PISA 2009 Results: Executive Summary

OECD

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THE OECD PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA)

PISA focuses on young people's ability to use their knowledge and skills to meet real-life challenges. This orientation reflects a change in the goals and objectives of curricula themselves, which are increasingly concerned with what students can do with what they learn at school and not merely with whether they have mastered specific curricular content. PISA's unique features include its:

- Policy orientation, which highlights differences in performance patterns and identifies features common to high-performing students, schools and education systems by linking data on learning outcomes with data on student characteristics and other key factors that shape learning in and outside of school.

- Innovative concept of "literacy", which refers both to students' capacity to apply knowledge and skills in key subject areas and to their ability to analyse, reason and communicate effectively as they pose, interpret and solve problems in a variety of situations.

- Relevance to lifelong learning, which goes beyond assessing students' competencies in school subjects by asking them 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 geographical coverage and collaborative nature, which, in PISA 2009, encompasses the 34 OECD member countries and 41 partner countries and economies.

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Executive Summary

WHAT STUDENTS KNOW AND CAN DO: STUDENT PERFORMANCE IN READING, MATHEMATICS AND SCIENCE

PISA's conception of reading literacy encompasses the range of situations in which people read, the different ways written texts are presented, and the variety of ways that readers approach and use texts, from the functional and finite, such as finding a particular piece of practical information, to the deep and far-reaching, such as understanding other ways of doing, thinking and being. Research shows that these kinds of reading literacy skills are more reliable predictors of economic and social well-being than the number of years spent in school or in post-formal education.

Korea and Finland are the highest performing OECD countries, with mean scores of 539 and 536 points, respectively. However, the partner economy Shanghai-China outperforms them by a significant margin, with a mean score of 556.
Top-performing countries or economies in reading literacy include Hong Kong-China (with a mean score of 533), Singapore (526), Canada (524), New Zealand (521), Japan (520) and Australia (515). The Netherlands (508), Belgium (506), Norway (503), Estonia (501), Switzerland (501), Poland (500), Iceland (500) and Liechtenstein (499) also perform above the OECD mean score of 494, while the United States, Sweden, Germany, Ireland, France, Denmark, the United Kingdom, Hungary, Portugal, and partner economy Chinese Taipei have scores close to the OECD mean.

The lowest performing OECD country, Mexico, has an average score of 425. This means that the gap between the highest and lowest performing OECD countries is 114 points – the equivalent of more than two school years. And the gap between the highest and lowest performing partner country or economy is even larger, with 242 score points – or more than six years of formal schooling – separating the mean performance of Shanghai-China and Kyrgyzstan (314).

Differences **between** countries represent, however, only a fraction of overall variation in student performance. Addressing the educational needs of such diverse populations and narrowing the gaps in student performance that have been observed remains a formidable challenge for all countries.

In 18 participating countries, including Mexico, Chile and Turkey, the highest reading proficiency level achieved by most students was the baseline Level 2.
Level 2 is considered a baseline level of proficiency, at which students begin to demonstrate the reading skills that will enable them to participate effectively and productively in life. Students who do not reach Level 2 have difficulties locating basic information that meets several conditions, making comparisons or contrasts around a single feature, working out what a well-defined part of a text means when the information is not prominent, or making connections between the text and outside knowledge by drawing on personal experience and attitudes. The proportion of 15-year-olds in this situation varies widely across countries, from fewer than one in 10 in four countries and economies to the majority of students in 10 countries. Even in the average OECD country, where nearly one student in five does not reach Level 2, tackling such low performance remains a major challenge.

At the other end of the proficiency spectrum, an average of 7.6% of students attain Level 5, and in Singapore, New Zealand and Shanghai-China the percentage is more than twice the OECD average.
However, for some countries, developing even a small corps of high-performing students remains an aspiration: in 16 countries, fewer than 1% of students reach Level 5. Students at this level are able to retrieve information requiring the reader to locate and organise several pieces of deeply embedded information, inferring which information in the text is relevant. They can critically evaluate information and build hypotheses drawing on specialised knowledge, develop a full and detailed understanding of a text whose content or form is unfamiliar, and understand concepts that are contrary to expectations.

Results from the PISA 2009 assessment show that nurturing high performance and tackling low performance need not be mutually exclusive. The countries with the very highest overall reading performance in PISA 2009, Finland and Korea, as well as the partner economies Hong Kong-China and Shanghai-China, also have among the lowest variation in student scores. Equally importantly, Korea has been able to raise its already-high reading performance even further, by more than doubling the percentage of students reaching Level 5 or higher since 2000.

Korea, with a country mean of 546 score points, performed highest among OECD countries in the PISA 2009 mathematics assessment. The partner countries and economies Shanghai-China, Singapore and Hong Kong-China rank first, second and third, respectively.
In the PISA 2009 mathematics assessment, the OECD countries Finland, Switzerland, Japan, Canada, the Netherlands, New Zealand, Belgium, Australia, Germany, Estonia, Iceland, Denmark, Slovenia and the partner countries and economies Chinese Taipei, Liechtenstein and Macao-China also perform significantly above the OECD average in mathematics.

Shanghai-China, Finland, Hong Kong-China and Singapore are the four highest performers in the PISA 2009 science assessment.

In science, New Zealand, Canada, Estonia, Australia, the Netherlands, Germany, Switzerland, the United Kingdom, Slovenia, Poland, Ireland and Belgium as well as the partner country and economies Chinese Taipei, Liechtenstein and Macao-China also perform significantly above the OECD average.

Some 14.6% of students in Shanghai-China and 12.3% of students in Singapore attain the highest levels of proficiency in all three assessment subjects.

High-level skills are critical for innovation and, as such, are key to economic growth and social development. On average, across OECD countries, 16.3% of students are top performers in at least one of the subject areas of science, mathematics or reading. However, only 4.1% of 15-year-old students are top performers in all three assessment subject areas.

Girls outperform boys in reading skills in every participating country.

Throughout much of the 20th century, concern about gender differences in education focused on girls' underachievement. More recently, however, the scrutiny has shifted to boys' underachievement in reading. In the PISA 2009 reading assessment, girls outperform boys in every participating country by an average, among OECD countries, of 39 PISA score points – equivalent to more than half a proficiency level or one year of schooling.

On average across OECD countries, boys outperform girls in mathematics by 12 score points while gender differences in science performance tend to be small, both in absolute terms and when compared with the large gender gap in reading performance and the more moderate gender gap in mathematics. The ranks of top-performing students are filled nearly equally with girls and boys. On average across OECD countries, 4.4% of girls and 3.8% of boys are top performers in all three subjects, and 15.6% of girls and 17.0% of boys are top performers in at least one subject area. While the gender gap among top-performing students is small in science (1% of girls and 1.5% of boys), it is significant in reading (2.8% of girls and 0.5% of boys) and in mathematics (3.4% of girls and 6.6% of boys).

Countries of similar prosperity can produce very different educational results.

The balance of proficiency in some of the richer countries in PISA looks very different from that of some of the poorer countries. In reading, for example, the ten countries in which the majority of students are at Level 1 or below, all in poorer parts of the world, contrast starkly in profile with the 34 OECD countries, where on average a majority attains at least Level 3. However, the fact that the best-performing country or economy in the 2009 assessment is Shanghai-China, with a GDP per capita well below the OECD average, underlines that low national income is not incompatible with strong educational performance. Korea, which is the best-performing OECD country, also has a GDP per capita below the OECD average. Indeed, while there is a correlation between GDP per capita and educational performance, this predicts only 6% of the differences in average student performance across countries. The other 94% of differences reflect the fact that two countries of similar prosperity can produce very different educational results. Results also vary when substituting spending per student, relative poverty or the share of students with an immigrant background for GDP per capita.

The following table summarises the key data of this volume. For each country, it shows the average score of 15-year-olds in reading, mathematics and science as well as on the subscales that were used to measure reading skills in greater detail. Cells shaded in light blue indicate values above the OECD average. Cells shaded in medium blue indicate values below the OECD average. Cells shaded in dark blue indicate values that are not statistically different from the OECD average.

