How Your School Compares Internationally

OECD TEST FOR SCHOOLS (BASED ON PISA)

Cesar E. Chavez High School
Houston Independent School District
Texas
United States

OECD

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CESAR E. CHAVEZ HIGH SCHOOL

OECD
BETTER POLICIES FOR BETTER LIVES

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Foreword

Parents, teachers, principals and administrators who are engaged in the running of schools and education systems need reliable information to assess how well their schools prepare students for life. Most monitor students' learning in order to make this assessment. But in a global economy, the measurement of educational success can no longer be based on national standards alone. Comparisons also need to be made with the best-performing schools and education systems internationally. International benchmarking and cross-country comparisons can help to better understand whether the younger generation is well equipped with the skills needed in today's globalized world. They can also offer guidance for governments, administrations and schools on the policies required to catch up with the best performers.

The OECD Programme for International Student Assessment (PISA) has evaluated the quality, equity and efficiency of school systems in over 70 countries that, together, make up nine-tenths of the world economy. In PISA 2012, 65 countries and economies participated. PISA represents a commitment to monitor the outcomes of education systems regularly within an internationally agreed framework and to provide a basis for global collaboration in defining and implementing educational policies.

Results from PISA reveal wide differences in the educational outcomes of countries. Those education systems that have been able to secure strong and equitable learning outcomes, and to mobilize rapid improvements, show others what can be achieved. Some of the strongest examples pertain to those countries that have seen rapid improvements over recent years.

For example, Korea's average performance was already high in 2000, yet the government was concerned that only a small elite achieved levels of excellence in the PISA reading assessment. Within less than a decade, Korea was able to double the share of students demonstrating excellence in this area. In Poland a major overhaul of the school system helped to dramatically reduce performance variability among schools, turn around the lowest-performing schools and raise overall performance by more than half a school year.

The remarkable success of Shanghai in China, which tops the league tables in PISA, also shows the outcomes that can be achieved with moderate economic resources and in a diverse social context. Based on PISA 2012 results in mathematics, a third of Shanghai-China's 15-year-olds can conceptualize, generalize and creatively use information based on their own investigations and modeling of complex problems. They can apply insight and understanding and develop new approaches and strategies when addressing novel situations. In the OECD area, just 3% of 15-year-old students reach that level of performance.

While knowing where a nation's education system stands internationally is important, many schools and local school administrations want to go further and understand how their own individual schools perform compared with the world's leading school systems and other schools operating within a similar social context. The OECD has developed an innovative tool to provide answers to these questions. Similar to the international PISA assessment, the *OECD Test for Schools* (based on PISA) measures 15-year-old students' applied knowledge and competencies in reading, mathematics and science as well as their attitudes toward learning and school.

This report provides results from the *OECD Test for Schools*, together with examples of strategies, policies and practices from education systems around the world to support critical reflection and encourage school staff and local educators to look beyond their classrooms in search of national and global excellence. The OECD stands ready to support all those involved in delivering "better policies for better schools and better lives."

Angel Gurría
OECD Secretary-General

Acknowledgments

The school reports and the work around the development and implementation of the *OECD Test for Schools* (based on PISA) were produced under the auspices of the OECD Directorate for Education and Skills in consultation with and with guidance from the members of the PISA Governing Board.

The development of the assessment and the implementation of the initial pilot trial in 2012 were made possible thanks to the generous support of the William and Flora Hewlett Foundation, the Carnegie Corporation of New York, the Kern Family Foundation, Bloomberg Philanthropies, America Achieves and the National Public Education Support Fund. Additional support for the pilot trial was provided by the Bechtel Group Foundation, the Stuart Foundation, Blue Valley Schools, Birmingham Public Schools, the Rodel Charitable Foundation of Arizona and the Craig and Barbara Barrett Foundation. Additionally, EdLeader21 and its members provided very useful feedback on initial drafts of the content of the school reports.

For the current cycle of testing in the United States, we extend our special thanks once again to the William and Flora Hewlett Foundation, the Kern Family Foundation, Bloomberg Philanthropies, America Achieves and to EdLeader21 for all of their efforts and leadership in the United States, as well as to all of the districts, schools, teachers, students and parents that actively participated.

The school reports are based primarily on data, comparative analysis, drafting and project coordination originally provided by the PISA-Based Test for Schools team and the PISA team of analysts within the Early Childhood and Schools Division of the OECD Directorate for Education and Skills. As an accredited service provider and partner in the current cycle of testing in the United States, CTB/McGraw-Hill conducted the test administration, coding, scoring, scaling, and data management and provided the analytical outputs that comprised the school reports for this cycle of testing.

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HIGH SCHOOL

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Summary of Your School's Results

School	**CESAR E. CHAVEZ HIGH SCHOOL**
District or Local Authority	**Houston Independent School District**
State	**Texas**
Country	**United States**

This school report presents summary results for **Cesar E. Chavez High School** based on its participation in the *OECD Test for Schools* (based on PISA) during the 2013-2014 school year in the United States. The school participated in a school-level assessment based on PISA that measures 15-year-old students' applied knowledge and competencies in reading, mathematics and science. By participating in the assessment, the school can compare its results with those from the international PISA assessment that was implemented around the world. Over 70 countries and economies have participated in various PISA cycles and these results are used for comparisons in this report.

The results for your school are based on a two-hour assessment administered to 66 students between November 2013 and March 2014. Students were also asked to fill out a questionnaire that was used to obtain information on their socioeconomic backgrounds and on their engagement with and attitudes toward learning and the school learning environment. These results are also presented in this report. The following is a summary of your school's results on the PISA scales of reading, mathematics and science:

Figure A ■ **Your school's mean performance in reading, mathematics and science**

READING		MATHEMATICS		SCIENCE	
Mean performance score	S.E.	Mean performance score	S.E.	Mean performance score	S.E.
421	14.7	**416**	12.9	**445**	11.1

S.E.: Standard error.

In reading, the mean performance for students at your school is 421 points, which is *significantly below* the mean performance of 500 points obtained by students across schools in the United States in PISA 2009. In mathematics, your school's mean performance of 416 points is *significantly below* the mean performance of 487 points obtained by students in the United States in PISA 2009. In science, your school's mean performance of 445 score points is *significantly below* the average of 502 points for the United States in PISA 2009.

When interpreting these results, it is important to take into account the powerful influence that home background has on learning outcomes. Compared with other schools in the United States, students at your school have socioeconomic backgrounds *below the average*. In this report you will be able to see how your school compares with other schools with a similar socioeconomic profile in the United States and internationally. You will be able to use these comparisons to see if your school performs above or below what would reasonably be expected, given the socioeconomic profile of students at your school.

International context

To put your school's results in an international context, in the highest-performing school system in PISA 2009 and 2012, Shanghai-China, the mean student performance in reading was 556 points, while in the

lowest-performing OECD country, Mexico, it was 425 points. In mathematics, students across schools in Shanghai-China had a mean performance of 600 points, while in Mexico it was 419 points. As for science, the mean performance in Shanghai-China was 575 points, and in Mexico it was 416 points.

Figure C shows how your school performs in reading, mathematics and science compared to schools in the United States, Shanghai-China and Mexico. The markers on the scales show the cut-off score *above* which schools that account for 10% of students perform for the particular country or economy. The second marker from the top shows the score *above* which 25% of students in schools perform for the country or economy. The middle marker shows the middle point at which 50% of schools perform *above* and *below*. The bottom two markers for each country and economy show the points *below* which schools that account for 25% and 10% of students perform.

Your school's results across PISA proficiency levels

The PISA frameworks on which the *OECD Test for Schools* has been developed are drawn from the best expertise in assessment practices internationally. Since it is not pegged to a specific curriculum or content standard, the *OECD Test for Schools* provides a broad, more global reflection of the knowledge and skills that students will need in the 21st century.

Students' knowledge and skills are summarized in proficiency levels for each subject. Students who reach the top levels are top performers even when compared with their peers around the world and can be considered as being well on their way to becoming the skilled knowledge workers of tomorrow in different fields. Students who are able to perform at the intermediate levels (baseline Levels 2 and 3) are able to demonstrate the skills and competencies that will allow them to participate productively in life as they continue their studies, as they enter the labor force and as citizens. Students who perform below the baseline levels, in contrast, are at risk of poor educational and labor-market outcomes, according to longitudinal research based on student performance in reading. The following is a summary of how students at your school perform in terms of proficiency levels:

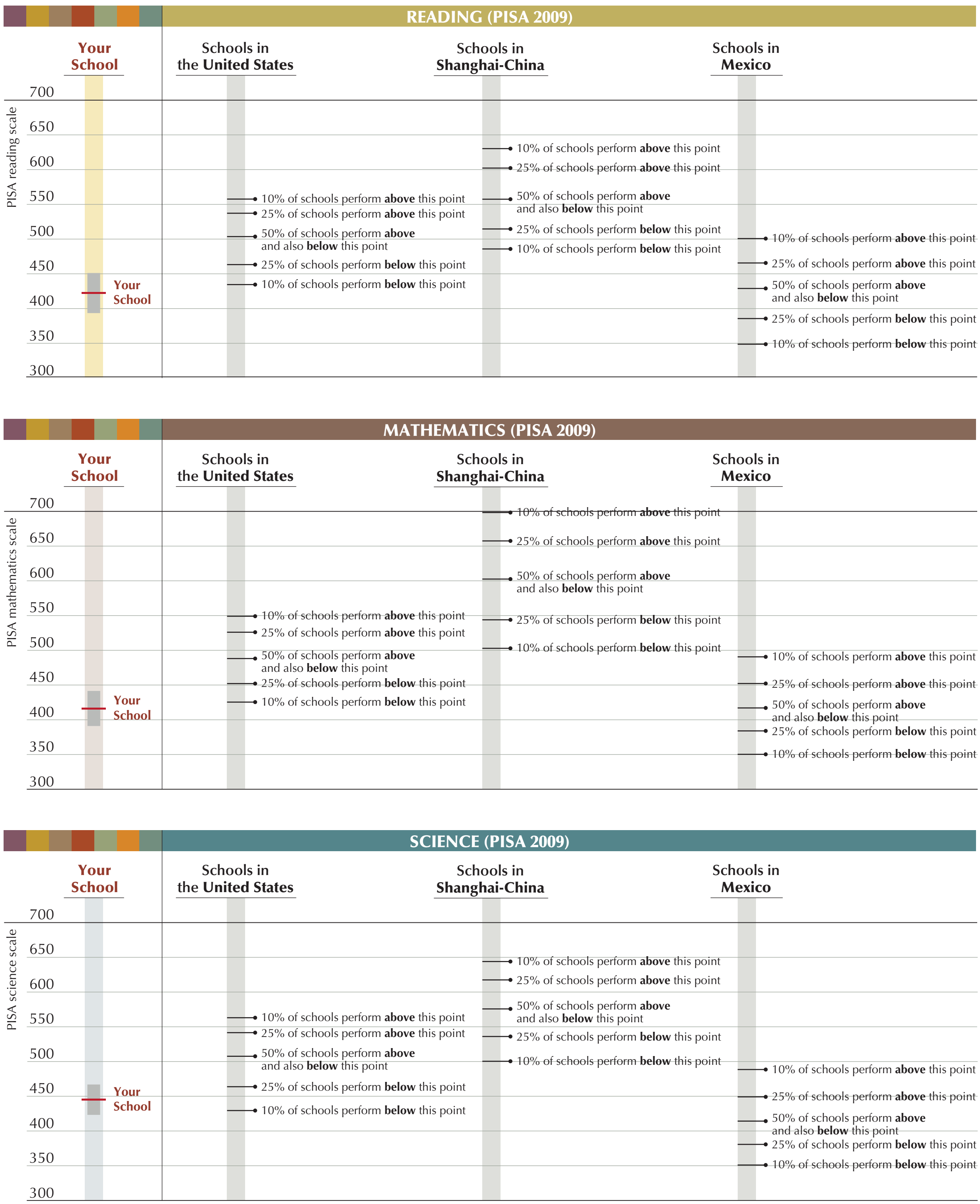
Figure B ▪ **Levels of proficiency of students at your school**

	READING		MATHEMATICS		SCIENCE	
	Percentage of students	S.E.	Percentage of students	S.E.	Percentage of students	S.E.
Top levels (Levels 5 and 6)	0%	0	2%	1.5	0%	0
Intermediate levels (Levels 2, 3 and 4)	50%	6.3	47%	5.0	71%	5.4
Below baseline level (Level 1 and below)	50%	6.3	52%	4.8	29%	5.4

S.E.: Standard error.

The reading assessment of the *OECD Test for Schools* covers the active, purposeful and functional application of reading in a range of situations and for various purposes. Students at the highest levels of reading proficiency are capable of critically evaluating unfamiliar texts and building hypotheses about them, drawing on specialized knowledge and accommodating concepts that may be contrary to expectations. At your school, 0% of students are proficient at the highest levels internationally. In comparison, 10% of students across schools in the United States and 19% of students in Shanghai-China reached similar levels in PISA 2009.

Figure C ▪ **How Cesar E. Chavez High School compares with schools in other countries and economies in reading, mathematics and science in PISA**



Notes: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance score would fall within this confidence interval.

Schools are weighted by the number of students enrolled. For example, the legend "10% of schools perform **above** this point" refers to the highest-performing schools that account for 10% of the total number of students in the country.

Source: OECD.

At the other end of the performance scale, PISA has defined a baseline level of reading proficiency, at which students begin to demonstrate the reading competencies that will enable them to participate effectively and productively in life. At your school, 50% of students do not reach the baseline level of proficiency in reading, compared with 18% of students across schools in the United States and 4% in Shanghai-China in PISA 2009.

The mathematics part of the assessment measures students' capacity to formulate, employ and interpret mathematics in a variety of contexts. Top performers in mathematics are capable of developing and working with models in complex situations, identifying constraints and specifying assumptions. At your school, 2% of students are proficient at the highest levels of mathematics proficiency. In comparison, 10% of students across schools in the United States and 50% of students in Shanghai-China reached these levels in PISA 2009.

Students who perform at the baseline level of proficiency in mathematics can employ basic algorithms, formulae, procedures or conventions and they can interpret and recognize situations in contexts that require no more than direct inference. At your school, 52% of students do not reach at least the baseline level in mathematics, compared with 23% of students in the United States and 5% of students in Shanghai-China in PISA 2009.

The science part of the assessment measures students' capacity to identify scientific issues, explain phenomena scientifically and use scientific evidence as they encounter, interpret, solve and make decisions in life situations that involve science and technology. Students at the highest levels of science proficiency can apply both scientific concepts and knowledge about science to complex life situations. They are able to compare, select and evaluate appropriate scientific evidence for responding to these situations. At your school, 0% of the students are among the top performers internationally. In comparison, 9% of students in the United States and 24% of students in Shanghai-China reached this level of proficiency in PISA 2009.

At the baseline level of proficiency in science, students begin to demonstrate the competencies that will enable them to participate actively in life situations related to science and technology. Students at this level have adequate scientific knowledge to provide possible explanations in familiar contexts or to draw conclusions based on simple investigations. At your school, 29% of the students do not reach at least the baseline level in science, compared with 18% in the United States and 3% in Shanghai-China in PISA 2009.

Some highlights of results for your school

- When looking at the average socioeconomic status of students at your school in relation to their performance, your school performs at the level that would reasonably be expected of schools with similar students in the United States in all three subjects – reading, mathematics, and science – as measured by the *OECD Test for Schools* (based on PISA) (Figures 4.1, 4.2, and 4.3).
- As reported by your students, the disciplinary climate in English and mathematics lessons at your school is *similar* to the average for the **10% highest-performing students** in reading and mathematics for the United States based on PISA results (Figures 3.1 and 3.3). Students at your school also report that teacher-student relations are *less positive* than the average for the **10% highest-performing students** in reading for the United States based on PISA results (Figure 3.4).
- Students at your school also report that their instrumental motivation in mathematics and science – how useful students believe the study of mathematics and science at school to be for their future – is *similar* to the average for the United States in PISA (Figures 3.8 and 3.11). At your school, students' confidence in their ability to successfully deal with mathematics-related tasks (self-efficacy in mathematics) and science-related tasks (self-efficacy in science) is *similar* to the average for the United States in PISA (Figures 3.9 and 3.12).

Reader's Guide

Understanding the differences between your school assessment and the main PISA studies

Although the *OECD Test for Schools* (based on PISA) is developed from the same assessment frameworks as the main PISA (Programme for International Student Assessment) studies organized every three years by the OECD, the two assessments – and the findings they provide – are different. The OECD created the original PISA assessment in response to its member countries' demands for regular and reliable data on the knowledge and skills of their students, and the performance of their education systems, in an international context. While the PISA assessment is intended to provide aggregate national results for international comparisons and to inform policy discussions, the *OECD Test for Schools* is designed to provide school-level results for benchmarking and school-improvement purposes.

Sources of school information and data

As the accredited service provider in the United States and partner for this cycle of testing which included over 300 schools in the United States, CTB/McGraw-Hill organized the assessment with participating schools in 2013 and 2014. The students who were tested at your school and at others responded to approximately two hours of test questions and provided answers to a 30-minute student questionnaire. In addition, the principals or designated officials of the schools where students were assessed provided information on their schools' characteristics by completing a questionnaire.

Other sources of information presented in the report

This report presents information, results and findings from various OECD sources. Primarily, it is based on the *OECD Test for Schools* and results from PISA cycles. Information from the main PISA studies is also included, and most of the international comparisons between your school's results and PISA results combine both of these sources. In addition, the report presents findings and information gleaned from PISA over the years as well as recent OECD research and resources on successful education systems, increasing equity and improving schools.

Data underlying the figures

Because of the nature of the assessment that your school participated in, your school's results will not be made available publicly. The results for your school and others participating in the assessment are confidential. The data for those figures where "countries that participated in PISA 2009" or "PISA 2012" are cited can be found in the reports of PISA 2009 and PISA 2012 results. As a reference point for the most recent PISA cycle in 2012, an overview of results for all countries and economies that participated in 2012 is presented as an annex to this report.

Focusing on statistically significant differences

This report discusses differences or changes that are statistically significant and, in some cases, results that are not statistically significant. Differences that are statistically significant are clearly indicated.

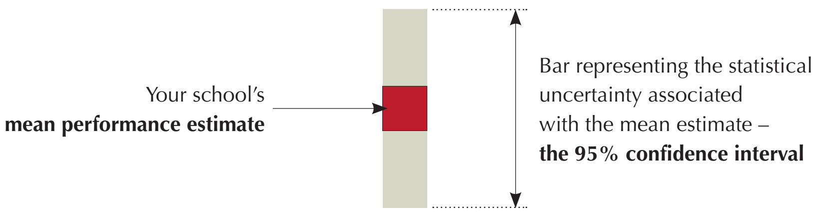
As a rule, PISA reports differences with a 95% confidence threshold, and this convention has been followed in this report. This refers to the fact that if the measurement were to be replicated several times, a difference of that size, smaller or larger, would be observed less than 5% of the time if there were actually no difference in corresponding population values.

Standard error (S.E.)

Whenever relevant, standard errors are included for performance estimates. Standard errors are used to express the degree of uncertainty associated with sampling, measurement and equating error. A larger sample usually reduces the standard error; however, even if a school tests all of its 15-year-olds, the standard error will not be eliminated as there will still be measurement and equating error. All standard errors in this report have been rounded to one decimal place. Thus, where the value 0.0 is shown, this does not imply that the standard error is zero, but that it is smaller than 0.05.

Confidence intervals

Whenever mean results for your school or for subgroups of students within your school are presented graphically in this report, you will notice a gray bar above and below the marker for your school. The bar indicates the statistical uncertainty (or "confidence interval") associated with the result. In technical terms, the error bar represents the 95% certainty with which your school's result is estimated to lay within the error bars, were the test to be replicated several times with different student samples in your school.



A note on statistical concepts and terminology for meaningful comparisons

The reader will find several statistical concepts and terms used throughout the school report. As with any estimate or measurement, there is a certain degree of uncertainty. The degree of error is associated with the scores describing student performance in reading, mathematics and science, for example, as these scores are estimated based on student responses to test items. As described earlier, a statistic called the ***standard error*** (S.E.) is used to express the degree of uncertainty associated with sampling, measurement and equating error. The standard error can be used to construct a ***confidence interval***, which provides a means of making inferences about the population averages and proportions in a manner that reflects the uncertainty associated with sample estimates. A 95% confidence interval is used in this report and represents a range of plus or minus about two standard errors around the sample average. Using this confidence interval it can be inferred that the population mean or proportion would lie within the confidence interval in 95 out of 100 replications of the measurement, using different samples randomly drawn from the same population.

When comparing scores among countries, economies, provinces or groups of schools, the degree of error in each average must be considered in order to determine if the true population averages are likely different from each other. Standard errors and confidence intervals may be used as the basis for performing these comparative statistical tests. Such tests can identify, with a known probability, whether there are actual differences in the populations being compared.

For example, when an observed difference is significant at the 0.05 level, it implies that the probability is less than 0.05 that the observed difference could have occurred because of error from sampling, measurement or linking. Only statistically significant differences at the 0.05 level are noted in this report, unless otherwise stated. Averages did not differ unless the 95% confidence intervals for the averages being compared did not overlap.

Reproduced and edited from Brochu, P., T. Gluszynski and T. Knighton, *Measuring Up: Canadian Results of the OECD PISA Study: The Performance of Canada's Youth in Reading, Mathematics and Science*, Minister of Industry, Canada, 2010.

Interpreting highlights of results for your school

Some highlights of the results for your school are presented on page 16 of the report. The highlights that relate to school disciplinary climate, teacher-student relations, and attitudes towards learning are calculated using item parameters and student responses to all options of the questions students answered. The corresponding figures referenced in the highlights and presented later in the report show information based on selected options to the questions students answered and thus may vary slightly from the highlights.

Rounding figures

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

OECD averages

The average for OECD countries is often presented in this report. The OECD average refers to the arithmetic mean of the respective country estimates that make up the OECD (34 countries in 2014).

Abbreviations used in this report

ESCS	PISA index of economic, social and cultural status
GDP	Gross domestic product
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
PPP	Purchasing power parity
S.D.	Standard deviation
S.E.	Standard error

Active hyperlinks included in the report

Numerous active hyperlinks are included throughout the report, and the reader is invited to explore these additional resources that include relevant PISA and OECD reports, websites and videos.

Further information

For more information on the PISA results, the PISA assessment instruments, the methods used in PISA and PISA in general, please visit www.oecd.org/pisa.

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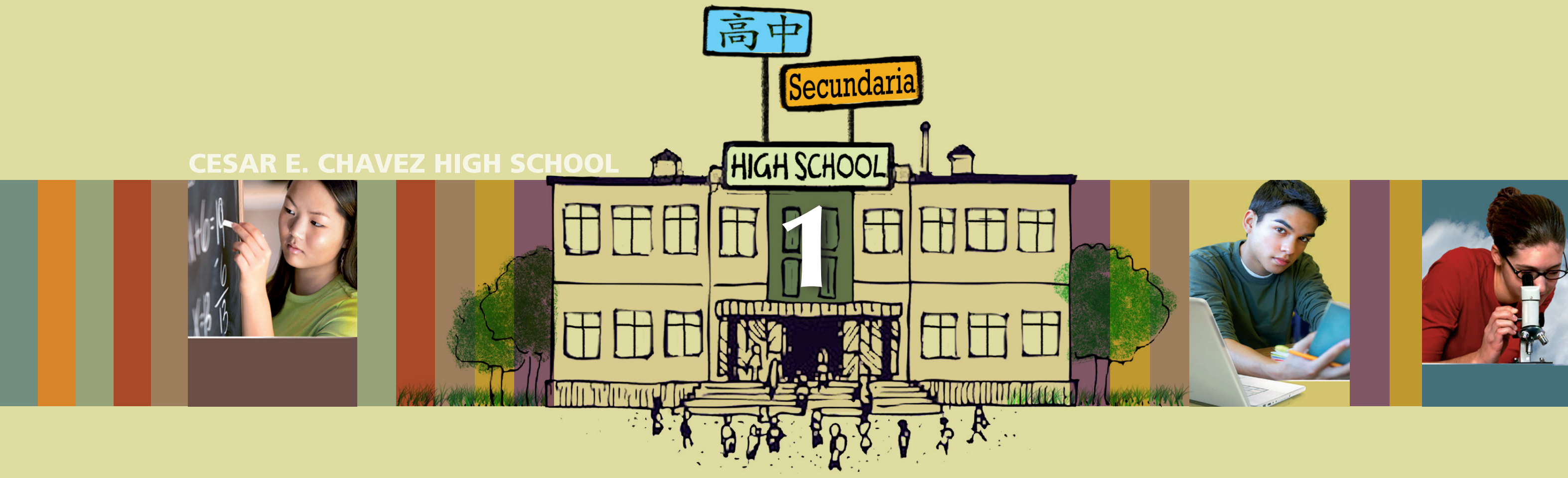

Introduction: Understanding Your School's Results

The *OECD Test for Schools* (based on PISA) is a student assessment that is linked to the knowledge base of the OECD's internationally recognized Programme for International Student Assessment (PISA), a description of which is presented in this section of the report. While the international PISA assessment is intended to provide aggregate national results for international comparisons and to inform policy discussions, the *OECD Test for Schools* is designed to provide school-level results for benchmarking and school-improvement purposes. It allows schools to assess and benchmark their students' proficiency in reading, mathematics and science and to benchmark their performance against that of their peers in their country as well as in some of the world's highest-performing schools. This section of the report presents an overview of what the assessment measures and how it does so, and it also describes the contents of the report.

THE *OECD TEST FOR SCHOOLS* (BASED ON PISA): AN OVERVIEW

Are 15-year-old students at your school prepared to meet the challenges of the future? Can they analyze, reason and communicate their ideas effectively? Have they developed the knowledge and skills that are essential for their successful participation in societies of the 21st century? The *OECD Test for Schools* seeks to answer these questions through a student assessment that is directly linked to the knowledge base of the internationally recognized Programme for International Student Assessment (PISA).

This report presents your school's results from the *OECD Test for Schools* assessment. It allows you to compare your students' level of proficiency in three key subjects with the levels of peers in your country and in some of the world's highest-performing school systems. The results can be used as a gauge of how prepared students at your school are to succeed in a global economy and to set targets that go beyond local and national expectations. This report will also provide you with examples of school practices from countries that have shown consistently high results and from countries that have shown considerable progress as a result of successful school improvement efforts and educational reforms.

Your school's results from the *OECD Test for Schools* are comparable to the same scales as used in the PISA assessment that covers students and schools from more than 70 countries and economies (see Box 1.1). Like the international PISA assessments, the *OECD Test for Schools* measures 15-year-old students' applied knowledge and competencies in *reading*, *mathematics* and *science*. The assessment seeks not only to determine whether students can reproduce knowledge, but also to examine how well they can extrapolate from what they have learned and apply it in unfamiliar settings, both within and outside of school.

Although the *OECD Test for Schools* is based on the same assessment frameworks as the international PISA assessment, it is important to note that the two assessments are different. While the international PISA assessment is intended to provide aggregate national results for international comparisons and to inform policy discussions, the *OECD Test for Schools* is designed to provide school-level results for benchmarking and school-improvement purposes.

Box 1.1 **An introduction to PISA and the OECD**

The Programme for International Student Assessment (PISA) is an international study that was launched in 1997 by the Organisation for Economic Co-operation and Development (OECD). PISA measures the competencies, skills and knowledge of 15-year-old students in countries around the world. The study is organized by the OECD every three years and aims to provide internationally comparable evidence on the quality and equity of student learning outcomes. In PISA 2012, 65 countries and economies participated, representing 80% of the world's GDP.

The OECD is an international organization that seeks to improve the economic and social well-being of people around the world. The organization assists countries by providing empirical evidence and policy insights to support dialogs and reform processes. In the field of education, the OECD helps member countries improve the quality, equity and effectiveness of their education systems. The organization, headquartered in Paris, France, was founded in 1961 by 20 countries including Canada, the United Kingdom and the United States. In 2013, it consisted of 34 member countries.

Since 2000, the OECD and national partners in participating countries have implemented PISA through an assessment of a randomly selected group of 15-year-old students. The students and participating school authorities (e.g., principals, directors) also fill in background questionnaires to provide information on the students' family background and the way their schools are run. PISA has also implemented a parent questionnaire that countries can choose to administer. It seeks information on the household environment and parental involvement in their children's learning.

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For each cycle of PISA, one subject is the main area of assessment. In 2000, the focus of the assessment was *reading*; in 2003, *mathematics*; in 2006, *science*; in 2009, *reading* was once again the focus; and in 2012, *mathematics* was the main assessment domain. The results for PISA 2012 are presented in several volumes:

- Volume I, *What Students Know and Can Do: Student Performance in Mathematics, Reading and Science*, summarizes student performance in the countries that participated in PISA 2012.
- Volume II, *Excellence through Equity: Giving Every Student the Chance to Succeed*, examines how factors such as socioeconomic background and immigrant status affect student and school performance. It also looks at the role that education policy can play in moderating the impact of these factors.
- Volume III, *Ready to Learn: Student Engagement, Attitudes and Motivation*, explores the information gathered on students' levels of engagement in reading activities and attitudes toward reading and learning.
- Volume IV, *What Makes a School Successful? Resources, Policies and Practices*, explores the relationships between student-, school- and system-level characteristics and educational quality and equity.
- Volume V, *Creative Problem Solving: Students' Skills in Tackling Real-Life Problems*, will present student performance in the PISA 2012 assessment of *problem solving*, which measures students' capacity to respond to non-routine situations.
- Volume VI, *Students and Money: Financial Literacy Skills for the 21st Century* (forthcoming July, 2014), will examine students' experience with and knowledge about money.

The figures and tables presented in the PISA reports include StatLinks©, which allows the reader of the e-books to click and download the data in Excel™ files. In addition to the main PISA initial reports, there is a monthly series called "PISA in Focus," which describes a policy-oriented PISA topic in a concise, user-friendly way. The following are some recent editions of the PISA in Focus series:

- PISA in Focus 34: *Who are the strong performers and successful reformers in education?*
- PISA in Focus 33: *What do immigrant students tell us about the quality of education systems?*
- PISA in Focus 32: *Do students perform better in schools with orderly classrooms?*
- PISA in Focus 31: *Who are the academic all-rounders?*

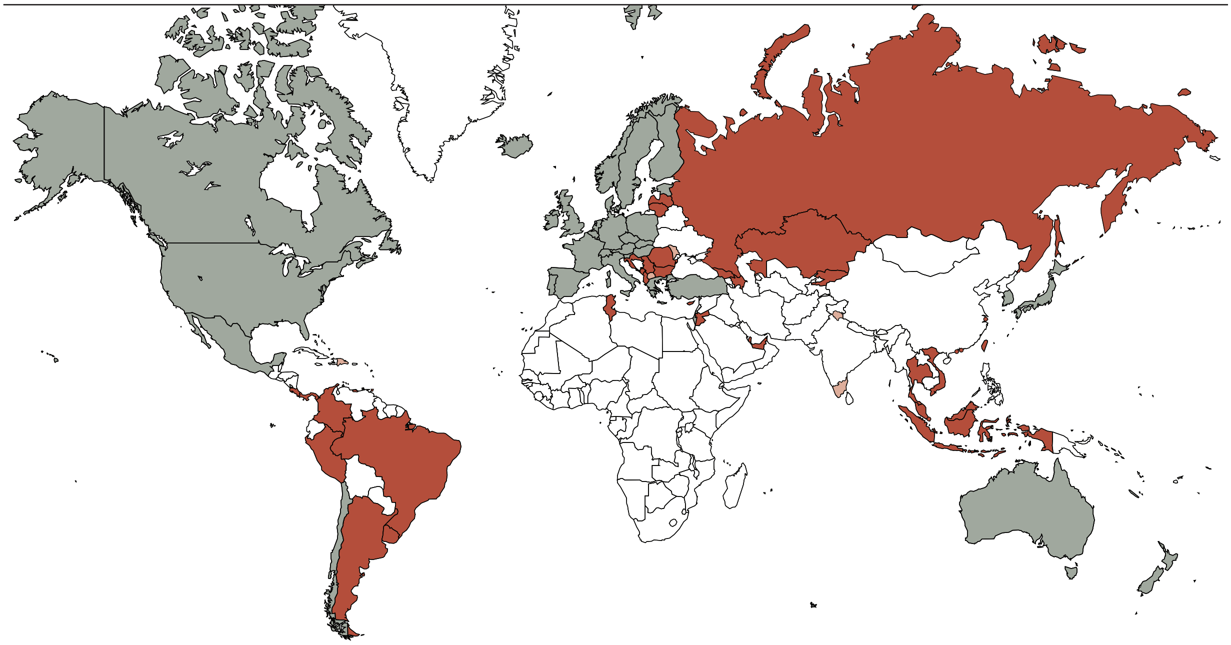
The PISA 2012 data collection focused on mathematics and included an optional computer-based assessment of mathematics and reading involving 32 countries. It also included an optional area of assessment: *financial literacy*, which 18 countries decided to implement. Detailed results of PISA 2012 were published in December 2013.

PISA not only seeks to assess whether students can reproduce knowledge, but also examines how well they can extrapolate from what they have learned and apply it in unfamiliar settings, both in and outside of school. A description of the assessment frameworks is presented in Box 1.2.

To find out more about PISA and the OECD, go to:

- PISA – Measuring student success around the world
- PISA 2012 Key Findings
- *Explore PISA 2012 Mathematics and Problem Solving Test Questions*
- PISA in Focus Series
- About the OECD

Figure 1.1 ▪ **Countries and economies that participated in PISA 2012**



OECD countries

Australia
Austria
Belgium
Canada*
Chile
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Japan
Korea
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 2012

Albania
Argentina
Brazil
Bulgaria
Colombia
Costa Rica
Croatia
Cyprus[1, 2]
Hong Kong-China
Indonesia
Jordan
Kazakhstan
Latvia
Liechtenstein
Lithuania
Macao-China
Malaysia
Montenegro
Peru
Qatar
Romania
Russian Federation
Serbia
Shanghai-China
Singapore
Chinese Taipei
Thailand
Tunisia
United Arab Emirates
Uruguay
Viet Nam

Partner countries and economies in previous cycles

Azerbaijan
Georgia
Himachal Pradesh-India
Kyrgyzstan
Former Yugoslav Republic of Macedonia
Malta
Mauritius
Miranda-Venezuela
Moldova
Panama
Tamil Nadu-India
Trinidad and Tobago

* Schools from these countries participated in the pilot trial of the school-level assessment.

1. Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognizes 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".
2. Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognized 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.

WHAT THE *OECD TEST FOR SCHOOLS* MEASURES AND HOW

The *OECD Test for Schools* follows the internationally recognized assessment frameworks used in the PISA studies. The frameworks were developed by international experts and are updated continuously to reflect subject matter developments and progress in assessment methods (see Box 1.2). The frameworks are based on the concept of literacy, which includes students' capacity to extrapolate from what they have learned and apply their knowledge and skills in real-life settings, as well as their capacity to analyze, reason and communicate effectively as they pose, interpret and solve problems in a variety of situations.

Like the international PISA test, the *OECD Test for Schools* is developed around units. A unit consists of stimulus material, including texts, diagrams, tables and/or graphs, followed by a question on various aspects of the text, diagram, table or graph, with the questions constructed so tasks that students have to undertake are as close as possible to those they might come across in the real world. The *OECD Test for Schools* contains 47 questions in reading, 40 in mathematics and 54 in science. Example questions developed for the test are included in Section 2, and you can see all of the publicly available PISA questions in the publication *PISA Take the Test: Sample Questions from OECD's PISA Assessments*.

The test questions vary in format. Around half require students to construct their own responses. Some require a brief answer, whereas others allow for different individual responses and, sometimes, an assessment of students' justification of their viewpoints. The other half are multiple-choice questions in which students make either one choice among four or five alternatives or choose one of two possible responses ("yes"/"no" or "agree"/"disagree") to a series of propositions or statements. The questions are grouped into seven booklets that each take up 120 minutes of testing time. Each booklet covers a selection of questions, so that students answer overlapping groups of questions. Thus, the students are tested in a wide range of topics while limiting the test time.

What is meant by PISA scales and proficiency levels?

The PISA scales enable comparisons of the mean performance scores in reading, mathematics and science for different groups of students, such as students in two countries or students in a particular school with other students across the country. The scales are a common feature in all PISA studies that take place every three years.

Student performance on the PISA scales can be divided into proficiency levels that make the score points more meaningful with regards to what students are expected to know and be able to do at different levels of performance. Every proficiency level in reading, mathematics and science indicates a specific level of student ability based on the tasks that students at this level are able to respond to successfully. Level 2 is a particularly important threshold, as PISA considers it to be a baseline level of proficiency at which students begin to demonstrate the competencies that will enable them to participate effectively and productively in life as continuing students, workers and citizens.

At the upper end of performance, Levels 5 and 6 are the highest levels of proficiency in PISA. How successful schools and education systems are in developing students who perform at these levels is particularly relevant when looking at long-term global competitiveness. Detailed descriptions of the proficiency levels are included in Section 2 of the report.

Contextual questionnaires

Apart from the cognitive test items, the assessment includes two contextual questionnaires. One is completed by the principal or designate and covers such elements as the structure and organization of the school, student and teacher demographics and the school's resources, policies and practices. Another questionnaire is completed by every student who participates in the assessment and includes questions about the student's family and home, the classroom and school climate and the student's strategies, attitudes and dispositions toward learning in reading, mathematics and science.

HOW YOUR SCHOOL'S RESULTS ARE PRESENTED IN THIS REPORT

In this report your school's results will be compared with results from past PISA cycles. The results are presented in the following four sections:

Section 2, *What Students at Your School Know and Can Do in Reading, Mathematics and Science,* allows the reader to become familiar with the school's results, before these are placed in an international context. The section describes the school's performance in terms of school-level means and students' distribution in the PISA proficiency levels, including the percentage of highest-performing students and students who do not reach the baseline level of proficiency. The section also shows how your school performs compared with similar schools across the country in terms of the students' socioeconomic backgrounds.

Section 3, *Student Engagement and the Learning Environment at Your School in an International Perspective,* describes the teacher-student relations at your school, the disciplinary climate in the classrooms and the students' attitudes toward learning as reported by the students in the contextual questionnaires. The section shows how these elements are related to student performance at your school and explains international findings on the relationship between the learning environment and the students' learning outcomes.

Section 4, *Your School Compared with Similar Schools in Your Country*, focuses on the relationship between the socioeconomic status of students at your school and their performance relative to students and schools in your country based on PISA 2009 results. PISA results have shown that it is useful not only to look at absolute performance but to also consider the degree to which students come from advantaged or disadvantaged backgrounds. The section also shows the performance of your school in the context of public and private schools in your country and shows how performance can be considered relative to the average socio-economic status of students.

Section 5, *Your School's Results in an International Context*, places your school's results in an international context for benchmarking. Your school will be compared with PISA 2009 results for a selected group of 12 countries and economies, most of which are the highest-performing or have undertaken significant reforms and seen rapid improvements. The section includes a comparison between how students at your school perform compared with students in similar schools in Shanghai-China, the world's highest-performing education system, and in Mexico, the lowest-performing country in the OECD area.

