons			Regular science lessons			Foreign language lessons			Total learning time in regular lessons			Difference between language-of-instruction lessons and foreign language lessons		
	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Dif.	S.E.	x
Belgium																		
*Flemish community**	3.3	(0.0)		3.3	(0.0)		3.0	(0.1)		4.6	(0.1)		27.9	(0.1)		**-1.4**	(0.1)	
French community	4.0	(0.0)		3.7	(0.0)		3.2	(0.1)		4.9	(0.1)		27.6	(0.1)		**-0.8**	(0.1)	
German-speaking community	3.7	(0.1)		3.7	(0.1)		2.5	(0.1)		6.4	(0.1)		30.3	(0.2)		**-2.7**	(0.2)	
Canada																		
Alberta	5.4	(0.1)		5.7	(0.1)		5.6	(0.1)		2.4	(0.2)		29.7	(0.3)	†	**3.0**	(0.2)	
British Columbia	5.1	(0.2)		4.8	(0.2)		4.9	(0.2)		3.7	(0.1)		29.3	(0.3)	†	**1.4**	(0.1)	
Manitoba	4.7	(0.1)		4.6	(0.1)		4.4	(0.1)		1.9	(0.1)		28.0	(0.3)	†	**2.8**	(0.2)	
New Brunswick	5.4	(0.1)		5.2	(0.1)		4.2	(0.1)		3.6	(0.1)		26.8	(0.2)	†	**1.8**	(0.1)	
Newfoundland and Labrador	4.5	(0.1)		4.6	(0.1)		4.9	(0.1)		2.7	(0.1)	†	26.2	(0.2)	†	**1.8**	(0.1)	†
Nova Scotia	5.0	(0.1)		6.0	(0.1)		4.8	(0.1)		2.7	(0.1)		27.5	(0.2)	†	**2.3**	(0.2)	
Ontario	5.5	(0.1)		5.1	(0.1)		5.1	(0.1)		3.0	(0.1)		28.1	(0.2)	†	**2.5**	(0.1)	
Prince Edward Island	5.2	(0.4)		5.1	(0.2)		4.8	(0.3)		3.3	(0.3)		27.3	(0.3)		**1.9**	(0.3)	
Quebec	5.7	(0.1)		5.3	(0.0)		5.3	(0.1)		3.1	(0.1)		27.3	(0.2)	†	**2.6**	(0.1)	
Saskatchewan	4.9	(0.1)		4.7	(0.1)		3.9	(0.1)		1.3	(0.1)		26.7	(0.2)	†	**3.6**	(0.1)	
Colombia																		
Bogotá	4.0	(0.1)		4.4	(0.2)		3.8	(0.2)		4.1	(0.2)		27.1	(0.6)	†	-0.1	(0.2)	
Italy																		
Bolzano	3.5	(0.0)	†	3.1	(0.0)	†	2.6	(0.0)	†	5.2	(0.1)	†	30.8	(0.2)	†	**-1.8**	(0.1)	†
Sardegna	4.5	(0.1)	†	3.9	(0.1)	†	2.2	(0.0)	†	3.8	(0.1)	†	29.2	(0.2)	†	**0.7**	(0.1)	†
Toscana	4.4	(0.1)	†	3.6	(0.1)	†	2.3	(0.1)	†	4.0	(0.2)	†	28.5	(0.3)	†	**0.4**	(0.2)	†
Trento	4.2	(0.0)	†	3.4	(0.0)	†	2.5	(0.0)	†	4.8	(0.1)	†	29.0	(0.1)	†	**-0.5**	(0.1)	†
Spain																		
Andalusia	3.5	(0.1)	†	4.0	(0.1)	†	3.2	(0.1)	†	4.6	(0.1)	†	29.7	(0.3)	‡	**-1.1**	(0.1)	†
Aragon	3.7	(0.0)	†	3.6	(0.0)	†	3.3	(0.1)	†	4.0	(0.1)	†	26.9	(0.3)	†	**-0.3**	(0.1)	†
Asturias	3.9	(0.0)		3.9	(0.0)		3.3	(0.1)		3.6	(0.1)		27.9	(0.2)	†	**0.3**	(0.1)	
Balearic Islands	3.2	(0.0)		3.7	(0.0)		3.3	(0.1)		3.3	(0.1)		29.1	(0.2)	†	0.0	(0.0)	
Basque Country	3.3	(0.1)	†	3.6	(0.0)	†	3.1	(0.1)	†	3.9	(0.1)	†	29.2	(0.2)	‡	**-0.7**	(0.1)	†
Canary Islands	3.9	(0.0)		3.9	(0.0)		3.1	(0.1)		3.9	(0.1)		27.7	(0.2)	†	0.0	(0.1)	
Cantabria	3.7	(0.0)		3.6	(0.0)		3.0	(0.1)		3.5	(0.1)		28.1	(0.2)	†	**0.2**	(0.1)	
Castile and Leon	3.6	(0.0)		3.6	(0.0)		3.6	(0.1)		3.1	(0.0)		27.2	(0.2)	†	**0.5**	(0.0)	
Castile-La Mancha	4.0	(0.1)	†	3.9	(0.1)	†	3.4	(0.1)	†	3.9	(0.0)	†	28.3	(0.2)	†	0.1	(0.1)	†
Catalonia	3.2	(0.1)	†	3.9	(0.1)	†	3.0	(0.1)	†	4.0	(0.1)	†	30.9	(0.3)	†	**-0.7**	(0.1)	†
Ceuta	4.1	(0.2)	‡	4.1	(0.2)	‡	3.3	(0.2)	‡	3.5	(0.2)	‡	27.3	(1.2)	‡	**0.7**	(0.2)	‡
Comunidad Valenciana	3.1	(0.0)	†	3.6	(0.0)	†	3.0	(0.1)	†	3.3	(0.1)	†	29.7	(0.3)	‡	**-0.2**	(0.1)	†
Extremadura	3.8	(0.0)	†	3.8	(0.1)	†	3.3	(0.1)	†	3.8	(0.1)	†	27.7	(0.3)	†	0.0	(0.1)	†
Galicia	3.2	(0.1)		3.5	(0.0)		3.2	(0.1)		3.2	(0.0)		27.7	(0.2)	†	0.0	(0.1)	
La Rioja	3.6	(0.0)		3.6	(0.0)		3.0	(0.1)		3.8	(0.0)		27.5	(0.2)	†	**-0.2**	(0.1)	
Madrid	3.9	(0.0)		3.9	(0.0)		3.5	(0.1)		4.3	(0.1)		29.2	(0.2)	†	**-0.5**	(0.1)	
Melilla	3.9	(0.1)	†	3.8	(0.1)	†	3.1	(0.2)	†	3.5	(0.1)	†	29.3	(1.0)	‡	**0.4**	(0.1)	†
Murcia	3.9	(0.0)		3.9	(0.1)		3.1	(0.0)		4.0	(0.1)		28.4	(0.2)	†	**-0.2**	(0.1)	
Navarre	3.8	(0.1)		3.7	(0.0)		3.9	(0.1)		4.0	(0.1)		28.3	(0.2)		-0.2	(0.1)	
United Kingdom																		
England	4.4	(0.1)		4.2	(0.0)		5.3	(0.1)		1.8	(0.1)		26.8	(0.1)		**2.6**	(0.1)	
Northern Ireland	3.8	(0.1)		3.7	(0.1)		4.5	(0.1)		1.6	(0.1)		27.6	(0.2)		**2.2**	(0.1)	
*Scotland**	4.2	(0.0)		4.0	(0.0)		4.3	(0.1)		1.2	(0.1)		27.6	(0.2)		**3.0**	(0.1)	
Wales	4.0	(0.0)		4.1	(0.0)		5.0	(0.1)		1.7	(0.1)		26.7	(0.1)	†	**2.3**	(0.1)	

* PISA adjudicated region.