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■ Figure I. ■
COMPARING COUNTRIES' AND ECONOMIES' PERFORMANCE

Statistically significantly **above** the OECD average
Not statistically significantly different from the OECD average
Statistically significantly **below** the OECD average

| | On the overall reading scale | On the reading subscales | | | | | On the mathematics scale | On the science scale |
		Access and retrieve	Integrate and interpret	Reflect and evaluate	Continuous texts	Non-continuous texts		
OECD average	493	495	493	494	494	493	496	501
Shanghai-China	556	549	558	557	564	539	600	575
Korea	539	542	541	542	538	542	546	538
Finland	536	532	538	536	535	535	541	554
Hong Kong-China	533	530	530	540	538	522	555	549
Singapore	526	526	525	529	522	539	562	542
Canada	524	517	522	535	524	527	527	529
New Zealand	521	521	517	531	518	532	519	532
Japan	520	530	520	521	520	518	529	539
Australia	515	513	513	523	513	524	514	527
Netherlands	508	519	504	510	506	514	526	522
Belgium	506	513	504	505	504	511	515	507
Norway	503	512	502	505	505	498	498	500
Estonia	501	503	500	503	497	512	512	528
Switzerland	501	505	502	497	498	505	534	517
Poland	500	500	503	498	502	496	495	508
Iceland	500	507	503	496	501	499	507	496
United States	500	492	495	512	500	503	487	502
Liechtenstein	499	508	498	498	495	506	536	520
Sweden	497	505	494	502	499	498	494	495
Germany	497	501	501	491	496	497	513	520
Ireland	496	498	494	502	497	496	487	508
France	496	492	497	495	492	498	497	498
Chinese Taipei	495	496	499	493	496	500	543	520
Denmark	495	502	492	493	496	493	503	499
United Kingdom	494	491	491	503	492	506	492	514
Hungary	494	501	496	489	497	487	490	503
Portugal	489	488	487	496	492	488	487	493
Macao-China	487	493	488	481	488	481	525	511
Italy	486	482	490	482	489	476	483	489
Latvia	484	476	484	492	484	487	482	494
Slovenia	483	489	489	470	484	476	501	512
Greece	483	468	484	489	487	472	466	470
Spain	481	480	481	483	484	473	483	488
Czech Republic	478	479	488	462	479	474	493	500
Slovak Republic	477	491	481	466	479	471	497	490
Croatia	476	492	472	471	478	472	460	486
Israel	474	463	473	483	477	467	447	455
Luxembourg	472	471	475	471	471	472	489	484
Austria	470	477	471	463	470	472	496	494
Lithuania	468	476	469	463	470	462	477	491
Turkey	464	467	459	473	466	461	445	454
Dubai (UAE)	459	458	457	466	461	460	453	466
Russian Federation	459	469	467	441	461	452	468	478
Chile	449	444	452	452	453	444	421	447
Serbia	442	449	445	430	444	438	442	443
Bulgaria	429	430	436	417	433	421	428	439
Uruguay	426	424	423	436	429	421	427	427
Mexico	425	433	418	432	426	424	419	416
Romania	424	423	425	426	423	424	427	428
Thailand	421	431	416	420	423	423	419	425
Trinidad and Tobago	416	413	419	413	418	417	414	410
Colombia	413	404	411	422	415	409	381	402
Brazil	412	407	406	424	414	408	386	405
Montenegro	408	408	420	383	411	398	403	401
Jordan	405	394	410	407	417	387	387	415
Tunisia	404	393	393	427	408	393	371	401
Indonesia	402	399	397	409	405	399	371	383
Argentina	398	394	398	402	400	391	388	401
Kazakhstan	390	397	397	373	399	371	405	400
Albania	385	380	393	376	392	366	377	391
Qatar	372	354	379	376	375	361	368	379
Panama	371	363	372	377	373	359	360	376
Peru	370	364	371	368	374	356	365	369
Azerbaijan	362	361	373	335	362	351	431	373
Kyrgyzstan	314	299	327	300	319	293	331	330

Source: OECD, *PISA 2009 Database*.
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OVERCOMING SOCIAL BACKGROUND:
EQUITY IN LEARNING OPPORTUNITIES AND OUTCOMES

The best performing school systems manage to provide high-quality education to all students.

Canada, Finland, Japan, Korea and the partner economies Hong Kong-China and Shanghai-China all perform well above the OECD mean performance and students tend to perform well regardless of their own background or the school they attend. They not only have large proportions of students performing at the highest levels of reading proficiency, but also relatively few students at the lower proficiency levels.

Disadvantaged students may have access to more teachers, but not necessarily to the best teachers.

With the exception of Turkey, Slovenia, Israel and the United States, where socio-economically disadvantaged schools also tend to be deprived in terms of basic resources, such as larger student-staff ratios, OECD countries place at least an equal, if not a larger, number of teachers into socio-economically disadvantaged schools as they do in advantaged schools. But despite this fact, disadvantaged schools still report great difficulties in attracting qualified teachers. In other words, in disadvantaged schools, quantity of resources does not necessarily translate into quality of resources since, in general, more advantaged students attend schools that have a higher proportion of full-time teachers who have an advanced university degree. Findings from PISA suggest that, in terms of teacher resources, many students face the double liability of coming from a disadvantaged background and attending a school with lower quality resources. Many countries also show a strong relationship between the socio-economic background of students and their success at school and, in some of these countries, these disparities are magnified by large variations in the schools' socio-economic backgrounds, that is, in the backgrounds of the students' peers.

Home background influences educational success, and schooling often appears to reinforce its effects. Although poor performance in school does not automatically follow from a disadvantaged socio-economic background, the socio-economic background of students and schools does appear to have a powerful influence on performance.

Socio-economic disadvantage has many facets and cannot be ameliorated by education policy alone, much less in the short term. The educational attainment of parents can only gradually improve, and average family wealth depends on the long-term economic development of a country and on a culture that promotes individual savings. However, even if socio-economic background itself is hard to change, PISA shows that some countries succeed in reducing its impact on learning outcomes.

While most of the students who perform poorly in PISA are from socio-economically disadvantaged backgrounds, some peers from similar backgrounds excel in PISA, demonstrating that overcoming socio-economic barriers to achievement is possible. Resilient students come from the bottom quarter of the distribution of socio-economic background in their country and score in the top quarter among students from all countries with similar socio-economic background. In Finland, Japan, Turkey, Canada and Portugal and the partner country Singapore, between 39% and 48% of disadvantaged students are resilient. In Korea and the partner economy Macao-China, 50% and 56% of disadvantaged students can be considered resilient, and this percentage is 72% and 76% in partner economies Hong Kong-China and Shanghai-China, respectively.

Across OECD countries, a student from a more socio-economically advantaged background (among the top one seventh) outperforms a student from an average background by 38 score points, or about one year's worth of education, in reading. In New Zealand, France, the partner country Bulgaria and the partner economy Dubai (UAE), the gap between advantaged and disadvantaged students is more than 50 score points. On average across OECD countries, 14% of the differences in student reading performance within each country is associated with differences in students' socio-economic background. In Hungary and the partner countries Peru, Bulgaria and Uruguay, more than 20% of the differences in student performance is associated with differences in background.

Regardless of their own socio-economic background, students attending schools with a socio-economically advantaged intake tend to perform better than those attending schools with more disadvantaged peers.

In the majority of OECD countries, the effect of the school's economic, social and cultural status on students' performance far outweighs the effects of the individual student's socio-economic background. And the magnitude of the differences is striking. In Japan, the Czech Republic, Germany, Belgium and Israel and the partner countries Trinidad and Tobago and Liechtenstein, the performance gap between two students with similar socio-economic backgrounds, one of whom attends a school with an average socio-economic background and the other attends a school with an advantaged socio-economic background (among the top 16% in the country), is equivalent to more than 50 score points, on average, or more than a year's worth of education.

Across OECD countries, first-generation students – those who were born outside the country of assessment and who also have foreign-born parents – score, on average, 52 score points below students without an immigrant background

In New Zealand, Canada and Switzerland, 20% to 25% of students are from an immigrant background while the proportions are even higher in Liechtenstein (30%), Hong Kong-China (39%), Luxembourg (40%) and Qatar (46%). In Macao-China and Dubai (UAE), that percentage is at least 70%. There is no positive association between the size of the immigrant student population and average performance at the country or economy level, and there is also no relationship between the proportion of students with an immigrant background and the performance gaps between native and immigrant students. These findings contradict the assumption that high levels of immigration will inevitably lower the mean performance of school systems.

Students in urban schools perform better than students in other schools, even after accounting for differences in socio-economic background.