The annexes include a technical overview of the assessment, a summary of how the test was carried out at your school, examples of test questions and tables of the most relevant results for all countries and economies that participated in PISA 2012.

Throughout the report you will find international case stories and insights on successful school improvement efforts gleaned from PISA and other OECD research on education. You will find text boxes that describe how some schools and educators have succeeded in implementing reforms and how they have tackled low performance and cultivated talented students. You will also find links to additional resources, such as a video series that showcases local educators and policy makers from around the world telling their own stories about how they succeeded in improving student outcomes.

Box 1.2 An introduction to the PISA assessment frameworks

The PISA frameworks focus on students' capacity to analyze, reason and communicate effectively as they pose, solve and interpret problems in a variety of situations. Age 15 is chosen as the target population of PISA because at this age students are approaching the end of compulsory education in most OECD, and many non-OECD, countries.

Competence involves far more than the capacity to reproduce accumulated knowledge. The PISA assessment frameworks define competence as the ability to successfully meet complex demands in varied contexts through the mobilization of psychosocial resources, including knowledge and skills, motivation, attitudes, emotions and other social and behavioral components. Within this definition, the first PISA assessments have focused on literacy skills, defined as the capacity of young adults to access, manage, integrate and evaluate information; to think imaginatively; to hypothesize and discover; and to communicate their ideas effectively. The reasoning behind shifting the emphasis from assessing whether students can reproduce what they have learned toward whether they can extrapolate from what they have learned and apply their competencies in novel situations derives from the nature of knowledge and skills required in modern life: tasks that can be solved through simple memorization or with pre-set algorithms are those that are also easiest to digitize, automate and contract offshore, and thus will be less relevant in a modern knowledge-based society.

To underscore the development process of the PISA frameworks, including but not limited to the areas of reading, mathematics and science, the following summarizes relevant milestones since the first cycle of the assessment in 2000 up to the most recent cycle in 2012, when mathematics was the focus:

- In 2000, PISA began with a focus on reading literacy, examining students' capacity to use, interpret and reflect on written material.
- In 2003, PISA focused on the capacity of students to put mathematical knowledge into functional use in a multitude of situations in varied, reflective and insight-based ways. Contrary to traditional school mathematics, often taught in an abstract mathematical world and in ways that are removed from authentic contexts, PISA tried to highlight the usefulness of mathematics in the real world. To succeed in PISA, students had to draw connections between the real world and the mathematical one, often in complex open-ended tasks. Many of the PISA tasks therefore confronted students with real-life problems in open-ended format. As a first step, students had to translate the situation or problem they faced into a form that exposed the relevance of mathematics. They then had to make the problems amenable to mathematical treatment, using relevant knowledge to solve problems, and finally to evaluate the solution in the original problem context.
- Also for PISA 2003, problem solving was included as an additional assessment domain. Since that assessment, considerable research has been undertaken in the areas of complex problem solving, transfer, computer-based assessment of problem solving and large-scale assessment of problem-solving competency.[1] This research has led to advances in understanding and measuring individuals' problem-solving capabilities and is the basis for the development of the PISA 2012 problem-solving framework described later in this note.
- PISA's development continued with an assessment in science in 2006 that focused on students': *i)* scientific knowledge and use of that knowledge to identify questions, to acquire new knowledge, to explain scientific phenomena, and to draw evidence-based conclusions about science-related issues; *ii)* understanding of the characteristic features of science as a form of human knowledge and inquiry; *iii)* awareness of how science and technology shape our material, intellectual and

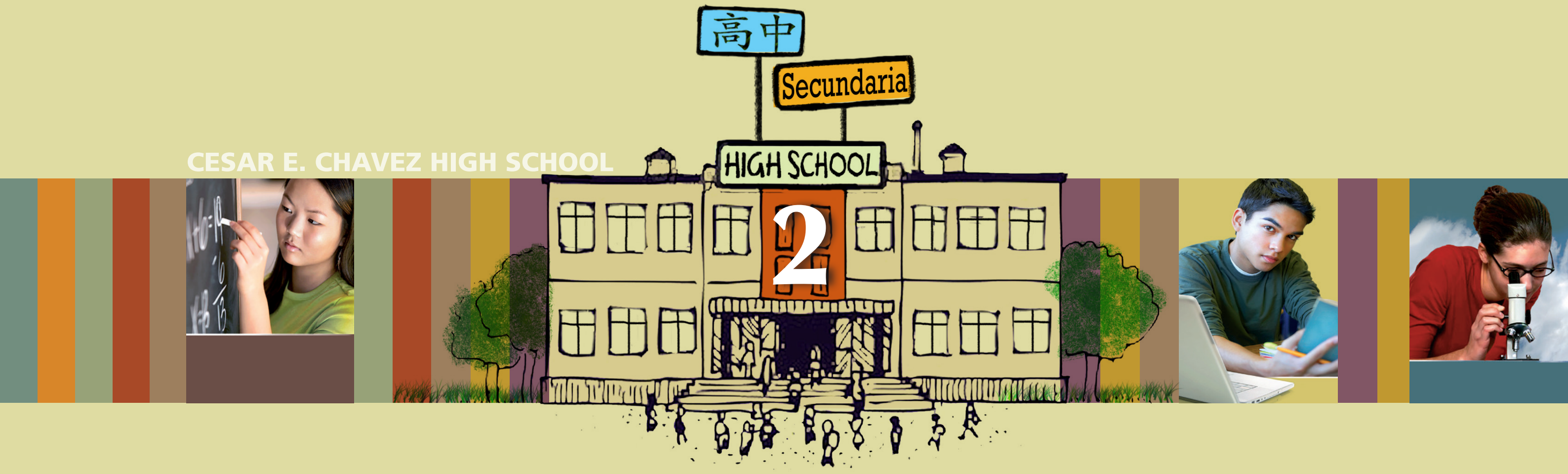
1. See e.g.: Blech & Funke (2010); Klieme (2004); Mayer (2002); Mayer & Wittrock (2006).

...

cultural environments; and *iv)* willingness to engage with science-related issues, and with the ideas of science, as reflective citizens. PISA has also begun to look at students' dispositions to learning, their approaches to learning, their self-concept and their engagement with school more generally.

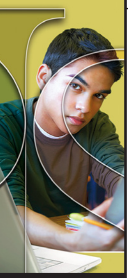
- For PISA 2009, reading literacy was once again the main domain, as it had been in the initial 2000 assessment. Based on progress in research and methods, however, important additions and developments were incorporated into the updated 2009 reading literacy framework. In addition to incorporating electronic texts, the PISA 2009 framework elaborated the constructs of reading *engagement* and *metacognition* (the awareness of and ability to use a variety of appropriate strategies when processing texts in a goal-oriented manner), given their importance to reading proficiency and the students' responsiveness to teaching and learning.
- In PISA 2012, the main area of assessment was mathematics, as it was in 2003. The assessment focused on an individual's capacity to formulate, employ and interpret mathematics in a variety of contexts. It included reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena. PISA assists students in recognizing the role that mathematics plays in the world and measures not just the extent to which students can reproduce mathematical content knowledge, but also how well they can extrapolate from what they know and apply their knowledge of mathematics in both new and unfamiliar situations. This is a reflection of modern societies and workplaces, which value success not by what people know, but by what people can do with what they know. The focus on real-life contexts is also reflected in the reference to using "tools" that appears in the PISA 2012 definition of mathematical literacy. The word "tools" here refers to physical and digital equipment, software and calculation devices that have become common in 21st-century workplaces.
- In addition, in PISA 2012, the computer-based assessment of problem solving was implemented as a core element in 44 countries and economies. Moreover, the financial-literacy framework developed served as the basis for an optional assessment in this domain in which 18 countries participated. Similarly, 32 participating countries and economies applied the optional computer-based assessment of reading and mathematics. As discussed in the following section, the PISA frameworks exploit the potential benefits provided by computer-delivered assessments.
- The 2015 PISA cycle will focus on scientific literacy as the major domain once again (as in 2006), and work is currently underway to review and revise the scientific literacy framework, including the possibility for computer delivery. Building on the problem-solving framework developed for the 2012 cycle, an important aspect for 2015 is the intent to include a computer-based assessment of *collaborative problem-solving skills*. Because engaging other students in a collaborative group effort requires additional cognitive and social skills for teamwork and interpersonal interactions, the computer-based collaborative problem-solving assessment represents a step toward assessing interpersonal competencies.

To find out more about PISA Assessment Frameworks, go to:
PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy



What Students at Your School Know and Can Do in Reading, Mathematics and Science

This section provides an overview of your school's performance in the *OECD Test for Schools* (based on PISA). It then describes what students at your school know and can do in each of the three assessment domains of reading, mathematics and science, focusing on the distribution of the highest- and lowest-performing students and on the kinds of tasks that they are able to perform. The section highlights the importance of the PISA proficiency levels in understanding the results from the assessment.

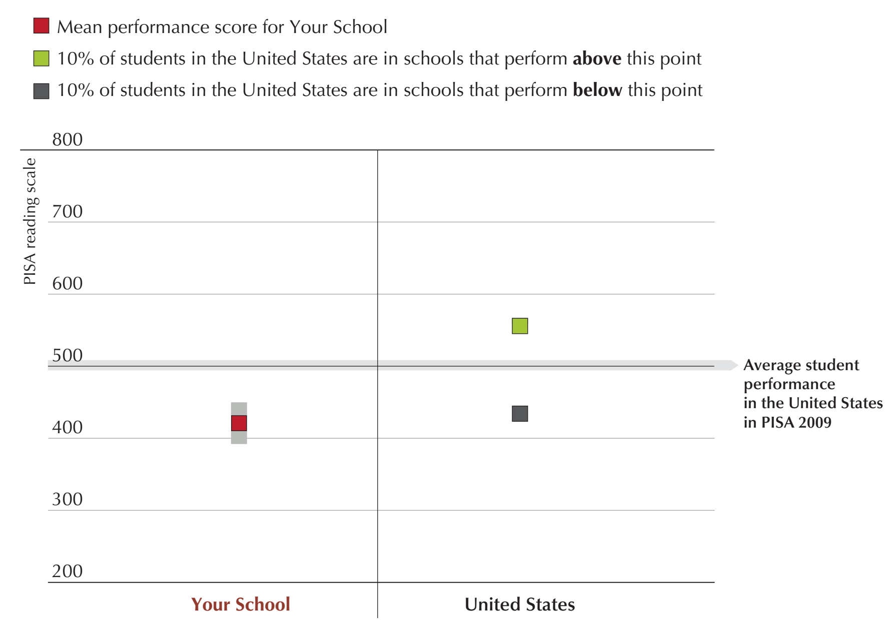


A PROFILE OF STUDENT PERFORMANCE AT YOUR SCHOOL COMPARED WITH THAT OF THE UNITED STATES

As discussed in the previous section, the *OECD Test for Schools* measures students' knowledge and skills in three core subjects: reading, mathematics and science. To better understand your school's performance results, it is useful to begin by comparing them with the performance of students in other schools in your country. Figures 2.1a to 2.1c show the mean performance results for your school in reading, mathematics and science in relation to the highest- and lowest-performing students and schools in your country.

On the right-hand side of the charts you will see two performance thresholds related to the highest-performing schools and the lowest-performing schools in the United States in PISA 2009. At the higher end of performance, the upper marker indicates the point *above* which the highest-performing schools that account for 10% of the students in the United States perform. At the lower end of performance, the lower marker indicates the point *below* which the lowest-performing schools that account for 10% of students in the United States perform. The schools that are neither highest- nor lowest-performing – accounting for the remaining 80% of students in the United States – perform between the two points. The figures also include the average performance scores for students in the United States in PISA 2009 in reading, mathematics and science shown by the shaded lines.

Figure 2.1a ▪ **Your school's performance in reading compared with schools in the United States in PISA 2009**



Note: Shaded bars above and below the mean score represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times to students, your mean performance score would fall within this confidence interval.
Source: OECD.

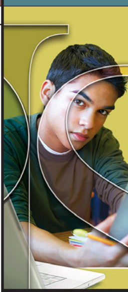
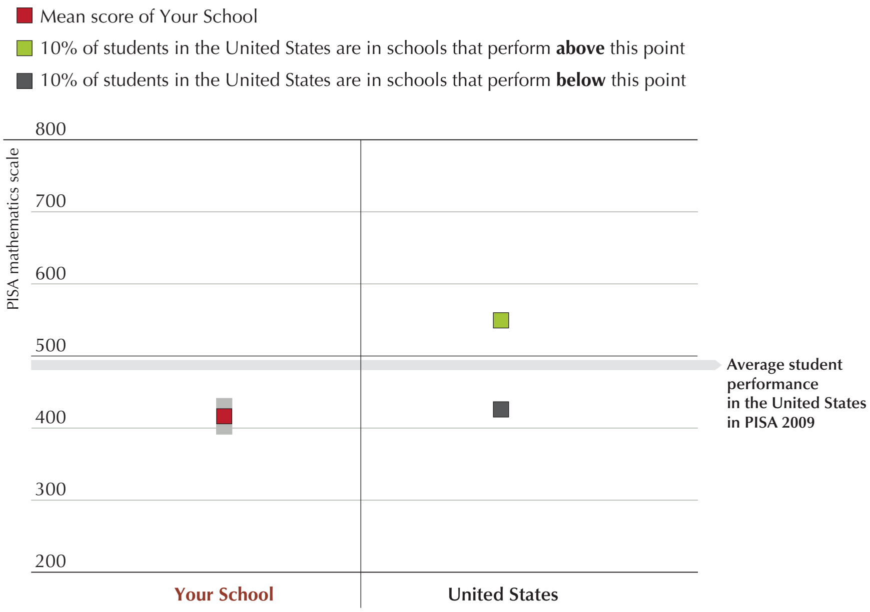
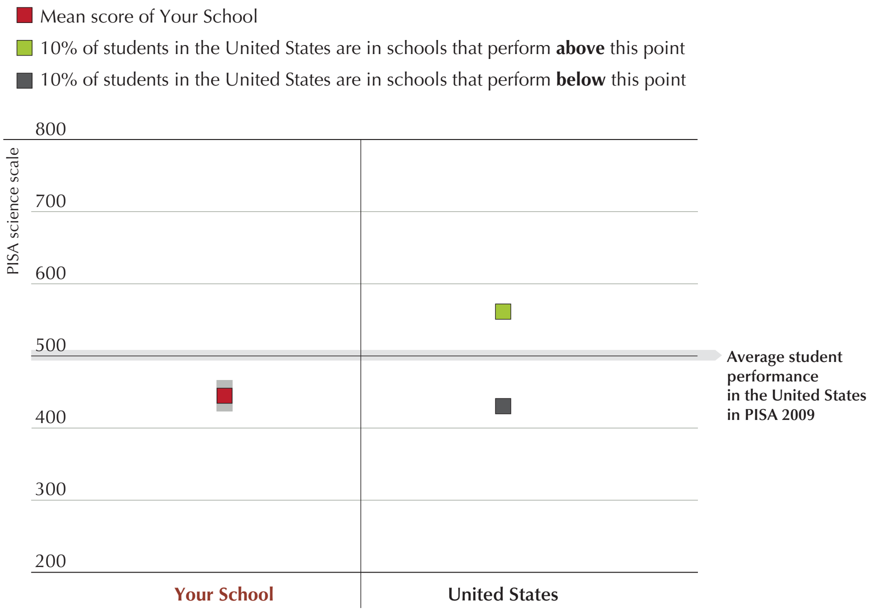


Figure 2.1b ▪ **Your school's performance in mathematics compared with schools in the United States in PISA 2009**



Note: Shaded bars above and below the mean score represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times to students, your mean performance score would fall within this confidence interval.
Source: OECD.

Figure 2.1c ▪ **Your school's performance in science compared with schools in the United States in PISA 2009**



Note: Shaded bars above and below the mean score represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times to students, your mean performance score would fall within this confidence interval.
Source: OECD.

Student performance in the United States

In the United States, the average reading performance of 15-year-old students in PISA 2009 is 500 score points on the reading scale, which is not statistically different from the average of 493 points in OECD countries. Among OECD countries, Korea, Finland and Canada are among the highest-performing countries in PISA 2009, with averages of 539, 536 and 524 points, respectively. Among countries and economies that participated in PISA 2009 but that are not members of the OECD, Shanghai-China, Hong Kong-China and Singapore were among the highest performers in reading. At 494 score points on the reading scale, the United Kingdom performed around the OECD average in PISA 2009, similarly to the United States. Among OECD countries, Chile and Mexico are the lowest-performing countries, with reading scores of 449 and 425, respectively, while the non-OECD country Peru is one of the lowest performers overall, with an average score of 370 in reading.

In mathematics, the performance of the United States in PISA 2009 (487 score points) is below the OECD average (496 score points). The highest-performing education system in PISA is that of Shanghai-China, with an average score of 600 points. Singapore, Hong Kong-China, Korea, Chinese Taipei and Finland are other top performers in mathematics. The mean score in the United Kingdom is 492 points, not statistically different from the OECD average. Canada performs above the OECD average, with 527 points.

The science performance of students in the United States is 502 points, not statistically different from the OECD average. The highest-performing education systems in science are also top performers in reading and mathematics. Shanghai-China has a mean performance of 575, making it the highest-performing education system in PISA 2009. Students in Finland, Hong Kong-China and Singapore are other top performers internationally. Both the United Kingdom and Canada perform above the OECD average, with 514 and 529 points, respectively.

The United States has participated in every cycle of PISA since 2000. PISA results therefore allow the performance of students in the United States to be compared with that of their peers throughout the world and to identify trends over time. This part of the report describes how the United States has performed in all PISA cycles from 2000 to 2009.

As previously discussed, the performance of the United States in PISA 2009 was *average* in reading and science among the 34 countries that currently make up the OECD and *below average* in mathematics. The results of the United States over the different PISA cycles show that student performance in reading and mathematics has remained broadly unchanged (Figure 2.2).

Figure 2.2 ▪ **Mean performance scores in reading, mathematics and science in the United States (PISA 2000, 2003, 2006 and 2009)[1]**

	PISA 2000	PISA 2003	PISA 2006	PISA 2009
	Mean score	Mean score	Mean score	Mean score
Reading	**504** (7.0)	**495** (3.2)		**500** (3.7)
Mathematics		**483** (2.9)	**474** (4.0)	**487** (3.6)
Science			**489** (4.2)	**502** (3.6)

Notes: Standard errors indicated in parentheses under the mean scores.
Shaded cells indicate that data are not available for those particular domains in the corresponding PISA cycle.

1. For PISA 2012 results see Annex D.

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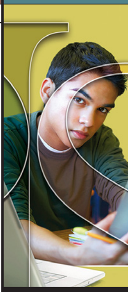

Box 2.1 The relationship between education and economic growth: Would improved educational outcomes of students also improve the prospects of a country's future?

During the 2010 World Economic Forum in Davos, Switzerland, the OECD released a report, *The High Cost of Low Educational Performance*. Written by Professor Eric A. Hanushek from the Hoover Institution at Stanford University and by Professor Ludger Woessmann from the Ifo Institute for Economic Research in Munich, Germany, the report uses economic modeling to estimate the relative value of cognitive skills to a country's projected economic growth. The report reflects the influence that human capital has on growth and how it can be characterized by the relationship between direct measures of cognitive skills and long-term economic development. The OECD report combines PISA results for countries with other international assessments to construct a common scale that looks at countries' performance on all of the assessments.

The report concludes that improvements in students' educational outcomes can greatly affect the skills of a nation's labor force and therefore affect the future of a nation's economy. These gains are measured by an increasing GDP over the long term. The evidence from the economic models presented in the report indicates that a majority of differences in economic growth rates across OECD countries can be explained by differences in cognitive skills and that differential skills have a very powerful and continuing impact on economic growth (OECD, 2010b).

The OECD report suggests that if countries want to invest long term in their economic growth, they must improve the quality of their education. The skills available in the labor force, and the price of those skills, determine how countries fare in the global market. Workers with higher levels of education become even more important as services and production systems become more complex. As heightened mobility of the global workforce is inevitable, the right balance is needed to encourage overall equity in societies and offer strong economic incentives to attract and retain skilled workers.

The PISA average performance score in reading for OECD countries was 493 points in 2009. If all 30 OECD countries[1] at the time the report was written were to raise their average PISA scores by only 25 points in the next 20 years, there would be a total gain of USD 115 trillion in GDP over the lifetime of the generation born in 2010 for OECD countries; in other words, by 2090. This projection assumes that it takes 20 years to implement reforms, meaning that the true impact would be felt when today's young students with greater skills become active members of the workforce.

The possible effect of improving PISA scores on GDP for the United States, Canada and the United Kingdom in a span of 20 years (2010-30)

	After bringing everyone to a basic level of 400 score points on PISA		After an increase of 25 PISA score points	After bringing each country to the Finnish performance of 546 points* on PISA	
	Value of reform (USD bn)	% of current GDP	Value of reform (USD bn)	Value of reform (USD bn)	% of current GDP
Canada	2,594	185	3,743	2,524	180
United Kingdom	6,481	272	6,374	7,326	307
United States	72,101	475	40,647	103,073	678

*546 score points represents Finland's PISA average in mathematics and science in 2000, 2003 and 2006.

Source: OECD (2010b), *The High Cost of Low Educational Performance: The Long-Run Economic Impact of Improving PISA Outcomes*, OECD Publishing.

1. When *The High Cost of Low Educational Performance: The Long-Run Economic Impact of Improving PISA Outcomes* was published, there were a total of 30 OECD member countries, as opposed to 34 today.

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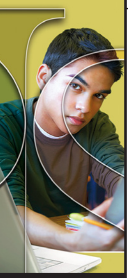


That would mean for the United States growth of almost USD 41 trillion in GDP from just under USD 15 trillion in GDP over the next 80 years and for the United Kingdom a USD 6 trillion increase in GDP, while Canada's GDP would increase by more than USD 3.7 trillion (OECD, 2010b).

To see the full impact of education on economic growth, however, countries must be able to absorb the newly trained and more advanced skilled workforce into the labor market; new types of jobs must be created and new technologies must be invented. Countries must use more creativity, critical thinking, problem solving and decision-making with innovative methods of communication and collaboration and learn how to recognize and exploit the potential of new technologies. Students must gain the ability to live in a multi-faceted world as active and responsible citizens (OECD, 2012a).

In the United States, local and regional government agencies have increasingly adopted sectoral strategy approaches to economic development. Through these efforts, some high schools and community colleges are able to establish career-pathway models that help connect them to the economy and produce workers with the appropriate skills for jobs in the region.

Through the School-to-Work Opportunities Act in Maryland (United States), around 350 business executives in 10 sectors were brought together to inform education policy makers about what they needed to be successful. The original project mapped out what knowledge and skills were required to develop programs around clusters of skills. For example, in Montgomery County, Maryland, which hosts the third-largest biotechnology cluster in the United States, a Cluster Advisory Board (CAB) focuses on biosciences, health science and medicine. Administrators, counselors, and faculty members use the system to develop programs that extend from high school to two- and four-year colleges/universities, graduate schools, apprenticeship programs and the workplace. The cluster framework, originally developed for high schools and young people, is now being adopted by workforce investment boards and other programs serving adults (OECD, 2012a).

To find out more about how countries are preparing students for the future and the impact of education on a country's GDP, go to:

- *The High Cost of Low Educational Performance: The Long-Run Economic Impact of Improving PISA Outcomes*
- *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*

Sources: Organisation for Economic Co-operation and Development (OECD) (2010b), *The High Cost of Low Educational Performance: The Long-Run Economic Impact of Improving PISA Outcomes*, OECD Publishing.

OECD (2012a), *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*, OECD Publishing.

Box 2.2 **The sample of students and schools participating in PISA 2012 in the United States**

The purpose of the sampling procedures conducted as part of the main PISA studies every three years is to provide results of student performance that are statistically representative for the whole country. Therefore, the students who participate in the main PISA studies are selected to statistically "represent" the total population of 15-year-olds in a given country. In the case of the United States for PISA 2012, a total of 6,111 students from 161 public and private schools participated. The schools and students were randomly selected and weighted so that results would be representative of the education system as a whole. At each of the participating schools, approximately 35 to 42 15-year-old students were invited to take part (unless the school had fewer than 35 eligible students, in which case all students were selected). Unlike other federal systems such as Canada and the United Kingdom, the United States did not measure the performance of states individually in PISA 2009, but a limited number of states did so in PISA 2012.[1]

1. In PISA 2012, three states – Connecticut, Florida and Massachusetts – participated to receive state-level results in addition to the country-level results for the United States.

In science, however, the United States has seen gains since 2006 and is now performing at the OECD average. These gains were driven mainly by improvements at the bottom of the performance distribution: between 2006 and 2009, there was a 7% decrease in students performing below Level 2 proficiency. At the top end of the performance scale (proficiency Levels 5 and 6), however, performance stayed relatively unchanged.

Expenditure per student explains 9% of the variation in student performance across OECD countries. PISA results show, however, that it is not just the volume of resources that matters, but how well countries succeed in directing the money where it can make the most difference. While the United States spends over USD 100,000 on education per student between the ages of 6 and 15 (surpassed only by Luxembourg), countries such as Canada, Finland and Korea achieve significantly better student outcomes with spending between USD 60,000 and 80,000 per student.

Across OECD countries, average reading performance has remained largely unchanged between PISA 2000 and PISA 2009. Yet some countries have seen marked improvements in learning outcomes. In Germany the average performance in reading increased by 13 points from 2000 to 2009, and in Poland and Portugal the performance increased by around 20 points in the same period. In these countries, the improvements in learning outcomes are the result of wide-ranging reforms in the education systems. The trends shown by PISA results indicate, therefore, that improvement is possible in a relatively short period of time – even at the system level.

PISA results therefore provide two key insights. One is that it is not just the amount of resources that can produce quality and equity across education systems, but how those resources are put to use. The second is that improvement is possible in a reasonable time frame, as shown by the improvement trajectories of some education systems across the world. To help put these and other insights from PISA into perspective, throughout this report the reader will find text boxes and references to OECD reports, research and resources (including videos) that analyze and provide examples of the education reforms in these and in other countries that are the highest-performing or that have seen rapid improvements in learning outcomes.

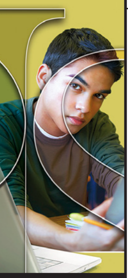
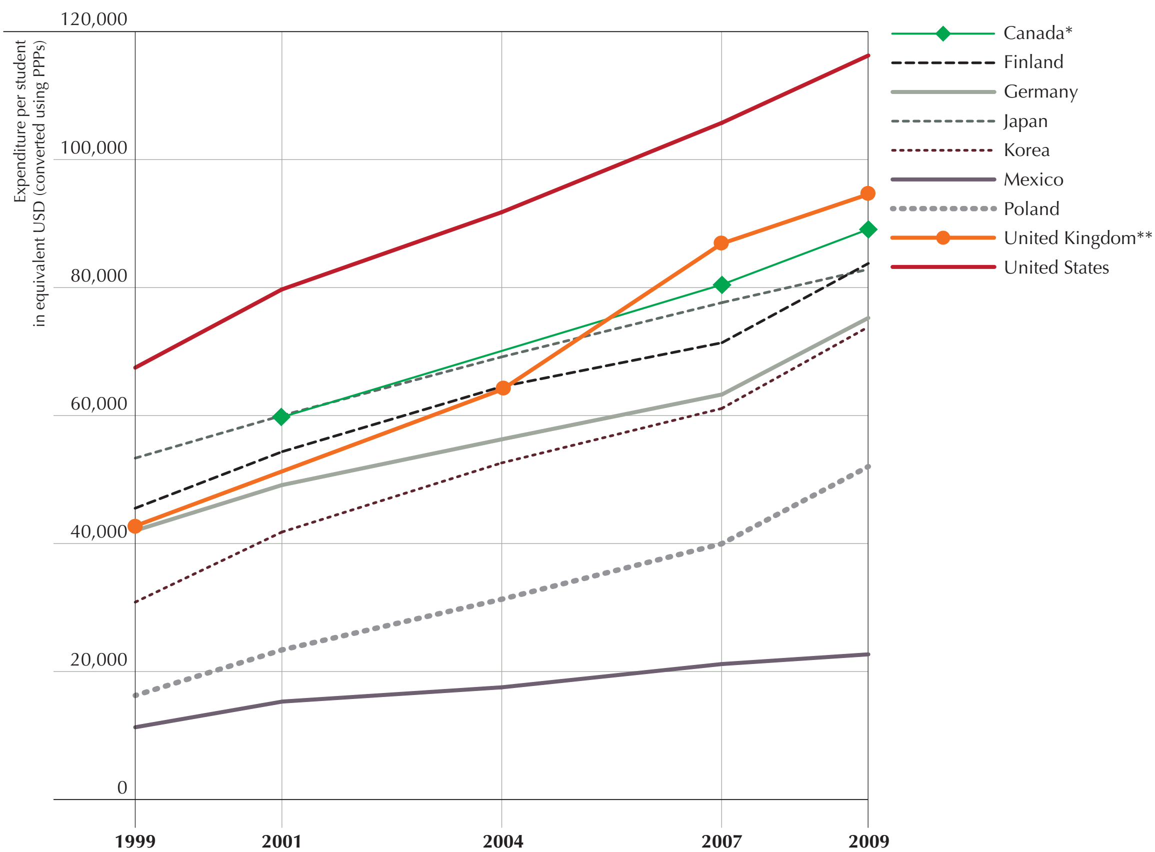


Figure 2.3 ▪ **Expenditure per student in Canada, the United Kingdom, the United States and selected OECD countries**



* Data for Canada are not available for 1999 and 2004.
** Data for the United Kingdom are not available for 2001.
Sources: Annual OECD publications of *Education at a Glance: OECD Indicators* from 2003, 2004, 2007, 2009 and 2012.

What students at your school know and can do in reading

This section takes a closer look at your school's performance results in reading. How well do students at your school read? Can they find what they need in written texts, interpret and use the information, and reflect upon it critically in relation to their own experiences and understanding? And how do they compare to students across the United States that participated in PISA 2009?

The reading part of the *OECD Test for Schools* focuses on students' ability to use written information in situations that they encounter in life. Like in the main PISA study, *reading literacy* in the *OECD Test for Schools* is defined as

> ***understanding, using, reflecting on and engaging with written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society.***

This definition goes beyond the traditional notion of the decoding of information and literal interpretation of what is written, toward more applied tasks. To provide a better understanding of the type of tasks used to assess student competencies, a selection of sample tasks can be found at the end of this section.

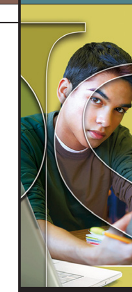


Figure 2.4 ■ **The six levels of reading proficiency in PISA**

Level	Lower score limit on PISA scale	What students can do at this level of proficiency
6	698	Students at proficiency Level 6 are highly skilled readers. They can conduct fine-grained analyses of texts, which require detailed comprehension of both explicit information and unstated implications, and they can reflect on and evaluate what they read at a more general level. Students at this level have successfully completed most of the tasks presented to them in the reading assessment, demonstrating that they are capable of dealing with many different types of reading material. Hence, they are diversified readers who can assimilate information from unfamiliar content areas presented in atypical formats, as well as being able to engage with more familiar content with typical structures and text features. Another characteristic of the most highly developed readers is that they can overcome preconceptions in the face of new information, even when that information is contrary to expectations. Students at this level are capable of recognizing what is provided in a text, both conspicuous and more subtle information, while being able to apply a critical perspective to it, drawing on sophisticated understanding beyond the text.
5	626	Students at proficiency Level 5 can handle texts that are unfamiliar in either form or content. They can find information in such texts, demonstrate detailed understanding, and infer which information is relevant to the task. They are also able to critically evaluate such texts and build hypotheses about them, drawing on specialized knowledge and accommodating concepts that might be contrary to expectations. An inspection of the kinds of tasks students at Level 5 are capable of suggests that those who get to this level and Level 6 can be regarded as potential "world-class" knowledge workers of tomorrow.
4	553	Students at proficiency Level 4 are capable of difficult reading tasks such as locating embedded information, construing meaning from linguistic nuances and critically evaluating a text. Tasks at this level that involve retrieving information require the reader to locate and organize several pieces of embedded information. Some tasks at this level require interpreting the meaning of nuances in a section of text by taking into account the text as a whole. Other interpretative tasks require understanding and applying categories in an unfamiliar context. Reflective tasks at this level require readers to use formal or public knowledge to hypothesize about or critically evaluate a text. Readers must demonstrate an accurate understanding of long or complex texts whose content or form might be unfamiliar.
3	480	Students at proficiency Level 3 are capable of reading tasks of moderate complexity, such as locating multiple pieces of information, making links between different parts of a text, and relating it to familiar everyday knowledge. Tasks at this level require the reader to locate, and in some cases recognize the relationship between, several pieces of information that must meet multiple conditions. Interpretative tasks at this level require the reader to integrate several parts of a text in order to identify a main idea, understand a relationship, or construe the meaning of a word or phrase. They need to take into account many features in comparing, contrasting or categorizing. The required information might not be prominent or there may be too much competing information, or there might be other obstacles in the text, such as ideas that are contrary to expectation or that are negatively worded. Reflective tasks at this level might require connections, comparisons, and explanations, or they might require the reader to evaluate a feature of the text. Some reflective tasks require readers to demonstrate a fine understanding of the text in relation to everyday knowledge. Other tasks do not require detailed text comprehension but require the reader to draw upon less common knowledge.
2	407	Students at proficiency Level 2 are capable of tasks that require the reader to locate one or more pieces of information, which might need to be inferred and might need to meet several conditions. Other tasks at this level require recognizing the main idea in a text, understanding relationships, or construing meaning within a limited part of the text when the information is not prominent and the reader must make low-level inferences. Tasks at this level may involve comparisons or contrasts based on a single feature in the text. Typical reflective tasks require readers to make a comparison or several connections between the text and outside knowledge by drawing on personal experience and attitudes. PISA considers Level 2 a baseline level of proficiency at which students begin to demonstrate the reading skills and competencies that will allow them to participate effectively and productively in life as they continue their studies and as they enter into the labor force and become members of society.
1	335	Students at proficiency Level 1 are capable of locating pieces of explicitly stated information that are rather prominent in the text, recognizing a main idea in a text about a familiar topic, and recognizing the connection between information in such a text and their everyday experience. Typically the required information in texts at this level is prominent and there is little, if any, competing information. The reader is explicitly directed to consider relevant factors in the task and in the text.

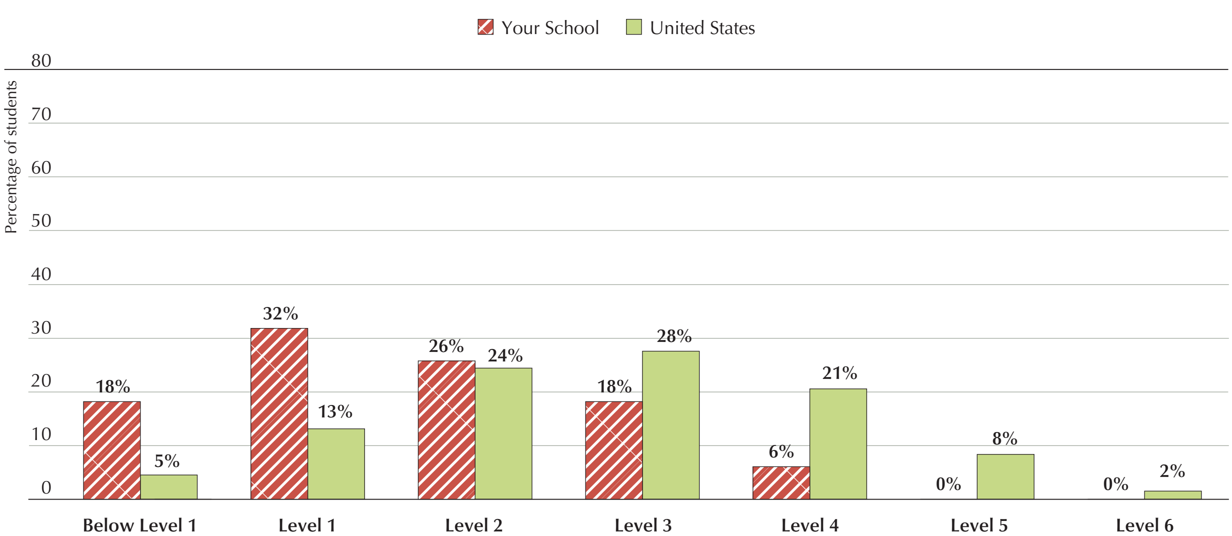
Depending on the tasks that students are able to successfully respond to, students can be grouped into levels of reading proficiency. Figure 2.4 presents short descriptions of what students are expected to know and be able to do at each proficiency level. The lowest score limit on the PISA reading scale is presented for each level. Students with a score between 480 and 552, for example, are proficient at Level 3. Students with a score of 698 or above are proficient at Level 6, while students with a score below 335 do not reach Level 1. Students below Level 1 are not necessarily considered illiterate, but based on the test used in the pilot, there is insufficient information on which to base a description of these students' reading proficiency. **Level 2** is considered the baseline level of reading proficiency. At this level students begin to demonstrate reading competencies that will enable them to participate effectively and productively in life. You can find a description of the assessment frameworks in the annexes to this report.

How students at your school perform in terms of proficiency levels in reading

Figure 2.5 shows the distribution of students at your school in the six proficiency levels in reading compared with students in the United States in PISA 2009. If the bars are striped, the distribution of students at your school is statistically different from that of the United States. If the bars are solid, the distributions are not statistically different.

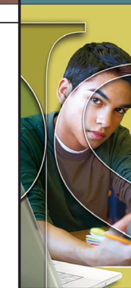
Only about 1 in 10 students in the United States performs at or above Level 5 in reading, while Shanghai-China, a top educational system, has twice as many of the highest-performing students in reading. The kinds of tasks that students at Levels 5 and 6 are capable of suggest that those who get to Level 5 or above can be regarded as potential "world-class" knowledge workers of tomorrow.

Figure 2.5 ▪ **How proficient are students at your school in reading compared with students in the United States in PISA 2009**



Note: Striped bars are an indication that the distribution of students in proficiency levels at your school is statistically significantly different from the distribution of students in the United States. Solid bars are an indication that the distribution of students in proficiency levels at your school is not statistically significantly different from the distribution of students in the United States.
Source: OECD.

Eighteen percent of 15-year-olds in the United States do not reach the baseline Level 2 of reading proficiency. As described earlier, Level 2 is the level at which students begin to demonstrate reading competencies that will enable them to participate effectively and productively as continuing students, as workers and as citizens. Excluding students with an immigrant background reduces the percentage only slightly, to 16%.