Notes: see Table V.B1.6.1 for national data.

Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132184

Table V.B2.6.1 [2/2] **Average student learning time per week in regular school lessons, by subject**
Results based on students' reports; in hours

	Regular language-of-instruction lessons			Regular mathematics lessons			Regular science lessons			Foreign language lessons			Total learning time in regular lessons			Difference between language-of-instruction lessons and foreign language lessons		
	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Hours	S.E.	x	Dif.	S.E.	x
Partners																		
Argentina																		
*CABA**	3.1	(0.1)	†	3.3	(0.1)	†	3.6	(0.2)	†	3.3	(0.2)	†	26.0	(0.5)	‡	-0.2	(0.2)	†
*Cordoba**	3.3	(0.1)	‡	3.4	(0.1)	‡	4.1	(0.3)	‡	2.5	(0.1)	‡	27.4	(0.8)	‡	**0.9**	(0.1)	‡
*PBA**	2.8	(0.1)	‡	3.1	(0.1)	‡	3.6	(0.2)	‡	2.1	(0.1)	‡	26.2	(0.6)	‡	**0.7**	(0.1)	‡
*Tucuman**	2.9	(0.1)	‡	3.1	(0.1)	‡	3.3	(0.2)	‡	2.6	(0.2)	‡	23.7	(0.8)	‡	0.3	(0.2)	‡
Brazil																		
North	3.3	(0.2)	‡	3.4	(0.1)	‡	2.6	(0.2)	‡	1.8	(0.1)	‡	25.4	(0.9)	‡	**1.4**	(0.1)	‡
Northeast	3.7	(0.1)	†	3.7	(0.1)	†	3.0	(0.1)	†	1.8	(0.1)	†	25.6	(0.4)	‡	**1.8**	(0.1)	†
South	3.1	(0.1)	†	3.2	(0.1)	†	2.7	(0.2)	†	1.7	(0.1)	†	23.6	(0.4)	‡	**1.4**	(0.1)	†
Southeast	4.1	(0.1)	†	4.1	(0.1)	†	2.9	(0.1)	†	1.8	(0.0)	†	26.5	(0.3)	‡	**2.3**	(0.1)	†
Middle-West	4.1	(0.2)	†	4.2	(0.2)	†	3.4	(0.2)	†	2.2	(0.1)	†	26.3	(0.6)	‡	**1.9**	(0.2)	†
Indonesia																		
DI Yogyakarta	4.1	(0.1)		4.4	(0.1)		4.0	(0.2)		3.5	(0.1)		31.2	(0.3)	†	**0.5**	(0.1)	
DKI Jakarta	3.9	(0.1)		4.3	(0.1)		3.7	(0.2)		3.2	(0.1)		27.9	(0.6)	†	**0.6**	(0.1)	
Kazakhstan																		
Akmola region	2.7	(0.1)	†	3.4	(0.1)	†	2.2	(0.2)	†	1.9	(0.1)	†	27.5	(0.6)	‡	**0.8**	(0.1)	†
Aktobe region	2.7	(0.1)		3.3	(0.1)		2.9	(0.2)		2.0	(0.1)		26.3	(0.3)		**0.7**	(0.1)	
Almaty	2.8	(0.1)	†	3.7	(0.1)	†	2.4	(0.1)	†	2.3	(0.1)	†	27.9	(0.4)	†	**0.5**	(0.1)	†
Almaty region	2.9	(0.1)		3.4	(0.1)		2.9	(0.2)		2.2	(0.1)		26.7	(0.5)	†	**0.6**	(0.1)	
Astana	2.4	(0.0)		3.2	(0.1)		2.2	(0.1)		2.2	(0.1)		27.7	(0.5)	†	0.3	(0.2)	
Atyrau region	2.8	(0.1)		3.2	(0.1)		2.6	(0.2)		2.2	(0.1)		25.0	(0.3)	†	**0.6**	(0.1)	
East-Kazakhstan region	2.9	(0.1)	†	3.6	(0.2)	†	2.7	(0.2)	†	2.6	(0.1)	†	27.6	(0.4)	†	**0.3**	(0.1)	†
Karagandy region	2.9	(0.1)		3.5	(0.1)		2.7	(0.2)		2.2	(0.1)		28.1	(0.5)	†	**0.7**	(0.1)	
Kostanay region	2.7	(0.1)		3.4	(0.1)		2.6	(0.1)		2.0	(0.1)		27.1	(0.3)	†	**0.7**	(0.1)	
Kyzyl-Orda region	2.8	(0.1)		3.3	(0.1)		3.8	(0.2)		2.1	(0.0)		24.8	(0.2)	†	**0.7**	(0.1)	
Mangistau region	3.0	(0.1)		3.4	(0.2)		2.5	(0.2)		2.4	(0.1)		25.7	(0.4)	†	**0.6**	(0.1)	
North-Kazakhstan region	2.8	(0.1)	†	3.3	(0.1)	†	1.8	(0.1)	†	2.2	(0.1)	†	27.6	(0.4)	†	**0.6**	(0.1)	†
Pavlodar region	3.0	(0.1)		3.4	(0.1)		2.4	(0.2)		2.3	(0.1)		28.3	(0.5)	†	**0.7**	(0.1)	
South-Kazakhstan region	3.0	(0.1)	†	3.4	(0.1)	†	3.0	(0.1)	†	2.2	(0.1)	†	25.9	(0.3)	†	**0.7**	(0.1)	†
West-Kazakhstan region	2.6	(0.0)		3.2	(0.0)		2.3	(0.2)		2.0	(0.1)		26.4	(0.4)	†	**0.5**	(0.1)	
Zhambyl region	2.9	(0.1)	†	3.4	(0.1)	†	3.1	(0.2)	†	2.0	(0.1)	†	26.2	(0.4)	‡	**0.8**	(0.1)	†
Russia																		
Moscow city	2.7	(0.0)	†	4.2	(0.0)	†	4.6	(0.1)	†	2.9	(0.0)	†	26.5	(0.1)	†	**-0.3**	(0.1)	†
*Moscow region**	2.6	(0.1)		4.0	(0.1)		4.7	(0.1)		2.6	(0.1)		26.7	(0.3)	†	0.0	(0.1)	
*Republic of Tatarstan**	3.1	(0.1)		4.5	(0.0)		4.4	(0.1)		2.7	(0.0)		28.0	(0.1)	†	**0.3**	(0.1)	

* PISA adjudicated region.

Notes: see Table V.B1.6.1 for national data.

Values that are statistically significant are indicated in bold (see Annex A3).