In Turkey, the Slovak Republic, Chile, Mexico and Italy, as well as the partner countries Peru, Tunisia, Albania, Argentina and Romania, the performance gap between students in urban schools and those in rural schools is more than 45 score points after accounting for differences in socio-economic background. This is more than one year of education across OECD countries. That gap is 80 score points or more – or two years of schooling – in Hungary and in the partner countries Bulgaria, Kyrgyzstan and Panama. However, this pattern is not observed in Belgium, Finland, Germany, Greece, Iceland, Ireland, Israel, the Netherlands, Poland, Sweden, the United Kingdom and the United States.

On average across the OECD, 17% of students come from single-parent families and they score five score points lower than students from other types of families after accounting for socio-economic background.

Among OECD countries, the gap is particularly large in the United States where, after accounting for socio-economic background, the performance difference between students from single-parent families and those from other types of families stands at 23 score points. In Ireland, Poland and Mexico, the gap is 13 score points and in Belgium, Japan and Luxembourg it is 10 score points, double the average among OECD countries. Among partner countries and economies, students from single-parent families score 10 points lower than peers from other types of families after accounting for socio-economic background.

Parents' engagement with their children's reading life has a positive impact on their children's reading performance. Students whose parents reported that they had read a book with their child "every day or almost every day" or "once or twice a week" during the first year of primary school performed higher in PISA 2009 than students whose parents reported that they had done this "never or almost never" or "once or twice a month". On average across the 14 countries that had collected information on this question, the difference is 25 score points, but it ranges from 4 score points in the partner country Lithuania to 63 score points in New Zealand. Also, 15-year-olds whose parents discuss political or social issues once a week or more score 28 score points higher than those whose parents do not, or who talk about these issues less often. The performance advantage was largest in Italy, at 42 score points, and smallest in the partner economy Macao-China, and it is observed across all countries.

The following table summarises key data. For each country, it shows the average score of 15-year-olds in reading and seven equity measures from PISA: i) and ii) two measures focusing on those who achieve the baseline level of proficiency in PISA: the proportion of boys and girls who score below Level 2; iii) a measure of those who overcome socio-economic disadvantaged and do best given their weak prospects, the proportion of resilient students; iv) and v) two measures of the relationship between student background and performance: the percentage of variation in student performance explained by the student's socio-economic background and the slope of the socio-economic gradient, the average gap in performance between students from different socio-economic backgrounds; and vi) and vii) two measures of equality in the distribution of educational resources, namely the quality and quantity of teachers. For the first five measures, cells shaded in light blue indicate values of quality or equity above the OECD average. Cells shaded in medium blue indicate values of equity below the OECD average. Cells shaded in dark blue indicate values that are not statistically different from the OECD average. In the last two columns, cells shaded in light blue indicate that disadvantaged schools are more likely to have more or better resources. Cells shaded in medium blue that advantaged schools are more likely to have more or better resources. Cells shaded in dark blue indicate values where disadvantaged and advantaged schools are equally likely to have more or better resources. In these two last columns, estimates in bold indicate that they are statistically different from the OECD average. ……..➔

■ Figure II. ■
SUMMARY OF PISA MEASURES OF EDUCATIONAL EQUITY

	Higher quality or equity than OECD average		Disadvantaged schools are more likely to have more or better resources, in **bold** if relationship is statistically different from the OECD average
	At OECD average (no statistically significant difference)		Within country correlation is not statistically significant
	Lower quality or equity than OECD average		Advantaged schools are more likely to have more or better resources, in **bold** if relationship is statistically different from the OECD average

	Mean reading score	Percentage of boys below proficiency Level 2	Percentage of girls below proficiency Level 2	Percentage of resilient students	Percentage of variance in student performance explained by students' socio-economic background	Slope of the socio-economic gradient	Correlation between the socio-economic background of schools and the percentage of teachers with university-level (ISCED 5A) among all full-time teachers	Correlation between socio-economic background of schools and the student/teacher ratio
OECD average	493	25	13	8	14	38	0.15	-0.15
Korea	539	9	2	14	11	32	-0.03	0.30
Finland	536	13	3	11	8	31	-0.01	0.08
Canada	524	14	6	10	9	32	0.03	0.09
New Zealand	521	21	8	9	17	52	0.07	0.11
Japan	520	19	8	11	9	40	0.20	**0.38**
Australia	515	20	9	8	13	46	0.02	-0.07
Netherlands	508	18	11	8	13	37	**0.62**	**0.38**
Belgium	506	21	14	8	19	47	**0.58**	**0.66**
Norway	503	21	8	6	9	36	0.15	0.19
Estonia	501	19	7	9	8	29	0.00	**0.43**
Switzerland	501	22	11	8	14	40	0.24	0.06
Poland	500	23	7	9	15	39	-0.05	0.01
Iceland	500	24	10	7	6	27	**0.30**	**0.40**
United States	500	21	14	7	17	42	0.10	**-0.17**
Sweden	497	24	10	6	13	43	-0.04	0.12
Germany	497	24	13	6	18	44	-0.02	**0.28**
Ireland	496	23	11	7	13	39	-0.08	**0.49**
France	496	26	14	8	17	51	w	w
Denmark	495	19	11	6	15	36	0.16	**0.27**
United Kingdom	494	23	14	6	14	44	-0.03	-0.10
Hungary	494	24	11	6	26	48	0.07	0.02
Portugal	489	25	11	10	17	30	0.04	**0.39**
Italy	486	29	13	8	12	32	0.13	**0.50**
Slovenia	483	31	11	6	14	39	**0.55**	**-0.25**
Greece	483	30	13	7	12	34	0.24	0.25
Spain	481	24	15	9	14	29	m	**0.45**
Czech Republic	478	31	14	5	12	46	**0.37**	0.08
Slovak Republic	477	32	13	5	15	41	**-0.21**	0.00
Israel	474	34	19	6	13	43	0.20	**-0.20**
Luxembourg	472	33	19	5	18	40	**0.39**	**0.28**
Austria	470	35	20	5	17	48	**0.64**	-0.07
Turkey	464	33	15	10	19	29	0.04	**-0.26**
Chile	449	36	25	6	19	31	**0.25**	-0.05
Mexico	425	46	34	7	14	25	-0.04	0.03
Shanghai-China	556	7	2	19	12	27	**0.32**	**-0.13**
Hong Kong-China	533	11	5	18	5	17	0.12	0.02
Singapore	526	16	9	12	15	47	0.22	**-0.14**
Liechtenstein	499	21	9	9	8	26	**0.57**	**0.70**
Chinese Taipei	495	22	10	10	12	36	0.29	-0.07
Macao-China	487	21	9	13	2	12	**-0.18**	**0.17**
Latvia	484	27	9	8	10	29	0.19	**0.38**
Croatia	476	31	13	7	11	32	**0.28**	0.32
Lithuania	468	35	13	5	14	33	0.19	0.21
Dubai (UAE)	459	41	21	3	14	51	**-0.01**	**-0.27**
Russian Federation	459	36	19	5	11	37	0.31	**0.29**
Serbia	442	43	23	4	10	27	0.06	0.11
Bulgaria	429	52	29	2	20	51	0.17	0.21
Uruguay	426	51	34	4	21	37	0.08	0.13
Romania	424	51	30	2	14	36	0.11	-0.02
Thailand	421	55	33	7	13	22	0.16	-0.02
Trinidad and Tobago	416	55	34	5	10	38	**0.56**	**0.38**
Colombia	413	50	45	6	17	28	-0.08	**-0.14**
Brazil	412	56	43	6	13	28	0.03	**-0.20**
Montenegro	408	61	37	2	10	31	**0.38**	**0.33**
Jordan	405	62	34	3	8	24	-0.02	0.06
Tunisia	404	58	43	7	8	19	0.20	-0.02
Indonesia	402	65	42	6	8	17	0.16	**-0.16**
Argentina	398	59	45	3	20	40	0.22	-0.02
Kazakhstan	390	67	50	1	12	38	**0.34**	**0.44**
Albania	385	69	44	3	11	31	**0.38**	0.15
Qatar	372	72	54	1	4	25	**-0.07**	0.11
Panama	371	72	59	2	18	31	-0.13	0.03
Peru	370	70	60	1	27	41	**0.48**	-0.02
Azerbaijan	362	78	68	1	7	21	**0.44**	0.23
Kyrgyzstan	314	88	78	0	15	40	**0.35**	0.27

Countries are ranked in descending order of the mean score in reading, separately for OECD and partner countries and economies.
Source: OECD, *PISA 2009 Database*, Tables I.2.2., II.1.1., II.2.3., II.3.2 and II.3.3.
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LEARNING TO LEARN: STUDENT ENGAGEMENT, STRATEGIES AND PRACTICES

PISA results show that mastering strategies that assist learning, such as methods to remember and understand or summarise texts and reading widely, are essential if students are to become proficient readers. Practicing reading by reading for enjoyment is most closely associated with better outcomes when it is accompanied by high levels of critical thinking and strategic learning. Across OECD countries, students who have low levels of awareness about which strategies are most effective for understanding, remembering and summarising information are less proficient readers than those who have high levels of awareness about these strategies, regardless of their reading habits.