Box 2.3 **The link between reading performance and success in adult life**

The ability to comprehend and interpret a text is not only a necessary foundation for all subject areas within an educational setting, but it is also essential for successful participation in most areas of adult life. Today, we recognize that it is not only the quantity of education that matters, but also the quality. Learning in school is not enough: students must be taught how to continue as lifelong learners after having left the halls of educational institutions. In order to meet this goal, students must be ready to cope with the variety of written information they will encounter throughout their lives and must be able to apply that knowledge in everyday settings as they make the transition to adult life (OECD, 2002).

Canada launched the "Youth in Transition Survey" in 2000, which interviewed 30,000 Canadian students who had participated in PISA 2000 every two years from ages 15 to 25. The survey shows that students in the bottom quartile of PISA reading scores were much more likely to drop out of secondary school and less likely to continue beyond grade 12 than those in the top quartile. High achievers were more likely to continue with education at age 21 and did not enter the workforce right away. Students at the top PISA levels of reading proficiency (Levels 5 and 6) were 20 times more likely to go to university than those at or below Level 1. If students who were in the top quartile did work, they were more likely to return to education later. Students who scored below Level 2 faced a disproportionately higher risk of poor participation in post-secondary education or low labor-market outcomes at age 19, and even worse outcomes at age 21. Also, women who had obtained high reading scores at age 15 earned 12% more than those with low scores. However, the relationship was weaker for men (OECD, 2010e).

Expanding students' knowledge of occupational choices and increasing their occupational aspirations may help them to become more motivated learners. Educational benefits can be reinforced by making literature available and other cultural possessions accessible to students, especially those from poor families in low- and middle-income neighborhoods. In addition, students who talk with their parents about social and cultural issues tend to be better readers. How will we support parents, particularly those with limited educational attainment, to facilitate their interaction with their children and with their children's schools?

Another interesting find from PISA 2009 results is that the difference between students who have higher scores on the combined reading literacy scale and those with lower scores is how they approach reading. Those who spend more time reading for pleasure tend to read a great variety of materials and have a more positive attitude toward reading. They tend to be better readers, regardless of family background (OECD, 2010h).

For students to become better readers, and overall learners, teachers can help promote parents' involvement at home. In addition, parent-teacher partnerships need not be restricted to school-based activities. When teachers have trusting relationships with parents, they can share their knowledge about their students' needs and preferences. Teachers can also support and inform parents on the best way to engage with their children and can discuss matters with students directly when parents face constraints that make regular involvement with their children difficult (OECD, 2012e).

Teachers can develop programs to cultivate the desire to read. Programs such as "Drop Everything and Read" in the United States show children that reading for pleasure is a valuable activity.

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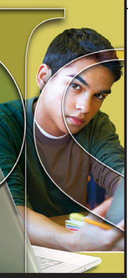


Teachers can encourage both students and parents to use libraries, support book clubs among students and among parents, and establish periods dedicated to reading during the school day. As a result, parents should begin to that see reading to their young children is as essential as feeding and clothing them, and children grow up with the deeply ingrained sense that reading is both a valuable pursuit and a pleasure (OECD, 2012e).

The workplace of the future will expect employees to obtain and organize information on the one hand and interpret and analyze the information on the other. Parents, teachers and communities can dramatically affect how much children read and help nurture young adults who continue to develop their knowledge base and their ability to think critically long after they have left school.

To find out more about the effects of reading on Canadian students' performance and other ways teachers and parents can encourage students to read, go to:

- *Pathways to Success: How Knowledge and Skills at Age 15 Shape Future Lives in Canada*
- *Let's Read Them a Story! The Parent Factor in Education*

Sources: Organisation for Economic Co-operation and Development (OECD) (2002), *Reading for Change: Performance and Engagement across Countries: Results from PISA 2000*, OECD Publishing.

OECD (2010e), *Pathways to Success: How Knowledge and Skills at Age 15 Shape Future Lives in Canada*, OECD Publishing.

OECD (2010h), *PISA 2009 Results: Learning to Learn: Student Engagement, Strategies and Practices (Volume III)*, PISA, OECD Publishing.

OECD (2012e), *Let's Read Them a Story! The Parent Factor in Education*, OECD Publishing.

In the highest-performing countries such as Canada, Finland and Korea, however, the proportion of poor performers is 10% or less. A Canadian study that followed students who were assessed by PISA in 2000 and later in life has shown that students scoring below Level 2 face high risks of not completing post-secondary education and of having difficulties in the labor market at age 19, and even more so at age 21. For example, more than 60% of students who performed below Level 2 in PISA 2000 had not gone on to any post-school education by age 21 (see Box 2.3).

How girls and boys perform in reading

PISA shows that in some subjects girls tend to perform better than boys, while in other subjects boys tend to perform better. It is useful therefore to look at the performance of girls and boys at your school to see if there are significant differences between them or between the tendency at your school and for the students who participated in PISA 2009. Large gender differences can indicate a need to consider whether instruction in the classroom is equally targeted toward all students and whether specific measures are necessary to improve performance among specific groups of students.

Figure 2.6 shows how girls and boys perform in reading at your school compared with girls and boys across the United States in PISA 2009. The left-hand side of the figure shows the results for your school, while the right-hand side shows the results for the United States in PISA 2009.

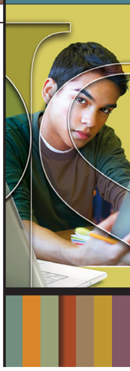
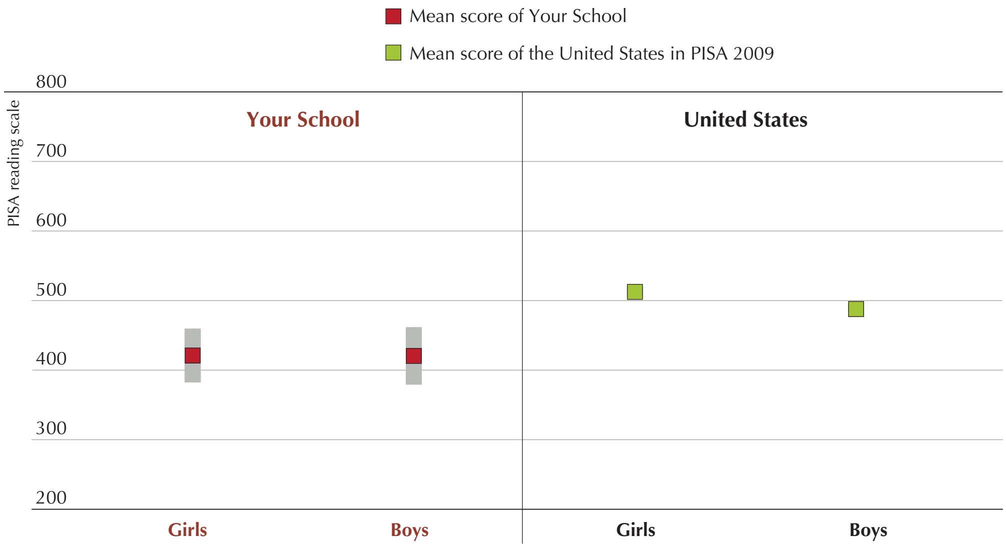


Figure 2.6 ▪ **How girls and boys perform in reading at your school and in the United States in PISA 2009**



Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance score would fall within this confidence interval.
Source: OECD.

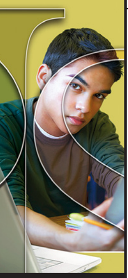
PISA results show that reading is the subject with the largest difference in average scores between boys and girls. In every country that participated in PISA 2009, from Albania to Singapore to the Russian Federation, ***girls on average read better than boys***. In the United States, the average gender difference in reading is 25 points in favor of girls. This difference is equal to the score point difference in reading between an average student in the United States (500 points) and an average student in one of the highest-performing country such as Singapore (526 points). Yet the gender gap in other countries can be even larger. On average across OECD countries, girls outperform boys by 39 points. In Canada the gender gap is close to the OECD average, with girls outperforming boys by 34 points. In the United Kingdom the gender difference is 25 points, similar to the United States.

What students at your school know and can do in mathematics

The following section will take a closer look at your school's results in mathematics. The *OECD Test for Schools* measures mathematics in terms of students' capacity to formulate, employ and interpret mathematics in a variety of contexts. This includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena.

Similar to the international PISA assessment, the test consists of tasks that allow the students to demonstrate their ability to analyze and reason as they solve and interpret mathematical problems that involve quantitative, spatial, probabilistic or other mathematical concepts. To provide a better understanding of the type of tasks used to assess students' knowledge and skills in mathematics, a selection of sample tasks has been included at the end of this section.

Depending on the tasks that students are able to respond to successfully, students can be grouped into different levels of mathematics proficiency. Figure 2.7 presents short descriptions of what students are expected to know and be able to do at each level of mathematics proficiency. The lowest score limit on the PISA scale is presented for each level. Level 2 represents a baseline level of mathematics proficiency at which students



begin to demonstrate the kinds of skills that enable them to use mathematics in ways that are considered fundamental for their future development. Students with a score between 482 and 544 are proficient at Level 3. Students with a score of 669 and above are proficient at Level 6, while students with a score below 358 do not reach Level 1. Students below Level 1 usually do not succeed at the most basic mathematical tasks that PISA and the *OECD Test for Schools* measure. Their pattern of answers is such that they would be expected to solve fewer than half of the tasks in a test made up of questions drawn solely from Level 1.

Figure 2.7 ▪ **The six levels of mathematics proficiency in PISA**

Level	Lower score limit on PISA scale	What students can do at this level of proficiency
6	669	Students at proficiency Level 6 can conceptualize, generalize and utilize information based on their investigations and modeling of complex problems. They can link different information sources and representations and flexibly translate between them. Students at this level are capable of advanced mathematical thinking and reasoning. They can apply this insight and understanding along with a mastery of symbolic and formal mathematical operations and relationships to develop new approaches and strategies for attacking novel situations. Students at this level can formulate and precisely communicate their actions and reflections regarding their findings, interpretations, arguments, and the appropriateness of these to the original situations.
5	607	Students at proficiency Level 5 can develop and work with models for complex situations, identifying constraints and specifying assumptions. They can select, compare, and evaluate appropriate problem-solving strategies for dealing with complex problems related to these models. Students at this level can work strategically using broad, well-developed thinking and reasoning skills, appropriately linked representations, symbolic and formal characterizations and insight pertaining to these situations. They can reflect on their actions and communicate their interpretations and reasoning.
4	545	Students at proficiency Level 4 can work effectively with explicit models for complex, concrete situations that might involve constraints or call for making assumptions. They can select and integrate different representations, including symbolic ones, linking them directly to aspects of real-world situations. Students at this level can use well-developed skills and reason flexibly, with some insight, in these contexts. They can construct and communicate explanations and arguments based on their interpretations, arguments and actions.
3	482	Students at proficiency Level 3 can execute clearly described procedures, including those that require sequential decisions. They can select and apply simple problem-solving strategies. Students at this level can interpret and use representations based on different information sources and reason directly from them. They can develop short communications reporting their interpretations, results and reasoning.
2	420	Students at proficiency Level 2 can interpret and recognize situations in contexts that require no more than direct inference. They can extract relevant information from a single source and make use of a single representational mode. Students at this level can employ basic algorithms, formulae, procedures, or conventions. They are capable of direct reasoning and literal interpretations of the results. PISA considers Level 2 a baseline level of mathematics proficiency at which students begin to demonstrate the kind of skills that enable them to use mathematics in ways that are considered fundamental for their future development.
1	358	Students at proficiency Level 1 can answer questions involving familiar contexts where all relevant information is present and the questions are clearly defined. They are able to identify information and to carry out routine procedures according to direct instructions in explicit situations. They can perform actions that are obvious and follow immediately from the given stimuli.

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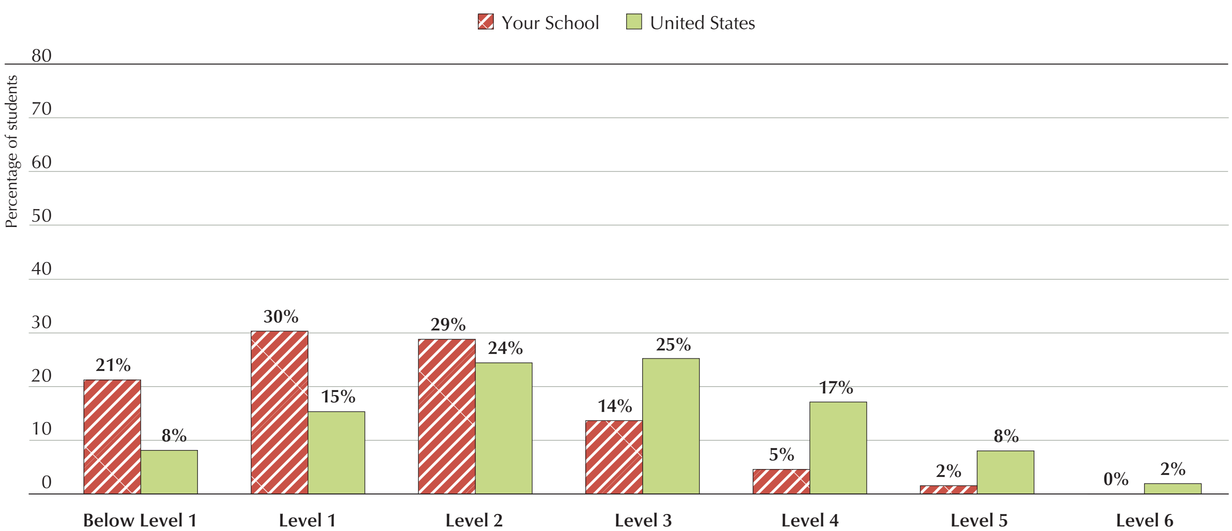
How students at your school perform in terms of proficiency levels in mathematics

Figure 2.8 shows the distribution of students at your school across the six proficiency levels in mathematics compared with students in the United States in PISA 2009. As before, if the bars are striped, the distribution of students at your school is statistically different from that of the United States. If the bars are solid, the distributions are not statistically different.

Figure 2.8 ▪ **How proficient are students at your school in mathematics compared with students in the United States in PISA 2009**



Note: Striped bars are an indication that the distribution of students in proficiency levels at your school is statistically significantly different from the distribution of students in the United States. Solid bars are an indication that the distribution of students in proficiency levels at your school is not statistically significantly different from the distribution of students in the United States.
Source: OECD.

Only 1 in 4 students in the United States (27%) scores at or above proficiency Level 4 in mathematics – the level at which students can solve problems that involve visual and spatial reasoning – which is comparable to the OECD average of 32%, while in the highest-performing OECD countries such as Finland and Canada, more than 40% of students perform at Level 4 or higher, and in Shanghai-China more than half of students perform at Level 5 or higher. In the lowest-performing OECD countries in mathematics – Chile and Mexico – less than 5% of students reach Level 5 or higher.

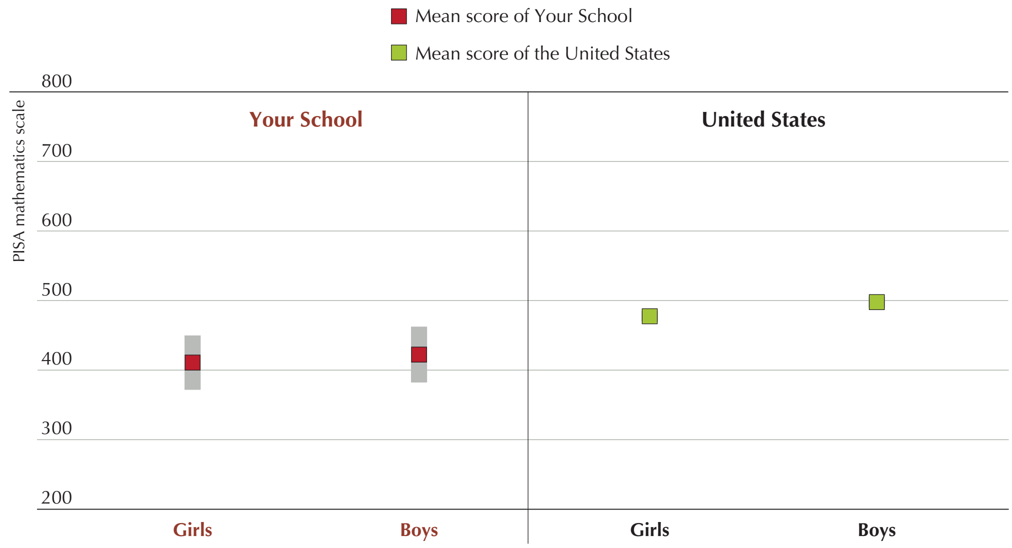
At the other end of the scale, 23% of students in the United States do not reach the baseline Level 2 in mathematics. Among these, 8% do not reach Level 1, while 15% reach Level 1 but not Level 2.

How girls and boys perform in mathematics

Figure 2.9 shows how girls and boys perform in mathematics at your school compared with girls and boys across the United States in PISA 2009.

In most countries ***boys on average perform better than girls in mathematics***. This is also the case in the United States, with boys performing on average 20 points higher than girls in mathematics. The 20-point difference makes the United States one of the countries with the largest gender gaps in the OECD area. The OECD average is a 12-point difference in favor of boys.

Figure 2.9 ▪ **How girls and boys perform in mathematics at your school and in the United States in PISA 2009**



Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance scores would fall within this confidence interval.
Source: OECD.

What students at your school know and can do in science

This section of the report will take a closer look at your school's results in science in order to provide information to respond to the following questions: To what extent have students at your school learned fundamental scientific concepts and theories? And have they learned to solve real-life problems involving science?

Unlike many traditional assessments of student performance in science, PISA and the *OECD Test for Schools* are not limited to measuring students' mastery of specific science content. Rather, they measure the capacity of students to identify scientific issues, explain phenomena scientifically and use scientific evidence as the students encounter, interpret, solve and make decisions in life situations involving science and technology.

To provide a better understanding of the type of tasks used to assess students' science competencies, a selection of sample tasks has been included at the end of this section. See also *PISA Take the Test: Sample Questions from OECD's PISA Assessments*.

As with reading and mathematics, depending on the science tasks that students are able to respond to successfully, students can be grouped into different levels of science proficiency. Figure 2.10 presents short descriptions of what students are expected to know and be able to do at each level of science proficiency. The lowest score limit on the PISA scale is presented for each level. Level 2 has been established as the baseline level of science proficiency. It defines the level of achievement at which students begin to demonstrate the science competencies that will enable them to participate actively in life situations related to science and technology. Students with a score between 484 and 558 are proficient at Level 3. Students with a score of 708 and above are proficient at Level 6, while students with a score below 335 do not reach Level 1. Students below Level 1 usually do not succeed at the most basic levels of science that PISA and the *OECD Test for Schools* measure. Their pattern of answers is such that they would be expected to solve fewer than half of the tasks in a test made up of questions drawn solely from Level 1.

Figure 2.10 ▪ **The six levels of science proficiency in PISA**

Level	Lower score limit on PISA scale	What students can do at this level of proficiency
6	708	At proficiency Level 6, students can consistently identify, explain and apply scientific knowledge and knowledge about science in a variety of complex life situations. They can link different information sources and explanations and use evidence from those sources to justify decisions. They clearly and consistently demonstrate advanced scientific thinking and reasoning, and they demonstrate willingness to use their scientific understanding in support of solutions to unfamiliar scientific and technological situations. Students at this level can use scientific knowledge and develop arguments in support of recommendations and decisions that center on personal, social or global situations.
5	633	At proficiency Level 5, students can identify the scientific components of many complex life situations; apply both scientific concepts and knowledge about science to these situations; and can compare, select and evaluate appropriate scientific evidence for responding to life situations. Students at this level can use well-developed inquiry abilities, link knowledge appropriately and bring critical insights to situations. They can construct explanations based on evidence and arguments based on their critical analysis.
4	559	At proficiency Level 4, students can work effectively with situations and issues that might involve explicit phenomena requiring them to make inferences about the role of science or technology. They can select and integrate explanations from different disciplines of science or technology and link them directly to aspects of life situations. Students at this level can reflect on their actions and can communicate decisions using scientific knowledge and evidence.
3	484	At proficiency Level 3, students can identify clearly described scientific issues in a range of contexts. They can select facts and knowledge to explain phenomena and apply simple models or inquiry strategies. Students at this level can interpret and use scientific concepts from different disciplines and apply them directly. They can develop short statements using facts and make decisions based on scientific knowledge.
2	409	At proficiency Level 2, students have adequate scientific knowledge to provide possible explanations in familiar contexts or draw conclusions based on simple investigations. They are capable of direct reasoning and making literal interpretations of the results of scientific inquiry or technological problem solving. PISA considers Level 2 a baseline level of proficiency at which students begin to demonstrate the science competencies that will enable them to participate actively in life situations related to science and technology.
1	335	At proficiency Level 1, students have such a limited scientific knowledge that it can only be applied to a few familiar situations. They can present scientific explanations that are obvious and follow explicitly from given evidence.

How students at your school perform in terms of proficiency levels in science

Figure 2.11 shows the distribution of students at your school across the six proficiency levels in science compared with students in the United States in PISA 2009. As with similar figures for reading and mathematics, if the bars are striped, the distribution of students at your school is statistically different from that of the United States. If the bars are solid, the distributions are not statistically different.

In the United States, 29% of students perform above Level 4 on the science scale, which is comparable to the OECD average. Level 4 proficiency consists of students' being able to "select and integrate explanations from different disciplines of science or technology" and "link those explanations directly to life situations." In Finland, half of all students perform at Level 4 or above in science, while in Mexico only 3.3% of students perform at or above Level 4. Similarly to the OECD average, 18% of United States students on average score below Level 2. Level 2 is the proficiency level at which students begin to provide probable explanations in contexts that are familiar using a sufficient amount of scientific knowledge. In better-performing education systems, very few students perform below this baseline Level 2: in Finland only 6% of students perform below Level 2, and in Shanghai-China, only 3%.

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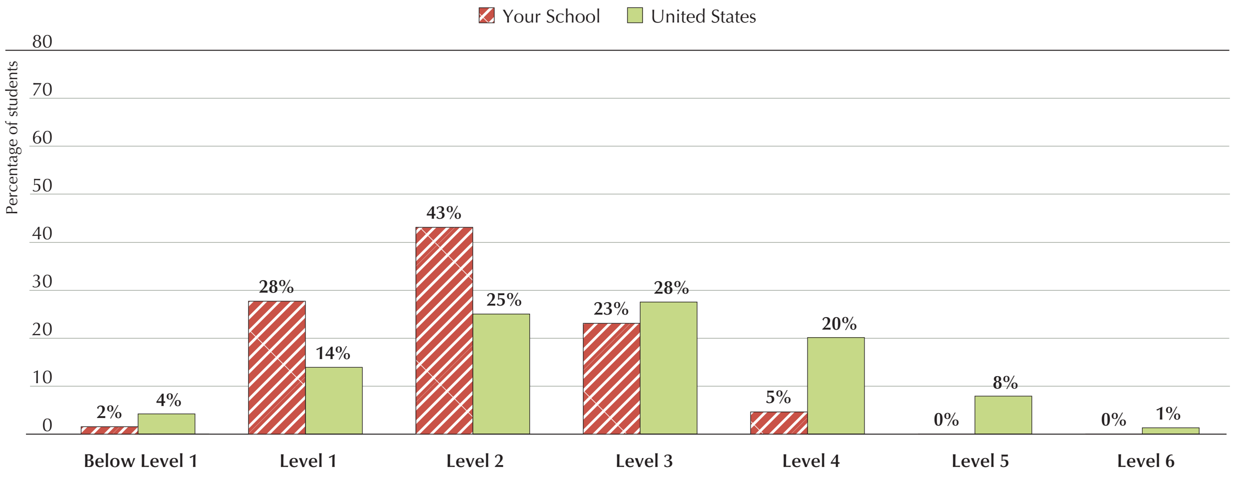
Figure 2.11 ▪ **How proficient are students at your school in science compared with students in the United States in PISA 2009**



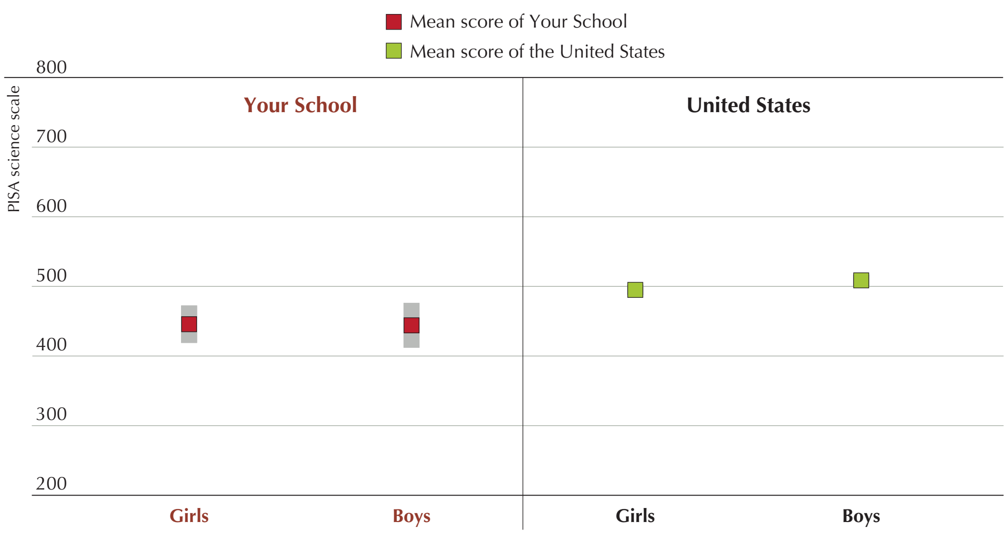
Note: Striped bars are an indication that the distribution of students in proficiency levels at your school is statistically significantly different from the distribution of students in the United States. Solid bars are an indication that the distribution of students in proficiency levels at your school is not statistically significantly different from the distribution of students in the United States.
Source: OECD.

How girls and boys perform in science

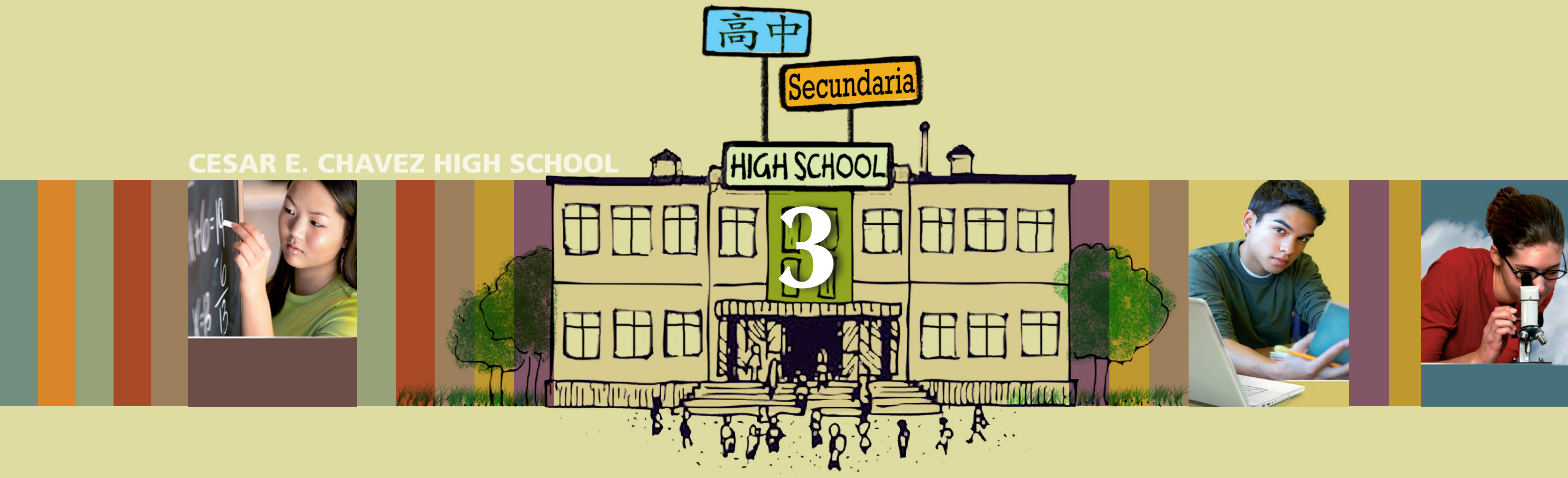
Figure 2.12 shows how girls and boys perform in science at your school compared with girls and boys across the United States in PISA 2009.

In general, boys tend to perform better in science than girls in the United States. The average difference is 14 points. ***This is the largest gender gap in favor of boys in any OECD country.*** In some OECD countries girls perform better than boys in science, and on average across all OECD countries there is no gender gap between girls and boys in science.

Figure 2.12 ▪ **How girls and boys perform in science at your school and in the United States in PISA 2009**



Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance scores would fall within this confidence interval.
Source: OECD.



Student Engagement and the Learning Environment at Your School in an International Perspective

Over the years, PISA results have shown that a strong learning environment and confident, engaged and motivated students are factors that consistently contribute to better learning outcomes. Based on students' responses to a contextual questionnaire that was part of the assessment, this section places the learning environment at your school in the context of other schools in your country. It then describes how students' reading habits and awareness of effective learning strategies are related to improved reading skills. It concludes by describing how confident and motivated students at your school are in learning mathematics and science compared with other students in your country.

When reviewing performance results for your school, it is important to also consider the learning environment as it can enhance or hinder student learning outcomes. Is the climate at your school conducive to learning? To what extent are students' skills in science and mathematics related to their motivation and belief in their capacity to solve difficult tasks? How motivated are students at your school compared with those of other schools? This section seeks to answer these and other questions related to the learning environment and the students' engagement with learning. It will compare your school with others in the United States and set the results in the context of results from the highest-performing countries around the world.

The findings in this section of the report are based on responses to the contextual questionnaire that students completed as part of the *OECD Test for Schools* (based on PISA). Students around the world have responded to the same questions as part of the international PISA studies in 2012 and previous years.

Responses reported by students at your school are compared with those of other students in your own country, not internationally. Students in different schools and in different countries might not apply the same criteria when assessing the learning environment. In addition, students might also consider some questions from the perspective of their experiences in other classes or schools than the one they were attending at the time of the assessment.

THE LEARNING ENVIRONMENT AT YOUR SCHOOL AND OTHER SCHOOLS IN THE UNITED STATES

PISA shows that a strong learning environment at the school is consistently and robustly associated with better student performance when comparing students' performance within the country. Looking at school systems across the world, students tend to perform better when classrooms are well disciplined and relations between students and teachers are amiable and supportive.

Disciplinary climate

Figure 3.1 shows how students at your school responded to five questions on the disciplinary climate in English class compared with highest- and lowest-performing students in your country who participated in PISA 2009. The figure shows the percentage of students who reported *occasional* or *next-to-never* interruptions in reading class at your school and among the 10% of highest- and lowest-performing students in your country from PISA 2009. The occurrences include how often students don't listen to what the teacher says, there is noise and disorder, the teacher has to wait a long time for students to quiet down, students cannot work well or students don't start working for a long time after the lesson begins.

When comparing the disciplinary climate at your school with the disciplinary climate that highest- and lowest-performing students experience, as shown in Figure 3.1, it is useful to note that the darkness of the triangular markers indicates whether the responses for students at your school are on average statistically different from those of the highest- or lowest-performing students in the United States. In short, darker-toned markers indicate statistical significance so the results for your school can be considered to be significantly different. If for example the marker for lowest-performing students in the United States is in a darker tone, but the marker for the highest-performing students is not, then students at your school have answered the question statistically differently from the lowest-performing students, but not statistically differently from the highest- performing students in the United States.

The majority of students in the United States enjoy orderly classrooms in their English lessons. Around 8 out of 10 report that they never or only in some lessons think that students don't start working for a long time after the lesson begins or that noise never or only in some lessons affects learning. As Figure 3.1 shows, however, not all students experience the same level of order in the classrooms. In general, high-performing students have a more positive view of the disciplinary climate than lowest-performing students.

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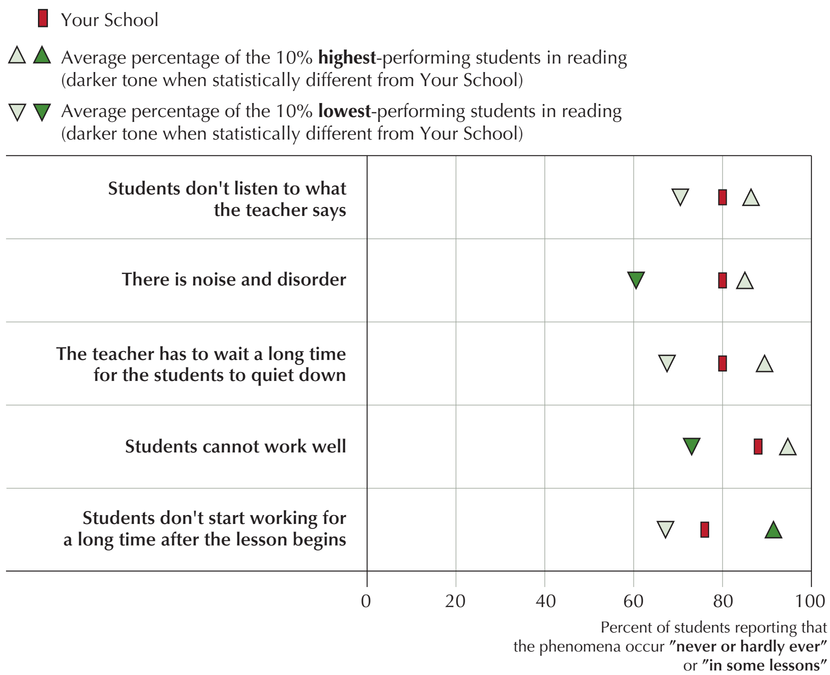
Figure 3.1 ■ **Disciplinary climate in English lessons at your school and among the highest- and lowest-performing students in the United States in PISA 2009**



Source: OECD.

While 9 out of 10 of the highest-performing students report that the teachers rarely have to wait a long time for the students to quiet down, only 7 out of 10 of the lowest-performing students have a similarly positive experience in their English classes.

PISA has found that this relationship between disciplinary climate and performance goes beyond the impact of social background. While schools with disciplined classrooms tend to have more students from advantaged socioeconomic backgrounds who also generally perform better, part of the correlation between disciplinary climate and performance is unrelated to socioeconomic background.

In Canada and the United Kingdom, student reports of the learning environment are slightly less positive than in the United States. The most positive reports on the learning environment are found in Japan and Korea. The average percentage of students in Japan reporting positively to questions on the disciplinary climate in reading lessons is around 90% on all five questions shown in Figure 3.1.

Disciplinary climate in English lessons and reading performance

Figure 3.2 shows the disciplinary climate at your school in comparison with that of schools in the United States with similar socioeconomic backgrounds of students from among those schools that participated in PISA 2009.

On this figure the students' responses to the five questions shown in Figure 3.1 have been converted to an index score on a scale from 0 to 10. The *higher* the score on this scale, the more *positive* the disciplinary climate at the school. This is represented by the horizontal axis on the figure. Thus the further to the right on the figure, the more positive is the disciplinary climate at the school.

The average score in the United States is 5.3 points on the index. This is indicated in the figure by the vertical line.

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The description of the quadrants presented in Figure 3.2:

2 This **top-left quadrant** is the area where schools have a ***less positive disciplinary climate*** compared with that of the country average but where reading performance is ***above*** the average.

Schools in this quadrant may be able to improve learning outcomes for all students if potential issues with the disciplinary climate are addressed. Educators may consider if a mean performance estimate for the school in general could be masking lower performance for some groups of students for whom the disciplinary climate is less positive.

1 The **top-right quadrant** is the area where schools have a ***positive disciplinary climate*** compared with that of the country average and where reading performance is also ***above*** the average for the country.

For schools in this quadrant it is useful to look at the relative position of similar schools shown in the figure. Are there other schools in the same quadrant that show an even more positive disciplinary climate and higher performance than your school? Compared to schools with a similar student intake, is your school relatively strong on disciplinary climate, on student performance, or both? The relative strengths can help foster reflection on how to further improve learning outcomes.

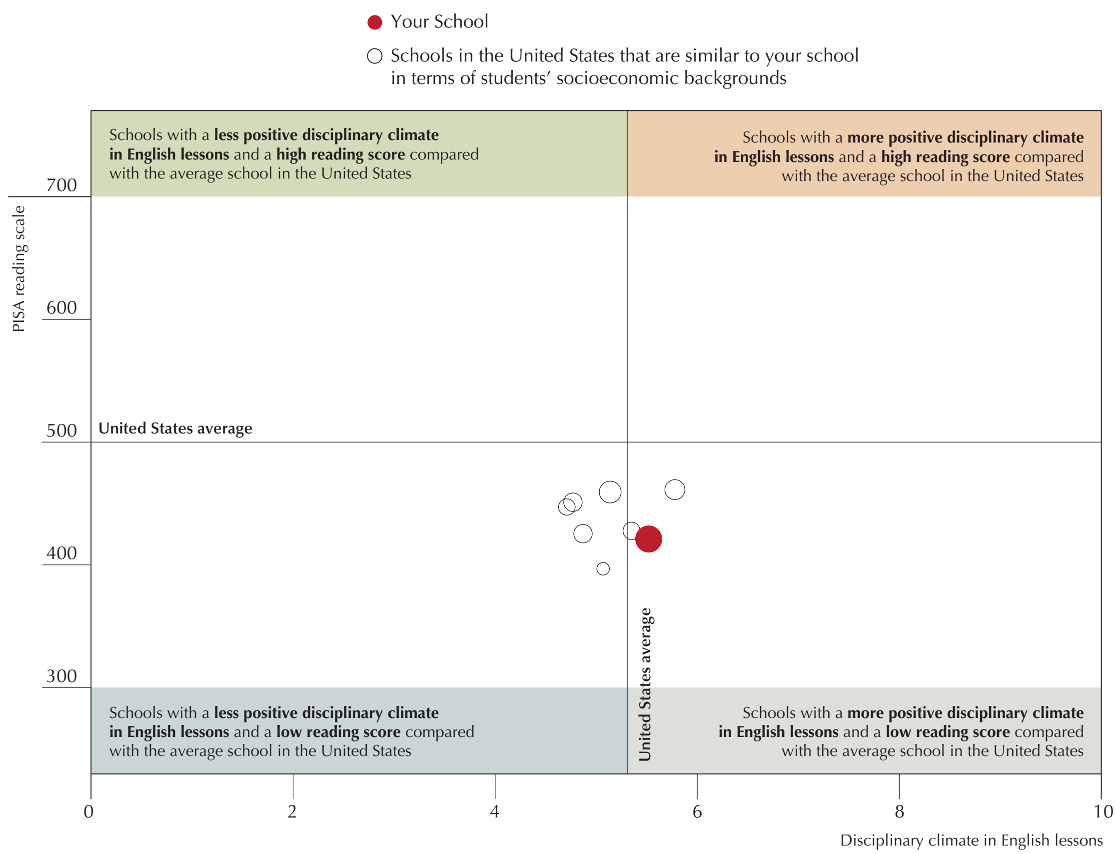
4 The **bottom-left quadrant** is the area where schools have a disciplinary climate that is ***less positive*** than the country average and where reading performance is ***below*** average.