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132184

Table V.B2.7.1 [1/2] **Enrolment in public and private schools**
Results based on principals' reports about school management and the school's sources of funding

	Percentage of students enrolled in:											
				Private schools								
	Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
	%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
OECD												
Belgium												
*Flemish community**	m	m		m	m		m	m		m	m	
French community	m	m		m	m		m	m		m	m	
German-speaking community	m	m		m	m		m	m		m	m	
Canada												
Alberta	1.4	(1.5)		1.6	(1.5)		97.0	(0.3)		3.0	(0.3)	
British Columbia	3.8	(2.1)		8.3	(2.4)		87.9	(2.6)		12.1	(2.6)	
Manitoba	1.3	(1.1)		6.0	(1.5)		92.7	(1.0)		7.3	(1.0)	
New Brunswick	0.0	c		0.0	c		100.0	c		0.0	c	
Newfoundland and Labrador	0.0	c		1.4	(1.3)		98.6	(1.3)		1.4	(1.3)	
Nova Scotia	0.0	c		0.0	c		100.0	c		0.0	c	
Ontario	2.8	(0.6)		0.4	(0.4)		96.8	(0.7)		3.2	(0.7)	
Prince Edward Island	0.0	c		0.0	c		100.0	c		0.0	c	
Quebec	14.3	(2.4)		8.1	(1.8)		77.6	(1.9)		22.4	(1.9)	
Saskatchewan	0.9	(0.9)		3.7	(0.3)		95.4	(0.9)		4.6	(0.9)	
Colombia												
Bogotá	39.8	(2.1)		0.0	c		60.2	(2.1)		39.8	(2.1)	
Italy												
Bolzano	0.3	(0.0)		2.6	(0.2)		97.1	(0.2)		2.9	(0.2)	
Sardegna	1.5	(1.2)		0.0	c		98.5	(1.2)		1.5	(1.2)	
Toscana	0.9	(0.5)		0.0	c		99.1	(0.5)		0.9	(0.5)	
Trento	1.0	(0.1)		24.6	(0.8)		74.4	(0.9)		25.6	(0.9)	
Spain												
Andalusia	0.0	c		21.7	(3.0)		78.3	(3.0)		21.7	(3.0)	
Aragon	8.2	(4.1)		27.4	(3.9)		64.4	(1.1)		35.6	(1.1)	
Asturias	1.4	(1.0)		28.7	(2.4)		69.9	(1.9)		30.1	(1.9)	
Balearic Islands	8.1	(2.3)		23.3	(4.1)		68.6	(3.5)		31.4	(3.5)	
Basque Country	0.0	c		51.2	(1.3)		48.8	(1.3)		51.2	(1.3)	
Canary Islands	11.9	(4.0)		12.1	(4.2)		76.0	(1.9)		24.0	(1.9)	
Cantabria	2.0	(1.9)		25.9	(2.5)		72.1	(2.7)		27.9	(2.7)	
Castile and Leon	3.4	(2.4)		31.1	(2.9)		65.5	(1.7)		34.5	(1.7)	
Castile-La Mancha	3.9	(2.8)		17.0	(2.5)		79.1	(0.6)		20.9	(0.6)	
Catalonia	5.3	(3.2)		31.1	(2.5)		63.6	(2.7)		36.4	(2.7)	
Ceuta	0.0	c	†	32.5	(1.0)	†	67.5	(1.0)	†	32.5	(1.0)	†
Comunidad Valenciana	8.4	(3.8)		25.5	(3.5)		66.1	(1.0)		33.9	(1.0)	
Extremadura	0.0	c		22.1	(1.8)		77.9	(1.8)		22.1	(1.8)	
Galicia	5.4	(2.3)		22.6	(1.9)		72.1	(2.0)		27.9	(2.0)	
La Rioja	0.0	c		40.0	(0.3)		60.0	(0.3)		40.0	(0.3)	
Madrid	14.6	(2.9)		31.8	(2.8)		53.7	(1.0)		46.3	(1.0)	
Melilla	0.0	c		10.8	(0.6)		89.2	(0.6)		10.8	(0.6)	
Murcia	0.0	c		26.5	(2.2)		73.5	(2.2)		26.5	(2.2)	
Navarre	0.0	c		39.8	(2.0)		60.2	(2.0)		39.8	(2.0)	
United Kingdom												
England	7.0	(1.6)		70.2	(3.0)		22.8	(2.5)		77.2	(2.5)	
Northern Ireland	0.0	(0.0)		10.5	(3.8)		89.5	(3.8)		10.5	(3.8)	
*Scotland**	3.5	(2.3)		1.0	(1.1)		95.5	(2.5)		4.5	(2.5)	
Wales	0.9	(0.5)		2.4	(0.6)		96.7	(0.5)		3.3	(0.5)	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.

2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.

* PISA adjudicated region.

Notes: see Table V.B1.7.1 for national data.

Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.

StatLink https://doi.org/10.1787/888934132184

Table V.B2.7.1 [2/2] **Enrolment in public and private schools**
Results based on principals' reports about school management and the school's sources of funding

		Percentage of students enrolled in:											
					Private schools								
		Government or public schools[1]			Total			Government-dependent private schools[2]			Government-independent private schools[3]		
		%	S.E.	x	%	S.E.	x	%	S.E.	x	%	S.E.	x
Partners	**Argentina**												
	*CABA**	15.8	(3.8)		32.6	(4.4)		51.6	(3.4)		48.4	(3.4)	
	*Cordoba**	14.0	(3.7)		31.8	(3.8)		54.3	(2.2)		45.7	(2.2)	
	*PBA**	6.9	(3.2)		27.9	(3.6)		65.2	(2.2)		34.8	(2.2)	
	*Tucuman**	4.8	(2.6)		22.5	(4.0)		72.6	(3.2)		27.4	(3.2)	
	Brazil												
	North	13.9	(5.0)		0.0	c		86.1	(5.0)		13.9	(5.0)	
	Northeast	10.0	(2.7)		2.0	(0.8)		88.0	(2.3)		12.0	(2.3)	
	South	14.5	(1.4)		0.0	c		85.5	(1.4)		14.5	(1.4)	
	Southeast	9.7	(2.2)		7.9	(2.2)		82.4	(1.5)		17.6	(1.5)	
	Middle-West	10.8	(2.7)		3.1	(2.6)		86.1	(2.2)		13.9	(2.2)	
	Indonesia												
	DI Yogyakarta	11.8	(4.9)		27.9	(6.6)		60.3	(4.8)		39.7	(4.8)	
	DKI Jakarta	30.4	(5.9)		21.7	(7.4)		47.9	(4.8)		52.1	(4.8)	
	Kazakhstan												
	Akmola region	3.3	(3.2)		0.0	c		96.7	(3.2)		3.3	(3.2)	
	Aktobe region	7.5	(0.8)		0.0	c		92.5	(0.8)		7.5	(0.8)	
	Almaty	11.2	(5.7)		8.7	(5.6)		80.1	(4.3)		19.9	(4.3)	
	Almaty region	3.8	(3.7)		0.0	c		96.2	(3.7)		3.8	(3.7)	
	Astana	14.8	(4.8)		0.0	c		85.2	(4.8)		14.8	(4.8)	
	Atyrau region	3.8	(3.8)		3.6	(3.6)		92.7	(5.2)		7.3	(5.2)	
	East-Kazakhstan region	3.3	(3.3)		2.6	(1.8)		94.1	(1.4)		5.9	(1.4)	
	Karagandy region	6.8	(4.8)		3.4	(3.4)		89.8	(3.4)		10.2	(3.4)	
	Kostanay region	3.2	(3.2)		0.0	c		96.8	(3.2)		3.2	(3.2)	
	Kyzyl-Orda region	11.2	(6.4)		3.7	(3.7)		85.2	(5.2)		14.8	(5.2)	
	Mangistau region	5.9	(1.5)		0.0	c		94.1	(1.5)		5.9	(1.5)	
	North-Kazakhstan region	0.0	c		0.0	c		100.0	c		0.0	c	
	Pavlodar region	0.0	c		2.4	(2.4)		97.6	(2.4)		2.4	(2.4)	
	South-Kazakhstan region	6.6	(4.0)		3.1	(3.1)		90.4	(5.1)		9.6	(5.1)	
	West-Kazakhstan region	3.3	(3.3)		0.0	c		96.7	(3.3)		3.3	(3.3)	
	Zhambyl region	3.2	(3.2)		0.8	(0.0)		96.0	(3.2)		4.0	(3.2)	
	Russia												
	Moscow city	0.0	c		0.0	c		100.0	c		0.0	c	
	*Moscow region**	0.0	c		0.0	c		100.0	c		0.0	c	
	*Republic of Tatarstan**	0.0	c		0.0	c		100.0	c		0.0	c	

1. Schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by a public authority or elected by public franchise.
2. Privately managed schools that receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Privately managed schools that receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
* PISA adjudicated region.
Notes: see Table V.B1.7.1 for national data.
Information regarding the proportion of the sample covered is shown next to the standard error. No symbol means at least 75% of the population was covered; one dagger (†) means at least 50% but less than 75%; and one double-dagger (‡) means less than 50% was covered. For comparisons across cycles, the coverage information corresponds to the cycle with the lowest sample coverage.
StatLink https://doi.org/10.1787/888934132184

ANNEX B3
PISA 2018 system-level indicators

System-level data that are not derived from the PISA 2018 student or school questionnaire are extracted from the OECD's annual publication *Education at a Glance* for those countries and economies that participate in that periodic data collection. For other countries and economies, a special system-level data collection was conducted in collaboration with PISA Governing Board members and National Project Managers.

For further information see: *System-level data collection for PISA 2018: Sources, comments and technical notes.pdf* at www.oecd.org/pisa/.

The following tables are available on line at https://doi.org/10.1787/888934029128.

1	**Expenditure**	**Table B3.1.1**	Cumulative expenditure by educational institutions per student aged 6 to 15 (2015)
		Table B3.1.2	Teachers' salaries (2017)
		Table B3.1.3	Teachers' salaries (2017)
		Table B3.1.4	GDP per capita (2015, 2016, 2017, 2018)
2	**Time and human resources**	**Table B3.2.1**	Teachers' actual teaching time (2018)
		Table B3.2.2	Intended instruction time in compulsory general education, by age (2018)
		Table B3.2.3	School support staff
3	**Education system characteristics**	**Table B3.3.1**	Theoretical starting age and theoretical duration (2015)
		Table B3.3.2	Cut-off birthdate for eligibility to school enrolment and first day of the school year (2018)
		Table B3.3.3	Selecting students for different programmes (2018)
4	**Accountability**	**Table B3.4.1**	School inspection at the primary level (2018)
		Table B3.4.2	School inspection at the lower secondary level (2018)
		Table B3.4.3	School inspection at the upper secondary level (2018)
		Table B3.4.4	School board
5	**Policies and curriculum**	**Table B3.5.1**	Bullying policies
		Table B3.5.2	Civic education
6	**School choice**	**Table B3.6.1**	Freedom for parents to choose a public school for their child(ren) (2018)
		Table B3.6.2	Financial incentives and disincentives for school choice (2018)
		Table B3.6.3	Government regulations that apply to schools at the primary and lower secondary levels (2018)
		Table B3.6.4	Criteria used by public and private schools when assigning and selecting students (2018)
		Table B3.6.5	Expansion of school choice within the public school sector over the past 10 years (2018)
		Table B3.6.6	Government-dependent private schools and their role in providing compulsory education at the primary and lower secondary level (2018)
		Table B3.6.7	Independent private schools and their role in providing compulsory education at the primary and lower secondary level (2018)
		Table B3.6.8	Homeschooling as a legal means of providing compulsory education at the primary and lower secondary level (2018)
		Table B3.6.9	Use of public resources for transporting students (2018)
		Table B3.6.10	Responsibility for informing parents about school choices available to them (2018)
		Table B3.6.11	Availability of school vouchers (or scholarships) (2018)
		Table B3.6.12	Extent to which public funding follows students when they leave for another public or private school (2018)

ANNEX C

The development and implementation of PISA: A collaborative effort

PISA is a collaborative effort, bringing together experts from the participating countries, steered jointly by their governments on the basis of shared, policy-driven interests.

A PISA Governing Board, on which each country is represented, determines the policy priorities for PISA, in the context of OECD objectives, and oversees adherence to these priorities during the implementation of the programme. This includes setting priorities for the development of indicators, for establishing the assessment instruments, and for reporting the results.

Experts from participating countries also serve on working groups that are charged with linking policy objectives with the best internationally available technical expertise. By participating in these expert groups, countries ensure that the instruments are internationally valid and take into account the cultural and educational contexts in OECD member and partner countries and economies, that the assessment materials have strong measurement properties, and that the instruments emphasise authenticity and educational validity.

Through National Project Managers, participating countries and economies implement PISA at the national level subject to the agreed administration procedures. National Project Managers play a vital role in ensuring that the implementation of the survey is of high quality, and verify and evaluate the survey results, analyses, reports and publications.

The design and implementation of the surveys, within the framework established by the PISA Governing Board, is the responsibility of external contractors. For PISA 2018, the overall management of contractors and implementation was carried out by the Educational Testing Service (ETS) in the United States as the Core A contractor. Tasks under Core A also included instrument development, development of the computer platform, survey operations and meetings, scaling, analysis and data products. These tasks were implemented in co-operation with the following subcontractors; i) the University of Luxembourg for support with test development; ii) the Unité d'analyse des systèmes et des pratiques d'enseignement (aSPe) at the University of Liège in Belgium for test development and coding training for open-response items; iii) the International Association for the Evaluation of Educational Achievement (IEA) in the Netherlands for the data management software; iv) Westat in the United States for survey operations; v) Deutsches Institut für Internationale Pädagogische Forschung (DIPF) in Germany, with co-operation from Statistics Canada, for the development of the questionnaires; and vi) HallStat SPRL in Belgium for the translation referee.

The remaining tasks related to the implementation of PISA 2018 were implemented through three additional contractors – Cores B to D. The development of the cognitive assessment frameworks for reading and global competence and of the framework for questionnaires was carried out by Pearson in the United Kingdom as the Core B contractor. Core C focused on sampling and was the responsibility of Westat in the United States in co-operation with the Australian Council for Educational Research (ACER) for the sampling software KeyQuest. Linguistic quality control and the development of the French source version for Core D were undertaken by cApStAn, who worked in collaboration with BranTra as a subcontractor.