In all countries, students who enjoy reading the most perform significantly better than students who enjoy reading the least.
There has been considerable debate as to what type of reading may be most effective in fostering reading skills and improving reading performance. The results from PISA suggest that, although students who read fiction are more likely to achieve high scores, it is students who read a wide variety of material who perform particularly well in reading. Compared with not reading for enjoyment at all, reading fiction for enjoyment appears to be positively associated with higher scores in the PISA 2009 reading assessment, while reading comic books is associated with little improvement in reading proficiency in some countries, and with lower overall reading performance in other countries. Also, students who are extensively engaged in online reading activities, such as reading e-mails, chatting on line, reading news on line, using an online dictionary or encyclopaedia, participating in online group discussions and searching for information on line, are generally more proficient readers than students who do little online reading.

On average across OECD countries, 37% of students – and 45% or more in Austria, the Netherlands, and Luxembourg – report that they do not read for enjoyment at all.
In all but a few countries, students who use appropriate strategies to understand and remember what they read, such as underlining important parts of the texts or discussing what they read with other people, perform at least 73 points higher in the PISA assessment – that is, one full proficiency level or nearly two full school years – than students who use these strategies the least. In Belgium, Switzerland and Austria, the quarter of students who use these strategies the most score an average of 110 points higher than the quarter of students who use them the least. That translates into a difference of roughly one-and-a-half proficiency levels or nearly three years of formal schooling.

In all countries, boys are not only less likely than girls to say that they read for enjoyment, they also have different reading habits when they do read for pleasure.
Most boys and girls in the countries that took part in PISA 2009 sit side by side in the same classrooms and work with similar teachers. Yet, PISA reveals that in OECD countries, boys are on average 39 points behind girls in reading, the equivalent of one year of schooling. PISA suggests that differences in how boys and girls approach learning and how engaged they are in reading account for most of the gap in reading performance between boys and girls, so much so that this gap could be predicted to shrink by 14 points if boys approached learning as positively as girls, and by over 20 points if they were as engaged in reading as girls. This does not mean that if boys' engagement and awareness of learning strategies rose by this amount the increase would automatically translate into respective performance gains, since PISA does not measure causation. But since most of the gender gap can be explained by boys being less engaged, and less engaged students show lower performance, then policy makers should look for more effective ways of increasing boys' interest in reading at school or at home.

PISA reveals that, although girls have higher mean reading performance, enjoy reading more and are more aware of effective strategies to summarise information than boys, the differences within genders are far greater than those between the genders. Moreover, the size of the gender gap varies considerably across countries, suggesting that boys and girls do not have inherently different interests and academic strengths, but that these are mostly acquired and socially induced. The large gender gap in reading is not a mystery: it can be attributed to differences that have been identified in the attitudes and behaviours of boys and girls.

Girls are more likely than boys to be frequent readers of fiction, and are also more likely than boys to read magazines. However, over 65% of boys regularly read newspapers for enjoyment and only 59% of girls do so. Although relatively few students say that they read comic books regularly, on average across OECD countries, 27% of boys read comic books several times a month or several times a week, while only 18% of girls do so.

High-performing countries are also those whose students generally know how to summarise information.
Across OECD countries, the difference in reading performance between those students who know the most about which strategies are best for summarising information and those who know the least is 107 score points. And students who say that they begin the learning process by figuring out what they need to learn, then ensure that

they understand what they read, figure out which concepts they have not fully grasped, try to remember the most important points in a text and look for additional clarifying information when they do not understand something they have read, tend to perform better on the PISA reading scale than those who do not.

While factors such as predisposition, temperament, peer pressure and socialisation may contribute to boys having less interest in reading than girls, boys could be encouraged to enjoy reading more and to read more for enjoyment.
PISA results suggest that boys would be predicted to catch up with girls in reading performance if they had higher levels of motivation to read and used effective learning strategies. In Finland, for example, if boys were equally aware as girls of the most effective ways of summarising complex information in their reading, their scores in the PISA assessment would be predicted to be 23 points higher. Similarly, in most of the countries that participated in PISA 2009, if the most socio-economically disadvantaged students had the same levels of awareness about these strategies as their most advantaged peers, their reading performance would be predicted to be at least 15 points higher.

Across OECD countries, if socio-economically disadvantaged students were as aware of effective strategies to summarise information as advantaged students, the performance gap between the two groups of students could be 20% narrower. The poor reading proficiency seen among socio-economically disadvantaged boys is of particular concern because, without the ability to read well enough to participate fully in society, these students and their future families will have fewer opportunities to escape a cycle of poverty and deprivation. On average in the OECD area, socio-economically disadvantaged boys would be predicted to perform 28 points higher in reading if they had the same level of awareness of effective summarising strategies as socio-economically advantaged girls and 35 points higher if they enjoyed reading as much as socio-economically advantaged girls.

In recent years, the gender gap in reading engagement has widened, as has the gender gap in reading performance.
Changing students' attitudes and behaviours may be inherently more difficult than providing equal access to high quality teachers and schools, two of the factors that explain the low performance of socio-economically disadvantaged students – an area where PISA shows that over the past decade, some countries have achieved significant progress.

The following table provides selected results.
- The first column shows students' mean reading scores.
- The second column shows the percentage of students who reported high levels of awareness about effective learning strategies and who regularly read a wide range of materials, including fiction and non-fiction books or at least magazines and newspapers, for enjoyment (considered 'wide and deep' or 'narrow and deep' readers).
- The third column shows the score point differences in reading between boys and girls, with negative numbers indicating an advantage for boys and positive numbers indicating an advantage for girls.
- The fourth column shows gender differences in the percentage of 'wide and deep' or 'narrow and deep' readers.
- The fifth column shows the portion of the gender gap that would be predicted to be closed if boys had the same level of enjoyment of reading as girls.
- The sixth column shows the score point difference between the top and bottom quarters of the socio-economic distribution of students.
- The seventh column shows the differences in the share of students who are 'wide and deep' or 'narrow and deep' readers between the top and bottom quarters of the socio-economic distribution of students. Larger numbers indicate a higher share of 'wide and deep' or 'narrow and deep' readers among socio-economically advantaged students.
- The last column shows the portion of the socio-economic gap in reading performance that would be predicted to be closed if socio-economically disadvantaged students had the same level of awareness of effective reading strategies (here, summarising strategies) as socio-economically advantaged students.

Values that are larger than the OECD average are shown in light blue; while values that are smaller than the OECD average are shown in medium blue and values that are not statistically different from the OECD average are shown in dark blue. ....➔

■ Figure III. ■
COMPARING THE CONTRIBUTION OF STUDENTS' ENGAGEMENT IN READING AND APPROACHES TO LEARNING TO READING PERFORMANCE AND EQUITY

Statistically significantly **above** the OECD average
Not statistically significantly different from the OECD average
Statistically significantly **below** the OECD average