Schools in this quadrant may consider how the disciplinary climate could be improved to enhance the learning environment for all students. A strategic approach to improving students' learning outcomes might benefit from including plans to address potential issues with the disciplinary climate.

3 The **bottom-right quadrant** is the area where schools have a disciplinary climate that is ***more positive*** than the country average but where reading performance is ***below*** average.

Schools in this quadrant have established a positive learning environment that is worth preserving in their efforts to improve the students' learning outcomes.

Figure 3.2 ▪ **Disciplinary climate in English lessons and reading performance at your school compared with that of similar schools in the United States in PISA 2009**



Source: OECD.

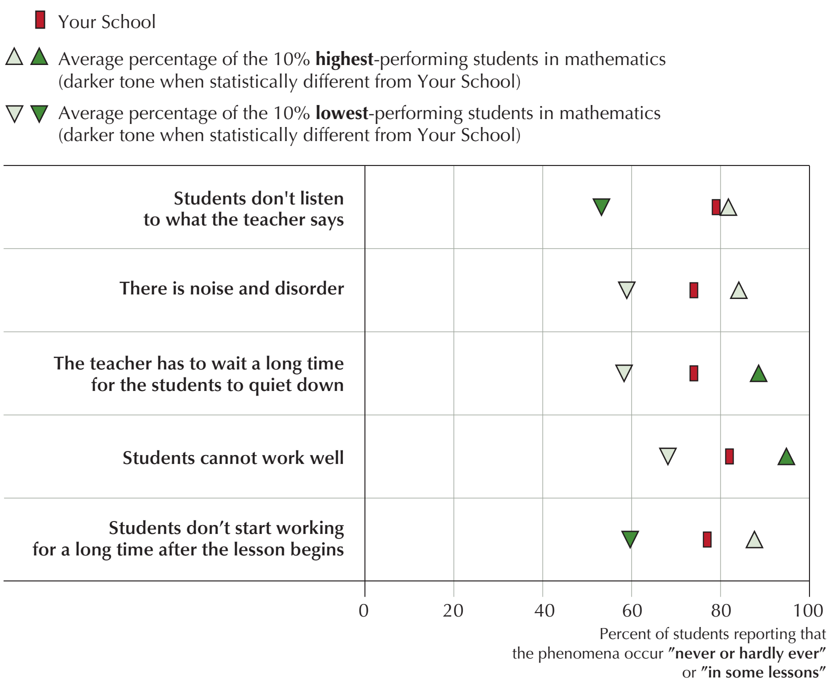
Your school is represented by a red bubble in the figure, and schools in the United States with socio-economic backgrounds similar to those of your school are represented by hollow bubbles. The group of similar schools is the same as the group of similar schools shown in some of the bubble charts presented later in the report. The number of similar schools depends on the number of schools that participated in PISA 2009 that share the same socioeconomic characteristics as your school. If the average socioeconomic background of students at your school is very low or very high compared with that of other schools in the United States, for example, then the number of schools similar to yours that is shown in Figure 3.2 could be low.

Disciplinary climate in mathematics lessons

Having looked at the disciplinary climate in English lessons, it is also worth examining the disciplinary climate in mathematics lessons. The same questions have been asked of students concerning the disciplinary climate in both subjects, so comparisons can be reasonably made between the learning environments in the two subjects at your school.

Figure 3.3 shows how students at your school responded to five questions on the disciplinary climate in mathematics compared with highest- and lowest-performing students in your country who participated in PISA 2012. Similar to the figure on disciplinary climate in English lessons, this figure shows the percentage of students who reported *occasional* or *next-to-never* interruptions in mathematics class at your school and among the 10% highest- and lowest-performing students in the United States. The occurrences include how often there are times students don't listen to what the teacher says, there is noise and disorder, the teacher has to wait a long time for students to quiet down, students cannot work well or students don't start working for a long time after the lesson begins.

Figure 3.3 ▪ **Disciplinary climate in mathematics lessons at your school and among the highest- and lowest-performing students in the United States in PISA 2012**



Source: OECD.

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Box 3.1 **School policies, practices and resources: Examples of innovative learning environments from around the world**

In addition to reporting on cumulative student learning outcomes, PISA also looks at the relationship between school policies, practices and resources and student performance. PISA 2009 results show that students who perform well attend schools with similar characteristics. Local educators are increasingly interested in exploring how the learning environment at schools can be improved to enhance achievement and other learning outcomes.

The highest-performing students in PISA 2009 report that teachers allowed them time to find answers to problems themselves. Teachers of the highest-performing students tend to ask questions that challenge students. They also tend to give students enough time to think about their answers and are ready to recommend a book or author, for example. Teachers of the highest-performing students also tend to encourage students to express their opinions about a text and to help them relate the stories they read to their lives (OECD, 2010i).

Policies and practices within local education systems and even within schools, however, are not always evenly distributed. In PISA 2009 the variance between student performance between schools in both the United States and the United Kingdom is at least four times the amount of variance between schools in Finland, while in Canada it is at least three times. In addition, the variance within schools in Canada, the United Kingdom, and the United States is at least two times higher than the between-school variance and higher than schools in Shanghai-China and Japan (OECD, 2010g).

The OECD's Innovative Learning Environment Project (ILE) attempts to shed light on some of the policies and practices that have been successful in enchancing student learning outcomes. The project highlights schools throughout OECD economies that ensure learning is central by encouraging students to be engaged and involved and that reinforce the idea that learning is social and often collaborative. The learning environment at these schools also tends to be highly attuned to the motivations of learners and acutely sensitive to individual differences. The schools also use assessments that emphasize formative feedback and encourage making connections between subjects learned in school and activities outside of school. The following examples illustrate initiatives that break from the traditional mold of schooling and try new approaches to creating innovative teaching and learning environments.

***Europaschule* in Linz (Austria).** This secondary school is a public general compulsory school and caters to all children who are entitled to move on to secondary education. It is affiliated with a university college of teacher education and serves as a center for practical in-school training of teacher-students. In addition, its entire teaching staff is involved in empirical research, constantly searching for the best teaching and learning methods. The school attaches great importance to building and maintaining international contacts.

With this view in mind, *Europaschule* emphasizes language learning, but students can also choose a science, arts or media program. Students learn in flexible, heterogeneous groups that focus on students' strengths rather than their shortcomings. Teaching methods include open teaching, during which students work according to weekly schedules. Individual feedback on student performance and behavior is given in the form of portfolios that include teachers' reports and student self-assessments. Based on the feedback, students know where their weaknesses lie and can prepare additional instruction time as needed. The aim of the approach is for students to self-manage their learning and be intrinsically motivated to learn.

...

***John Monash Science School* (Australia).** This secondary school is devoted to the teaching of mathematics and science to selected high-achieving 15- to 18-year-olds. Located on one of the campuses of Monash University, the school works with university staff to develop cutting-edge, research-inspired curricula and weekly co-curricular activities, and to give students access to university-level enhancement subjects. Students are taught almost exclusively in large groups by several teachers and supported in small tutorials closely monitoring student performance. The physical environment can be flexibly configured with students able to learn in ways that best suit their own needs. All students create and implement learning plans that are individualized and are informed by their own interests and abilities. All students have an individual tablet computer that is used both for electronic communication between students and staff and as their chief learning tool, to research, problem solve, organize, document, analyze, present and create digital objects as well as to access references and resources from the university and beyond. In addition, all staff have to complete an individual Staff Development Plan that helps identify suitable professional learning opportunities for them, related to the school's strategic directions. Every teacher is able to access three hours of professional learning and curriculum development once a week while students undertake a range of co-curricular options delivered by educators from within and outside the university.

***Instituto Agrícola Pascual Baburizza* (Chile).** This school is an agricultural VET school primarily attended by students from rural areas and from socioeconomically disadvantaged backgrounds. It provides students with a cross-disciplinary balance of general education subjects (mathematics, languages, science), agricultural subjects (horticulture, watering and cattle management), and hands-on work using sustainable agricultural practices. Learning "soft" skills, such as a sense of command, initiative and honesty, is also emphasized. Teachers act as mentors by providing guidance and support for groups of 10 students. The idea of building a strong relationship between school and the workplace is important, and all the content is adjusted to the skills and needs students will face in the workplace. The national assessment in Chile shows that the overall performance of students at this school has improved in both language and mathematics by at least 20 score points within a span of 8 years, from 1998 to 2006.

The OECD is continuing to explore ways that local education systems can benchmark their performance internationally, establish improvement goals and trajectories and take steps to share and learn from other schools.

To find out more about learning environments that are breaking with tradition, go to:

- *OECD's Innovative Learning Environments*
- *PISA 2009 Results: What Makes a School Successful? Resources, Policies and Practices (Volume IV)*

Sources: Organisation for Economic Co-operation and Development (2012c), Innovative Learning Environment Project – Papers for:

Europaschule – Linz, Austria

John Monash Science School, Australia

Instituto Agrícola Pascual Baburizza, Chile

OECD (2010g), *PISA 2009 Results: Overcoming Social Background: Equity in Learning Opportunities and Outcomes (Volume II)*, OECD Publishing.

OECD (2010i), *PISA 2009 Results: What Makes a School Successful? Resources, Policies and Practices (Volume IV)*, OECD Publishing.

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Because PISA focused on mathematics in the 2012 cycle, results on the disciplinary climate in mathematics for other students in the United States that participated in PISA are drawn from the 2012 cycle, whereas for reading they are drawn from PISA 2009, when reading was the main subject of assessment.

When comparing the disciplinary climate at your school with the disciplinary climate that highest- and lowest-performing students experience, as shown in Figure 3.3, it is useful to note that the darkness of the triangular markers indicates whether the responses for students at your school are on average statistically different from those of the highest- or lowest-performing students in the United States. Darker-toned markers indicate that the results are significantly different from those of your school.

As with English lessons, the majority of students in the United States enjoy orderly classrooms in their mathematics lessons. Around 8 out of 10 students who participated in PISA 2012 reported that they *never* or *only in some lessons* think that students don't start working for a long time after the lesson begins or that noise *never* or *only in some lessons* affects learning. As Figure 3.3 shows, however, not all students show the same learning environment in the classrooms. In general, the highest-performing students had a more positive view of the disciplinary climate than the lowest-performing students. While around 9 out of 10 of the highest-performing students reported that the teachers rarely had to wait a long time for the students to quiet down, only 5 out of 10 of the lowest-performing students had a similarly positive experience in their mathematics lessons.

Box 3.2 **Making the most of top teachers**

In many education systems in Europe and Asia, certain teachers – known as homeroom or classroom teachers – follow students through a number of grades. They assume a holistic responsibility for the students in their class and form a close relationship not only with the students but also with the students' parents. In both Asia and Europe, it is typical in such cases that a notebook is passed back and forth between the teacher and the parents, in which each party shares information about the student. These relationships lead to a kind of parental involvement in the education of their children that is rare in the United States, as well as to a spirit of collaboration between teacher and parents that is also unusual (OECD, 2011c). In some countries, such as in Japan, homeroom teachers even provide academic and career advice to students in upper secondary school.

Effective teachers are recognized and asked to actively support fellow teachers. Those who demonstrate the very best practices in Canada, Finland and some East Asian countries are relieved, full-time or part-time, of their regular classroom duties in order to mentor new teachers and provide demonstrations to teachers in their own and other schools.

Top teachers as resources in Shanghai-China

Shanghai provides just such an example of an education system that recognizes and mobilizes its highest-performing teachers. Teachers are classified into four grades that indicate their professional status. Promotion from one grade to the next often requires the capacity to give demonstration lessons, contribute to the induction of new teachers, publish in journals or magazines about education or teaching, and other elements. The provincial office often identifies the best teachers emerging from evaluation processes and relieves them of some or all of their teaching duties so that they may give lectures to their peers, provide demonstrations, and coach other teachers on a district, provincial and even national level. Carefully chosen schools are often asked to pilot new programs or policies, and the best teachers in those schools are enlisted as co-researchers to evaluate the effectiveness of the new practices (OECD, 2012f).

...

This picture of teaching in Shanghai-China would not be complete without pointing out that almost all of the officers in the government education authorities, at both municipal and district levels, started as schoolteachers. Most of them distinguished themselves as teachers or school principals with strong track records. This may explain their strong commitment to teaching and learning amidst all of the administrative duties and political issues that they normally have to contend with.

To find out more about highest-performing teachers and their practices, go to:

- *Preparing teachers and developing school leaders for the 21st century: Lessons from around the world*
- *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States*
- *Evaluating and rewarding the quality of teachers: International practices*

Sources: Organisation for Economic Co-operation and Development (OECD) (2009b), *Evaluating and rewarding the quality of teachers: International practices*, OECD Publishing.

OECD (2011c), *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States*, OECD Publishing.

OECD (2012f), *Preparing teachers and developing school leaders for the 21st century: Lessons from around the world*, OECD Publishing.

Teacher-student relations

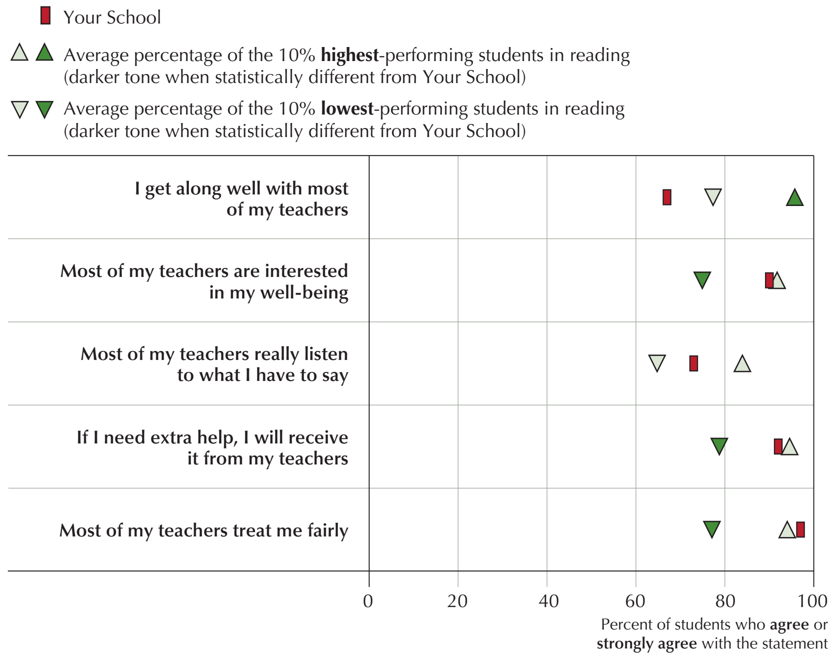
Along with the disciplinary climate, teacher-student relations at the school are a key element of the learning environment that is positively associated with student performance.

Figure 3.4 shows to what extent students at your school agree with several statements regarding the relationship with teachers. These statements reflect whether they get along well with most of their teachers, whether they feel that their teachers are interested in their well-being, whether the teachers listen to what the students have to say, whether the teachers provide extra help when needed, and whether the students feel that teachers treat them fairly.

To place your school's results in context, the figure also shows how the highest- and lowest-performing students in the United States responded to the same questions in PISA 2009. As with similar figures, when comparing the teacher-student relations at your school to those of students in other schools, the darkness of the triangular markers indicates whether the responses for students at your school are statistically different from the highest- or lowest-performing students in the United States who participated in PISA.

In PISA 2009 students from more than 70 countries and economies were asked the same questions on their teacher-student relations. The results from OECD countries suggest that students are generally satisfied with their relations with teachers. On average across OECD countries, 85% of students reported that they agree or strongly agree that they get along well with most of their teachers. In the United States the figures are even higher, with 90% of students agreeing that they get along well with most of their teachers. In the United Kingdom and Canada, students report similarly positive teacher-student relations, with 86% and 89% of students, respectively, agreeing with the statement. The overall teacher-student relations in the United States, the United Kingdom and Canada are more positive than the OECD average.

Figure 3.4 ▪ **Teacher-student relations at your school and among the highest- and lowest-performing students in the United States in PISA 2009**



Source: OECD.

Teacher-student relations and reading performance

Student responses on the five questions covering teacher-student relations can be converted into a single index score that indicates the overall teacher-student relations at your school and at others. Figure 3.5 shows the teacher-student relations at your school in comparison with those of schools in the United States with similar socioeconomic backgrounds of students among the schools that participated in PISA 2009.

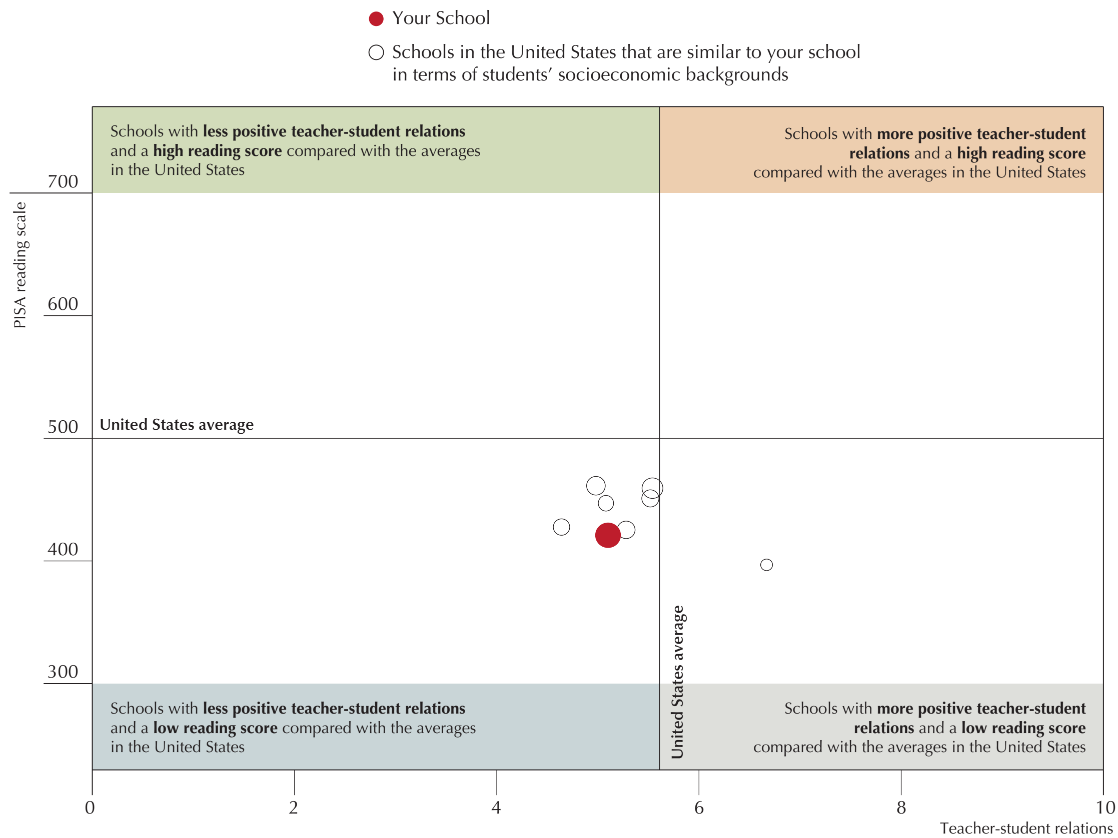
On this figure the students' responses to the five questions shown in Figure 3.4 have been used to create an index score on a scale from 0 to 10. The higher the score on this scale, the more positive the teacher-student relations at the school. This is represented by the *horizontal axis*. Thus the further to the right in the figure, the more positive the teacher-student relations are at the school.

The average teacher-student relations in the United States, indicated by the vertical line, is 5.6 points on the index.

Your school is represented by a red bubble in the figure, and schools in the United States with a socioeconomic background similar to that of your school are represented by hollow bubbles. The number of similar schools depends on the number that participated in PISA 2009 that share the same socioeconomic characteristics as your school. If the average socioeconomic background of students at your school is very low or very high compared with that of other schools in the United States, then the number of schools shown in Figure 3.5 that is similar to your school may be limited.

The results in Figure 3.5 are presented across four quadrants showing the teacher-student relations and the reading performance for each school. The top-right quadrant shows schools in which both teacher-student relations and reading performance are *above* the United States average. The bottom-left quadrant, on the other hand, shows schools that are *below* the United States average in reading performance and teacher-student relations. In the top-left and the bottom-right quadrants, either teacher-student relations or reading performance is above average, while the other is below the average of the United States.

Figure 3.5 ▪ **Teacher-student relations and reading performance at your school compared with that of similar schools in the United States in PISA 2009**



Source: OECD.

STUDENTS' READING HABITS AND THE RELATIONSHIP WITH PERFORMANCE

The rest of this section will take a closer look at the association between student-related factors and the performance in each of the three subjects covered by the assessment: reading, mathematics and science. The first part of the section will focus on reading.

PISA 2009 results have shown that two factors are closely associated with students' high performance in reading:

- Students who read a wide variety of materials for enjoyment are the most proficient readers. Although students who regularly read fiction tend to be the highest-performing, those who read a wider variety of materials for enjoyment achieve the highest scores in PISA.

  Students were asked to indicate how often they read magazines, comic books, fiction (novels, narratives, and stories), non-fiction and newspapers because they want to. They could indicate that they read each type of material "never or almost never," "a few times a year," "about once a month," "several times a month" and "several times a week."

- Students who are highly aware of the most effective learning strategies to understand, remember and summarize information are more proficient readers than those students with low levels of effective learning strategies.

  Students were asked to specify to what extent they believe that 11 reading strategies are effective, including strategies such as "I quickly read through the text twice," "After reading the text, I discuss it with other people" and "I underline important parts of the text." Student awareness of what strategies are the most effective was established by comparing the rating of students with those of international reading experts.

In Figure 3.6, students at your school are grouped into six reader profiles that take into account both their reading habits and their understanding of effective learning strategies, building on the evidence of the strong association between these two factors and students' reading proficiency.

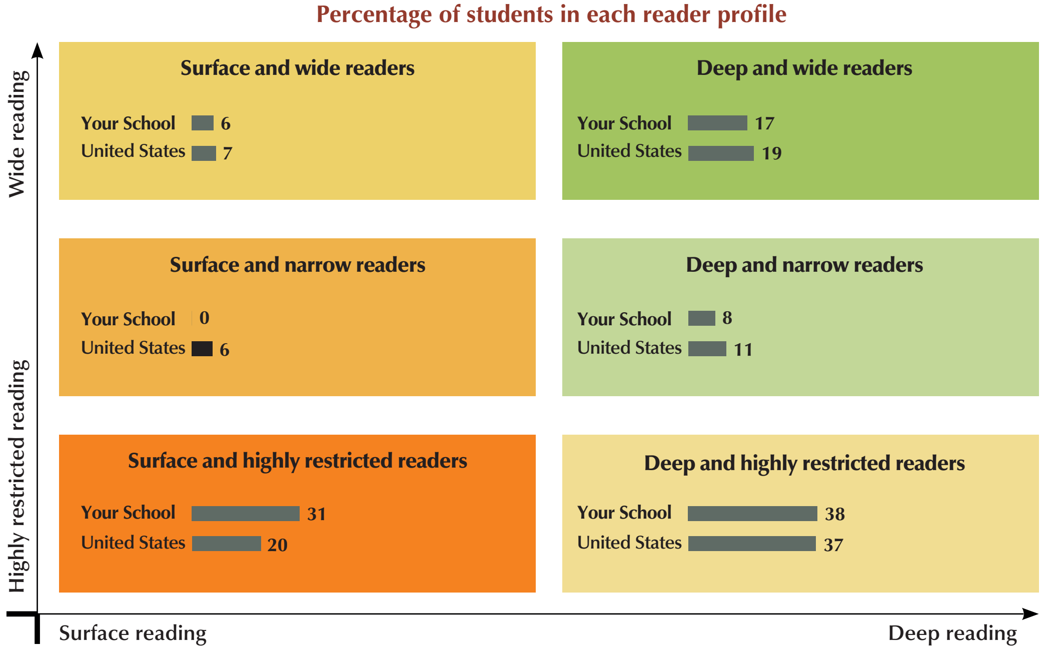
Students who are "deep and wide readers" (the top-right corner on the figure) have a deep understanding of the most effective learning strategies – as determined by reading experts – and they also read a wide variety of materials for enjoyment. In the opposite corner of the figure, students who are "surface and highly restricted readers" have a poor understanding of the most effective learning strategies and they only spend little time reading any type of printed material for enjoyment.

For each category of reader profiles the figure presents the percentage of students at your school in the category and the percentage of students across the United States as measured by PISA 2009. A percentage of students of a particular reader profile at your school that is statistically different from the percentage in your country is marked by a darker bar.

A description of the six reader profiles shown in Figure 3.6:

	Surface	Deep
Wide	**Surface and wide readers** These students have low levels of awareness about effective strategies to understand, summarize and remember information, but they read a wide variety of materials regularly, including fiction and non-fiction books. In the United States, 7% of 15-year-old students are surface and wide readers.	**Deep and wide readers** These students are those who have high levels of awareness about effective learning strategies and who also read all sorts of materials, including fiction and non-fiction books for enjoyment. In the United States, 19% of students are deep and wide readers.
Narrow	**Surface and narrow readers** Students with this reader profile have low levels of awareness about effective learning strategies and their reading habits are narrow in the sense that they do not read a wide variety of materials, but they do read some materials regularly for enjoyment. This profile accounts for 6% of students in the United States.	**Deep and narrow readers** Students in this group also have high levels of awareness about effective learning strategies but their reading habits are more *narrow* than those of *deep and wide readers*. This reader profile accounts for 11% of students.
Highly restricted	**Surface and highly restricted readers** Students in this group have low levels of awareness about effective learning strategies and they spend little time reading any type of printed material for enjoyment. In the United States, 20% of students are surface and highly restricted readers.	**Deep and highly restricted readers** These students are aware of effective learning strategies, but they do not regularly read any printed material for enjoyment. With 37% of students being deep and highly restricted readers, this profile accounts for the largest number of students in the United States.

Figure 3.6 ▪ **Reader profiles at your school and in the United States in PISA 2009**



Note: Values that are statistically significantly different from your school are marked in a darker tone.
Source: OECD.

How well different types of students read

To better understand how well different types of students read at your school, Figure 3.7 shows the mean reading performance for students in each reader profile at your school, in the United States and in four other countries that participated in PISA 2009. The comparison countries include the two other countries that have schools participating in the *OECD Test for Schools* pilot and two of the highest-performing countries, Finland and Korea.

The first chart in Figure 3.7 shows the mean reading performance for students in your school, grouped in the six reader profiles shown in Figure 3.6.

Across all five comparison countries, students in the group "deep and wide readers" show higher reading performance than those in the other reader profiles. These students have high levels of awareness about effective learning strategies and read varied types of materials regularly, including fiction and non-fiction books. In contrast, students who are grouped in one of the three profiles of "surface" readers in the figures have less awareness of effective learning strategies, which is reflected in their lower reading performance on average.

In the United States, students in the group of "deep and wide readers" have an average reading performance of 539 points, compared with those in the group of "surface and narrow readers" with an average performance of 454. This difference in reading proficiency is equivalent to approximately two years of schooling. The gap is even wider among students in the United Kingdom, with a difference of 104 score points on average between students who are "deep and wide readers" compared with those who are "surface and narrow readers." In Canada, students in the group of "deep and wide readers" perform 93 points higher on average than "surface and highly restricted readers."

On the right-hand side of the figures, you'll find the corresponding proficiency levels at which the students are reading.

Box 3.3 How schools in Korea use ICT to make a successful education system even better

In the last 50 years, South Korea has transformed itself from a developing nation into a leading industrial economy, thanks mostly to its efforts in raising educational standards. PISA 2009 results show that in South Korea's highly competitive society, families place a high value on education, students show strong commitment to learning, and government policies support education with above-average spending (OECD, 2011b).

A major objective of successive government administrations in South Korea has been to reduce inequalities in access to education, and ICT (information and communication technologies) are seen as critical to achieving that goal. In 2005, the government launched a Cyber Home Learning System that gives students home access to digital tutoring. In 2011, building upon pilot projects launched in 2007, the Korean government announced a USD 2.4 billion strategy to digitize the nation's entire school curriculum by 2015.

At the core of this ambitious project, dubbed "Smart Education," is the implementation of "digital textbooks," interactive versions of traditional textbooks that can be continuously updated in real time. Digital books contain a combination of textbooks, reference books, workbooks, dictionaries and multimedia content such as video clips, animations and virtual-reality programs that can be tailored to students' abilities and interests. Students can underline sections, take notes, reorganize pages and create hyperlinks to online material. By making access to new learning modes available to all, Smart Education will help to bridge the education divide between families who can afford to pay for private tutoring and those who cannot.

Policy makers say that this project is designed to respond to 21st-century education challenges by moving from uniform and standardized education to diversified, creativity-based learning. The project has shown positive results, as the groups using digital textbooks demonstrate better skills in problem solving and in self-directed studying, the performance of economically disadvantaged groups has improved more than that of other groups, and students using digital textbooks concentrate better on the content than those using normal paper textbooks. In addition, students' use of ICT devices for social and recreational purposes helps them to develop reactivity and response capabilities that are useful in academic contexts as well (OECD, 2011d). Although it is clear that the success of schools cannot be based solely on ICT, successful schools around the world show that ICT can be harnessed as a powerful tool for student learning.

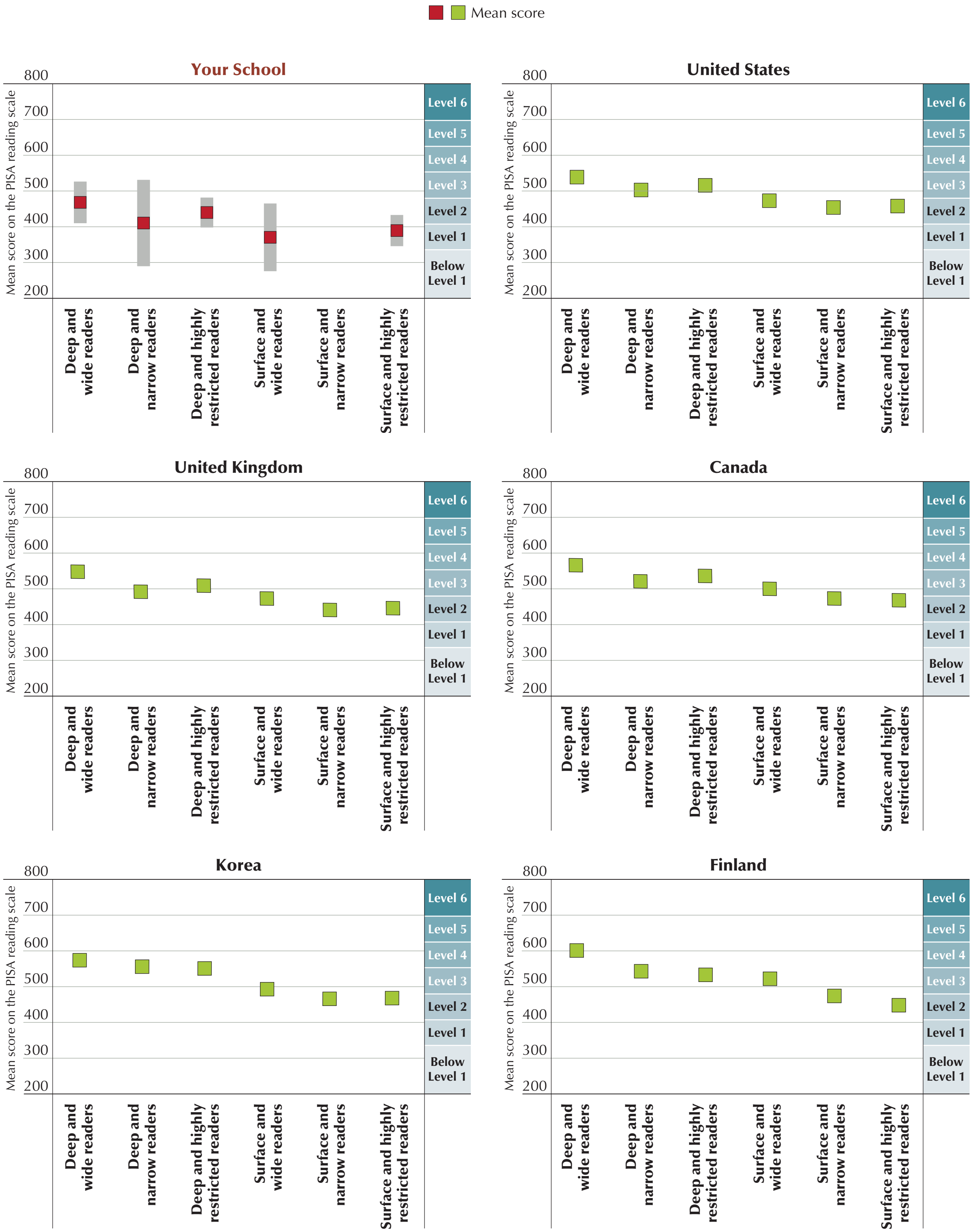
To find out more about learning in the digital age, go to:

- *Strong Performers and Successful Reformers in Education: Using ICT to make a successful education system even better*
- PISA in Focus 12: *Are boys and girls ready for the digital age?*

Sources: Organisation for Economic Co-operation and Development (OECD) (2011b), *Education at a Glance 2011: OECD Indicators*, OECD Publishing.

OECD (2011d), *PISA 2009 Results: Students On Line: Digital Technologies and Performance (Volume VI)*, OECD Publishing.

Figure 3.7 ▪ **How well different types of readers read at your school, in your country and internationally in PISA 2009**



Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance scores would fall within this confidence interval.
Source: OECD.

STUDENTS' ATTITUDES TOWARD MATHEMATICS AND THE RELATIONSHIP WITH PERFORMANCE

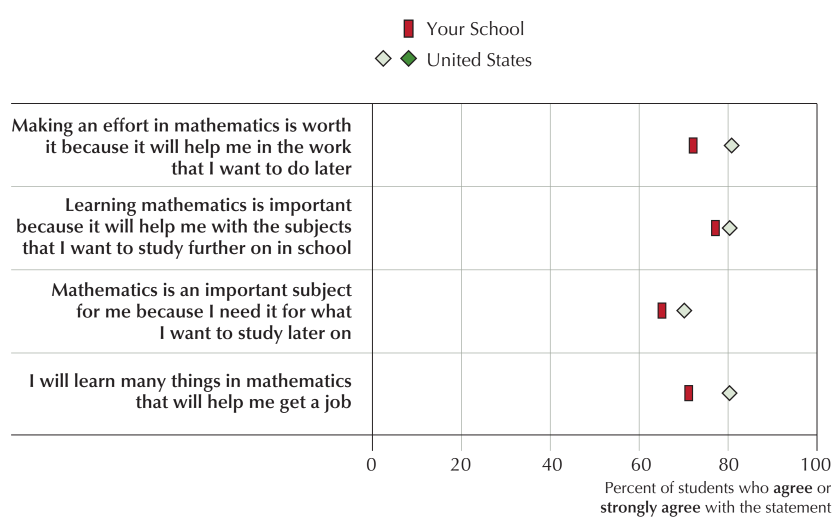
The focus of the next set of figures shifts from reading to mathematics. The figures seek to answer such questions as: How motivated are students at your school to learn mathematics? How confident are they in their abilities to solve difficult mathematics tasks? How are students' motivation and self-belief related to learning outcomes in mathematics?

Instrumental motivation in mathematics

Figure 3.8 shows how students at your school responded to four questions regarding their motivation to learn mathematics. The questions focus on the students' *instrumental motivation* in the sense of how important they see mathematics in their own lives as they move on to further studies and the labor market. Instrumental motivation has been found to be an important predictor for course selection, career choice and job performance (Eccles, 1994).

Student responses for your school are compared to responses from a representative sample of United States students who participated in PISA 2012, when mathematics was the main focus. Across the United States, 81% of students agree or strongly agree that "making an effort in mathematics is worth it because it will help me in the work that I want to do later;" 80% agree or strongly agree that "learning mathematics is important because it will help me with the subjects that I want to study further on in school;" 70% agree or strongly agree that "mathematics is an important subject for me because I need it for what I want to study later on;" and 80% agree or strongly agree that "I will learn many things in mathematics that will help me get a job."

Figure 3.8 ▪ **Students' instrumental motivation in mathematics at your school and in the United States in PISA 2012**



Source: OECD.

Box 3.4 The importance of student engagement in Japan

Many people outside Japan imagine Japanese schools as quiet, intense places where students quietly and diligently write down everything the teacher says. But that is far from what actually occurs. In fact, visitors to Japanese schools often report that the level of noise is often well above that found in Western classrooms (OECD, 2011c). Students can often be heard excitedly talking with one another as they tackle problems together. PISA results show that this approach to education is far from ineffective, as the performance of Japan's students in reading, and most notably in mathematics and science, is quite impressive compared with those in other OECD countries (OECD, 2010f).

Maximizing student engagement is a major key to the success of Japanese schools. Japanese teachers spend little time on drilling or lecturing. Teachers in a mathematics class, for example, will spend an entire lesson focusing on one practical problem, not in order to get hold of the right answer from the students but to make them think of all possible solutions. Contrary to Western countries, where mistakes and wrong answers are something to be avoided, Japanese teachers will ask all their students to work together in groups on a problem in order to come up with plausible solutions (OECD, 2011c). Students will be asked to explain their approaches, and other students will evaluate them. If students disagree with an approach, they must back up their reasoning with concrete evidence. Using this approach, students examine all sides of the mathematical problem while learning that some answers are wrong for interesting reasons and discovering other approaches that they didn't know were possible. As a result, students have a deeper grasp of the mathematics that underline the solution to the problem.

Principal Yasuo Komatsu of Karakuwa Junior High School recently explained the approach of teaching and learning in Japan when describing the skills that are critical to students facing a rapidly changing society: "Students need to determine what the problem is and analyze the information. And based on that, they need to make their assessments, think independently, and express what they think. These skills are required for them to live in this society."

To find out more about the approaches to teaching and learning in Japan's schools, go to:

- *Strong Performers and Successful Reformers in Education: Educating students to think independently in confronting the challenges of modern society*
- *Strong Performers and Successful Reformers: Lessons from PISA for the United States*

Sources: Organisation for Economic Co-operation and Development (OECD) (2010f), *PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science (Volume I)*, OECD Publishing.

OECD (2011c), *Lessons from PISA for the United States, Strong Performers and Successful Reformers*, OECD Publishing.