The OECD Secretariat has overall managerial responsibility for the programme, monitors its implementation daily, acts as the secretariat for the PISA Governing Board, builds consensus among countries and serves as the interlocutor between the PISA Governing Board and the international Consortium charged with implementing the activities. The OECD Secretariat also produces the indicators and analyses and prepares the international reports and publications in co-operation with the PISA Consortium and in close consultation with member and partner countries and economies both at the policy level (PISA Governing Board) and at the level of implementation (National Project Managers).

PISA GOVERNING BOARD

(*Former PGB representative who was involved in PISA 2018)

Chair of the PISA Governing Board: Michele Bruniges

OECD Members and PISA Associates

Australia: Rick Persse, Rhyan Bloor* and Gabrielle Phillips*

Austria: Mark Német

Belgium: Isabelle Erauw and Geneviève Hindryckx

Brazil: Alexandre Ribeiro Pereira Lopes, Maria Helena Guimarães De Castro*, Maria Inês Fini* and José Francisco Soares*

Canada: Gilles Bérubé, Kathryn O'Grady, Pierre Brochu* and Tomasz Gluszynski*

Chile: Claudia Matus and Carolina Flores*

Czech Republic: Tomas Zatloukal

Denmark: Charlotte Rotbøll Sjøgreen, Hjalte Meilvang, Eyðun Gaard, Mette Hansen* and Frida Poulsen*

Estonia: Maie Kitsing

Finland: Tommi Karjalainen and Najat Ouakrim-Soivio*

France: Ronan Vourc'h, Thierry Rocher* and Bruno Trosseille*

Germany: Jens Fischer-Kottenstede, Katharina Koufen, Elfriede Ohrnberger and Martina Diedrich*

Greece: Ioannis Tsirmpas and Chryssa Sofianopoulou*

Hungary: Sándor Brassói

Iceland: Stefan Baldursson

Ireland: Rachel Perkins, Peter Archer* and Caroline McKeown*

Israel: Hagit Glickman

Italy: Roberto Ricci

Japan: Yu Kameoka and Akiko Ono*

Korea: Jimin Cho, Ji-Young Park, Dong-In Bae*, Inn-Soon Jung*, Sungsook Kim*, Myungae Lee*, Bu Ho Nam* and Jea Yun Park*

Latvia: Alona Babica and Liga Lejiņa*

Lithuania: Rita Dukynaite

Luxembourg: Amina Afif

Mexico: Andres Sanchez, Ana María Aceves Estrada*, Eduardo Backhoff Escudero* and Otto Granados Roldán*

Netherlands: Marjan Zandbergen

New Zealand: Craig Jones and Lisa Rodgers*

Norway: Marthe Akselsen and Anne-Berit Kavli*

Poland: Piotr Mikiewicz, Lidia Olak* and Jerzy Wiśniewski*

Portugal: Luís Pereira Dos Santos and Hélder Manuel Diniz De Sousa*

Slovak Republic: Romana Kanovska

Slovenia: Ksenija Bregar Golobic, Mojca Štraus and Andreja Barle Lakota*

Spain: Carmen Tovar Sánchez

Sweden: Ellen Almgren and Eva Lundgren*

Switzerland: Reto Furter, Camil Würgler, Vera Husfeldt* and Claudia Zahner Rossier*

Thailand: Sukit Limpijumnong, Nantawan Somsook and Supattra Pativisan*

Turkey: Sadri Şensoy and Kemal Bülbül*

United Kingdom: Lorna Bertrand, Keith Dryburgh and Jonathan Wright*

United States: Peggy Carr and Dana Kelly*

Observers (Partner economies)

Albania: Zamira Gjini

Argentina: María Angela Cortelezzi and Elena Duro*

Azerbaijan: Emin Amrullayev

Belarus: Aliaksandr Yakabchuk

Bosnia and Herzegovina: Maja Stojkic

Brunei Darussalam: Shamsiah Zuraini Kanchanawati Tajuddin, Hj Azman Bin Ahmad* and Hjh Romaizah Hj Mohd Salleh*

Bulgaria: Neda Oscar Kristanova

Beijing-Shanghai-Jiangsu-Zhejiang (China): Zhang Jin, Xiang Mingcan, Jun Fang*, Yanpin Hu* and Lin Shiliang*

Colombia: María Figueroa Cahnspeyer and Ximena Dueñas Herrera*

Costa Rica: Pablo José Mena Castillo, Melania Brenes Monge, Edgar Mora Altamirano* and Alicia Vargas Porras*

Croatia: Ines Elezovic and Michelle Bras Roth*

Dominican Republic: Ancell Scheker Mendoza

Georgia: Sophia Gorgodze, Tamar Bregvadze* and Natia Mzahavnadze*

Hong Kong (China): Ho-Pun Choi, Barry Lau, Fanny Yuen-Fan Wan* and Chun-Sing Woo*

Indonesia: Suprayitno Totok

Jordan: Abdalla Yousef Awad Al-Ababneh

Kazakhstan: Yerlikzhan Sabyruly, Serik Irsaliyev* and Nurgul Shamshieva*

Kosovo: Valmir Gashi

Lebanon: Nada Oweijane

Macao (China): Pak Sang Lou and Leong Lai*

Malaysia: Habibah Abdul Rahim, Dato Sri Khairil Awang* and Suliaman Wak*

Malta: Charles L. Carmelo Mifsud

Republic of Moldova: Anatolie Topala

Montenegro: Dragana Dmitrovic

Morocco: Mohammed Sassi

Republic of North Macedonia: Natasha Jankovska and Natasha Janevska*

Panama: Nadia De Leon and Marelisa Tribaldos*

Peru: Humberto Perez León Ibáñez and Liliana Miranda Molina*

Philippines: Nepomuceno A. Malaluan

Qatar: Khalid Abdulla Q. Al-Harqan

Romania: Daniela Bogdan*

Russian Federation: Sergey Kravtsov, Pavel Zenkovich and Anton Chetvertkov*

Saudi Arabia: Abdullah Alqataee, Husam Zaman, Nayyaf Al-Jabri, Mohamed Al-Harthi*, Faisal Mashary Al Saud* and Saja Jamjoom*

Serbia: Anamarija Vicek and Zorana Lužanin*

Singapore: Chern Wei Sng and Khah Gek Low*

Chinese Taipei: Tian-Ming Sheu, Hwawei Ko* and Li-Chun Peng*

Ukraine: Sergiy Rakov, Inna Sovsun* and Pavlo Khobzey*

United Arab Emirates: Rabaa Alsumaiti, Hessa Alwahhabi, Ayesha Al Marri*, Khawla Al Mualla* and Moza Rashid Alghufli*

Uruguay: Andrés Peri

Viet Nam: Sai Cong Hong and My Ha Le Thi

PISA 2018 NATIONAL PROJECT MANAGERS

(*Former PISA 2018 NPM)