	Mean Reading Score	Percentage of "wide and deep" and "narrow and deep readers"	Difference in reading performance (G – B)	Difference in the percentage of girls and boys who can be considered "wide and deep" and "narrow and deep" readers (G – B)	Proportion of the overall gender gap that could be closed if boys enjoyed reading as much as girls	Socio-economic differences in reading performance (top – bottom quarter of ESCS)	Socio-economic differences in the percentage of students who are "wide and deep" and "narrow and deep" (top – bottom quarter of ESCS)	Proportion of the socio-economic gap that could be closed if socio-economically disadvanatged students had values on the index of summarising as socio-economically advantaged students
	Mean Score	%	Dif.	Dif.	%	Dif.	Dif.	%
OECD average	493	45	39	11	61	89	17	20
Korea	539	35	35	5	30	70	32	27
Finland	536	60	55	20	64	62	17	27
Canada	524	37	34	14	86	68	15	13
New Zealand	521	37	46	11	63	102	14	20
Japan	520	54	39	6	33	73	18	25
Australia	515	35	37	9	76	91	16	22
Netherlands	508	34	24	9	102	83	23	23
Belgium	506	46	27	3	81	116	23	27
Norway	503	56	47	14	52	70	17	22
Estonia	501	61	44	14	65	60	12	17
Switzerland	501	54	39	11	76	94	22	24
Poland	500	50	50	20	49	88	17	20
Iceland	500	49	44	20	58	62	12	18
United States	500	30	25	7	95	105	12	14
Sweden	497	43	46	16	68	91	19	18
Germany	497	41	40	0	80	105	21	23
Ireland	496	45	39	14	48	86	5	15
France	496	46	40	1	54	110	20	21
Denmark	495	48	29	8	75	80	21	20
United Kingdom	494	40	25	10	90	91	11	19
Hungary	494	52	38	15	65	118	20	20
Portugal	489	43	38	9	61	87	17	24
Italy	486	39	46	7	56	85	15	20
Slovenia	483	45	55	16	42	87	15	20
Greece	483	34	47	1	54	90	18	13
Spain	481	38	29	6	73	83	22	15
Czech Republic	478	47	48	14	59	84	12	23
Slovak Republic	477	52	51	16	35	87	13	18
Israel	474	36	42	17	44	102	14	19
Luxembourg	472	50	39	8	70	114	16	19
Austria	470	50	41	10	70	102	20	23
Turkey	464	38	43	12	25	92	16	11
Chile	449	37	22	17	57	91	19	15
Mexico	425	36	25	6	27	82	16	17
Shanghai-China	556	59	40	5	31	74	21	11
Hong Kong-China	533	41	33	7	44	46	15	14
Singapore	526	59	31	11	81	98	19	17
Liechtenstein	499	49	32	14	76	62	25	34
Chinese Taipei	495	44	37	6	53	76	24	17
Macao-China	487	44	34	11	38	25	18	23
Latvia	484	45	47	20	52	63	16	19
Croatia	476	53	51	19	40	74	17	19
Lithuania	468	53	59	21	47	83	20	17
Dubai (UAE)	459	56	51	10	38	102	15	19
Russian Federation	459	46	45	16	43	78	9	16
Serbia	442	43	39	16	37	67	18	24
Bulgaria	429	42	61	20	27	132	22	16
Uruguay	426	35	42	15	30	116	15	20
Romania	424	44	43	13	23	85	16	17
Thailand	421	40	38	12	22	63	15	8
Trinidad and Tobago	416	49	58	19	26	92	10	19
Colombia	413	46	9	10	41	89	12	19
Brazil	412	37	29	14	34	83	13	16
Montenegro	408	42	53	8	30	80	18	15
Jordan	405	34	57	14	12	66	12	9
Tunisia	404	45	31	11	0	63	12	4
Indonesia	402	43	37	11	8	45	18	13
Argentina	398	40	37	14	24	122	15	15
Kazakhstan	390	46	43	13	-1	84	12	12
Albania	385	50	62	17	38	77	15	10
Qatar	372	42	50	8	23	56	9	14
Panama	371	37	33	13	10	108	10	13
Peru	370	50	22	9	19	129	20	14
Azerbaijan	362	32	24	6	21	50	12	4
Kyrgyzstan	314	43	53	7	10	94	18	14

Countries are ranked by their mean reading score.
Source: OECD, *PISA 2009 Database.*
StatLink ⟨∎⟩ http://dx.doi.org/10.1787/888932360309

WHAT MAKES A SCHOOL SUCCESSFUL? RESOURCES, POLICIES AND PRACTICES

Since school is where most learning happens, what happens in school has a direct impact on learning. In turn, what happens in school is influenced by the resources, policies and practices approved at higher administrative levels in a country's education system.

Successful school systems – those that perform above average and show below-average socio-economic inequalities – provide all students, regardless of their socio-economic backgrounds, with similar opportunities to learn.

Systems that show high performance and an equitable distribution of learning outcomes tend to be comprehensive, requiring teachers and schools to embrace diverse student populations through personalised educational pathways. In contrast, school systems that assume that students have different destinations with different expectations and differentiation in terms of how they are placed in schools, classes and grades often show less equitable outcomes without an overall performance advantage.

Earlier PISA assessments showed these expectations to be mirrored in how students perceived their own educational future. The results of these differences can also be seen in the distribution of student performance within countries and in the impact that socio-economic background has on learning outcomes:

- In countries, and in schools within countries, where more students repeat grades, overall results tend to be worse.

- In countries where more students repeat grades, socio-economic differences in performance tend to be wider, suggesting that people from lower socio-economic groups are more likely to be negatively affected by grade repetition.

- In countries where 15-year-olds are divided into more tracks based on their abilities, overall performance is not enhanced, and the younger the age at which selection for such tracks first occurs, the greater the differences in student performance, by socio-economic background, by age 15, without improved overall performance.

- In school systems where it is more common to transfer weak or disruptive students out of a school, performance and equity both tend to be lower. Individual schools that make more use of transfers also perform worse in some countries.

These associations account for a substantial amount of the differences in the outcomes of schooling systems. For example, the frequency with which students are transferred across schools is associated with a third of the variation in country performance. This does not necessarily mean that if transfer policies were changed, a third of country differences in reading performance would disappear, since PISA does not measure cause and effect. Transferring pupils who do badly may be partly a symptom, rather than a cause, of schools and school systems that are not producing satisfactory results, especially for lower-achieving students. It is worth noting that the schools with lower transfer rates tend to have greater autonomy and other means of addressing these challenges. The cluster of results listed above suggests that, in general, school systems that seek to cater to different students' needs through a high level of differentiation in the institutions, grade levels and classes have not succeeded in producing superior overall results, and in some respects they have lower-than-average and more socially unequal performance.

Most successful school systems grant greater autonomy to individual schools to design curricula and establish assessment policies, but these school systems do not necessarily allow schools to compete for enrolment.

The incentive to deliver good results for all students is not just a matter of how a school's student body is defined. It also depends on the ways in which schools are held accountable for their results and what forms of autonomy they are allowed to have – and how that could help influence their performance. PISA has looked at accountability both in terms of the information that is made available about performance and in terms of the use made of that information – whether by administrative authorities through rewards or control systems, or by parents, for example through their choice of school. Thus the issues of autonomy, evaluation, governance and choice interact in providing a framework in which schools are given the incentives and the capacity to improve. PISA 2009 finds that:

- In countries where schools have greater autonomy over what is taught and how students are assessed, students tend to perform better.

- Within countries where schools are held to account for their results through posting achievement data publicly, schools that enjoy greater autonomy in resource allocation tend to do better than those with less autonomy. However, in countries where there are no such accountability arrangements, the reverse is true.

- Countries that create a more competitive environment in which many schools compete for students do not systematically produce better results.

- Within many countries, schools that compete more for students tend to have higher performance, but this is often accounted for by the higher socio-economic status of students in these schools. Parents with a higher socio-economic status are more likely to take academic performance into consideration when choosing schools.

- In countries that use standards-based external examinations, students tend to do better overall, but there is no clear relationship between performance and the use of standardised tests or the public posting of results at the school level. However, performance differences between schools with students of different social backgrounds are, on average, lower in countries that use standardised tests.

After accounting for the socio-economic and demographic profiles of students and schools, students in OECD countries who attend private schools show performance that is similar to that of students enrolled in public schools.

On average, socio-economically disadvantaged parents are over 13 percentage points more likely than socio-economically advantaged parents to report that they consider "low expenses" and "financial aid" as very important determinants in choosing a school. If children from socio-economically disadvantaged backgrounds cannot attend high-performing schools because of financial constraints, then school systems that offer parents more choice of schools for their children will necessarily be less effective in improving the performance of all students.

School systems considered successful tend to prioritise teachers' pay over smaller classes.

School systems differ in the amount of time, human, material and financial resources they invest in education. Equally important, school systems also vary in how these resources are spent:

- At the level of the school system and net of the level of national income, PISA shows that higher teachers' salaries, but not smaller class sizes, are associated with better student performance. Teachers' salaries are related to class size in that if spending levels are similar, school systems often make trade-offs between smaller classes and higher salaries for teachers. The findings from PISA suggest that systems prioritising higher teachers' salaries over smaller classes tend to perform better, which corresponds with research showing that raising teacher quality is a more effective route to improved student outcomes than creating smaller classes.