Students' self-efficacy in mathematics

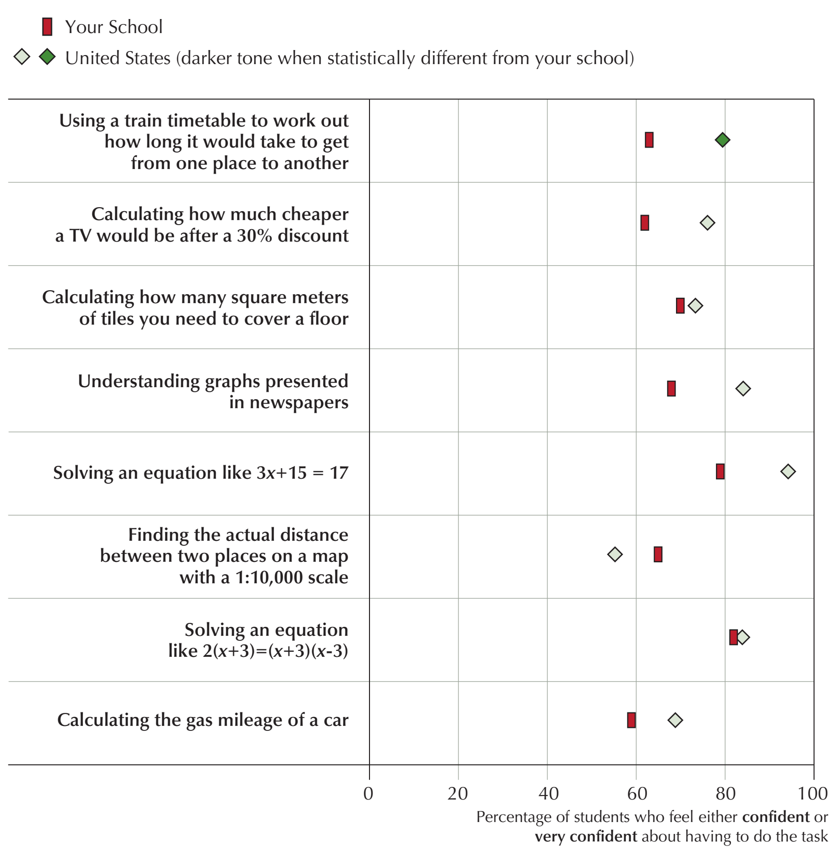
Successful learners often believe in their own *self-efficacy*: they are confident in their ability to solve tasks related to mathematics. In fact, students' self-efficacy is one of the strongest predictors of their performance, explaining on average 23% of the variance in mathematics performance across OECD countries.

One might ask if students' beliefs about their abilities simply mirror their performance. Research has given strong evidence, however, for assuming that confidence helps to drive learning success, rather than simply reflecting it. Students need to believe in their own capacities before making necessary investments in learning strategies that will help them achieve higher performance (Zimmerman, 1999).

Figure 3.9 shows how students at your school responded to eight questions regarding their *self-efficacy in mathematics*. They were asked how confident they feel about having to do each of the mathematics tasks mentioned in the figure. The values in the figure represent the percentage of students who responded they are "confident" or "very confident" about having to do the task.

The figure also shows how confident students in the United States on average feel about having to do the tasks, as measured by PISA 2012. The task that most students feel confident about is "Solving an equation like $3x+15 = 17$." Nine out of ten students in the United States are confident or very confident that they can solve that task. At the other end, the task that students feel less confident about is "Finding the actual distance between two places on a map with a 1:10,000 scale." Six out of ten students in the United States feel that they can solve that task.

Figure 3.9 ▪ **Students' self-efficacy in mathematics at your school and in the United States in PISA 2012**



Source: OECD.

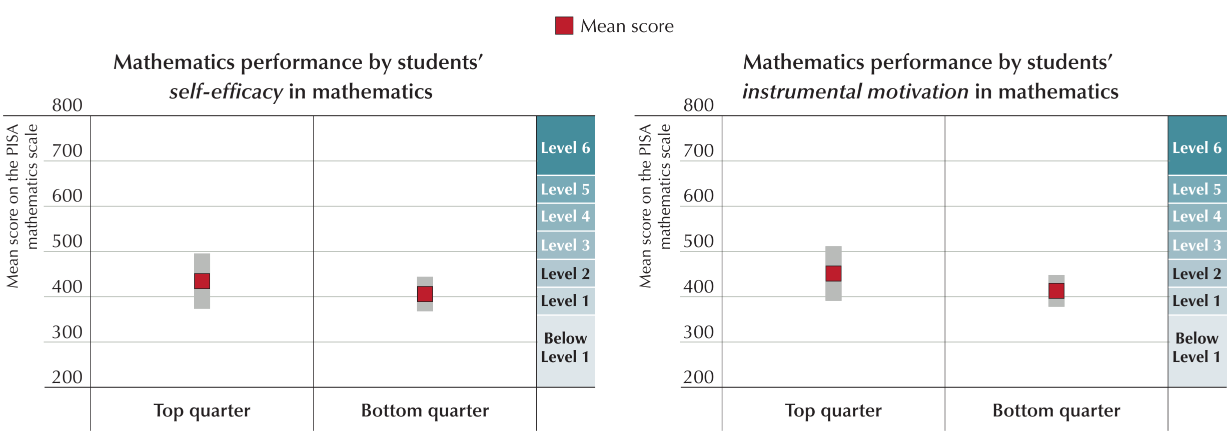
These responses make students in the United States some of the most confident students internationally. The high level of confidence reported by students in PISA 2012, however, is not reflected by the average performance of students in mathematics in the United States in PISA 2012, when the United States performed *below* the OECD average. Yet when looking at the relationship within the United States, confidence is highly correlated with student performance. While the quarter of students with the *lowest* levels of self-efficacy in mathematics showed a mean performance of 424 points in PISA 2012 (less than the average student in Turkey), the quarter of students with the *highest* levels of self-efficacy in the United States showed a mean performance of 553 points, a performance level similar to that of an average student in a highest-performing country such as Korea.

How students' motivation and self-efficacy relate to their mathematics performance

While the two previous figures show how motivated and confident students at your school are when learning mathematics, the next figure shows how these factors relate to performance in mathematics.

Figure 3.10 shows how the *self-efficacy* and *instrumental motivation* of students at your school relate to mathematics performance. The first chart shows how students at your school with the *highest* level of self-efficacy in mathematics (the top quarter) perform in mathematics compared with students with the lowest levels of self-efficacy reported at your school (the bottom quarter). The top and bottom quarters of students have been identified by grouping each student's responses on the eight questions shown in Figure 3.9. The 25% of students at your school who show the *highest* level of confidence across the eight questions constitute the top quarter, while the 25% of students at your school who show the lowest levels of confidence across the eight questions constitute the bottom quarter.

Figure 3.10 ▪ **How instrumental motivation and self-efficacy in mathematics relate to performance at your school**



Note: Shaded bars above and below the mean scores represent the 95% confidence interval.
Source: OECD.

Similarly, the second chart in the figure shows mathematics performance for students by instrumental motivation. The top quarter of students in terms of instrumental motivation is the 25% of students at your school with the most positive responses to the four questions shown in Figure 3.8. Similarly, the bottom quarter of students is the 25% of students with the least positive responses to these four questions.

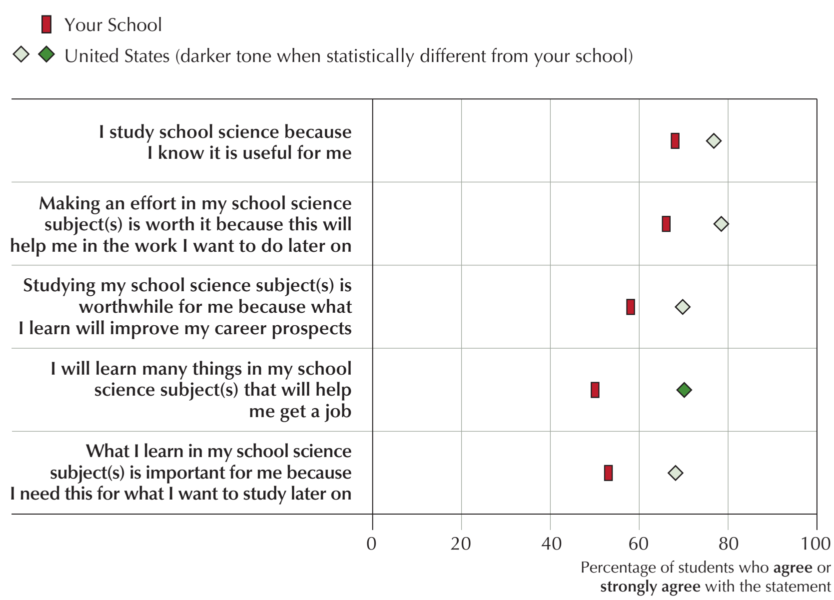
STUDENTS' SELF-BELIEF AND INTEREST IN SCIENCE AND THE RELATIONSHIP WITH PERFORMANCE

In the last set of figures, the focus shifts to students' motivation and self-efficacy in *science*. Although their engagement with science may be particularly relevant for schools with a specific focus on science and technology, the information in these figures may be helpful for other schools as well given the close association between motivation, self-efficacy and student performance in science.

Instrumental motivation in science

Figure 3.11 shows how students at your school responded to five questions regarding their motivation to learn science. The questions focus on students' instrumental motivation in the sense of how important they see science for their own lives as they move on to further studies and the labor market.

Figure 3.11 ▪ **Students' instrumental motivation in science at your school and in the United States in PISA 2006**



Source: OECD.

The responses provided by students at your school are compared with responses from a representative sample of students in the United States who participated in PISA 2006 when science was the main focus of the assessment. Across the United States, 77% of students agree or strongly agree with the statement "I study school science because I know it is useful for me;" 78% agree or strongly agree that "making an effort in my school science subject(s) is worth it because this will help me in the work I want to do later on;" 70% agree or strongly agree that "studying my school science subject(s) is worthwhile for me because what I learn will improve my career prospects;" 70% agree or strongly agree with "I will learn many things in my school science subject(s) that will help me get a job;" and 68% agree or strongly agree with "What I learn in my school science subject(s) is important for me because I need this for what I want to study later on."

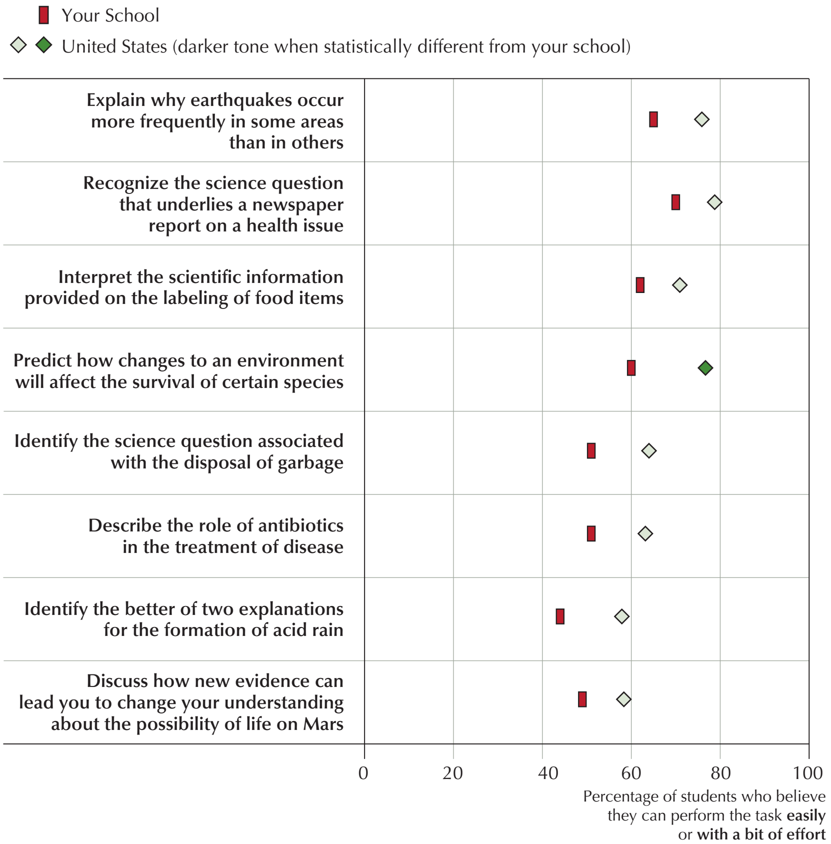
Students' self-efficacy in science

Students who lack confidence in their ability to solve science tasks often tend to show weaker performance results than those with a high level of self-efficacy. Although improvements in confidence to some extent seem to mirror the students' performance levels, improvements in performance and in self-confidence often need to go hand in hand: students with higher academic abilities are more confident, and in turn, students with higher confidence have the drive to make the efforts that improve their abilities.

Figure 3.12 shows how students at your school responded to eight questions regarding their self-efficacy in science. They were asked how confident they feel about having to do each of the science tasks mentioned in the figure. The values reported by the figure represent the percentage of students who responded they can perform the tasks "easily" or "with a bit of effort."

The figure also shows how confident students in the United States on average feel about having to do the tasks, as measured by PISA 2006. The task that most students in the United States feel that they can do "easily" or "with a bit of effort" is "Recognize the science question that underlies a newspaper report on a health issue." Eight out of ten students in the United States respond that they feel capable of the task. At the other end, the task that students feel less confident about is "Identify the better of two explanations for the formation of acid rain." Six out of ten students in the United States feel that they can solve that task "easily" or "with a bit of effort."

Figure 3.12 ▪ **Students' self-efficacy in science at your school and in the United States in PISA 2006**



Source: OECD.

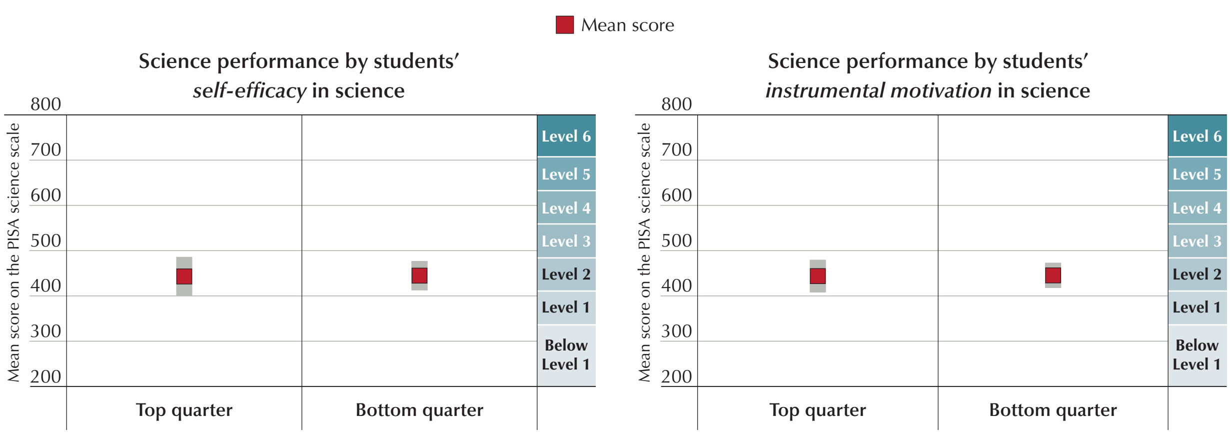
Similar to the case in mathematics, students in the United States are among the most confident internationally in solving science tasks. Of the 57 countries that participated in PISA 2006, only Poland showed higher levels of self-confidence in solving science tasks among its 15-year-old students.

How students' motivation and self-efficacy relate to their science performance

While the two previous figures show how motivated and confident students at your school are to learning science, the next figure shows how these factors relate to their performance in science.

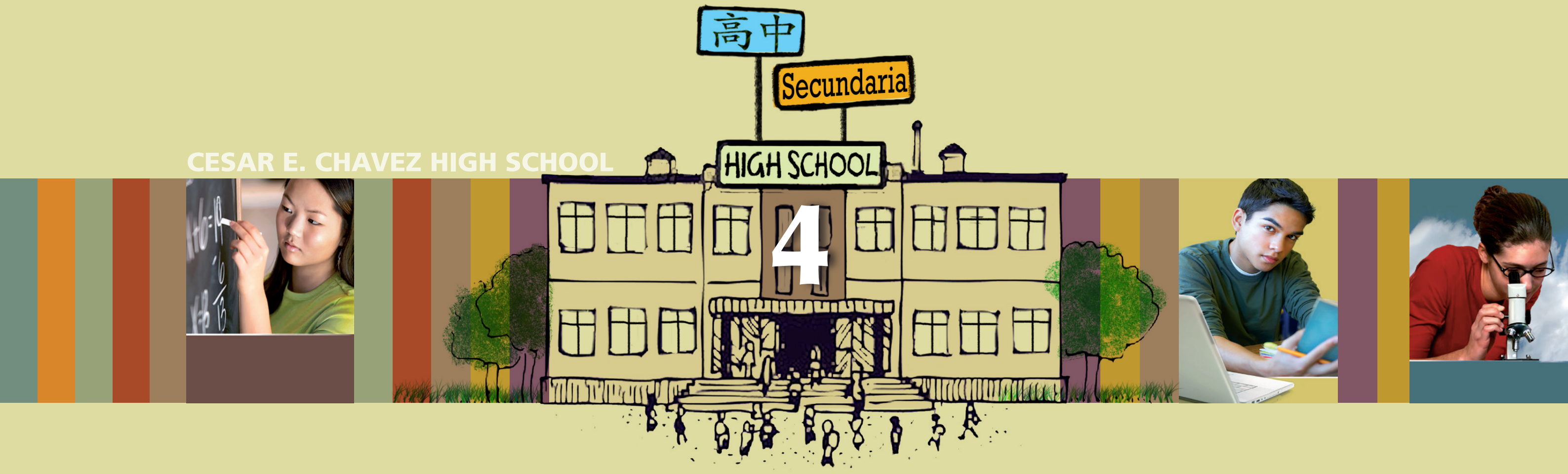
Figure 3.13 includes two charts, both of which show results for your school. The first chart shows how students at your school with the *highest* levels of *self-efficacy* in science (the top quarter) perform in science compared with the students with the lowest levels of self-efficacy at your school (the bottom quarter). The top and bottom quarters of students have been identified by grouping each student's responses on the eight questions shown in Figure 3.12. The 25% of students at your school who show the *highest* levels of confidence across the eight questions constitute the top quarter, while the 25% of students who show the lowest levels of confidence across the eight questions constitute the bottom quarter.

Figure 3.13 ■ **How instrumental motivation and self-efficacy in science relate to performance at your school**



Note: Shaded bars above and below the mean scores represent the 95% confidence interval.
Source: OECD.

Similarly, the second chart shows the science performance for students by *instrumental motivation*. The top quarter of students in terms of instrumental motivation is the 25% of students at your school with the most positive responses to the five questions shown in Figure 3.11. The bottom quarter of students is the 25% of students with the least positive responses to these four questions.



Your School Compared with Similar Schools in Your Country

Is your school performing in line with what would reasonably be expected given the relative socioeconomic advantage or disadvantage of students? Many schools in your country and in other education systems are successful in providing their students with the knowledge and skills that will enable them to compete with peers from the best education systems worldwide, but some are even able to do so with students from largely disadvantaged backgrounds. This section focuses on the relationship between the socioeconomic status of students and their performance relative to students and schools in your country, based on PISA 2009 results. It also presents the performance of your school in the context of public and private schools in your country and shows how performance can be considered in view of the average socioeconomic status of students.

HOW YOUR SCHOOL COMPARES WITH SIMILAR SCHOOLS IN THE UNITED STATES

Student learning outcomes do not occur in isolation to other factors. To better understand your school's performance results, therefore, it is important to consider these in light of students' socioeconomic backgrounds. It is well established that home background often influences educational success. In most countries, including the United States, large variations in performance can be found among schools due to the socioeconomic and cultural characteristics of the students and communities that they serve. It is therefore useful to compare your school's results with those of other schools across the country whose intake of students is similar to that of your school.

Figures 4.1, 4.2 and 4.3 show your school's average performance results in reading, mathematics and science along with the results of other schools in the United States that participated in PISA 2009. In each figure, the red bubble (at the center of the bands) represents your school. The hollow bubbles represent schools that participated in PISA 2009. It is important to remember that students in the PISA 2009 schools are a representative sample of students in the United States.

The scale on the bottom (the *x*-axis) refers to the socioeconomic status of students as measured by the PISA **index of economic, social and cultural status** (**ESCS**).[1] The scale shows average index values of **-3.0** to **+3.0** (although this could have been calibrated differently, from 0 to 5 or 10 for example). The scale is calibrated so that a value of 1 equals a difference of 1 standard deviation from the OECD average of 0.0. The important element to keep in mind when reviewing these figures is that as values increase (from left to right), the average socioeconomic status of students increases: they are more advantaged in terms of their socio-economic backgrounds. Thus, schools that are plotted toward the lower end of the scale (-2.0 for example) will appear on the left side of the figure, and one may conclude that students on average in these schools come from disadvantaged backgrounds. Schools plotted with higher ESCS values such as +1.0 or higher (toward the right side of the *x*-axis) serve students primarily from advantaged backgrounds.

Schools with a **similar socioeconomic background** to yours are indicated by the vertical **blue** band. The schools that appear in this blue band are serving students from similar socioeconomic backgrounds. These schools have an index value on the index of economic, social and cultural status (ESCS) that is within the range of 0.25 of a standard deviation from your school's value. Schools in the blue band, therefore, serve students who are on average from similar socioeconomic backgrounds.

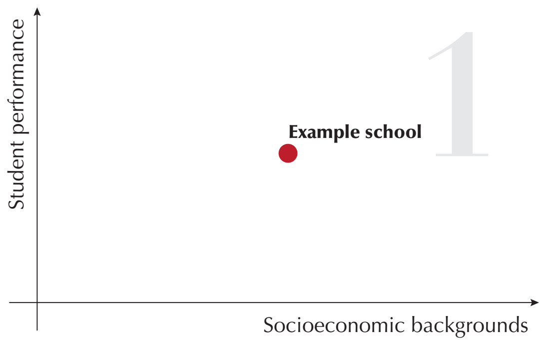
With this information in mind, it is now useful to see whether other schools that fall within the vertical blue band are performing *above* or *below* your school level. Schools within the band that are well above your school show a higher student performance with a student intake similar to that of your school. Similarly, the schools within the band that are well below your school show a lower student performance with a student intake similar to that of your school.

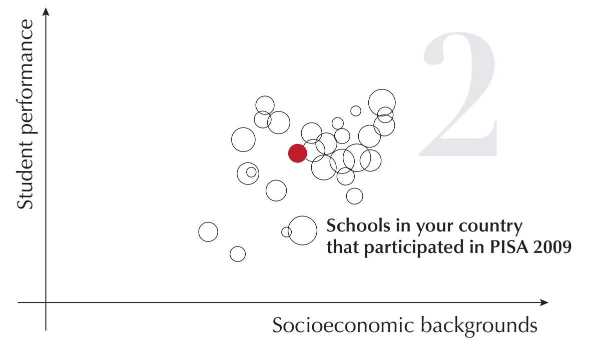
The diagonal line on the figures indicates the relationship (i.e., simple correlation) between socioeconomic background and performance between the schools that participated in PISA 2009 in the United States.[2] Schools well above the diagonal line perform better than what would reasonably be expected given the socioeconomic status of their students. Schools well below the line perform lower than what would reasonably be expected.

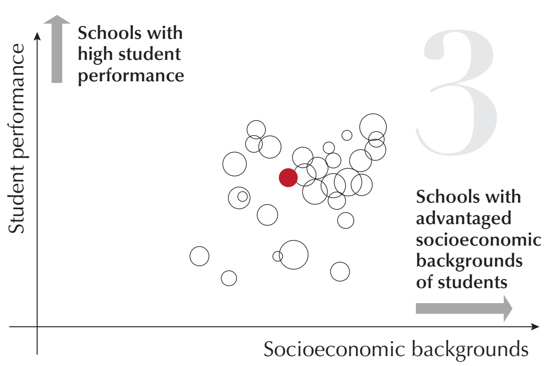
1. The PISA index of *social, cultural and economic* status is based on information provided by students about their parents' education and occupations and their home possessions, such as a desk to use for studying and the number of books in the home. The index is standardized to have an average value of 0 and a standard deviation of 1 across all OECD countries. The United States has a value of 0.17, which is slightly higher than the OECD average.

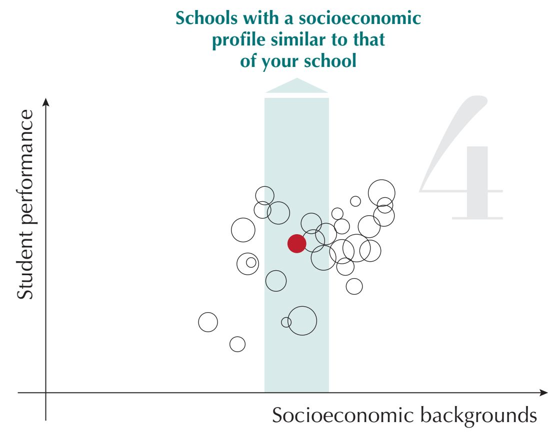
2. The diagonal line is based on a linear regression of school mean estimates by average socioeconomic background of the students at the school level. Schools were weighted by the number of students enrolled.

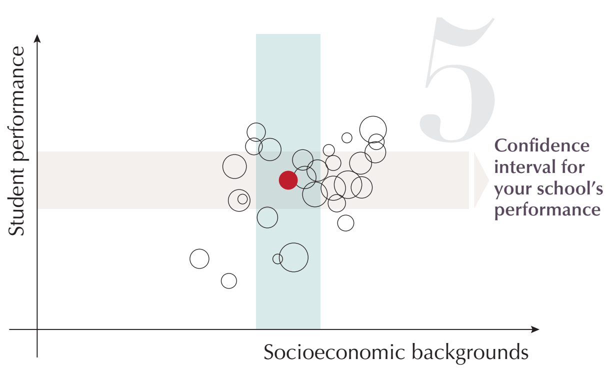
HOW TO READ THE BUBBLE CHARTS

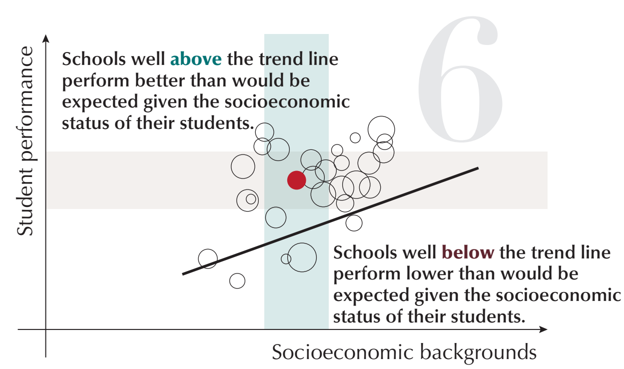


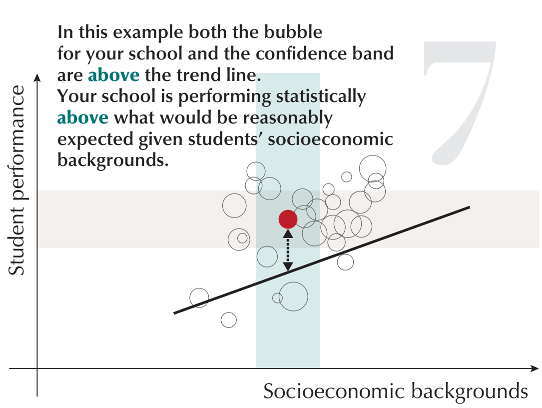








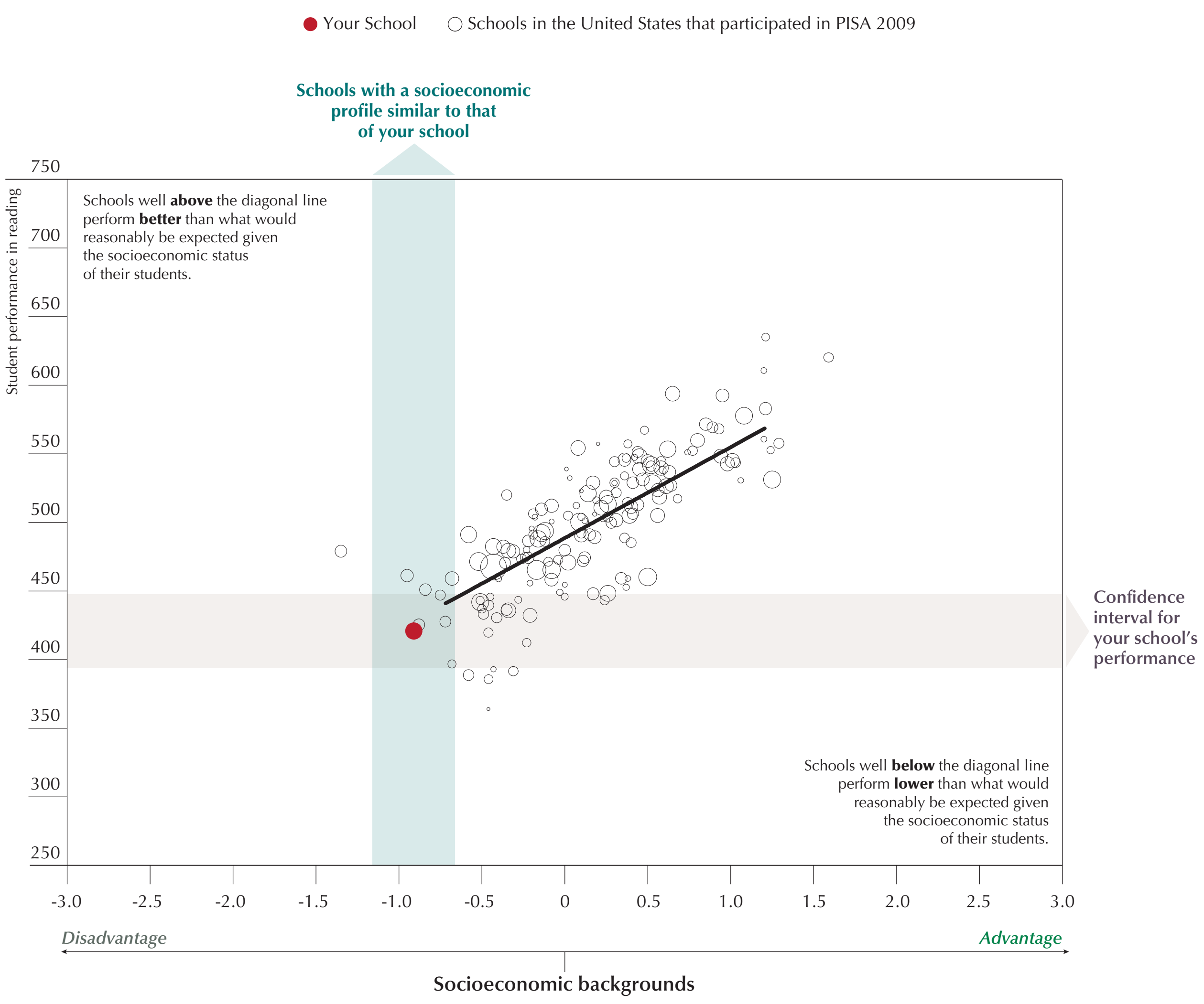




Example

Whether your school is ***well above*** or ***well below*** the diagonal line can be used as an indication of how effective your school is compared with others across the country. If, for example, student performance is below average for the United States but the student intake at your school is relatively disadvantaged, your school could still show results that are better than expected given the backgrounds of the students enrolled. In that case, the red bubble representing your school will be well above the diagonal line. If, on the other hand, your school performs above average but most of your students come from mostly advantaged backgrounds, it is relevant to consider whether the relatively high performance for your school can be accounted for primarily by the students' socioeconomic backgrounds. If your school is well above the diagonal line, then its performance is higher than what would be expected on average among schools in the United States given similar students.

Figure 4.1 ▪ **How your school's results in reading compare with schools in the United States in PISA 2009**

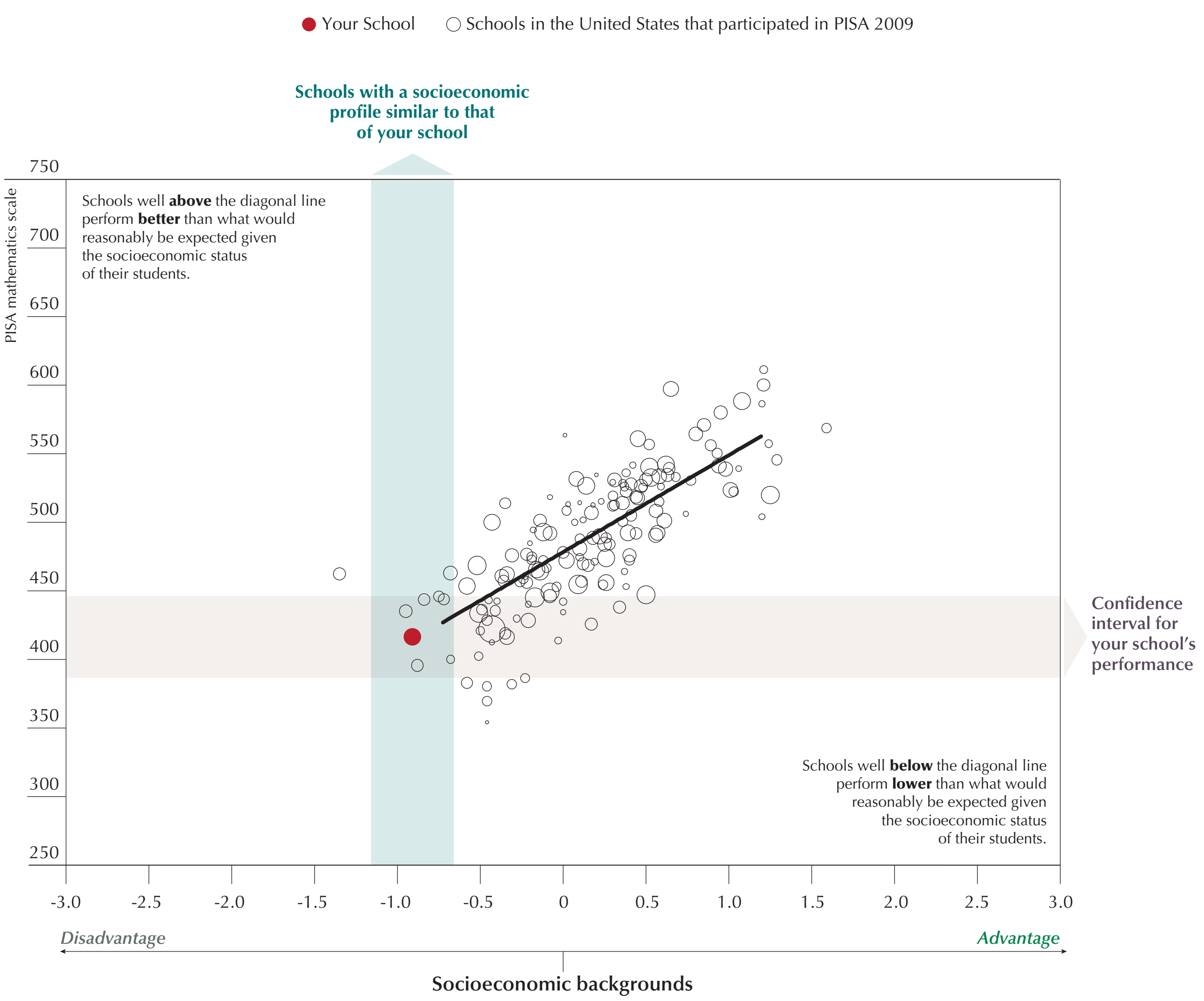


Note: Size of bubbles is proportional to the number of students enrolled at the school.
Source: OECD.

When comparing your school's performance to other schools, it is also important to take into account the statistical uncertainty associated with performance estimates. This uncertainty is represented by the **gray** horizontal band. You will notice that the red bubble that represents your school is located in the middle of this band. A simple way to identify whether your school's results can be considered as statistically below or above what would be expected given the students' socioeconomic backgrounds is to follow the following procedure:

- *If your school is above the vertical line*: Look at the gray band around your school's performance and find the lower border of the gray band, right beneath the red bubble that represents your school. If the lower border is above the vertical line, then your school's performance is ***significantly above*** what would be expected.
- *If your school is below the vertical line*: Look at the upper border of the gray band, right on top of the red bubble that represents your school. If the upper border is below the vertical line, then your school's performance is ***significantly below*** what would be expected.

Figure 4.2 ▪ **How your school's results in mathematics compare with schools in the United States in PISA 2009**



Note: Size of bubbles is proportional to the number of students enrolled at the school.
Source: OECD.

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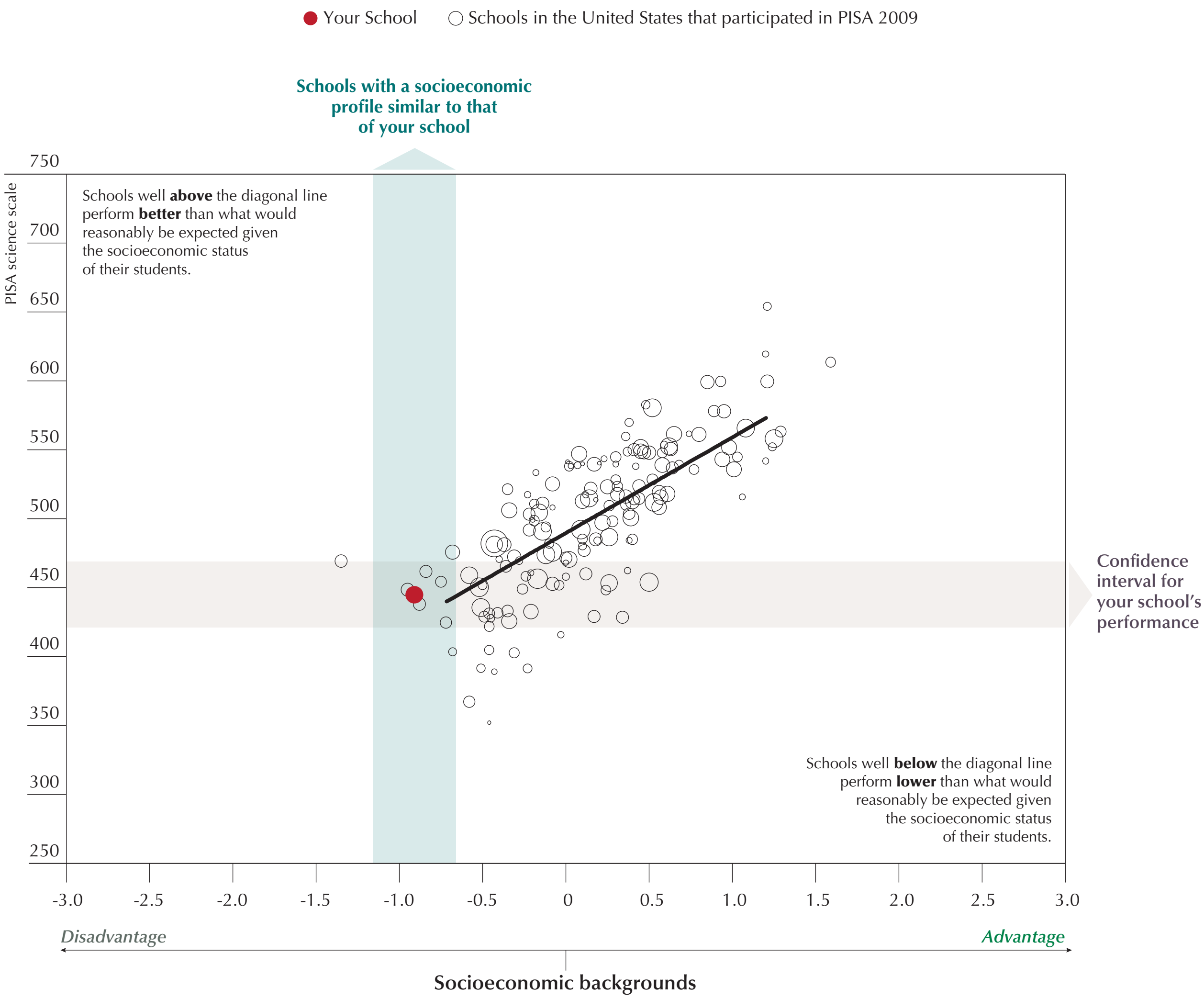
Figure 4.3 ■ **How your school's results in science compare with schools in the United States in PISA 2009**



Note: Size of bubbles is proportional to the number of students enrolled at the school.
Source: OECD.