Albania: Rezana Vrapi

Argentina: Cecilia Beloqui and Samanta Bonelli*

Australia: Sue Thomson

Austria: Birgit Suchań

Azerbaijan: Narmina Aliyeva

Belarus: Jurij Miksiuk and Julia Khokhlova

Belgium: Inge De Meyer and Anne Matoul

Bosnia and Herzegovina: Žaneta Džumhur

Brazil: Aline Mara Fernandes

Brunei Darussalam: Hazri Kifle, Hjh Kamlah Hj Daud* and Habibah Hj Sion*

Bulgaria: Natalia Vassileva and Svetla Petrova*

Canada: Kathryn O'Grady, Tanya Scerbina and Pierre Brochu*

Chile: Ema Lagos Campos

Beijing-Shanghai-Jiangsu-Zhejiang (China): Tao Xin

Colombia: Natalia González Gómez and Andrés Gutiérrez Rojas*

Costa Rica: Rudy Masís Siles and Lilliam Mora Aguilar*

Croatia: Ana Markocic Dekanic and Michelle Bras Roth*

Cyprus: Yiasemina Karagiorgi

Czech Republic: Radek Blažek

Denmark: Hans Hummelgaard, Helga Foldbo, Vibeke Tornhøj Christensen and Óli Jákup Joensen*

Dominican Republic: Massiel Cohen Camacho

Estonia: Gunda Tire

Finland: Arto Ahonen

France: Irène Verlet

Georgia: Lasha Kokilashvili, Sophie Baxutashvili* and Tamar Bregvadze*

Germany: Kristina Reiss, Mirjam Weis and Christine Sälzer*

Greece: Ioannis Tsirmpas and Chryssa Sofianopoulou*

Hong Kong (China): Kit-Tai Hau

Hungary: László Ostorics

Iceland: Guðmundur Þorgrímsson, Almar Miðvik Halldórsson* and Svanhildur Steinarsdóttir*

Indonesia: Moch Abduh and Nizam Nizam*

Ireland: Caroline McKeown

Israel: Georgette Hilu, Inbal Ron-Kaplan and Joel Rapp*

Italy: Laura Palmerio

Japan: Yu Kameoka and Akiko Ono*

Jordan: Emad Ghassab Ababneh

Kazakhstan: Temirlan Kultumanov, Yerlikzhan Sabyruly, Magzhan Amangazy* and Irina Imanbek*

Korea: Seongmin Cho and Ku Jaok*

Kosovo: Mustafa Kadriu

Latvia: Andris Kangro

Lebanon: Bassem Issa

Lithuania: Natalija Valaviciene and Mindaugas Stundza*

Luxembourg: Bettina Boehm

Macao (China): Kwok-Cheung Cheung

Malaysia: Wan Raisuha Binti Wan Ali

Malta: Louis Scerri

Mexico: María Antonieta Díaz Gutierrez

Republic of Moldova: Valeriu Gutu and Anatolie Topala

Montenegro: Divna Paljevic

Morocco: Ahmed Chaibi

Netherlands: Joyce Gubbels, Martina Meelissen and Andrea Netten*

New Zealand: Adam Jang-Jones, Steven May and Saila Cowles*

Republic of North Macedonia: Beti Lameva

Norway: Fredrik Jensen and Marit Kjærnsli*

Panama: Ariel Melo, Jahir Calvo* and Genoveva Iglesias*

Peru: Humberto Perez León Ibáñez and Liliana Miranda*

Philippines: Nelia Vargas Benito

Poland: Barbara Ostrowska

Portugal: Vanda Lourenço* and João Maroco Domingos*

Qatar: Shaikha Al-Ishaq

Romania: Simona Velea

Russian Federation: Galina Kovaleva

Saudi Arabia: Fahad Abdullah Alharbi and Mohammed Al-Sobeiy*

Serbia: Gordana Capric and Dragica Pavlovic-Babic*

Singapore: Elaine Chua and Chew Leng Poon*

Slovak Republic: Julia Miklovicova and Jana Ferencová*

Slovenia: Klaudija Šterman Ivančič and Mojca Štraus*

Spain: Lis Cercadillo

Sweden: Ellen Almgren, Eva Lundgren* and Agnes Tongur*

Switzerland: Andrea B. Erzinger and Christian Nidegger*

Chinese Taipei: Pi-Hsia Hung

Thailand: Ekarin Achakunwisut

Turkey: Umut Erkin Taş

Ukraine: Tetiana Vakulenko and Anna Novosad*

United Arab Emirates: Shaikha Al Zaabi, Ahmed Hosseini and Moza Rashid Al Ghufli

United Kingdom: Juliet Sizmur

United States: Patrick Gonzales

Uruguay: María Helvecia Sánchez Núñez

Viet Nam: My Ha Le Thi

OECD SECRETARIAT

Andreas Schleicher (Strategic development)

Marilyn Achiron (Editorial support)

Alejandra Arbeláez Ayala (Analytic services)

Francesco Avvisati (Analytic services)

Yuri Belfali (Strategic development)

Filippo Besa (Analytic services)

Simone Bloem (Dissemination support)

Guillaume Bousquet (Analytic services)

Alison Burke (Production support)

Rodrigo Castaneda Valle (Analytic services)

Cassandra Davis (Dissemination co-ordination)

Alfonso Echazarra (Analytic services)

Juliet Evans (Communication & dissemination)

Natalie Foster (Analytic services)

Pauline Givord (Analytic services)

Hélène Guillou (Analytic services)

Tue Halgreen (Project management)

Parker Hart (Dissemination support)

Julia Himstedt (Communication & dissemination)

Miyako Ikeda (Analytic services)

Natalie Laechelt (Project management)

Sophie Limoges (Production support)

Camille Marec (Analytic services)

Thomas Marwood (Administrative support)

Nicolás Miranda (Analytic services)

Jeffrey Mo (Analytic services)

Chiara Monticone (Analytic services)

Tarek Mostafa (Analytic services)

Tomoya Okubo (Analytic services)

Lesley O'Sullivan (Administrative support)

Judit Pál (Analytic services)

Mario Piacentini (Analytic services)

Giannina Rech (Analytic services)

Daniel Salinas (Analytic services)

Markus Schwabe (Analytic services)

Della Shin (Production support)

Pablo Swedberg (Analytic services)

Rebecca Tessier (Production support)

Hanna Varkki (Administrative support)

Sophie Vayssettes (Project management)

PISA 2018 READING EXPERT GROUP

Core Expert Group

Jean-François Rouet (Chair) (University of Poitiers, France)

Paul van den Broek (Leiden University, The Netherlands)

Kevin Kien Hoa Chung (The Education University of Hong Kong China)

Dominique Lafontaine (QEG Liaison) (University of Liège, Belgium)

John Sabatini (Educational Testing Service, United States)

Sascha Schroeder (University of Cologne, Germany)

Sari Sulkunen (University of Jyväskylä, Finland)

Extended Expert Group

Gina Biancarosa (University of Oregon, United States)

Ivar Braten (University of Oslo, Sweden)

Marina I. Kuznetkova (Russian Academy of Education, Russia)

Nele McElvany (Technische Universität Dortmund, Germany)

Eduardo Vidal-Abarca (University of Valencia, Spain)

William G. Brozo (University of South Carolina, United States)

Kate Cain (Lancaster University, United Kingdom)