- Within countries, schools with better resources tend to do better only to the extent that they also tend to have more socio-economically advantaged students. Some countries show a strong relationship between schools' resources and their socio-economic and demographic background, which indicates that resources are inequitably distributed according to schools' socio-economic and demographic profiles.

- In other respects, the overall lack of a relationship between resources and outcomes does not show that resources are not important, but that their level does not have a systematic impact within the prevailing range. If most or all schools have the minimum resource requirements to allow effective teaching, additional material resources may make little difference to outcomes.

In more than half of all OECD countries, over 94% of 15-year-old students reported that they had attended pre-primary school for at least some time.

Students who had attended pre-primary school tend to perform better than students who have not. This advantage is greater in school systems where pre-primary education lasts longer, where there are smaller pupil-to-teacher ratios at the pre-primary level and where there is higher public expenditure per pupil at that level of education. Across all participating countries, school systems with a higher proportion of students who had attended pre-primary education tend to perform better.

Schools with better disciplinary climates, more positive behaviour among teachers and better teacher-student relations tend to achieve higher scores in reading.

Across OECD countries, 81% of students report that they feel they can work well in class most of the time, 71% report that they never, or only in some classes, feel that other students don't listen, and 72% say that their teacher never, or only in some lessons, has to wait a long time before students settle down to learn.

Meanwhile, 28% of students in OECD countries are enrolled in schools whose principals report that their teaching staff's resistance to change negatively affects students or that students' needs are not met; 23% attends schools whose principals report that students are not encouraged by teachers in the school; 22% attend schools whose principals believe that learning is hindered by low teacher expectations; and 17% of students attend schools whose principals say that teacher absenteeism hampers learning.

■ Figure IV.a ■

Comparing school systems…

…some characteristics are related to better reading performance and/or greater equity throughout the system. *For example…*

	Reading performance	Strength of the relationship between students' socio-economic background and reading performance	Percentage of students in schools that transfer students to other schools due to low achievement, behavioural problems or special learning needs	Index of school responsibility for curriculum and assessment[1]	Existence of standards-based external examinations[2]
	Mean score	% variance explained	%	Mean index	Proportion
OECD					
Australia	515	12.7	2.9	0.17	0.81
Austria	470	16.6	52.2	-0.31	0.00
Belgium	506	19.3	48.3	-0.17	0.00
Canada	524	8.6	12.6	-0.66	0.51
Chile	449	18.7	24.0	-0.09	0.00
Czech Republic	478	12.4	22.1	0.92	1.00
Denmark	495	14.5	6.1	0.05	1.00
Estonia	501	7.6	9.9	0.22	1.00
Finland	536	7.8	1.7	-0.15	1.00
France	496	16.7	w	w	w
Germany	497	17.9	24.0	-0.25	0.35
Greece	483	12.5	42.2	-1.25	0.00
Hungary	494	26.0	14.1	0.11	1.00
Iceland	500	6.2	0.0	0.23	1.00
Ireland	496	12.6	0.8	0.01	1.00
Israel	474	12.5	23.1	-0.01	1.00
Italy	486	11.8	20.1	0.20	1.00
Japan	520	8.6	8.4	1.06	1.00
Korea	539	11.0	6.3	0.79	1.00
Luxembourg	472	18.0	68.0	-0.86	1.00
Mexico	425	14.5	32.8	-0.92	0.00
Netherlands	508	12.8	15.2	1.04	1.00
New Zealand	521	16.6	2.7	0.81	1.00
Norway	503	8.6	1.4	-0.57	1.00
Poland	500	14.8	8.2	0.31	1.00
Portugal	489	16.5	0.8	-0.93	0.00
Slovak Republic	477	14.6	30.2	0.08	1.00
Slovenia	483	14.3	21.8	-0.38	1.00
Spain	481	13.6	7.3	-0.48	0.00
Sweden	497	13.4	3.4	0.21	0.00
Switzerland	501	14.1	21.3	-0.62	0.00
Turkey	464	19.0	35.1	-1.04	1.00
United Kingdom	494	13.7	2.2	0.83	1.00
United States	500	16.8	12.6	-0.20	0.07
OECD average	493	14.0	17.6	-0.06	0.66
Partners					
Albania	385	10.7	17.4	-0.42	m
Argentina	398	19.6	14.6	-0.57	0.00
Azerbaijan	362	7.4	15.4	-0.64	1.00
Brazil	412	13.0	13.8	-0.56	0.00
Bulgaria	429	20.2	34.5	-0.91	1.00
Colombia	413	16.6	41.3	-0.21	1.00
Croatia	476	11.0	18.3	-0.93	1.00
Dubai (UAE)	459	14.2	20.1	0.15	1.00
Hong Kong-China	533	4.5	12.1	0.92	1.00
Indonesia	402	7.8	40.5	0.13	1.00
Jordan	405	7.9	46.0	-1.20	1.00
Kazakhstan	390	12.0	12.9	-0.98	m
Kyrgyzstan	314	14.6	38.2	-0.25	1.00
Latvia	484	10.3	14.7	-0.54	1.00
Liechtenstein	499	8.4	0.0	-0.05	1.00
Lithuania	468	13.6	6.8	0.13	1.00
Macao-China	487	1.8	47.7	0.86	0.00
Montenegro	408	10.0	7.1	-0.97	1.00
Panama	371	18.1	32.4	-0.60	0.00
Peru	370	27.4	26.8	-0.19	0.00
Qatar	372	4.0	44.9	-0.61	0.00
Romania	424	13.6	40.1	-0.36	0.78
Russian Federation	459	11.3	13.6	-0.36	1.00
Serbia	442	9.8	29.8	-1.03	0.26
Shanghai-China	556	12.3	15.3	-0.09	1.00
Singapore	526	15.3	0.7	-0.09	1.00
Chinese Taipei	495	11.8	37.2	0.38	1.00
Thailand	421	13.3	9.8	0.76	0.79
Trinidad and Tobago	416	9.7	13.8	-0.61	1.00
Tunisia	404	8.1	26.0	-1.29	0.00
Uruguay	426	20.7	8.5	-0.99	0.00

The lower the rate of student transfers, the better the performance and the more equitable the educational opportunities.

The greater the school autonomy, the better the performance.

The greater the prevalence of standards-based external examinations, the better the performance.
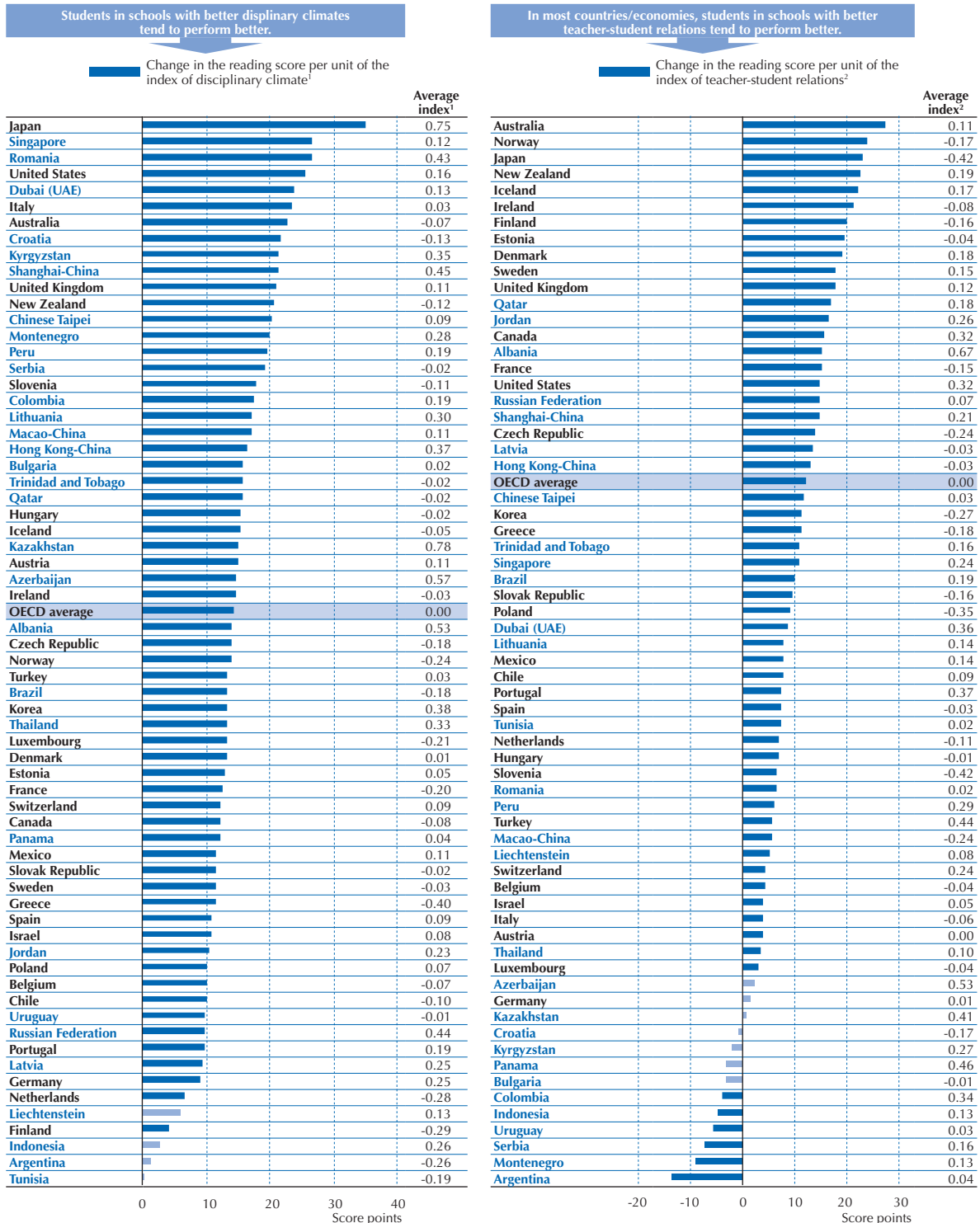
1. In this index, 0 is the OECD average. The higher the value, the greater the autonomy granted to schools in that country/economy.
2. Values between 0 and 1 indicate that standards-based external examinations exist in some parts of the school system, but not throughout.