The socioeconomic backgrounds of students in the United States

In PISA 2009, the socioeconomic backgrounds of students have a higher impact on their performance in the United States than the average across OECD countries. In the United States, 17% of the variation in student performance is explained by students' socioeconomic backgrounds, compared with just 9% in Canada or Japan. Among OECD countries, only Hungary, Belgium, Turkey, Luxembourg, Chile and Germany show a larger impact of socioeconomic backgrounds on reading performance. These countries, including the United States, do not necessarily have a more disadvantaged socioeconomic student intake than other countries, but socio-economic differences among students have a particularly strong impact on learning outcomes.

Similarly, when looking at the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution and then comparing it to student performance, among the 25 countries participating in PISA 2009 that show a more unequal distribution of income in their populations than the United States, only Panama, Chile, Peru, Argentina, Uruguay and Turkey show a larger impact of socioeconomic backgrounds on learning outcomes at school.

Box 4.1 **The relationship between socioeconomic backgrounds and student performance in the United States**

PISA 2012 results show how four aspects of socioeconomic background relate to student performance in the United States:

- Across OECD countries, ***community size*** can have a strong impact on performance outcomes, contrary to the United States. PISA shows that students who attend schools located in cities with over 1 million inhabitants outperform those who attend smaller-town schools and rural schools even after taking into account students' socioeconomic background. Yet in the United States these differences are not significant *even before* adjusting for the socioeconomic background of students. Performance challenges for the United States therefore do not relate only to poor students in poor neighborhoods, but to many students in many neighborhoods.
- There is also the issue of ***family structure***. While results from PISA show that single-parent families are more prevalent in the United States (20% of 15-year-olds in the United States come from a single-parent family compared with an average of 13% across OECD countries), results also show that these types of students face a much higher risk of low performance in the United States than across OECD countries.
- PISA 2012 results also illustrate the role that ***immigrant students*** play in performance compared with other OECD countries. Integrating students with an immigrant background is part of the socioeconomic challenge, and the performance levels of students who immigrated to the country in which they were assessed in PISA can only be somewhat attributed to the education system of their host country. Around 22% of 15-year-old students in the United States have an immigrant background as defined by being either first- or second-generation immigrants, and 34% of 15-year-old students are in schools that have more than a quarter of students with an immigrant background. These figures are surpassed only by Australia, Canada, Luxembourg, New Zealand and Switzerland (the OECD average is 15%).

  Although it is tempting to attribute a performance lag to the challenges that immigrant inflows pose to the education system, the share of students with an immigrant background explains just 4% of the performance variation among countries. After the socioeconomic background of students is accounted for, immigrant students actually outperform non-immigrant students by 15 PISA score points, and this relative performance of immigrant students has improved over time.
- Another important fact is the ***concentration of students in disadvantaged schools***. In the United States, *immigrant students attend schools with a more socioeconomically disadvantaged background*. These schools have a lower quality of educational resources, a less advantageous student/staff ratio and greater teacher shortages as reported by school principals. For example, in the United States, 40% of students in disadvantaged schools are immigrant students, whereas they account for 13% of the student population in advantaged schools. A similar pattern is observed among immigrant students who do not speak the language of assessment at home.

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To read more about these and other findings from PISA, go to:

- *PISA 2012 Key Findings*
- *Strong Performers and Successful Reformers in Education: Lessons from PISA 2012 for the United States*
- *Untapped Skills: Realising the Potential of Immigrant Students*

A reason for this disparity lies in the distribution of resources across students and schools. In around half of OECD countries, the student-teacher ratio relates positively to the socioeconomic background of schools – in other words, disadvantaged schools tend to have more teachers per student. This is particularly prevalent in Denmark, Japan and Korea. Among OECD countries, only Israel, Slovenia, Turkey and the United States *favor socioeconomically advantaged schools over disadvantaged ones with access to more teachers and educational resources.*

Your school's relative performance in comparison with similar schools

Student performance in reading, mathematics and science is usually closely correlated. Students who perform well in one subject often tend to perform well in other subjects as well. Some schools, however, have students who are challenged in one or more subjects or have specific talents. Some schools also have a high focus on some subjects, such as science, technology and mathematics, which might result in particularly strong learning outcomes in these subjects.

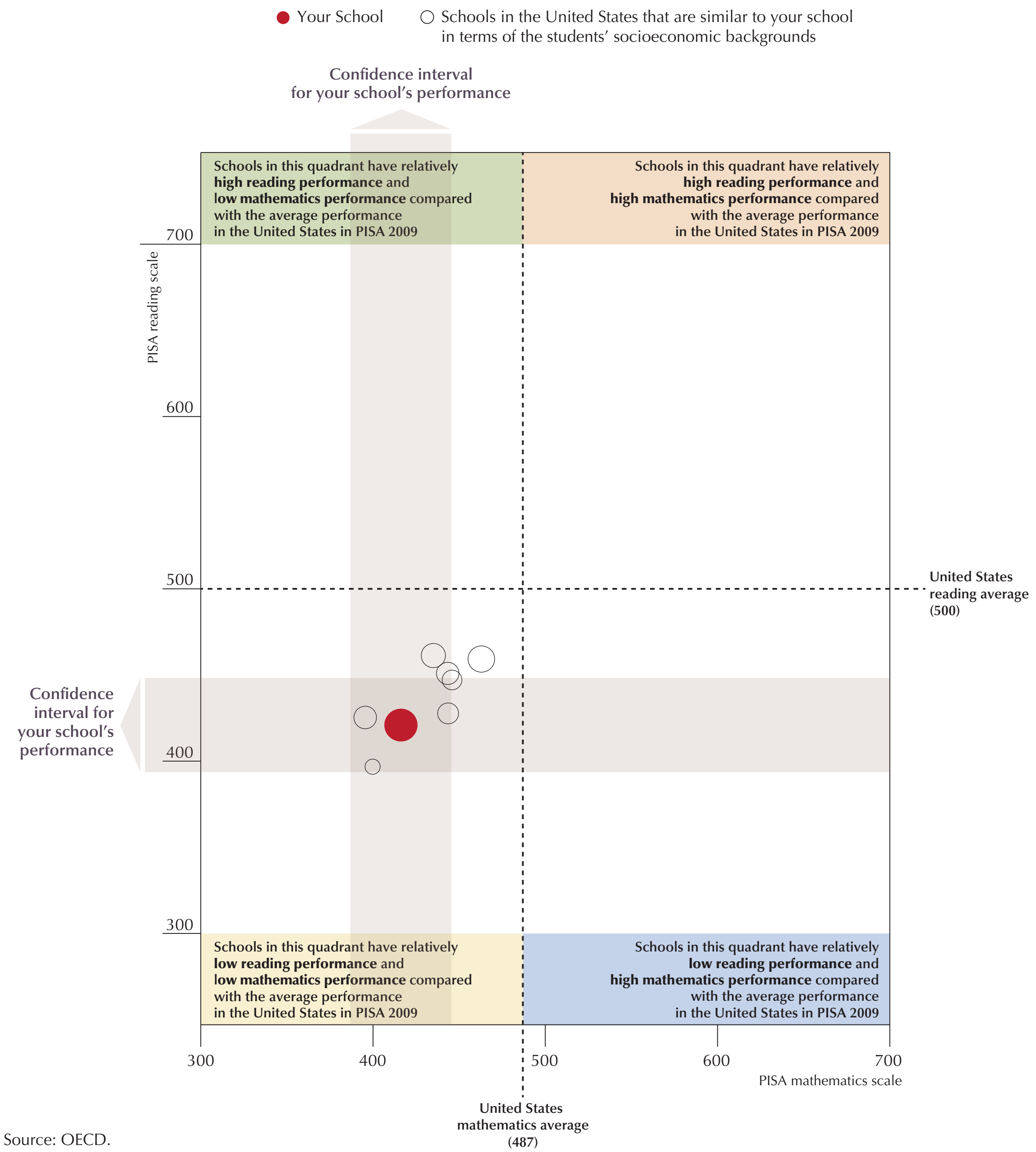
The following set of Figures 4.4a to 4.4c shows how students at your school perform in reading, mathematics and science compared with schools with a similar socioeconomic background of students among the schools in the United States that participated in PISA 2009.

The similar schools (to your school) shown on these charts are the same schools as shown within the vertical gray band on the earlier Figures 4.1, 4.2 and 4.3. That is, similar schools in these charts are defined as serving students that are on average of a similar socioeconomic background as those attending your school. The number of similar schools depends on the number of schools that participated in PISA 2009 that serve students who have – on average – the same socioeconomic status as your school.

These figures are useful to identify the relative strengths and weaknesses of the students at your school in terms of their performance in reading, mathematics and science. Each of the three figures presents the performance results across **four quadrants** that are based on the average performance results for the United States in each area (e.g. reading, mathematics and science) in PISA 2009. That is, the lines that make up the quadrants are drawn by the lines that represent the average performance in your country for PISA 2009:

- Figure 4.4a maps **reading** results with **mathematics** results for your school, compared with similar schools in your country. In the upper-left quadrant, you'll find schools that have relatively *high* performance in reading but relatively *low* performance in mathematics compared with the average performance for your country. On the opposite part of the figure, in the lower-right quadrant, you'll find schools that have relatively *low* performance in reading but relatively *high* performance in mathematics. The upper-right quadrant shows schools that have relatively *high* performance in both reading and mathematics, while the lower-left quadrant shows schools that have relatively low performance in both subjects.

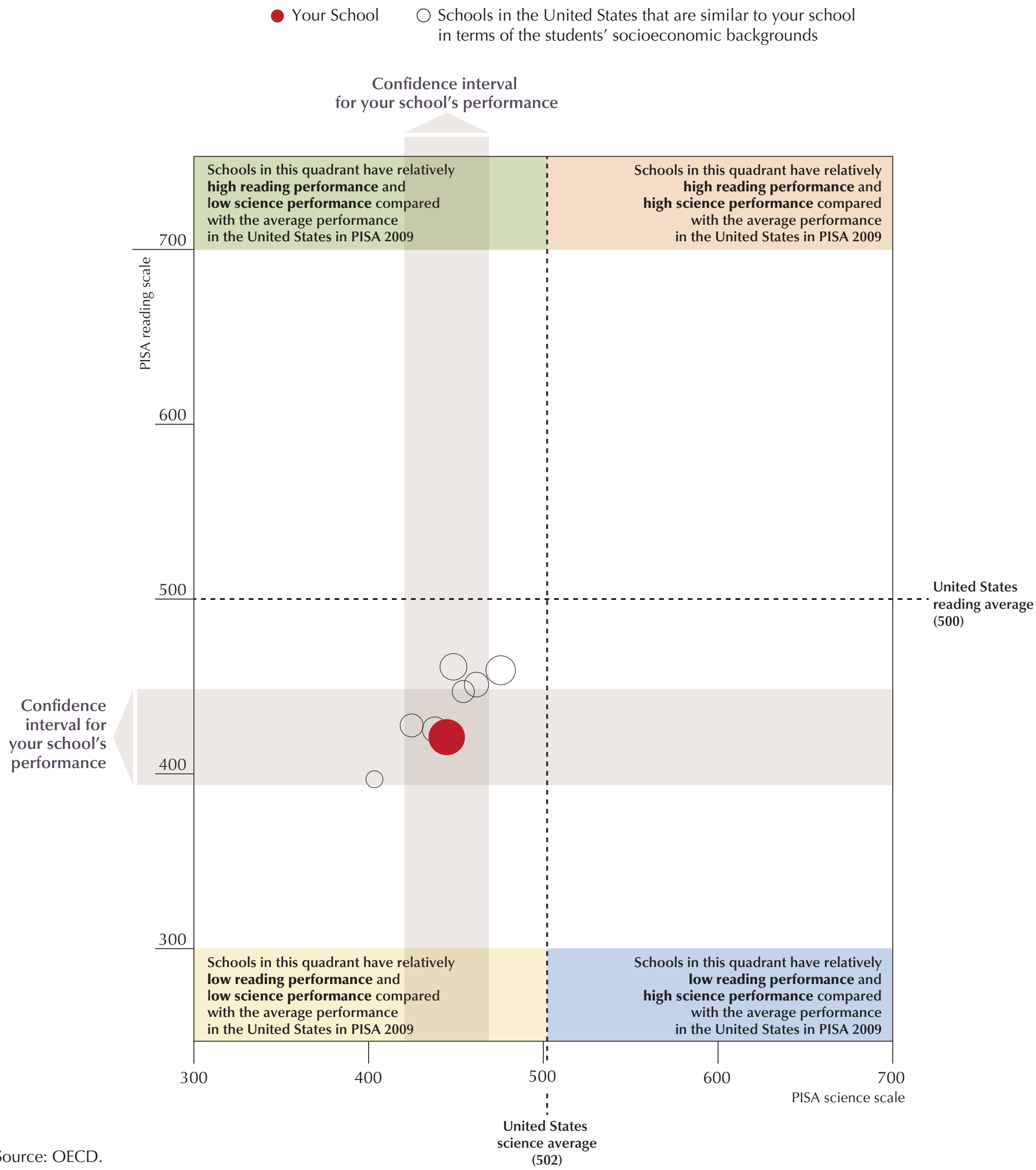
Figure 4.4a ■ **How your school's performance compares with similar schools in the United States in reading and mathematics in PISA 2009**



Source: OECD.

- Figure 4.4b maps **reading** results with **science** results for your school, compared with the group of similar schools.
- Figure 4.4c maps **mathematics** results with **science** results for your school, compared with the group of similar schools.

Figure 4.4b ▪ **How your school's performance compares with similar schools in the United States in reading and science in PISA 2009**



Source: OECD.

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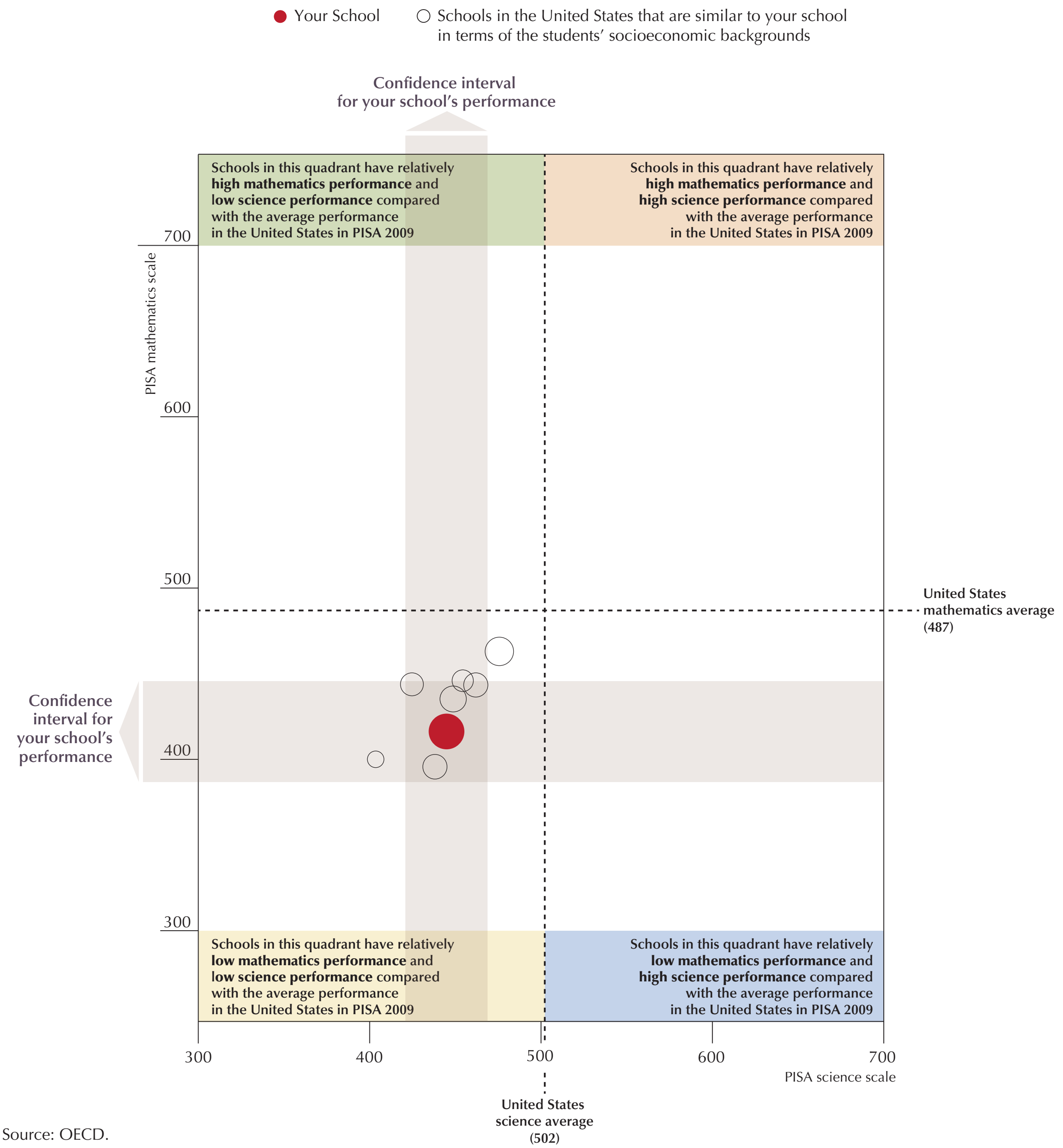
Figure 4.4c ▪ **How your school's performance compares with similar schools in the United States in mathematics and science in PISA 2009**



Source: OECD.

If your school clearly shows stronger performance in some subjects relative to others, then it might be useful to reflect upon these differences: Do the relative strengths and weaknesses mirror what would be expected given the school's focus areas? Do the students at your school demonstrate potential for improvement in one or more subject areas that would need to be recognized and addressed? What efforts could be taken to raise student performance in those subjects where student performance seems to be weaker relative to others? To support reflection and discussion on these and related questions, it is useful to also look at the distribution of students in proficiency levels as shown on Figures 2.5, 2.8 and 2.11 earlier in the report and on the descriptions of the competencies and skills associated with each level of proficiency.

YOUR SCHOOL'S RESULTS COMPARED WITH PUBLIC AND PRIVATE SCHOOLS IN THE UNITED STATES

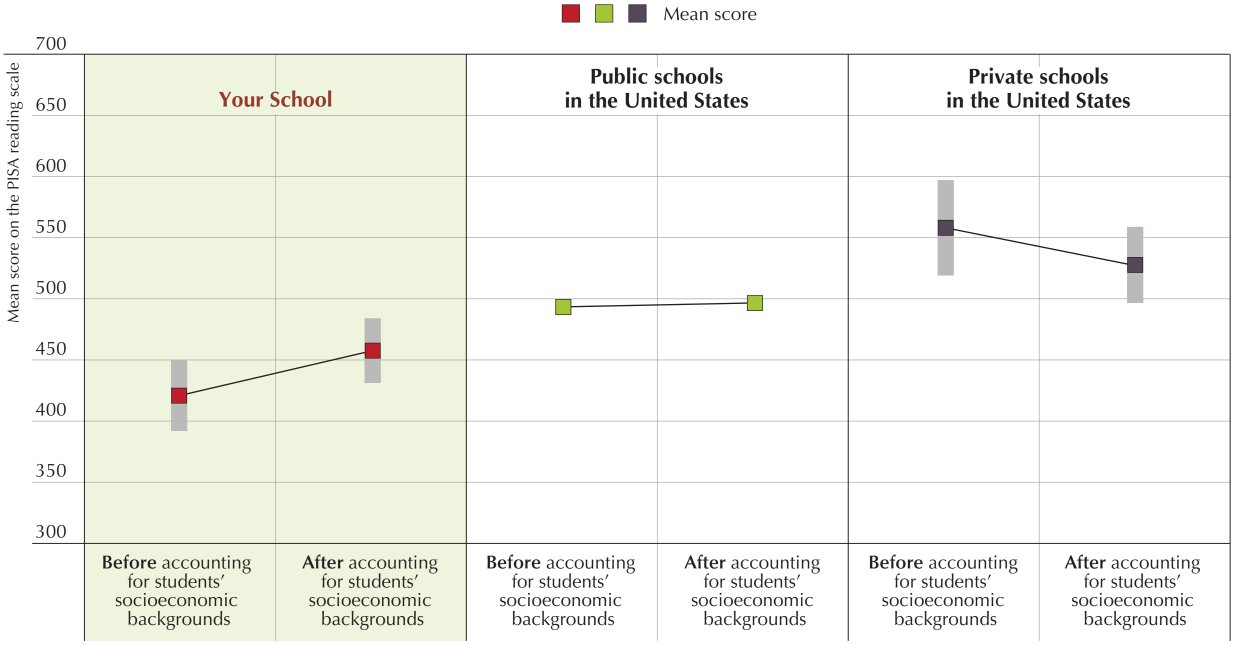
Students who attend private schools tend to perform better than those who attend public schools. This is the case in most countries that participate in PISA, including Canada, the United Kingdom and the United States. In most of these countries, however, this difference cannot be attributed solely to differences in the quality of instruction, but also to the fact that students in private schools on average come from more advantaged socioeconomic contexts than students in public schools.

Figures 4.5a to 4.5c show how students in your school perform in reading, mathematics and science compared with students in public schools and private schools in the United States in PISA 2009.

For your school and for the public and private schools in PISA 2009, the figures shows two values connected by a blue line. The markers on the left-hand side of the line represent the actual performance of students, without accounting for their socioeconomic backgrounds. When looking at the figures, it is worth focusing first on these values. You will notice that the value on the left-hand side for your school is the mean score of your school that has been presented previously in this report.

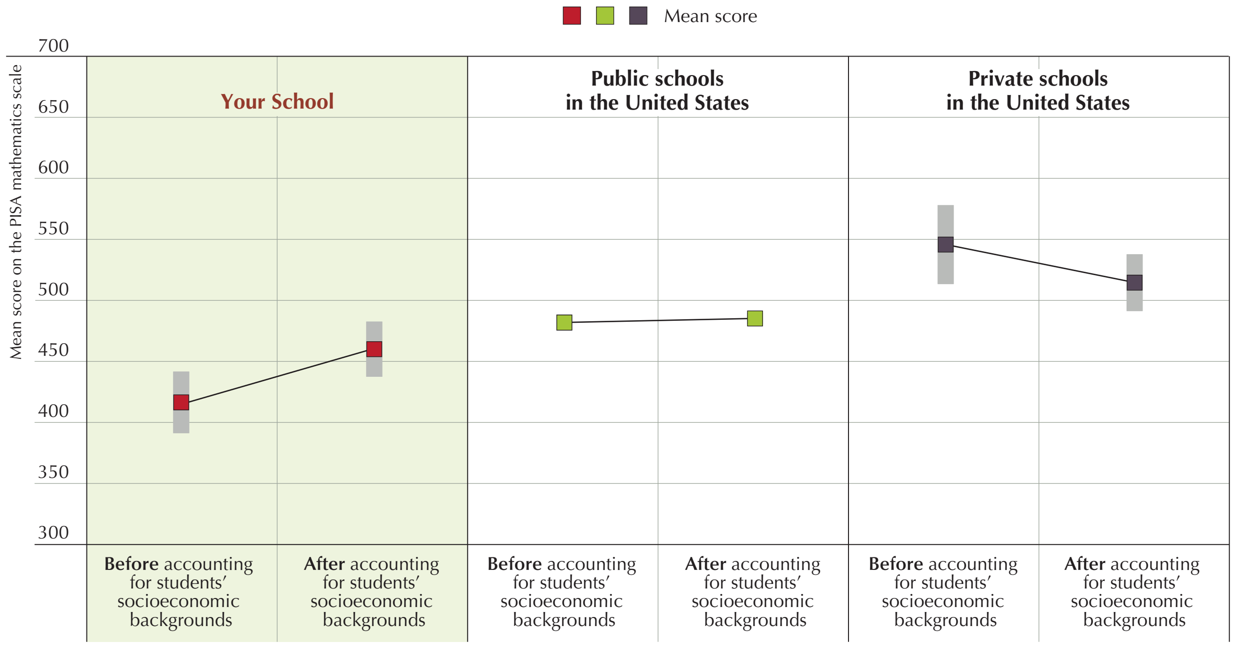
Moving on to public and private schools in the United States, you will notice from the left-hand values that students in private schools perform higher than students in public schools in all three subjects. In reading, students in public schools have a mean score of 494, while students in private schools have a mean score of 559, a difference of 65 points. In mathematics, the gap between public and private schools is 64 points, with students in public and private schools performing at 482 points and 546 points, respectively. In science, the gap is 63 points, with students in public and private schools performing at 496 and 559 points, respectively.

Figure 4.5a ▪ **How your school's performance in reading compares with public and private schools in the United States in PISA 2009**



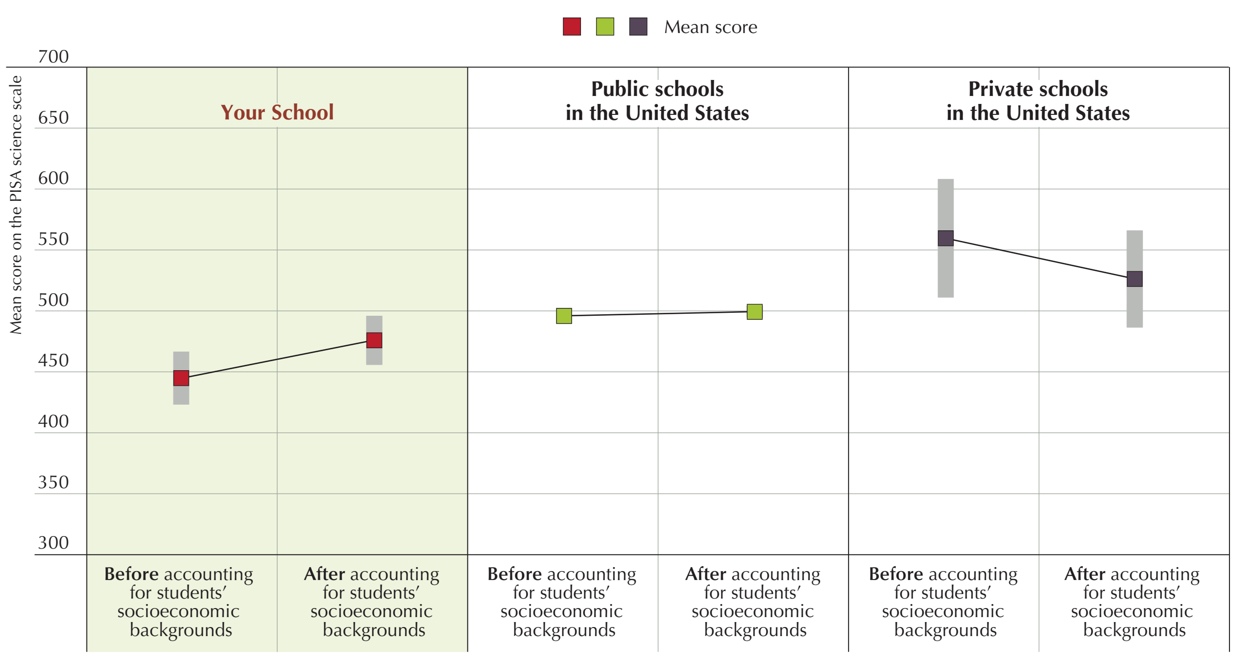
Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance score would fall within this confidence interval.
Source: OECD.

Figure 4.5b ▪ **How your school's performance in mathematics compares with public and private schools in the United States in PISA 2009**



Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance score would fall within this confidence interval.
Source: OECD.

Figure 4.5c ▪ **How your school's performance in science compares with public and private schools in the United States in PISA 2009**



Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance score would fall within this confidence interval.
Source: OECD.

But what does the performance of these schools look like if one were to try to "factor out" the relative socioeconomic advantage – on average – of students who attend private schools?

The values on the right-hand side of the blue lines are the mean scores *after taking into account the socio-economic backgrounds of the students.* These values are helpful in considering the relative performance of your school and of public and private schools in general. They provide the answer to the questions: How would students in your school have performed if they had had a socioeconomic background similar to the average students in the country? And how would students in public or private schools have performed if these types of schools had had student intakes similar to the average of the country?

The figure shows that for public schools in the United States, the average student performance does not change very much when taking into account the students' socioeconomic backgrounds. For private schools, however, the performance is significantly *lower* when taking into account the students' socioeconomic backgrounds. Seven percent of students in the United States attend private schools, and on average they come from more advantaged backgrounds than those in public schools. When taking into account the more advantaged background of the student intake, the results for the private schools decrease from 559 to 528 points in reading, from 546 to 514 points in mathematics, and from 559 to 526 points in science. The results decrease because private schools on average serve students from more advantaged backgrounds than do public schools.

Furthermore, private schools in the United States produce students who on average score 65 points higher than students who attend public schools, which is more than the OECD average of 30 points. Once the socioeconomic status is taken into account, however, public and private schools do not show a marked difference in performance. You can learn more about student performance in public and private schools in the four-page note: PISA in Focus 7: *Private schools: Who benefits?*

When looking at these figures it is useful to note that the average socioeconomic status of students in the United States is only slightly higher than the OECD average. In other words, students there are on average slightly more advantaged than those across OECD countries. Thus, when adjusting for the students' socioeconomic status, the average performance of the United States in reading does not significantly change. In contrast, in Shanghai-China, not only did students perform better on average (556 score points), but after taking into account the socioeconomic status their score would actually *increase* – meaning that not only are there more students who come from disadvantaged socioeconomic backgrounds in Shanghai-China, but they also perform better than students from the United States who come from similar and socioeconomically advantaged backgrounds. Also, when looking more closely at the impact of a student's socioeconomic status in the United States, a student who is 1 point higher than another student on the socioeconomic and cultural status scale (i.e., 1 standard deviation higher than the OECD average) will score 42 points higher on average, equivalent to an advantage of one full year of school (39 score points).

Box 4.2 **Resilient students who succeed against the odds: Lessons from PISA**

PISA considers students resilient when they come from the bottom quarter of the distribution of socioeconomic backgrounds in their country and score in the top quarter among students from all countries with similar socioeconomic backgrounds.[1]

When policy leaders and educators look at learning outcomes of students from disadvantaged backgrounds, they often ask: ***Why is it that some students, even though they come from disadvantaged socioeconomic backgrounds, are able to beat the odds and outperform their peers?***

To try to answer this question and provide relevant insights for schools and educators, PISA looked closely at the performance of these students in the 2006 cycle, when science was the main assessment area. PISA 2006 looked into the factors that contribute to some students from disadvantaged backgrounds continually being among the highest-performing students. These students are recognized by PISA as resilient. The following are some of the insights from PISA 2006 regarding students' higher performance despite their disadvantaged socioeconomic backgrounds.

- ***Investing more time in learning is a very important factor for students from disadvantaged socioeconomic backgrounds.*** PISA shows that students from disadvantaged backgrounds do not enjoy as much learning time in school as those who come from advantaged backgrounds.
- ***Along with more learning time in school, time spent learning science correlates strongly with better performance across the board***. Students from disadvantaged backgrounds who take one hour extra of regular science classes are 1.27 times more likely to be resilient than other disadvantaged students who do not have this opportunity. Taking more general science classes benefits disadvantaged students even much more so than those who come from an advantaged background. Therefore, introducing compulsory science classes such as physics, biology and chemistry into the core curriculum of disadvantaged students might help close the performance gap with students who come from more advantageous backgrounds.
- ***A positive outlook on learning and more confidence in their ability might also help students who come from disadvantaged backgrounds.*** PISA results show that on average across OECD countries, ***self-efficacy*** has the strongest association with *resilience*. Students who believe in their own ability to handle tasks effectively and overcome difficulties are almost twice as likely (1.95 times more) to be resilient than disadvantaged students with low levels of self-efficacy. Policies that focus on disadvantaged students' confidence overall might be effective, as students who come from disadvantaged backgrounds might not receive enough support outside the classroom.

Schools may have an important role in promoting resilience among students by developing activities, classroom practices and modes of instruction that foster disadvantaged students' motivation and confidence in their abilities. Additionally, disadvantaged students do not often have the opportunity to take general science classes, thereby increasing the potential for widening performance gaps (OECD, 2011a).

1. OECD (2010g), *PISA 2009 Results: Overcoming Social Background: Equity in Learning Opportunities and Outcomes (Volume II)*, OECD Publishing.

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Ultimately, targeted policies addressing some of the issues identified by PISA with regard to resilient students – such as developing modes of instruction that foster disadvantaged students' motivation and confidence in their abilities, as well as introducing more science classes to the curriculum – may be necessary in order to ensure that all students, including those from disadvantaged backgrounds, perform at high levels.

To find out more about what educators and policy makers can do to foster high performance among students from disadvantaged backgrounds, go to:

- PISA in Focus 5: *How do some students overcome their socioeconomic background?*
- *Against the Odds: Disadvantaged Students Who Succeed in School*

Sources: Education Today (2011), *"Can Disadvantaged Students Beat the Odds against Them?,"* OECD Publishing, 8 February 2011.

Organisation for Economic Co-operation and Development (OECD) (2010g), *PISA 2009 Results: Overcoming Social Background: Equity in Learning Opportunities and Outcomes (Volume II)*, OECD Publishing.

OECD (2011a), *Against the Odds: Disadvantaged Students Who Succeed in School*, OECD Publishing.

Furthermore, in comparing the difference in performance explained by **students'** socioeconomic backgrounds with the variance among **schools'** socioeconomic backgrounds in the United States, the variance explained by schools' socioeconomic backgrounds is almost *eight times greater* than the variance explained by students' socioeconomic backgrounds – superseded only by New Zealand, the United Kingdom and Luxembourg. This indicates that students attending the same school do not display different abilities or effort, *but* that the ways in which students are allocated to schools in the United States result in large gaps and marked variations in performance among schools. The financing of schools in the United States, which is dependent on local taxation and thus closely related to housing costs, may contribute to concentrations of disadvantaged pupils in poorly resourced schools. This is the opposite of Shanghai-China, where the variation among schools is twice the amount of the variation explained by the socioeconomic backgrounds of students.

When looking at the extent to which a student's performance is associated with advantaged backgrounds, the United States has a correlation almost two times the amount of other OECD economies such as Chile. The greater the socioeconomic advantage is in the United States, the greater the marginal increase observed in student performance compared with students who come from disadvantaged backgrounds. Whereas in the highest-performing OECD economies such as Finland, the correlation is negative, meaning there is a decline in the advantage that students with a higher socioeconomic status have over those who come from disadvantaged backgrounds.

In addition, when looking at the differences in results between urban and suburban areas after accounting for the socioeconomic status, the difference becomes much less significant and students' performance in all areas (suburban and urban) is around the OECD average (493). Whereas in Canada, after accounting for the socioeconomic status, the performance of students in cities with over 1 million people goes from greatly exceeding the OECD average with an average score of 541 to a *decrease* of 54 points.

Box 4.3 Effectively supporting disadvantaged students and schools: Examples from Canada, Shanghai-China and Ireland

Schools and educators in many countries face the challenge of answering the following questions: ***What are effective policies and practices to improve equity and reduce school failure? What are the specific challenges facing schools with high proportions of students from disadvantaged backgrounds?***

The OECD has identified various approaches that educators use to effectively support disadvantaged schools. These include developing specialized school leadership; fostering a supportive school environment; recruiting, developing and supporting high-quality teachers; and linking parents and communities with schools to increase student learning outcomes (OECD, 2012b). Some insights on policies and practices to support disadvantaged students and schools include the following:

- Evidence suggests that the starting point for transforming the lowest-performing, disadvantaged schools is to ***strengthen and support school leadership***. Yet, school leaders are not always adequately trained or given systemic support and better working conditions to respond to the needs of these schools and their students. Effective leadership entails a combination of internal and external development that includes: supporting and developing teacher quality; goal-setting and accountability for school leaders, teachers and students; and collaborating with other schools by forming networks where school leaders can share strategies.
- In addition, ***a positive and supportive school environment is important.*** Disadvantaged schools face a greater risk of student behavior problems in the classroom that negatively affect learning. Policies need to ensure that disadvantaged schools are able to create an orderly and co-operative effective learning environment. Improving positive teacher-student and peer relationships *while avoiding an emphasis on discipline alone* will encourage students to identify positively with school.
- Another important strategy is to ***develop a support system for teachers in disadvantaged schools*** to ensure that they gain the skills and knowledge they need to effectively work with students in these contexts. Well-structured programs that focus on diagnosing student problems and understanding the context of the schools where they learn facilitate teacher effectiveness (OECD, 2012b). Support from principals and school leadership, collaboration with colleagues and adequate resources will also encourage teachers to be more engaged and remain at the same school to see the fruit of their efforts.
- ***Experienced educators have also stressed the importance of linking schools with parents and communities,*** as disadvantaged parents tend to be less involved in their children's schooling for multiple economic and social reasons. Engaged parents encourage more positive attitudes toward school, improve homework habits, reduce disengagement and enhance academic achievement.

To illustrate some of these strategies, the following are examples of policies and practices from Canada, Shanghai-China and Ireland that have proved effective in supporting disadvantaged schools and students.

Strengthening school leadership in Ontario, Canada

In 2003, the Ontario Ministry of Education launched the Student Success/Learning to 18 Strategy, which focuses on providing engaging, quality learning opportunities for all students and support for students at risk of not graduating (OECD, 2011c). One of the main objectives was to promote

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strong leadership in schools and district school boards, with the aim of changing school culture and achieving long-term improvements. New roles at the district and school levels were created in an effort to provide high-quality learning opportunities for all students and to support those at risk of not completing secondary education. At the district school-board level, the Student Success Leader was created to build leadership capacity. At the school level, the role of Student Success Teacher provides support to students at risk of leaving school, while a Student Success Team (which includes school leaders, Student Success Teachers and staff) tracks and addresses the needs of disengaged students. As a result of these efforts focusing on students who are at risk of not completing secondary school, the overall graduation rate in Ontario has increased by more than 10% since 2003 (OECD, 2011c).