PISA 2018 GLOBAL COMPETENCE EXPERT GROUP

Experts who led the first phase of development

David Kerr (University of Reading and Young Citizens, United Kingdom)

Peter Franklin (HTWG Konstanz University of Applied Sciences, Germany)

Darla Deardorff (Duke University, United States)

Sarah Howie (University of Stellenbosch, South Africa)

Wing On Lee (Open University of Hong Kong, China)

Jasmine B.-Y. Sim (National Institute of Education, Singapore)

Sari Sulkunen (Jyväskylä University, Finland)

Experts who led the second phase of development

Martyn Barrett (Chair) (University of Surrey, United Kingdom)

Veronica Boix Mansilla (Harvard University, United States)

Darla Deardorff (Duke University, United States)

Hye-Won Lee
(Korea Institute for Curriculum and Evaluation [KICE], Korea)

Extended group

Tom Franklin (Young Citizens, United Kingdom)

Alicia Cabezudo (Universidad Nacional de Rosario, Argentina)

Hans Ruesink (Ministry of Education, Culture and Science, The Netherlands)

Myunghee Ju Kang (Ewha Womans University, South Korea)

Jom Schreiber (Duquesne University, United States)

Jo-Anne Baird (University of Oxford, United Kingdom)

Naomi Miyake (University of Tokyo, Japan)

PISA 2018 QUESTIONNAIRE EXPERT GROUP

Core Expert Group

Fons J. R. van de Vijver (Chair) (Tilburg University, the North-West University and the University of Queensland, The Netherlands and Australia)

Dominique Lafontaine (University of Liège, Belgium)

David Kaplan (University of Wisconsin, United States)

Sarah Howie (University of Stellenbosch, South Africa)

Andrew Elliot (University of Rochester, United States)

Therese Hopfenbeck (Oxford University, England)

Extended Expert Group

David Cantor (University of London, United Kingdom)

Kit-Tai Hau (The Chinese University of Hong Kong, China)

Hwa-Wei Ko (National Central University, Chinese Taipei)

Malgorzata Mikucka (Universität Mannheim, Germany)

Naomi Miyake (University of Tokyo, Japan)

Thierry Rocher (Ministère de l'Éducation Nationale, France)

Herb Marsh (Australian Catholic University, Australia)

Ben Jensen (Learning First, Australia)

Technical Advisory Group

Keith Rust (chair) (Westat, United States)

Kentaro Yamamoto (ETS, United States)

John de Jong (VU University Amsterdam, Netherlands)

Christian Monseur (University of Liège, Belgium)

Leslie Rutkowski (University of Oslo, Norway and Indiana University, United States)

Cees Glas (University of Twente, Netherlands)

Irwin Kirsch (ETS, United States)

Theo Eggen (Cito, Netherlands)

Kit-Tai Hau (The Chinese University of Hong Kong, China)

Oliver Lüdtke (IPN - Leibniz Institute for Science and Mathematics Education, Germany)

Matthias von Davier (NBME, United States)

David Kaplan (University of Wisconsin – Madison, United States)

Thierry Rocher (Ministère de l'Éducation Nationale, France)

Margaret Wu (Victoria University, Australia)

PISA 2018 LEAD CONTRACTORS

Educational Testing Service (United States) – Core A lead contractor

Irwin Kirsch (International Project Director)

Claudia Tamassia (International Project Manager)

David Garber (Project Management)

Ann Kennedy (Project Management)

Larry Hanover (Editorial Support)

Lisa Hemat (Project Support)

Isabelle Jars (Project Management, Questionnaires)

Luisa Langan (Project Management, Questionnaires)

Judy Mendez (Project Support and Contracts)

Daniel Nicastro (Project Support)

Yelena Shuster (Project Support)

Eugenio Gonzalez (Training and Data Poducts)

Kentaro Yamamoto (Director, Psychometrics and Analysis)

Fred Robin (Manager, Psychometrics and Analysis)

Usama Ali (Psychometrics and Analysis)

Haiwen Chen (Psychometrics and Analysis)

Qiwei He (Psychometrics and Analysis)

Sean-Hwane Joo (Psychometrics and Analysis)

Lale Khorramdel (Psychometrics and Analysis)

Selene Sunmin Lee (Psychometrics and Analysis)

Emily Lubaway (Psychometrics and Analysis)

Hyo Jeong Shin (Psychometrics and Analysis)

Peter van Rijn (Psychometrics and Analysis)

Laura Halderman (Lead Test Developer and Test Development Coordinator, Reading Literacy and Global Competence)

Kelly Bruce (Test Developer and Test Development Coordinator, Reading Literacy)

Marylou Lennon (Test Developer and Test Development Coordinator, Global Competence)

Patti Mendoza (Test Developer, Reading Literacy)

Eric Miller (Test Developer, Reading Literacy)

Laura Shook (Test Developer, Reading Literacy)

Denise Walker (Test Developer, Reading Literacy)

James Seal (Test Developer, Reading Literacy)

Darla Scates (Test Developer, Reading Literacy)

Scott Seay (Test Developer, Reading Literacy)

John Fischer (Test Developer, Reading Literacy)

Nial Eastman (Reviewer, Reading Liteacry)

Mary Kathryn Arnold (Reviewer, Reading Literacy)

Lynette Perloff (Reviewer, Reading Literacy)

John Hawthorn (Test Developer, Global Competence)

Douglas Baldwin (Test Developer, Global Competence)

Tenaha O'Reilly (Test Developer, Global Competence)

Michael Wagner (Director, Platform Development)

Jason Bonthron (Platform Development and Authoring)

Paul Brost (Platform Development)

Ramin Hemat (Platform Development and Authoring)

Keith Keiser (Platform Development and Coding System)

Debbie Pisacreta (Interface Design and Graphics)

Janet Stumper (Graphics)

Chia Chen Tsai (Platform Development)

Ted Blew (Area Director, Data Analysis and Research Technologies)

John Barone (Director, Data Analysis and Database Technologies)

Mathew Kandathil (Team Leader, Data Analysis and Data Management)

Kevin Bentley (Data Products)

Hezekiah Bunde (Data Management)

Karen Castellano (Data Analysis)

Matthew Duchnowski (Data Management)

Ying Feng (Data Management)

Harrison Gamble (Data Analysis)

Zhumei Guo (Data Analysis)

Paul Hilliard (Data Analysis)

Lokesh Kapur (Data Analysis)

Debra Kline (Project Management)

Phillip Leung (Data Quality, Data Products)

Alfred Rogers (Data Management, Data Products)

Carla Tarsitano (Project Management)

Tao Wang (Data Quality)

Lingjun Wong (Data Analysis)

Ping Zhai (Data Analysis)

Wei Zhao (Data Analysis)

Pearson (United Kingdom) – Core B lead contractor

John de Jong (Programme Director)

Peter Foltz (Content lead, Reading Literacy)

Christine Rozunick (Content lead, Background Questionnaire)

Jon Twing (Psychometric consultant)

Dave Leach (Programme Manager and Programme Director)

Lorraine Greenwood (Project management)

Jay Larkin (Editor and support for Reading literacy)

Madison Cooper (Editor and support for Background Questionnaire)

Clara Molina (Programme Administrator)