■ Figure IV.b ■

Comparing schools within each country/economy…
…the climate in class is also associated with reading performance. *For example…*

Students in schools with better disciplinary climates tend to perform better.	**In most countries/economies, students in schools with better teacher-student relations tend to perform better.**

Change in the reading score per unit of the index of disciplinary climate[1]

Change in the reading score per unit of the index of teacher-student relations[2]

Country	Average index[1]		Country	Average index[2]
Japan	0.75		Australia	0.11
Singapore	0.12		Norway	-0.17
Romania	0.43		Japan	-0.42
United States	0.16		New Zealand	0.19
Dubai (UAE)	0.13		Iceland	0.17
Italy	0.03		Ireland	-0.08
Australia	-0.07		Finland	-0.16
Croatia	-0.13		Estonia	-0.04
Kyrgyzstan	0.35		Denmark	0.18
Shanghai-China	0.45		Sweden	0.15
United Kingdom	0.11		United Kingdom	0.12
New Zealand	-0.12		Qatar	0.18
Chinese Taipei	0.09		Jordan	0.26
Montenegro	0.28		Canada	0.32
Peru	0.19		Albania	0.67
Serbia	-0.02		France	-0.15
Slovenia	-0.11		United States	0.32
Colombia	0.19		Russian Federation	0.07
Lithuania	0.30		Shanghai-China	0.21
Macao-China	0.11		Czech Republic	-0.24
Hong Kong-China	0.37		Latvia	-0.03
Bulgaria	0.02		Hong Kong-China	-0.03
Trinidad and Tobago	-0.02		OECD average	0.00
Qatar	-0.02		Chinese Taipei	0.03
Hungary	-0.02		Korea	-0.27
Iceland	-0.05		Greece	-0.18
Kazakhstan	0.78		Trinidad and Tobago	0.16
Austria	0.11		Singapore	0.24
Azerbaijan	0.57		Brazil	0.19
Ireland	-0.03		Slovak Republic	-0.16
OECD average	0.00		Poland	-0.35
Albania	0.53		Dubai (UAE)	0.36
Czech Republic	-0.18		Lithuania	0.14
Norway	-0.24		Mexico	0.14
Turkey	0.03		Chile	0.09
Brazil	-0.18		Portugal	0.37
Korea	0.38		Spain	-0.03
Thailand	0.33		Tunisia	0.02
Luxembourg	-0.21		Netherlands	-0.11
Denmark	0.01		Hungary	-0.01
Estonia	0.05		Slovenia	-0.42
France	-0.20		Romania	0.02
Switzerland	0.09		Peru	0.29
Canada	-0.08		Turkey	0.44
Panama	0.04		Macao-China	-0.24
Mexico	0.11		Liechtenstein	0.08
Slovak Republic	-0.02		Switzerland	0.24
Sweden	-0.03		Belgium	-0.04
Greece	-0.40		Israel	0.05
Spain	0.09		Italy	-0.06
Israel	0.08		Austria	0.00
Jordan	0.23		Thailand	0.10
Poland	0.07		Luxembourg	-0.04
Belgium	-0.07		Azerbaijan	0.53
Chile	-0.10		Germany	0.01
Uruguay	-0.01		Kazakhstan	0.41
Russian Federation	0.44		Croatia	-0.17
Portugal	0.19		Kyrgyzstan	0.27
Latvia	0.25		Panama	0.46
Germany	0.25		Bulgaria	-0.01
Netherlands	-0.28		Colombia	0.34
Liechtenstein	0.13		Indonesia	0.13
Finland	-0.29		Uruguay	0.03
Indonesia	0.26		Serbia	0.16
Argentina	-0.26		Montenegro	0.13
Tunisia	-0.19		Argentina	0.04

Left axis: 0 10 20 30 40 Score points

Right axis: -20 -10 0 10 20 30 Score points

Note: Darker bars show statistically significant associations.
1. In this index, zero is the OECD average and one unit is the standard deviation across OECD countries. The higher the value, the better the school climate.
2. In this index, zero is the OECD average and one unit is the standard deviation across OECD countries. The higher the value, the better the teacher-student relations.

LEARNING TRENDS: CHANGES IN STUDENT PERFORMANCE SINCE 2000

The design of PISA does not just allow for a comparison of the relative standing of countries in terms of their learning outcomes; it also enables each country to monitor changes in those outcomes over time. Such changes indicate how successful education systems have been in developing the knowledge and skills of 15-year-olds.

Indeed, some countries have seen impressive improvements in performance over the past decade, sometimes exceeding the equivalent of an average school year's progress for the entire 15-year-old student population. Some of these countries have been catching up from comparatively low performance levels while others have been advancing further from already high levels. All countries seeking to improve their results can draw encouragement – and learn lessons – from those that have succeeded in doing so in a relatively short period of time.

Changes in student performance over time prove that a country's performance in reading is not set in stone. In both absolute and relative terms, educational results can improve, and they cannot be regarded either as part of fixed "cultural" differences between countries or as inevitably linked to each country's state of economic development.

Since both PISA 2000 and PISA 2009 focused on reading, it is possible to track how student performance in reading changed over that period. Among the 26 OECD countries with comparable results in both assessments, Chile, Israel, Poland, Portugal, Korea, Hungary and Germany as well as the partner countries Peru, Albania, Indonesia, Latvia, Liechtenstein and Brazil all improved their reading performance between 2000 and 2009, while performance declined in Ireland, Sweden, the Czech Republic and Australia.

Between 2000 and 2009, the percentage of low performers in Chile dropped by more than 17 percentage points, while the share of top performers in Korea grew by more than 7 percentage points.

In many countries, improvements in results were largely driven by improvements at the bottom end of the performance distribution, signalling progress towards greater equity in learning outcomes. Among OECD countries, variation in student performance fell by 3%. On average across the 26 OECD countries with comparable data for both assessments, 18% of students performed below the baseline reading proficiency Level 2 in 2009, while 19% did so in 2000. Among countries where between 40% and 60% of students performed below Level 2 in 2000, Chile reduced that proportion by the largest amount, and Mexico and the partner country Brazil also show important decreases in their share of low performers. Among countries where the proportion of students performing below Level 2 was smaller than 40% but still above the OECD average of 19%, the partner country Latvia reduced the proportion by 13 percentage points, while Portugal, Poland, Hungary, Germany, Switzerland and the partner country Liechtenstein reduced the share by smaller amounts. In Denmark, the percentage of students below Level 2 fell from an already below-average level.

The share of top performers – those students who attain reading proficiency Level 5 or 6 in reading – increased in Japan, Korea and the partner economy Hong Kong-China such that these countries now have the largest proportions of high-achieving students among the countries participating in the 2009 assessment. Several countries that had above-average proportions of top performers in 2000 saw those proportions decrease in 2009. Notable among them was Ireland, where the proportion of top performers fell from 14% to 7%, which is below the OECD average.