Teacher-to-teacher support in Shanghai-China

Shanghai-China, a city with 754 general secondary schools (Shanghai Education, 2011), provides an excellent example of valuable teacher support. All new teachers participate in workshops, mentoring, and peer observation; they also analyze lessons in groups with experienced teachers. Teachers are able to join teaching research groups in order to discuss techniques. They also must observe experienced teachers conduct lessons in their classroom at least eight times a semester, while new teachers are also observed and given advice on how to improve their lessons and teaching strategies. Experienced as well as new teachers talk through lesson plans and explain their methods and approaches to the lesson plans. These types of strategies illustrate how teachers can help each another effectively (OECD, 2012b).

Working with parents and communities in Ireland

Ireland has a Home/School/Community Liaison Program (HSCL), targeted at students at risk, which focuses directly on the most important adults in children's educational lives. The program establishes partnerships with parents and teachers and organizes locally based activities to encourage greater contact among parents, teachers and local volunteer groups in order to tackle issues that focus on children at risk of not reaching their potential in the education system. Approximately 155,000 students attending 545 schools have access to this service. (OECD, 2012b).

Disadvantaged students within schools

The students most likely to attend disadvantaged schools mainly come from lower socio-economic backgrounds. Results from PISA 2006 show that factors such as whether a school is private or public, competition among schools for the highest-performing students and whether a school has good educational resources do not significantly affect disadvantaged or advantaged students' performance (OECD, 2011a).

There are, however, effective policies that help raise disadvantaged students' performance and provide them with more opportunities to live up to their full potential:

- *One way is by reducing the number of students who repeat a school year.* Grade repetition is costly and often ineffective in raising educational outcomes (OECD, 2012b). In addition, in systems where more than 10% of students have repeated a grade, students obtain an average of 19 score points fewer than systems where fewer than 10% of students have repeated a grade (OECD, 2010i). The most effective strategy to address learning gaps and avoid repetition is to tackle them during the school year by providing early, regular and timely support and evaluation.

...

- ***Avoid early tracking and defer student selection to upper secondary education***. Early student selection has a negative impact, especially on students from disadvantaged backgrounds, as they would most likely be placed in the least academically oriented tracks or groups and thus would have lower self-esteem and would not benefit from the positive effects of being around more capable peers.
- ***Overall, strengthening students' motivation, discipline and confidence helps eliminate barriers such as behavioral problems and grade repetition.***
- ***Investing in high-quality early child education and care significantly benefits students, including those from disadvantaged socioeconomic backgrounds.*** PISA results show that students from disadvantaged backgrounds who attend pre-primary education for more than one year are more likely to complete secondary education, as acquiring early skills and knowledge makes it easier to acquire skills and knowledge later on (OECD, 2012b). Investing early on to close disparities and prevent achievement gaps, therefore, may be more advantageous than trying to remedy disparities later, when they are harder and more expensive to correct.

To find out more about how educators, policy leaders and communities can help disadvantaged schools and students succeed, go to:

- *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*
- PISA in Focus 13: *Does money buy strong performance in PISA?*
- PISA in Focus 1: *Does participation in pre-primary education translate into better learning outcomes at school?*
- *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States*

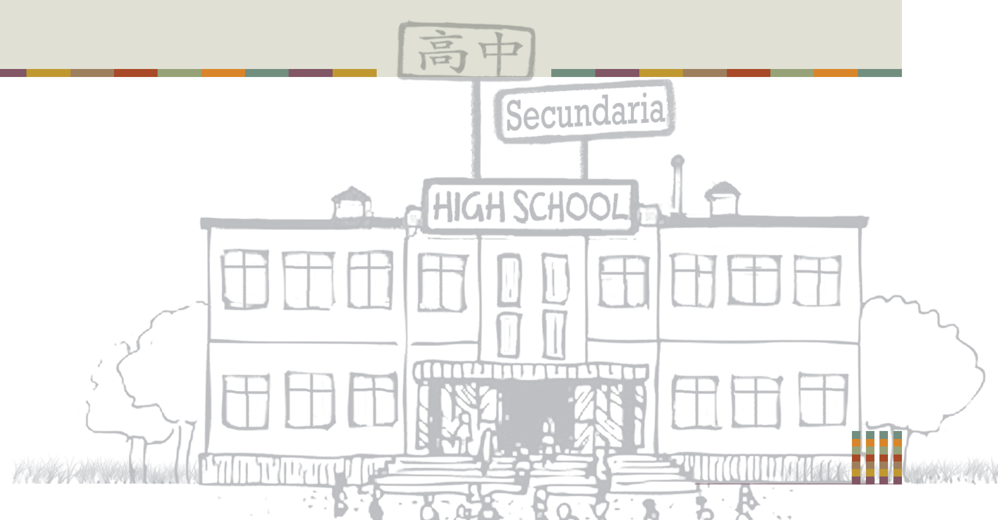
Sources: Organisation for Economic Co-operation and Development (OECD) (2010i), *PISA 2009 Results: What Makes a School Successful? Resources, Policies and Practices (Volume IV)*, OECD Publishing.

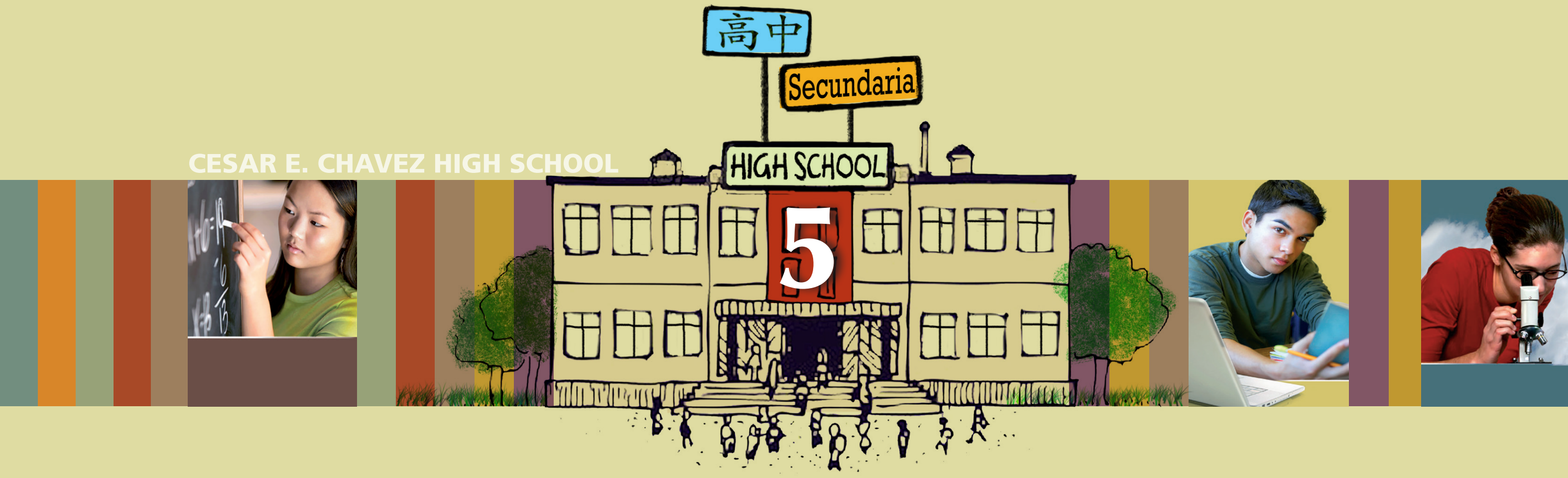
OECD (2011a), *Against the Odds: Disadvantaged Students Who Succeed in School*, OECD Publishing.

OECD (2011c), *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States*, OECD Publishing.

OECD (2012b), *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*, OECD Publishing.

Shanghai Education (2011), *"A Survey of Basic Education In Shanghai,"* Shanghai Municipal Education Commission.





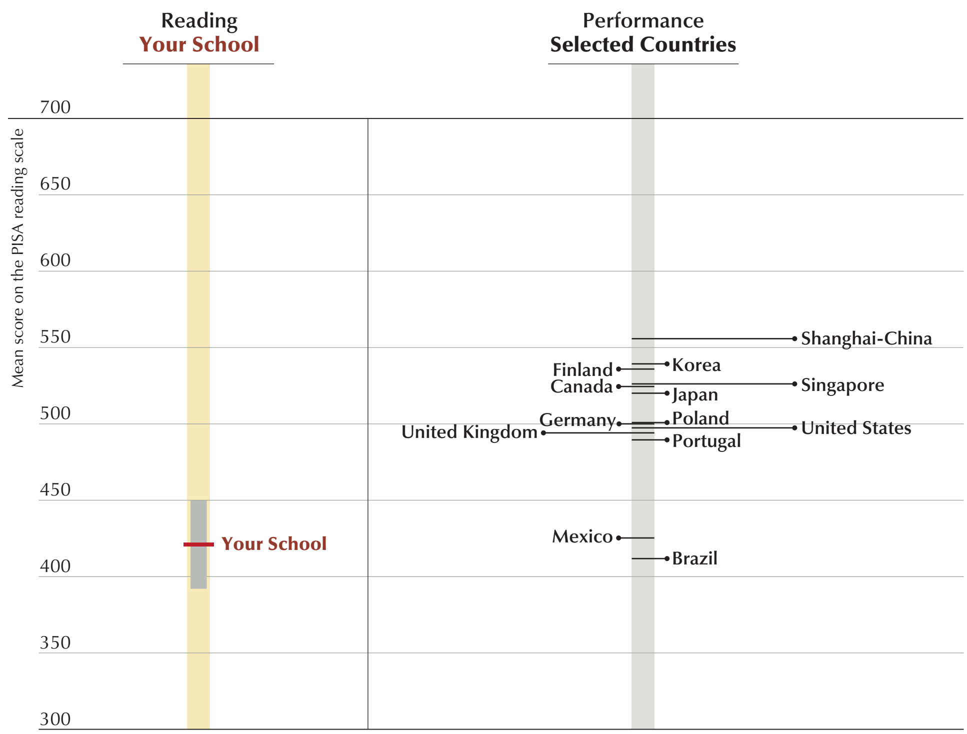
Your School's Results in an International Context

How do students at your school compare internationally? This section places your school's performance in the context of a selected group of 12 countries and education systems from around the world, most of which are the highest-performing or have undertaken significant reforms and have seen rapid improvements in learning outcomes as measured by the main PISA studies. The section first looks at reading results for your school and compares them with those of students and schools in other countries. The section then focuses on mathematics performance, followed by science. Examples of how education systems have implemented school improvement, tackled low performance and fostered the talent of students are included throughout the section, and several additional examples from around the world are presented at the end of the section.

The school-level assessment that your school participated in provides mean performance results in reading, mathematics and science to be reported on the PISA scales. This allows your school's results to be compared with results for students in schools around the world that participated in PISA 2009. Although more than 70 countries and economies participated in PISA 2009, a group of 12 comparison countries has been selected in order to provide an international context for understanding your school's results as described in Box 5.1.

In Figure 5.1, your school's mean performance results in reading are presented on the PISA scales (score points on the vertical axis on the left-hand side of the figure) with the 95% confidence interval for your school's mean score. On the right-hand side of the figure, the average results in reading in PISA 2009 for the group of 12 comparison countries and economies are also presented.

Figure 5.1 ▪ **How students at your school compare with students from selected countries and economies in reading in PISA 2009**



Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance scores would fall within this confidence interval.
Source: OECD.

YOUR SCHOOL'S PERFORMANCE IN READING IN AN INTERNATIONAL CONTEXT

Some of the comparison countries, such as Brazil, Canada, Germany, Mexico, the United Kingdom and the United States, have very large education systems with hundreds of thousands of 15-year-old students, and in some cases millions. Although average student performance in these countries can be summarized by average score estimates on the PISA scales (e.g., 524 in reading for Canada and 500 in reading for the United States), large variations of student performance exist behind these country scores.

Thus, to make meaningful comparisons of your school's mean performance scores in reading, it is useful to look at how your school compares with groups of schools internationally. In Figure 5.2, your school's mean performance estimate is presented on the PISA reading scale along with the 95% confidence interval.

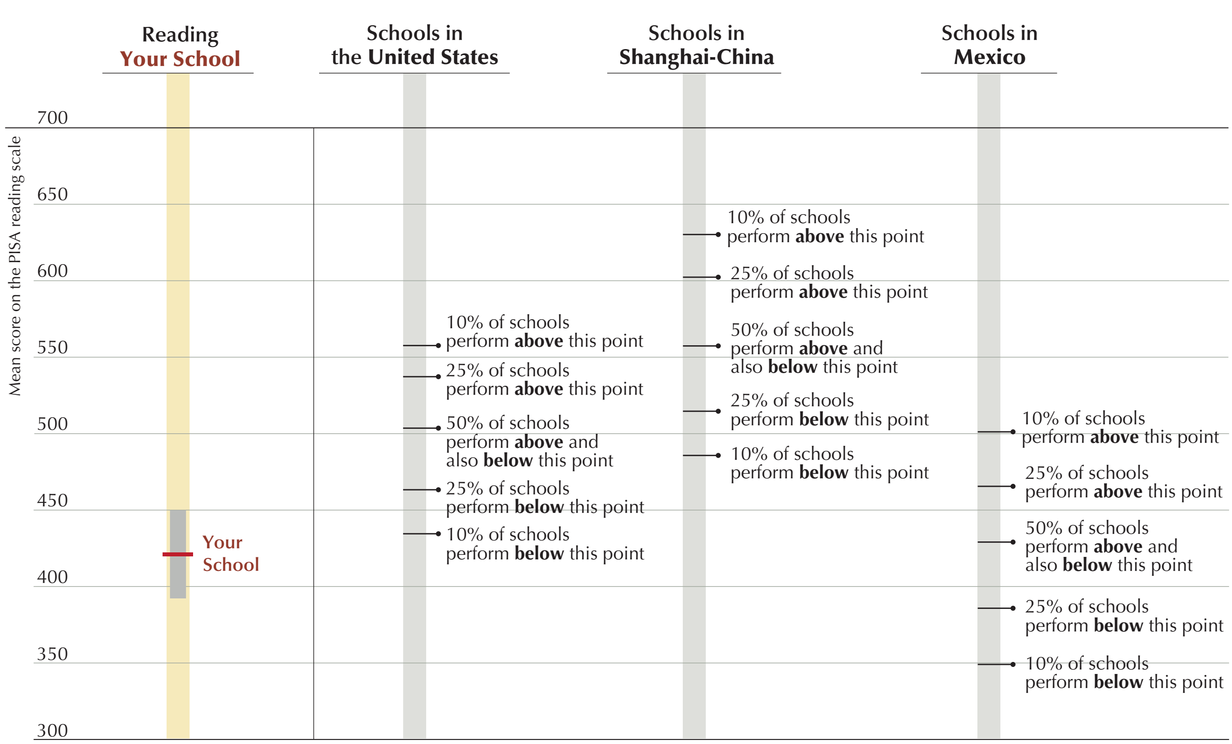
The performance of other schools in the United States, Shanghai-China and Mexico that participated in PISA 2009 are presented alongside your school's results.

For each comparison country/economy, five marks (horizontal marks) show how schools performed. The first mark at the top of each scale shows the cut-off score above which 10% of schools performed in that country. If your school's mean performance is above the first marker for your country, for example, then your school is among the top 10% of the highest-performing schools in your country.

The second marker from the top of the scales represents the score point above which the top quartile of schools performed. If your school's mean performance estimate is above the second marker for your country but not above the first 10% marker, for example, then your school is among the top 25% schools in your country but not among the top 10%.

The third and middle marker for each of the scales shows the point at which 50% of the schools perform *above* and 50% perform *below* for a given country. The two lower markers for each country show the points *below* which 25% and 10% of schools perform in that country based on PISA 2009 results. Given the large differences in student performance between the highest-performing economy in PISA 2009 – Shanghai-China – and the lowest-performing OECD country – Mexico – your school's mean performance estimates will correspond to very different percentiles within these economies.

Figure 5.2 ▪ **How your school compares with schools in other countries and economies in reading in PISA 2009**



Notes: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance score would fall within this confidence interval.

Schools are weighted by the number of students enrolled. For example, the legend "10% of schools perform above this point" refers to the highest-performing schools that account for 10% of the total number of students in the country.

Source: OECD.

Box 5.1 Education performance in PISA around the world: The group of comparison countries and economies highlighted in the school report

Most of the education systems referred to in this school report are those PISA considers as the highest-performing or that have undergone significant reforms and have seen rapid improvement in recent years. To make comparisons more meaningful, a group of 12 countries and economies is used for most of the comparisons presented in the report. The comparison group represents a wide range of education systems and models as well as diverse policies and practices that are relevant for school improvement efforts.

Trends in reading performance from 2000 to 2009 for the comparison countries included in this report

- (orange) Statistically significantly ***improved*** performance in 2009 from 2000
- (grey) Statistically significantly ***decreased*** performance in 2009 from 2000
- (white) Data are not available

	PISA reading scores				Percentage of students who performed below Level 2				Percentage of students who performed at Level 5 or above			
	2000	S.E.	2009	S.E.	2000	S.E.	2009	S.E.	2000	S.E.	2009	S.E.
Shanghai-China[1]			556	2.4			4				20	
Korea	525	2.4	539	3.5	6	0.7	6	0.8	6	0.6	13	1.1
Finland	546	2.6	536	2.3	7	0.7	8	0.5	19	0.9	15	0.8
Singapore[1]			526	1.1			12				16	
Canada	534	1.6	524	1.5	10	0.4	10	0.5	17	0.5	13	0.5
Japan	522	5.2	520	3.5	10	1.5	14	1.1	10	1.1	13	0.9
Poland	479	4.5	500	2.6	23	1.4	15	0.8	6	0.9	7	0.6
United States	504	7.0	500	3.7	18	2.2	18	1.1	12	1.4	10	0.9
Germany	484	2.5	497	2.7	23	1.0	19	1.1	9	0.5	8	0.6
United Kingdom[1]			494	2.3			18	0.8			8	0.5
Mexico	422	3.3	425	2.0	44	1.7	40	1.0	0.9	0.2	0.4	0.1
Brazil	396	3.1	412	2.7	56	1.7	50	1.3	0.6	0.2	1.3	0.2

Note: Countries appear in the table based on their reading performance in PISA 2009.

1. PISA results are not available for 2000 for the United Kingdom because the initial response rate fell short of the minimum requirements. Singapore and Shanghai-China did not participate in PISA 2000.

Sources: OECD (2001), *Knowledge and Skills for Life: First Results from the OECD Programme for International Student Assessment,* OECD Publishing and OECD (2010f), *PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science (Volume I)*, OECD Publishing.

In many countries, better performance results were driven largely by improvements at the bottom end of the performance distribution – students performing below Level 2 – indicating progress toward greater equity in learning outcomes. Among countries where between 40% and 60% of students performed below Level 2 in 2000, Mexico and OECD partner country Brazil showed important decreases in the share of low performers. In mathematics, for example, Brazil decreased its share of low performers by 6% and Mexico by 15%.

In Germany and Poland, overall performance in reading improved, while the variation in performance decreased. This was the result of improvements among the lowest-achieving students. The proportion of top performers increased in Japan and Korea to one of the highest levels among 2009 participants, from nearly 10% to above 13% in Japan and by some 7 percentage points (6% to 13%) in Korea, the

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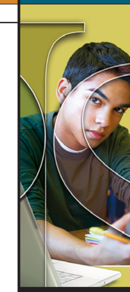

highest observed change among participating countries. Poland and Germany saw improvements in the performance of their lowest-achieving students while maintaining the performance level among the highest-achieving students. In addition, Brazil raised the reading performance of its highest-achieving students while maintaining the performance level among the lowest-achieving ones. In contrast, performance among Canada's highest-achieving students declined, while performance among their lowest-achieving students remained largely unchanged (OECD, 2010j).

Korea's experience demonstrates that even at the highest performance level, further improvements are possible. In 2000, with PISA reading performance at 525 score points, Korea was already performing above the OECD average along with several countries that had similar or even higher performance levels, including Canada, Japan, and Finland (Finland being the highest-performing country that year). In 2009, Finland retained its top performance level, but Korea continued to improve and now outperforms Finland and other high-performing economies. Korea's strong performance in PISA 2000 did not prevent its policy makers from believing that students needed to improve further to meet the changing demands of an internationally competitive labor market. As a result, ***Korea's focus shifted from requiring proficiency in grammar and literature to encouraging skills and strategies needed for creative and critical understanding.***

Diverse teaching methods and materials that reflected those changes were developed, including investments in related digital and Internet infrastructure. The government also developed and implemented reading-related policies and requested schools to spend a fixed share of their budgets on reading education. Training programs for reading teachers were developed and distributed. Parents were not only encouraged to participate more in school activities, but were also given information on how to support their children's schoolwork. Socioeconomically disadvantaged students were given support through various afterschool reading, writing and mathematics courses that had been put in place at the end of the 1990s. The government established national measurement tools to monitor the quality of educational achievement and to ensure that all students had attained basic competencies. As of 2000 and 2006, Korea has significantly improved in both reading and science.

Poland's experience of educational improvement is also illustrative. In 2000, Poland's 15-year-old students averaged 479 score points on the PISA reading assessment, well below the OECD average of 500. Another troubling fact was that over 23% of students had not reached the baseline Level 2 in reading. Even before the release of the PISA results in 2000, plans were under way in Poland to improve learning outcomes. In 1998, the Polish Ministry of Education presented an outline of reforms to raise the level of education by increasing the number of people with secondary and higher education qualifications, ensuring equal educational opportunities, and supporting improvements in the quality of education. The reform also covered health, the pension system, and the delegation to local authorities of more responsibilities for education. The reform envisaged changes in the structure of the education system, reorganizing the school network and transportation; changes in administration and supervision methods; changes in the curriculum; a new central examination system with independent student assessments; the reorganization of school finances through local government subsidies; and new teacher incentives, such as alternative promotion paths and a revised remuneration system. For example, the period of general education, based on the same curriculum and standards for all students, was extended by one year. Only after completing three years of lower-secondary education would the student move on to a three- or four-year upper-secondary school that provided access to higher education or to a two- or three-year basic vocational school.

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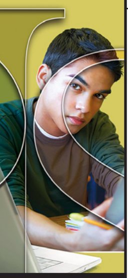


In the new system, each stage of education ends with a standardized national examination, which gives students, parents and teachers feedback. Enrollment in higher education increased from roughly half a million students before 1993 to nearly 2 million 15 years later. This also transformed the environment in which newly established schools operated, with more parents committed to giving their children the best education and more students choosing schools carefully, taking into consideration future career prospects. Education became highly valued in Poland as the economic returns of a good education increased (OECD, 2010j).

To find out more about improvement in other education systems, go to:

- *Strong Performers and Successful Reformers in Education*
- *PISA 2009 Results: Learning Trends: Changes in Student Performance Since 2000 (Volume V)*

Sources: Organisation for Economic Co-operation and Development (OECD) (2001), *Knowledge and Skills for Life: First Results from the OECD Programme for International Student Assessment*, OECD Publishing.

OECD (2010f), *PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science (Volume I)*, OECD Publishing.

OECD (2010j), *PISA 2009 Results: Learning Trends: Changes in Student Performance Since 2000 (Volume V)*, PISA, OECD Publishing.

OECD (2010c), *Strong Performers and Successful Reformers in Education: Lessons from PISA for Mexico*, OECD Publishing.

Because it is clear that students' socioeconomic backgrounds affect their learning outcomes, it is important to consider performance not in absolute terms but in light of the students' socioeconomic advantage or disadvantage. Continuing with the same idea of comparing your school's performance with that of schools in other countries and economies as opposed to whole education systems, the following Figures 5.3 and 5.4 show your school's performance results in reading in the context of the schools that participated in PISA 2009 in the highest-performing economy – Shanghai-China – and in the lowest-performing OECD country – Mexico. In addition to reading performance, the average socioeconomic status of students at these schools is shown in these figures to allow for meaningful comparisons.

As with the previous bubble charts introduced in Section 2 of the report, performance on the PISA scales increases from bottom to top (on the *y*-axis) and students' socioeconomic advantage increases from left to right (on the *x*-axis). As before, the *x*-axis shows the average index values of the PISA index of economic, social and cultural status (ESCS) from -3.0 (very disadvantaged) to +3.0 (socioeconomically advantaged). The scale used is calibrated so that the OECD average is 0.0 and plus or minus 1 is equivalent to 1 standard deviation from the OECD average.

Starting with the highest-performing economy in PISA 2009, Figure 5.3 shows your school's performance relative to the schools that participated in Shanghai-China. The figure shows that most of the students and schools in Shanghai-China have a lower socioeconomic status than the OECD average (0.0 on the charts), including that of the United States (0.17), the United Kingdom (0.20) and Canada (0.50). The average socioeconomic status of students in Shanghai-China is in fact -0.49. Another interesting point is that schools with high student enrollment – shown by the larger bubbles – tend to perform at or slightly below the trend line.

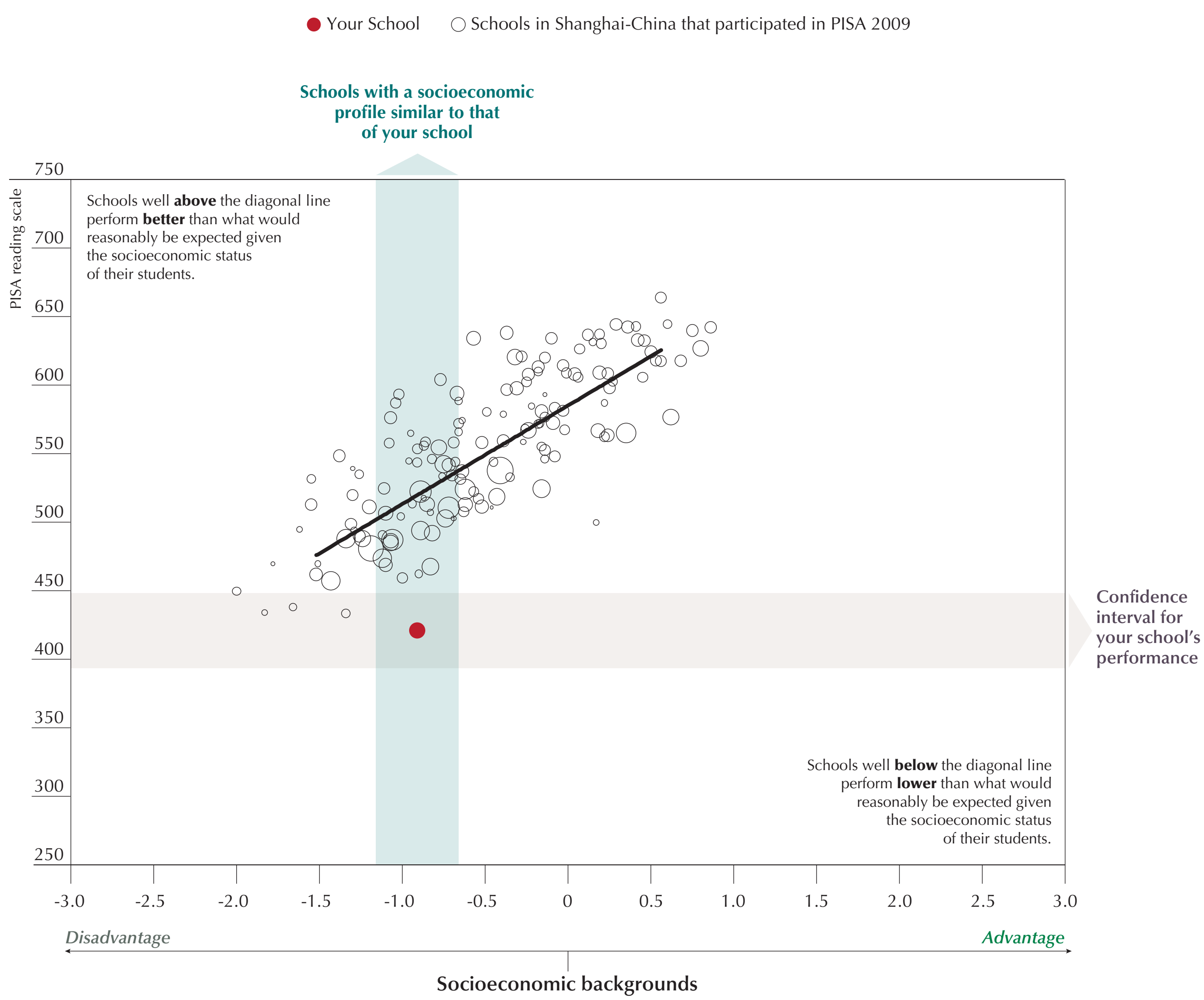
As with previous figures, it is important for you to consider your school's relative position not only vertically (i.e., on the performance scale) but also in terms of socioeconomic status vis-à-vis other schools.

This figure also shows that while the average performance in reading for Shanghai-China was 556 score points, students in many schools in Shanghai-China actually show results well above 600 points.

Schools with similar socioeconomic backgrounds to your school are indicated by the vertical *light-blue* band. The confidence interval for your school's results is indicated by the horizontal *gray* band. The size of the bubbles indicates the number of students enrolled at each school.

A diagonal trend line is also shown to help the reader understand school performance in relation to socio-economic backgrounds. Schools above the diagonal line perform better than what would reasonably be expected given the socioeconomic status of their students. Schools below the line perform lower than what would reasonably be expected given the socioeconomic status of their students.

Figure 5.3 ▪ **How your school's results in reading compare with schools in Shanghai-China in PISA 2009**



Note: Size of bubbles is proportional to the number of students enrolled at the school.
Source: OECD.

Box 5.2 What makes a school successful? Some lessons from PISA

***Success in terms of performance and equity**: According to the most recent PISA results, successful school systems are defined as those that perform above the OECD average in mathematics (494 points in 2012) and in which students' socioeconomic background has less of an impact on mathematics performance than in a typical OECD country. On average across OECD countries, 15% of the variation in mathematics scores is explained by socioeconomic background.*[1]

PISA 2012 results identify several features of school systems that relate to student performance and equity in education. Factors such as how students are selected for entry into schools and classrooms; the extent to which individual schools are granted autonomy to make decisions on curricula and assessments; and whether schools are allowed to compete for student enrolment, as well as other factors such as accountability and feedback, all play an important role in the success of school systems across OECD countries.

World-class education systems such as those in Canada, Japan and Korea invest educational resources where they can make the greatest difference, they attract the most talented teachers into the most challenging classrooms and they establish effective spending choices that prioritize the quality of teachers (OECD, 2013a). The following approaches highlighted in PISA 2012 results are utilized by educators and policy makers for successful schools:

- ***Successful systems are equitable***. School systems where all students, regardless of their socioeconomic background, are offered similar opportunities to learn and to attend the same schools and where students rarely repeat grades are more likely to perform above the OECD average.

  Results from PISA also show that parents and students who are able to choose among schools *while not being constrained by financial or logistical considerations* relate positively to equity in education. Thus, local education systems considering policies with regards to school choice should consider the different aspects involved with school choice and competition, such as modes of transportation to and from school for students from disadvantaged backgrounds or providing wavers for student fees.

  In addition, students in schools where no ability grouping is practiced scored eight points higher in mathematics in 2012 compared to their counterparts in 2003, while students in schools where ability grouping is practiced in some or all classes had lower scores in PISA 2012 than their counterparts in PISA 2003.
- *School systems that allow schools more autonomy over their curriculum and allocation of resources, while limiting school competition for students, are more likely to perform above the OECD average and to show below-average socioeconomic inequalities*. School systems that also grant schools greater discretion in establishing student disciplinary policies and in deciding student-assessment policies, the courses offered, the content of those courses and the textbooks used are those systems with higher mathematics scores overall.
- ***Accountability goes hand in hand with school autonomy***. PISA results show that in school systems where most schools post student-achievement data publicly, average student performance is marginally higher in schools that also have autonomy over resource allocation.

  However, standardized tests might have the adverse effect of schools focusing only on achieving passing or proficient results on tests. In order to break away from this negative impact of "teaching to the test," countries should not merely focus on student assessments, but also evaluate schools and appraise teachers and school leaders. All school staff and students need to be engaged in a broader range of evaluation exercises, targeting both schools and teachers (OECD, 2013b).

1. OECD (2013a), *PISA 2012 Results: Volumes I-IV*, OECD Publishing.

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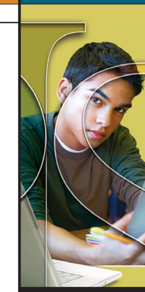


- Across all countries and economies that participated in PISA 2012, ***the extent to which schools provide an opportunity for teacher mentoring is also related to equity***. In systems where more schools provide teacher mentoring, students' socioeconomic status has less impact on their performance.
- ***Schools that ask for continual feedback from their students also report higher results***. PISA 2012 shows that the degree to which systems seek feedback from students regarding lessons, teachers or resources tends to be related to systems' level of equity. Systems where more students attend schools with such practices tend to show less impact of student socioeconomic status on performance. At the school level, on average across OECD countries, schools seeking written feedback from students tend to perform better, even after accounting for the socioeconomic status of students and schools.

Placing a high value on education is very important for success but can only get a country so far if the teachers, parents and citizens of a country believe that only a segment of the nation's children can or need to meet high standards. Systems that show high performance and an equitable distribution of learning outcomes tend to be comprehensive and have a more positive outlook on every student's ability to succeed, requiring teachers and schools to embrace diverse student populations through personalized educational pathways.

Equity in schools in Finland

Finland provides an excellent example of a thriving school system that embraces equity and diversity. Equality in educational opportunities lies at the heart of Finland's education policy. Education policies emphasize equity and well-being in schools and rely upon the principle of inclusive education. The aim is for all children to find their neighborhood school sufficient and appropriate to their needs and to their parents' expectations. However, parents still have freedom to choose any school in their own municipality. While assessment practice is grounded in the national curriculum, education policy in Finland gives a high priority to individualized education and creativity as an important part of how schools operate. Thus, each student is judged more against his or her individual progress and abilities than against statistical indicators (OECD, 2012d).

To find out more about what makes schools successful, go to:

- *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*
- *Strong Performers and Successful Reformers in Education: Lessons from PISA 2012 for the United States*
- *Strong Performers and Successful Reformers in Education: Maintaining a strongly supportive school system in which teachers and students share responsibility for results*
- PISA in Focus 34: *Who are the strong performers and successful reformers in education?*

Sources: OECD (2012d), *Lessons from PISA for Japan, Strong Performers and Successful Reformers in Education*, OECD Publishing.

OECD (2013a), *PISA 2012 Results: Volumes I-IV*, OECD Publishing.

OECD (2013b), *Lessons from PISA 2012 for the United States, Strong Performers and Successful Reformers in Education*, OECD Publishing.

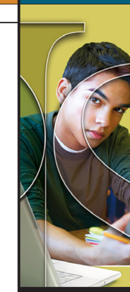
As with previous bubble charts, it is important to consider your school's relative performance vis-à-vis other schools and to identify schools that might be performing at the level of your school but with a much lower average socioeconomic status or those that have a similar socioeconomic status on average but that may be performing *well below* or *well above* your school.

At the other end of performance, Figure 5.4 presents your school's mean performance estimate and average socioeconomic status of students in the context of the schools and students that participated in Mexico in PISA 2009. From looking at this figure, the reader may notice the following:

- There are many more schools represented in this figure for Mexico than in similar figures for the United States and Shanghai-China. This is because Mexico is the country with the largest student and school sample size in PISA 2009: more than 38,000 students from 1,560 schools.
- As with nearly all of the countries and economies that participated in PISA 2009, student performance is strongly correlated with socioeconomic status. Although the average status of students is -1.22 in Mexico compared with the average of 0.0 among OECD countries, performance tends to increase as students come from more socioeconomically advantaged backgrounds, as shown by the linear trend line in the figure.

Figure 5.4 ▪ **How your school's results in reading compare with schools in Mexico in PISA 2009**

Note: Size of bubbles is proportional to the number of students enrolled at the school.
Source: OECD.



- Although there is a large amount of variance in reading performance, no schools reach performance levels above 600 score points, and there is very large variance in terms of schools' average socioeconomic status – so much so that the common scale used throughout the report of -3.0 to +3.0 does not cover several schools that fall below -3.0.
- In contrast to Shanghai-China, the very large schools (represented by larger bubbles) typically perform above the trend line for Mexico – mirroring the relative performance of schools in urban centers versus smaller schools in rural or semi-urban settings.
- Figure 5.4 also graphically shows that while the average performance in reading of Mexico in PISA 2009 was 425 score points, more than 25% of the schools have a performance result below 400 points.

Box 5.3 **School-to-school learning: How effective schools support other schools in Shanghai-China**

Shanghai-China became the topic of discussion for many educators after PISA 2009 results showed it to be one of the highest-performing education systems in the world. The success of the education system is shown by its PISA 2009 results in reading, mathematics and science that exceed those of all OECD countries. The superlative performance of Shanghai-China in PISA challenged the notion held by many educators that learning in China is based only on rote, with no room for innovation or critical thinking (OECD, 2011c).

The success of Shanghai-China did not occur overnight. Since the late 1990s, Shanghai has been a crucible for educational experimentation, with its vision of broadening students' learning experiences and developing "capability" rather than accumulation of information and knowledge. By eliminating public examinations at the end of primary schooling, Shanghai released elementary students from the exam pressure that is still a pervasive feature in much of Chinese education, thus allowing teachers to introduce more innovation and creativity in their classrooms.

Focusing on disadvantaged schools, Shanghai also established a system of financial transfer payments that utilized public funding for schools in rural areas lacking in resources. Teachers and principals were transferred from urban to rural areas and vice versa, not only to raise the standard of staffing in disadvantaged schools, but also to introduce teachers and principals from rural schools to urban education systems so that they could return to their districts with fresh ideas.

Some of the most ambitious projects leading to Shanghai's success have drawn on the strengths of the best-performing schools by getting them to take responsibility for leading improvements at weaker schools. One recent development implemented among schools involves putting together a team of experienced teachers and administrators from strong schools and sending them to work directly with weaker schools to improve the school environment, including management style and teaching effectiveness.

Yet another approach creates clusters in which two or more schools in a specific area are grouped together, whether they are private or public, with a strong school at the core. The district education authority provides funding, and an external evaluation body assesses the results of the project. Within this group of schools, the strong school provides ideas on management and teaching effectiveness and as a result helps raise the performance level of the other schools.

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One example of successfully grouping schools together takes place in Qibao, a suburb of Shanghai-China. The Qibao Education Group includes a strong secondary school that acts as the core and leads five other schools: three public schools that were adopted and two private schools established by the group. Qibao's secondary school, the core school, excels in science, arts and technology, among other domains, and is known for its effective leadership. All six schools, including Qibao's secondary school, have demonstrated continuous improvement since becoming a member (OECD, 2011c).