Mark Robeck (Minutes and editor)

Kimberly O'Malley (Additional management support)

Westat (United States) – Core C lead contractor

Keith Rust (Director of the PISA Consortium for Sampling and Weighting)

Sheila Krawchuk (Sampling and Weighting)

Jessica Chan (Sampling)

David Ferraro (Weighting)

Susan Fuss (Sampling and Weighting)

Moriah Goodnow (Weighting)

Amita Gopinath (Weighting)

Jing Kang (Sampling and Weighting)

Véronique Lieber (Sampling and Weighting)

John Lopdell (Sampling and Weighting)

Neha Patel (Weighting)

Shawn Lu (Weighting)

Jacqueline Severynse (Sampling and Weighting)

Yumiko Siegfried (Sampling and Weighting)

Joel Wakesberg (Sampling and Weighting)

Sipeng Wang (Sampling)

Natalia Weil (Sampling and Weighting)

Erin Wiley (sampling and Weighting)

Sergey Yagodin (Weighting)

cApStAn Linguistic Quality Control (Belgium) – Core D lead contractor

Steve Dept (Project Director, Translatability Assessment)

Lieve Deckx (Verification Management, Cognitive Units)

Andrea Ferrari (Linguistic Quality Assurance and Quality Control Designs)

Musb Hayatli (Right-to-Left Scripts, Cultural Adaptations)

Emel Ince (Verification Management, Manuals)

Elica Krajceva (Verification Management, Questionnaires)

Shinoh Lee (Verification Management, Cognitive Units)

Irene Liberati (Verification Management, Cognitive Units)

Roberta Lizzi (Verification Management, Trend Content)

Manuel Souto Pico (Translation Technologist, Linguistic Quality Assurance Tools and Procedures)

Laura Wayrynen (Lead Project Manager)

PISA 2018 CONTRIBUTORS, WORKING WITH LEAD CONTRACTORS

Australian Council for Educational Research (Australia) – Core C contributor

Eveline Gebhardt (Project Director)

Bethany Davies (School Sampling)

Jorge Fallas (School and Student Sampling)

Jennifer Hong (School Sampling)

Renee Kwong (School and Student Sampling)

Dulce Lay (School Sampling)

Gregory Macaskill (School Sampling)

Martin Murphy (School Sampling)

Claire Ozolins (School Sampling)

Leigh Patterson (School Sampling)

Alla Routitsky (Student Sampling)

BranTra (Belgium) – Core D contributor

Eva Jacob (Translation Management, French Source Development)

Danina Lupsa (Translation Technologist, Linguistic Quality Assurance Tools and Procedures)

Ben Meessen (Translation Management, Development of Common Reference Versions for Spanish, Chinese, Arabic)

Deutsches Institut für Internationale Pädagogische Forschung (DIPF, Germany – Core A contributor on the development of the questionnaires)

Eckhard Klieme (Study Director, Questionnaire Framework and Development)

Nina Jude (Management and Questionnaire Development)

Sonja Bayer (Questionnaire Development and Analysis)

Janine Buchholz (Questionnaire Scaling)

Frank Goldhammer (Questionnaire Development)

Silke Hertel (Questionnaire Development)

Franz Klingebiel (Questionnaire Development)

Susanne Kuger (Questionnaire Framework and Development)

Ingrid Mader (Team Assistance)

Tamara Marksteiner (Questionnaire Analysis)

Jean-Paul Reeff (International Consultant)

Nina Roczen (Questionnaire Development)

Brigitte Steinert (Questionnaire Development)

Svenja Vieluf (Questionnaire Development)

HallStat SPRL (Belgium) – Core A contributor as the translation referee

Béatrice Halleux (Consultant, Translation/Verification Referee, French Source Development)

Statistics Canada (Canada) – Core A DIPF contributor on questionnaires

Sylvie Grenier (Overall Management)

Patrick Cloutier (Implementation Delivery System)

Ginette Grégoire (Implementation Delivery System)

Martine Lafrenière (Implementation Delivery System)

Rosa Tatasciore (Implementation Delivery System)

Unité d'analyse des Systèmes et des Pratiques d'enseignement (aSPe, Belgium) – Core A contributor on coding training

Dominique Lafontaine (Project Supervisor)

Anne Matoul (Coding Training, Reading)

Stéphanie Géron (Coding Training, Reading)

Valérie Bluge (Coding Training, Reading)

Valérie Quittre (Coding Training, Science)

Isabelle Demonty (Coding Training, Mathematics)

University of Luxembourg (Luxembourg) – Core A contributor on test development

Romain Martin (Test Development Coordinator)

Samuel Greiff (Test Development Coordinator)

Antoine Fischbach (Test Development Coordinator)

Robert Reuter (Test Development)

Monique Reichert (Test Development)

Philipp Sonnleitner (Test Development)

Christoph Kemper (Test Development)

Maida Mustafic (Test Development)

Purya Baghaei (Test Development)

Vincent Koenig (User Testing)

Sophie Doublet (User Testing)

Westat (United States) – Core A contributor on survey operations

Merl Robinson (Director of Core A Contractor for Survey Operations)

Michael Lemay (Manager of Core A Contractor for Survey Operations)

Sarah Sparks (National Centre Support, Quality Control)

Beverley McGaughan (National Centre Support, Quality Control)

PISA 2018 Results (Volume V)
EFFECTIVE POLICIES, SUCCESSFUL SCHOOLS

The OECD Programme for International Student Assessment (PISA) examines what students know in reading, mathematics and science, and what they can do with what they know. It provides the most comprehensive and rigorous international assessment of student learning outcomes to date. Results from PISA indicate the quality and equity of learning outcomes attained around the world, and allow educators and policy makers to learn from the policies and practices applied in other countries. This is one of six volumes that present the results of the PISA 2018 survey, the seventh round of the triennial assessment.

Volume I, *What Students Know and Can Do,* provides a detailed examination of student performance in reading, mathematics and science, and describes how performance has changed since previous PISA assessments.

Volume II, *Where All Students Can Succeed,* examines gender differences in student performance, and the links between students' socio-economic status and immigrant background, on the one hand, and student performance and well-being, on the other.

Volume III, *What School Life Means for Students' Lives,* focuses on the physical and emotional health of students, the role of teachers and parents in shaping the school climate, and the social life at school. The volume also examines indicators of student well-being, and how these are related to the school climate.

Volume IV, *Are Students Smart about Money?,* examines 15-year-old students' understanding about money matters in the 21 countries and economies that participated in this optional assessment.

Volume V, *Effective Policies, Successful Schools,* analyses the policies and practices used in schools and school systems, and their relationship with education outcomes more generally.

Volume VI, *Are Students Ready to Thrive in an Interconnected World?,* explores students' ability to examine local, global and intercultural issues, understand and appreciate different perspectives and world views, interact respectfully with others, and take responsible action towards sustainability and collective well-being.

Consult this publication on line at: ***https://doi.org/10.1787/ca768d40-en***

This work is published on the *OECD iLibrary,* which gathers all OECD books, periodicals and statistical databases.
Visit ***www.oecd-ilibrary.org*** for more information.

ISBN 978-92-64-40868-5

9 789264 408685

OECD*publishing*
www.oecd.org/publishing