Between 2000 and 2009, Poland, Portugal, Germany, Switzerland and the partner countries Latvia and Liechtenstein raised the performance of their lowest-achieving students while maintaining the performance level among their highest-achieving students. Korea, Israel and the partner country Brazil raised the performance of their highest-achieving students while maintaining the performance level among their lowest-achieving students. Chile and the partner countries Indonesia, Albania and Peru showed improvements in reading performance among students at all proficiency levels.

On average, OECD countries narrowed the gap in scores between their highest- and lowest-performing students between 2000 and 2009; some also improved overall performance. In Chile, Germany, Hungary, Poland, Portugal, and the partner countries Indonesia, Latvia and Liechtenstein, overall performance improved while the variation in performance decreased. In many cases, this was the result of improvements among low-achieving students.

The gender gap in reading performance did not narrow in any country between 2000 and 2009.

The gender gap in reading performance widened in Israel, Korea, Portugal, France and Sweden, and in the partner countries and economies Romania, Hong Kong-China, Indonesia and Brazil between 2000 and 2009. The fact that girls outperform boys in reading is most evident in the proportion of girls and boys who perform below baseline

proficiency Level 2. Across OECD countries, 24% of boys perform below Level 2 compared to only 12% of girls. The proportion of girls performing below this level decreased by two percentage points between 2000 and 2009, while the share of low-achieving boys did not change during the period.

Across the OECD area, the percentage of students with an immigrant background increased by an average of two percentage points between 2000 and 2009. The performance gap between students with and without an immigrant background remained broadly similar over the period. However, some countries noted large reductions in the performance advantage of students without an immigrant background. In Belgium, Switzerland and Germany, the gap narrowed by between 28 and 38 score points due to improvements in reading proficiency among students with an immigrant background. However, the gap is still relatively wide in these countries.

Across OECD countries, overall performance in mathematics remained unchanged between 2003 and 2009, as did performance in science between 2006 and 2009.

In mathematics, students in Mexico, Turkey, Greece, Portugal, Italy, Germany and the partner countries Brazil and Tunisia improved their mathematics scores considerably, while students in the Czech Republic, Ireland, Sweden, France, Belgium, the Netherlands, Denmark, Australia and Iceland saw declines in their performance. On average across the 28 OECD countries with comparable results in the 2003 and 2009 assessments, the share of students below mathematics proficiency Level 2 remained broadly similar over the period, with a minor decrease from 21.6% to 20.8%. Among the OECD countries in which more than half of students performed below mathematics proficiency Level 2 in 2003, Mexico shrunk this proportion by 15 percentage points, from 66% to 51%, by 2009 while Turkey reduced it from 52% to 42% during the same period. Meanwhile, the percentage of top performers in mathematics in those 28 OECD countries decreased slightly, from 14.7% in 2003 to 13.4% in 2009. Portugal showed the largest increase – four percentage points – in top performers in mathematics.

In science, 11 of the 56 countries that participated in both the 2006 and 2009 assessments show improvements in student performance. Turkey, for example, saw a 30 score point increase, nearly half a proficiency level, in just three years. Turkey also reduced the percentage of students below science proficiency Level 2 by almost 17 percentage points, from 47% to 30%. Portugal, Chile, the United States, Norway, Korea and Italy all reduced the share of lowest performers in science by around five percentage points or more, as did the partner countries Qatar, Tunisia, Brazil and Colombia. Performance in science declined considerably in five countries.

On average across OECD countries, the percentage of students who report reading for enjoyment daily dropped by five percentage points.

Enjoyment of reading tends to have deteriorated, especially among boys, signalling the challenge for schools to engage students in reading activities that 15-year-olds find relevant and interesting. On average across OECD countries, the percentage of students who said they read for enjoyment every day fell from 69% in 2000 to 64% in 2009. On the other hand, changes in student-teacher relations and classroom climate have generally been favourable or, at least, they have not deteriorated as many would have expected. Generally, students have become more confident that they can get help from their teachers. Across the 26 OECD countries that participated in both assessments, 74% of students in 2000 agreed or strongly agreed with the statements, "If I need extra help, I will receive it from my teachers" or "Most of my teachers treat me fairly", while in 2009, 79% of students agreed or strongly agreed with those statements. Overall, aspects of classroom discipline have also improved. Thus there is no evidence to justify the notion that students are becoming progressively more disengaged from school.

■ **Figure V.** ■

COMPARING A SUMMARY OF CHANGES IN READING PERFORMANCE

Mean score in reading 2009 is statistically significantly above the OECD average. Changes in reading and in the share of students at proficiency Level 5 or above are statistically significantly positive. Changes in the share of students below proficiency Level 2 and in the association of socio-economic background with reading is statistically significantly negative.

Mean score in reading 2009 is not statistically significantly different from the OECD average. Changes in reading, in the share of students at proficiency Level 5 or above, in the share of students below proficiency Level 2 and in the association of socio-economic background with reading are not statistically significantly different.

Mean score in reading 2009 is statistically significantly below the OECD average. Changes in reading and in the share of students at proficiency Level 5 or above are statistically significantly negative. Changes in the share of students below proficiency Level 2 and in the association of socio-economic background with reading is statistically significantly positive.

| | Mean score in reading 2009 | Change in reading performance between 2000 to 2009 | | | | | |
		All students	Boys	Girls	Share of students below proficiency Level 2	Share of students at proficiency Level 5 or above	Association of socio-economic background with reading performance
Peru	370	43	35	50	-14.8	0.4	0.1
Chile	449	40	42	40	-17.6	0.8	-7.6
Albania	385	36	35	39	-13.7	0.1	-9.9
Indonesia	402	31	23	39	-15.2		-6.9
Latvia	484	26	28	23	-12.5	-1.2	-11.0
Israel	474	22	9	35	-6.7	3.3	-8.4
Poland	500	21	14	28	-8.2	1.3	-1.5
Portugal	489	19	12	26	-8.6	0.6	-4.7
Liechtenstein	499	17	16	17	-6.4	-0.4	-13.3
Brazil	412	16	9	21	-6.2	0.8	-0.6
Korea	539	15	4	25	0.0	7.2	8.5
Hungary	494	14	11	17	-5.1	1.0	-4.2
Germany	497	13	10	15	-4.2	-1.2	-7.7
Greece	483	9	3	13	-3.1	0.6	2.0
Hong Kong-China	533	8	0	17	-0.8	2.9	-8.6
Switzerland	501	6	1	10	-3.6	-1.1	-2.3
Mexico	425	3	1	6	-4.0	-0.5	-7.3
Belgium	506	-1	0	-5	-1.2	-0.8	0.7
Bulgaria	429	-1	-8	6	0.7	0.6	-4.5
Italy	486	-1	-5	2	2.1	0.5	3.2
Denmark	495	-2	-5	-1	-2.7	-3.4	-3.2
Norway	503	-2	-5	-1	-2.5	-2.8	0.4
Russian Federation	459	-2	-6	1	-0.1	-0.0	1.4
Japan	520	-2	-6	3	3.5	3.6	c
Romania	424	-3	-18	11	-0.9	-1.5	10.7
United States	500	-5	-2	-6	-0.3	-2.4	-9.2
Iceland	500	-7	-10	-6	2.3	-0.5	5.4
New Zealand	521	-8	-8	-8	0.6	-3.0	4.9
France	496	-9	-15	-4	4.6	1.1	7.0
Thailand	421	-9	-6	-10	5.8	-0.2	-0.7
Canada	524	-10	-12	-10	0.7	-4.0	-6.4
Finland	536	-11	-12	-8	1.2	-4.0	5.8
Spain	481	-12	-14	-10	3.3	-0.9	1.5
Australia	515	-13	-17	-13	1.8	-4.9	-1.4
Czech Republic	478	-13	-17	-6	5.6	-1.9	-11.4
Sweden	497	-19	-24	-15	4.9	-2.2	7.7
Argentina	398	-20	-15	-22	7.7	-0.7	-1.7
Ireland	496	-31	-37	-26	6.2	-7.3	5.8

Note: Countries are ranked in descending order of the change in reading performance between 2000 and 2009 for all students.
Source: OECD, *PISA 2009 Database*, Tables V.2.1, V.2.2, V.2.4 and V.4.3

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