To learn more about how strong and weaker schools learn from each other in Shanghai-China, go to:

- *Strong Performers and Successful Reformers in Education: Raising standards by getting strong-performing schools to help weaker ones*
- *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States*

Source: Organisation for Economic Co-operation and Development (OECD) (2011c), *Lessons from PISA for the United States, Strong Performers and Successful Reformers*, OECD Publishing.

Student performance at your school across reading proficiency levels

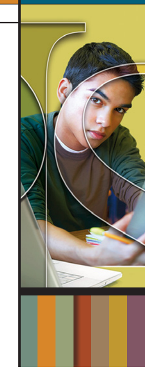
The mean performance estimate for your school in reading is based on the average of the students who were tested. It will therefore be revealing to look more closely at student performance in your school – beyond the mean score – in terms of different levels of performance reached by different groups of students. As discussed previously and described in Figure 2.4, it is useful to consider student performance in terms of PISA proficiency levels.

Students who reach proficiency Levels 5 and 6 are top performers even when compared with their peers around the world and can be considered as being well on their way to becoming the skilled knowledge workers of tomorrow.

Proficiency Level 2 is considered by PISA as a baseline level at which students begin to demonstrate the reading skills and competencies that will allow them to participate effectively and productively in life as they continue their studies, and as they enter into the labor force and become members of society. Students below this level, while not necessarily illiterate, do not show the basic proficiency that would be expected to ensure their success later in life.

Your school's results in terms of the distribution of student performance across proficiency levels are presented in Figure 5.5, which shows the percentage of 15-year-olds at your school who reached the six proficiency levels. The figure shows a dark vertical line at the 0% value of the *x*-axis, such that the percentage of students at *Level 1 or below* is found on the left-hand side and the percentage of students at *Level 2 or above* is on the right-hand side.

For reference, the lower part of the figure shows the distribution of student performance across reading proficiency levels in selected countries and economies that participated in PISA 2009. Countries and economies in this part of the figure are ranked in ascending order of the percentage of students below baseline proficiency Level 2. As with your school's results, the dark line at 0% separates the two sides of

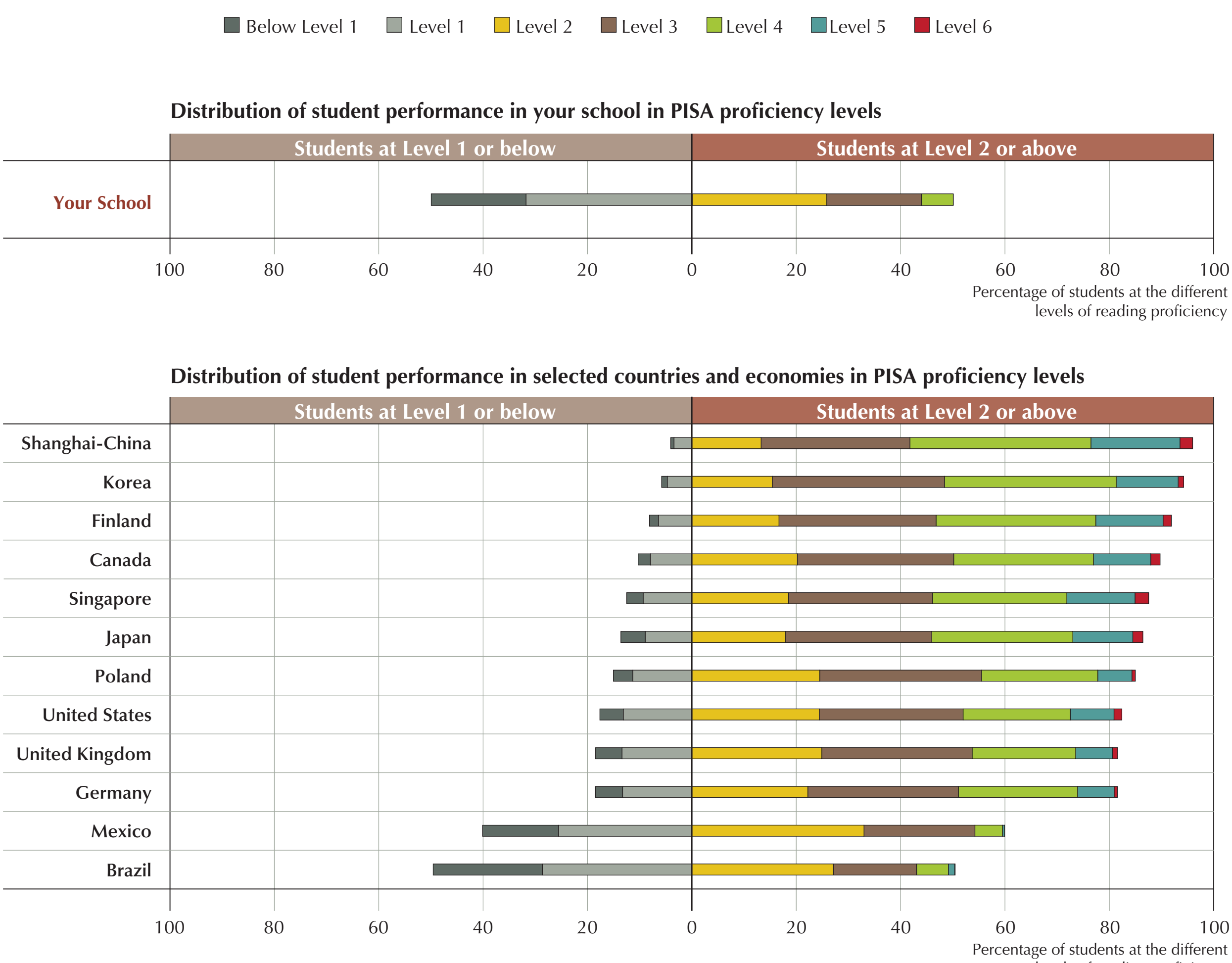


the figure: the percentages of students at Level 2 and above are found on the right-hand side of the figure, while students at Level 1 and below are on the left of the dark line.

The distribution of student performance across proficiency levels for the comparison group of countries and economies in PISA 2009 is revealing. In Shanghai-China, nearly 20% of students – 1 out of 5 – perform at the highest levels (proficiency Levels 5 and 6). In comparison with the United States and Canada, for example, although the percentage of students reaching Level 6 in reading is similar for all three (2%), Shanghai-China can boast 17% of students reaching Level 5, while that percentage is only 8% in the United States and 11% in Canada. Singapore, another high-performing economy in PISA 2009, has nearly 3% of students performing at the very highest level (proficiency Level 6), whereas virtually no students reach this level of performance in Mexico, the lowest-performing OECD country.

The percentages of students reaching baseline proficiency Level 2 or above in reading are also revealing. While nearly all students in Shanghai-China reach this level (96%), only 1 out of 2 students does so in Brazil and 2 out of 5 students do not reach these levels in Mexico.

Figure 5.5 ▪ **How the distribution of student performance at your school compares with student performance in selected countries and economies in reading in PISA 2009**



Countries are ranked in ascending order of the percentage of ***students below Level 2.***

Source: OECD (2010), *PISA 2009 Results: What Students Know and Can Do – Student Performance in Reading, Mathematics and Science (Volume I)*, OECD Publishing.

Box 5.4 **The importance of recruiting and training good teachers: Examples from Singapore**

"Dream, Design, Deliver" is how the success story in Singapore has been described in a recent OECD report looking at examples from some of the world's highest-performing and most equitable education systems (report and video series titles *Strong Performers and Successful Reformers in Education: Lessons from PISA*). In Singapore, educational reform has been a priority and it has served as a foundation for the city-state's transformation from a developing country to a vibrant, modern economy in less than half a century. Prime Minister Goh Chok Tong (1990-2004) once said, "The wealth of a nation lies in its people," and it is therefore not surprising that Singapore focuses so much on teacher training and strong school leadership (OECD, 2011c). Not only do values and civic education play a major role in schools, but teaching in Singapore is a highly regarded profession. PISA results show that schools in Singapore are effective in fostering the highest-achieving students. The following policies and practices implemented in Singapore reflect the importance placed on teacher training and school leadership.

- ***The standards for selecting teachers are high.*** Teachers are selected from the top one-third of each class by panels that include current school principals. Once accepted for training (training is centralized at one institution), prospective teachers receive full tuition as well as a monthly stipend that is competitive with the monthly salary of recent graduates in other fields. These competitive standards help establish teaching as a respected profession.
- ***Teachers are appraised annually, as are other professions.*** The contribution to the school and the academic and character development of their students matter in teachers' evaluations, as do their collaboration with parents, community groups, and colleagues. Even in primary schools, students are taught by more than one teacher, so it is not surprising that in Singaporean schools, teaching is looked at as a group effort.
- ***Prospective career paths are introduced to teachers who are newer to the field.*** After three years of teaching in schools, teachers are evaluated to determine what career path is most suited to their talent: master teacher, specialist in curriculum or research, or school leader (OECD, 2011c).
- In addition, ***teachers who show strong leadership skills are continuously assessed in order to ascertain potential vice-principals.*** The potential candidates are given every opportunity to learn and to demonstrate their abilities. They can be asked to serve on committees or be promoted to head of the department. If they show promise as future school leaders, teachers are interviewed and go through leadership situational exercises. If they successfully pass these, teachers go on to six months of executive leadership training that includes a study trip abroad and a project on school innovation. Only 30 to 40 candidates are selected for the "Leaders in Education" course per year.

Teachers are continuously supported and encouraged to develop their skills within the profession. Every school has a fund through which it can support teacher growth, including developing fresh perspectives by going abroad to learn about aspects of education in other countries. Teacher networks and professional learning communities encourage peer-to-peer learning, and the Academy of Singapore Teachers opened in September 2010 to encourage teachers to share best practices.

Last but not least, teachers are entitled to 100 hours of professional development per year, mostly at no cost to them, in order to keep up with the rapid changes occurring in the world and to continuously improve their practice. They may attend courses that focus on curricular and pedagogical knowledge and that lead to higher degrees or advanced diplomas. Teachers may also opt to develop skills at

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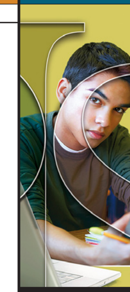


school, mentored by staff developers. By focusing on one school, these staff developers can identify teaching-based problems such as a group's mathematics performance, or introduce new practices such as project-based learning.

The size of the Singapore education system in context

Singapore's success and its policies regarding the recruitment and training of teachers may be particularly relevant for local education systems with similar numbers of secondary schools and students. With 196,220 students enrolled in 155 secondary schools in 2010 (Ministry of Education, 2010), Singapore's education system is comparable in size to several state education systems in the United States, where the numbers of students enrolled in high schools – the secondary-school equivalent – are similar. For example, the state of Connecticut had a total of 173,071 students enrolled in 259 secondary schools in 2010; Oregon had 178,119 students in 307 secondary schools; and Kentucky had 192,661 students in 478 secondary schools (U.S. Department of Education, 2010).

Of the more than 14,000 school districts in the United States (U.S. Census Bureau, 2012), several are similar in size to the education system in Singapore in terms of the number of secondary schools and students enrolled. Districts that are roughly of similar size include the Chicago Public Schools, the third-largest school district after New York City Public Schools, and the Los Angeles Unified School District, with 113,873 students enrolled in 106 high schools (CPS, 2012).

Additionally, the average student/teacher ratio in secondary schools in Singapore is higher than in the United States: during the 2007-2008 school year, the average secondary student/teacher ratio in the United States was nearly 12:1 (U.S. Department of Education, 2008), while the ratio in Singapore was 16:1 (Ministry of Education, 2010).

Thus, the example from Singapore may offer relevant insights for local education systems such as in the United States and the United Kingdom (e.g., with districts and local authorities) that wish to focus on the quality and effectiveness of teacher recruitment and training policies.

To find out more about Singapore's approach to recruiting and keeping good teachers in schools, go to:

- *Strong performers and successful reformers in Education: Building a strong and effective teaching force*
- *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States*
- *Evaluating and Rewarding the Quality of Teachers: International Practices*

Sources: CPS (2012), Chicago Public Schools.

Ministry of Education (2010), *Report of the Secondary Education, Review and Implementation (SERI) Committee*, Ministry of Education, Singapore.

Organisation for Economic Co-operation and Development (OECD) (2009b), *Evaluating and Rewarding the Quality of Teachers: International Practices*, OECD Publishing.

OECD (2011c), *Lessons from PISA for the United States, Strong Performers and Successful Reformers in Education*, OECD Publishing.

U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Public Elementary/Secondary Education Survey," 2010-11, Version 1a.

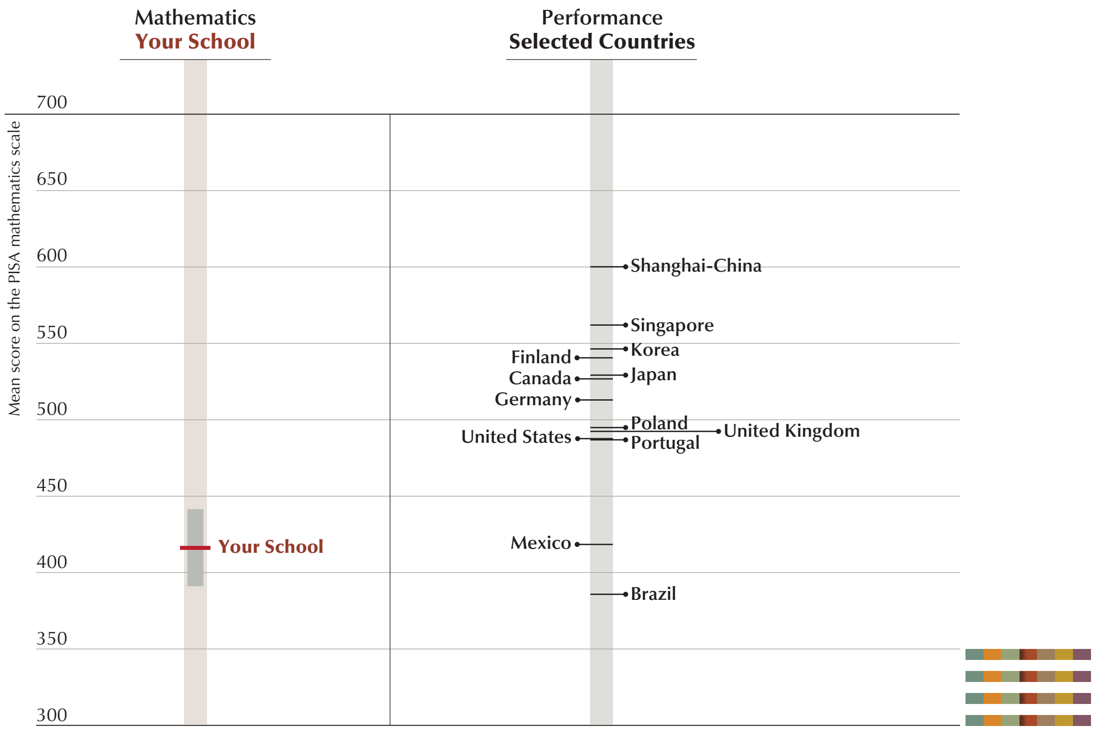
U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2007-08, Version 1a.

United States Census Bureau (2012), School Districts.

YOUR SCHOOL'S PERFORMANCE IN MATHEMATICS IN AN INTERNATIONAL CONTEXT

Figure 5.6 shows your school's mean performance results in mathematics on the PISA scales (score points on the vertical axis on the left-hand side of the figure) with the 95% confidence interval around your school's mean score. On the right-hand side of the figure, the average results in mathematics in PISA 2009 for the group of 12 comparison countries and economies described previously are also presented.

Figure 5.6 ▪ **How students at your school compare with students from selected countries and economies in mathematics in PISA 2009**

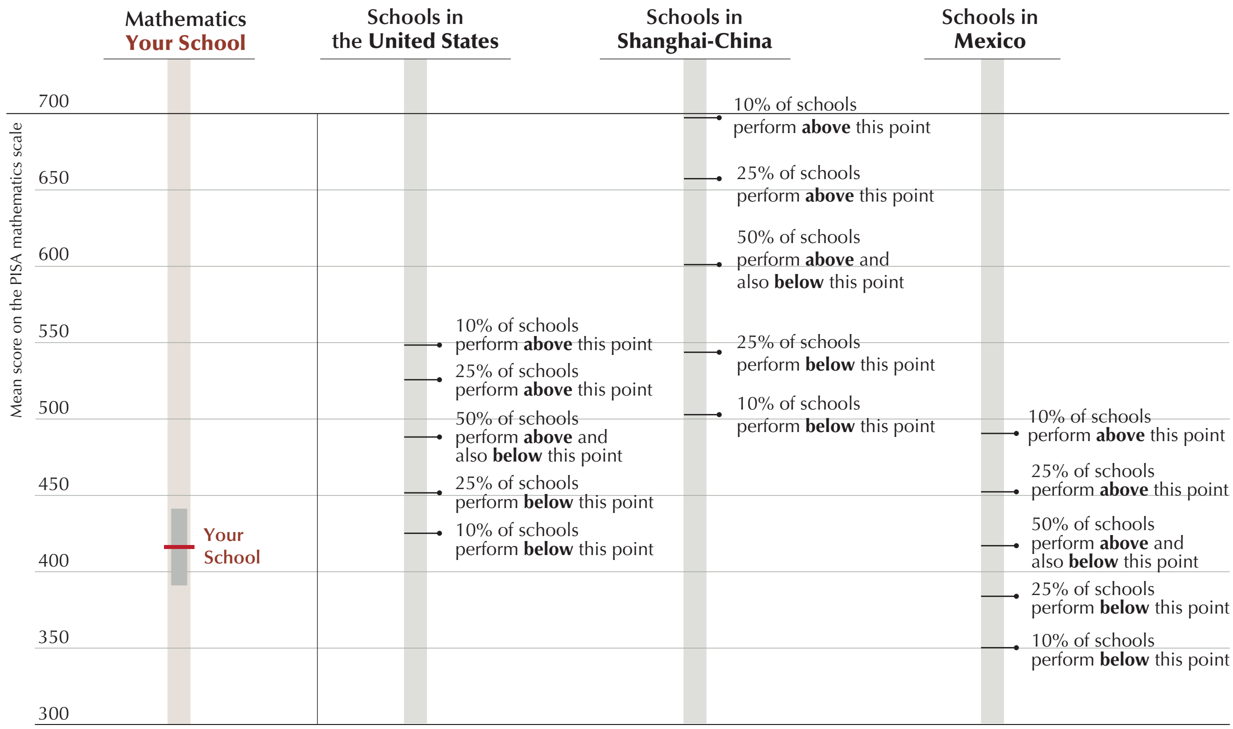


Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance scores would fall within this confidence interval.
Source: OECD.

To make meaningful comparisons of your school's mean performance in mathematics, it is useful to compare your results with those of groups of schools internationally. In Figure 5.7, your school's mean performance estimate is presented on the PISA mathematics scale along with the 95% confidence interval. The performance of other schools in the United States, Shanghai-China and Mexico that participated in PISA 2009 are presented on the right side of your school's results.

Performance scales for other schools in the United States, Shanghai-China and Mexico that participated in PISA 2009 are presented alongside your school's results. As with earlier similar figures, the markers on the scales show the cut-off score *above* which 10% of students perform for the particular country or economy. The second marker from the top shows the score *above* which 25% of students in schools perform for the country or economy. The middle marker shows the middle point at which 50% of schools perform *above* and *below*. The bottom two markers for each country and economy show the points *below* which schools that account for 25% and 10% of students perform.

Figure 5.7 ▪ **How your school compares with schools in other countries and economies in mathematics in PISA 2009**



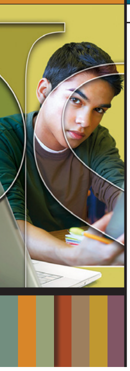
Notes: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance score would fall within this confidence interval.
Schools are weighted by the number of students enrolled. For example, the legend "10% of schools perform **above** this point" refers to the highest-performing schools that account for 10% of the total number of students in the country.
Source: OECD.

This figure allows you to compare your school's results in mathematics with those of groups of schools in your country and with those of different groups of schools in the highest and lowest performers in PISA 2009. Given the large differences in student performance between Shanghai-China and Mexico, your school's mean performance estimates will correspond to very different percentiles within these economies.

Continuing with the same idea of comparing your school's performance with that of schools in other countries and economies, Figures 5.8 and 5.9 show your school's performance results in mathematics in the context of the highest-performing economy – Shanghai-China – and of the lowest-performing OECD country – Mexico – in PISA 2009.

Because performance should be considered in terms of the factors that might hinder or enhance student achievement, the average socioeconomic status of students at these schools is also shown in the figures to allow for meaningful comparisons.

As with the previous bubble charts, performance on the PISA mathematics scale increases from bottom to top (on the *y*-axis) and students' socioeconomic advantage increases from left to right (on the *x*-axis). As before, the *x*-axis shows the average index values of the PISA index of economic, social and cultural status (ESCS) from -3.0 (very disadvantaged) to +3.0 (socioeconomically advantaged). The scale used is calibrated so that the OECD average is 0.0 and plus or minus 1 is equivalent to 1 standard deviation from the OECD average.

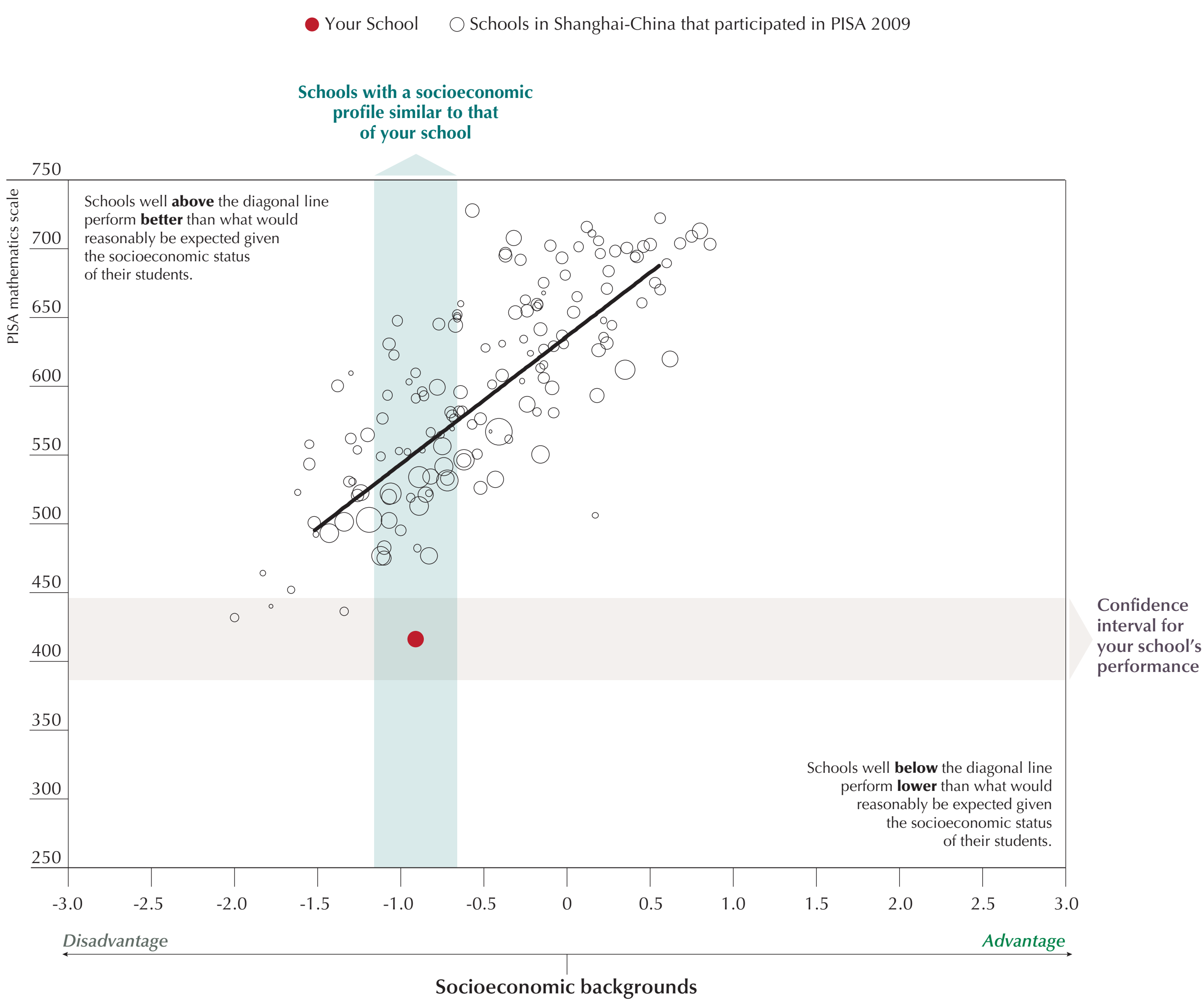


Schools with similar socioeconomic backgrounds to your school are indicated by the vertical *light-blue* band. The confidence interval for your school's results is indicated by the horizontal *gray* band. The size of the bubbles indicates the number of students enrolled at each school.

A diagonal trend line is also shown to help the reader understand school performance in Shanghai-China and Mexico in relation to students' average socioeconomic background. Schools above the diagonal line perform better than what would reasonably be expected given their students' socioeconomic status. Schools below the line perform lower than what would reasonably be expected given their students' socioeconomic status.

The following points may be helpful in considering your school's relative performance in the context of two very differently performing education systems, such as Shanghai-China's and Mexico's. The position of your school's results in terms of mathematics performance (*y*-axis) and the socioeconomic status of students (*x*-axis) does not change. What changes is the comparison group of schools in Shanghai-China and in Mexico.

Figure 5.8 ▪ **How your school's results in mathematics compare with schools in Shanghai-China in PISA 2009**



Note: Size of bubbles is proportional to the number of students enrolled at the school.
Source: OECD.

Figure 5.9 ▪ **How your school's results in mathematics compare with schools in Mexico in PISA 2009**

Note: Size of bubbles is proportional to the number of students enrolled at the school.
Source: OECD.

First, it is important to look at the group of schools that fall within the blue band that indicates these schools serve students who have similar socioeconomic status, as measured by the PISA index. Are there many schools above or below your school along the blue band? Next, it is also revealing to look at the gray band – horizontally – to identify the schools that have a similar average performance as your school. Are there many schools with similar performance results as your school, and are they serving students from more or less advantaged socioeconomic backgrounds?

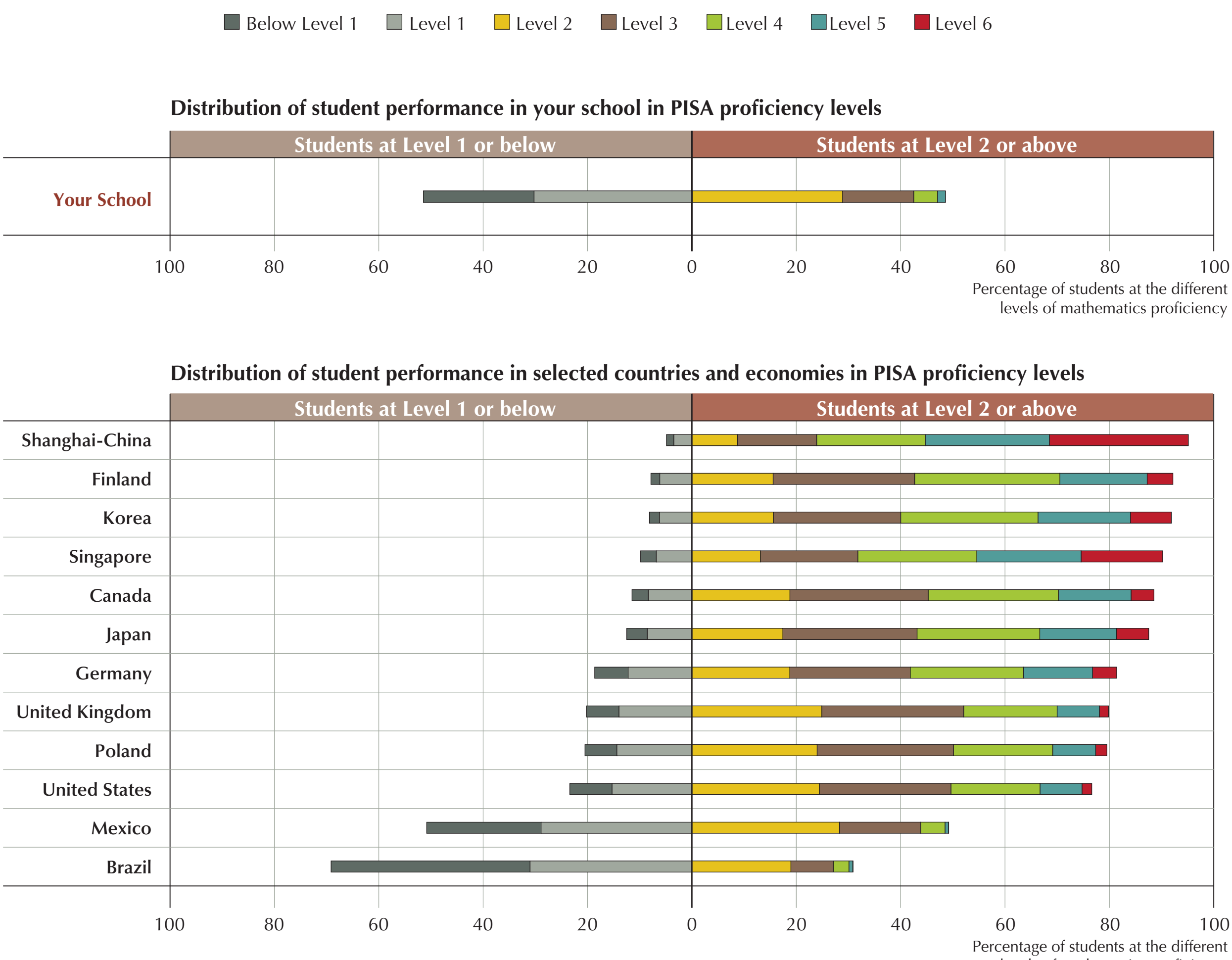
Student performance at your school across mathematics proficiency levels

The mean performance estimate for your school in mathematics is based on the average of the students who were tested. It will therefore be revealing to look at the different levels of performance in mathematics reached by different groups of students. As discussed previously and described in Figure 2.7, it is useful to consider student performance in terms of mathematics proficiency levels in PISA.

- Students who reach proficiency Levels 5 and 6 are top performers even when compared with their peers around the world and can conceptualize, generalize and utilize information based on their investigations and modeling of complex problems. Students at these levels can also develop and work with models for complex situations, identifying constraints and specifying assumptions. They can reflect on their actions and communicate their interpretations and reasoning.
- Proficiency Level 2 is considered by PISA as a baseline level of mathematics proficiency at which students begin to demonstrate the kind of skills that enable them to use mathematics in ways considered fundamental for their future development. Students below this level are likely to find the basic mathematical tasks that the assessment measures as challenging or too difficult.

Your school's results in terms of the distribution of student performance across proficiency levels in mathematics are presented in Figure 5.10, which shows the percentage of 15-year-olds at your school who reached the six proficiency levels. The figure shows a dark vertical line at the 0% value of the *x*-axis such that the percentage of students at *Level 1 or below* is found on the left-hand side of the figure and the percentage of those at *Level 2 or above* is found on the right-hand side.

Figure 5.10 ▪ **How the distribution of student performance at your school compares with student performance in selected countries and economies in mathematics in PISA 2009**



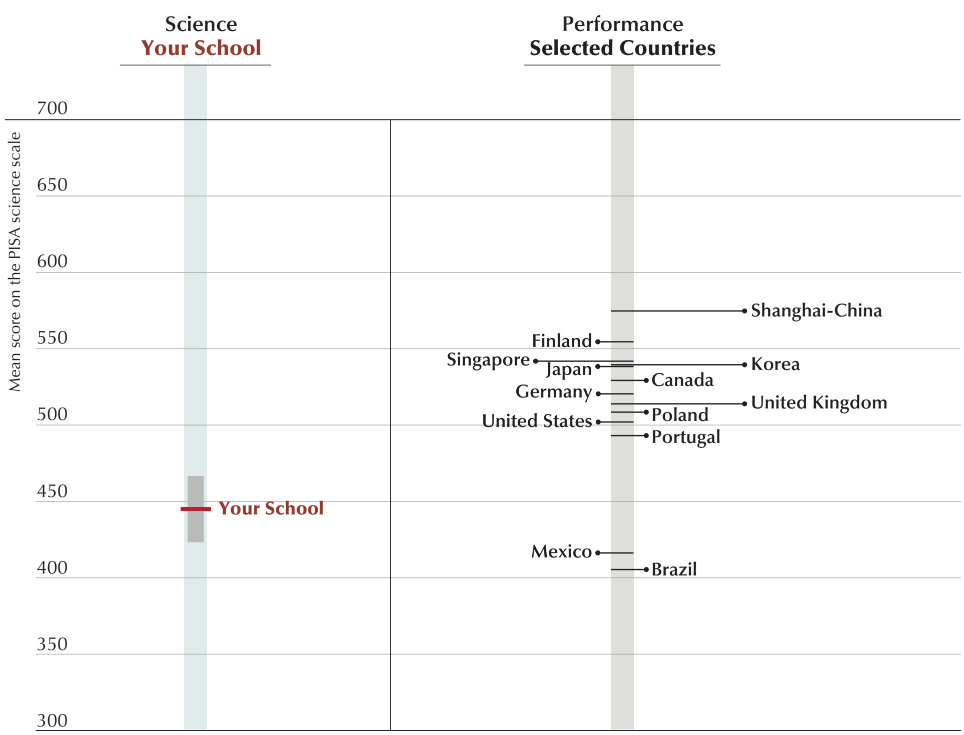
Countries are ranked in ascending order of the percentage of ***students below Level 2.***
Source: OECD (2010), *PISA 2009 Results: What Students Know and Can Do – Student Performance in Reading, Mathematics and Science (Volume I)*, OECD Publishing.

The lower part of the figure shows the distribution of student performance across mathematics proficiency levels in selected countries and economies that participated in PISA 2009. Countries and economies in this part of the figure are ranked in ascending order of the percentage of students below baseline proficiency Level 2. As with your school's results, the dark line at 0% separates the two sides of the figure: the percentages of students at mathematics proficiency Level 2 and above are found on the right-hand side of the figure, while those at Level 1 and below are on the left.

YOUR SCHOOL'S PERFORMANCE IN SCIENCE IN AN INTERNATIONAL CONTEXT

Figure 5.11 shows your school's performance results on the PISA science scale (along the vertical axis on the left-hand side of the figure) with the 95% confidence interval around your school's mean score. The right-hand side of the figure shows the average results in science in PISA 2009 for the group of comparison countries and economies.

Figure 5.11 ▪ **How students at your school compare with students from selected countries and economies in science in PISA 2009**

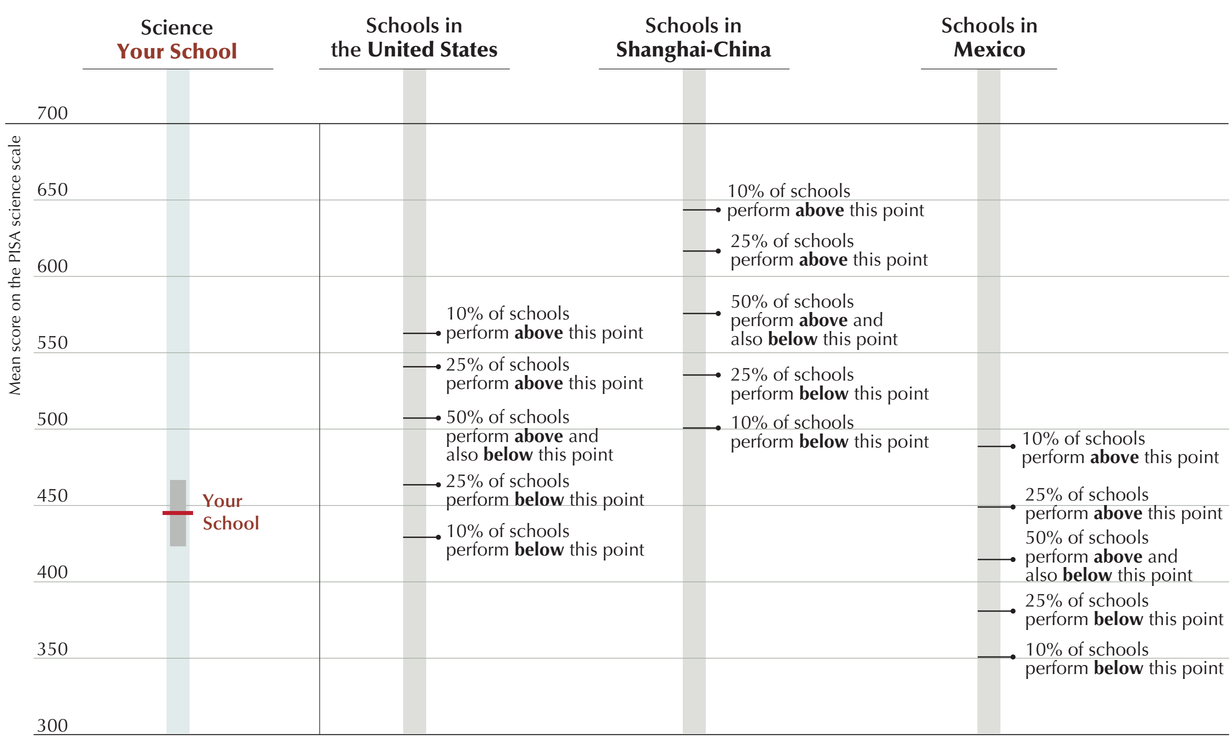


Note: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance scores would fall within this confidence interval.
Source: OECD.

To allow you to compare your school's mean performance in science with that of other schools internationally, Figure 5.12 presents your school's mean performance estimate on the PISA mathematics scale along with the 95% confidence interval. This figure allows you to compare your school's results in science with that of groups of schools in your country and also with different groups of schools in the highest- and lowest performers in PISA 2009.

Performance scales in science for schools in the United States, Shanghai-China and Mexico that participated in PISA 2009 are presented alongside your school's results. As with earlier similar figures, the markers on the scales show the cut-off score *above* which 10% of students perform for the particular country or economy. The second marker from the top shows the score *above* which 25% of students in schools perform for the country or economy in science. The middle marker shows the middle point at which 50% of schools perform *above* and *below*. The bottom two markers for each country and economy show the points *below* which schools that account for 25% and 10% of students perform in science. Given the large differences in student performance between Shanghai-China and Mexico, your school's mean performance estimates will correspond to very different percentiles within these economies and so you can see where the performance of your students compares – on average – with that of students and schools in these education systems.

Figure 5.12 ▪ **How your school compares with schools in other countries and economies in science in PISA 2009**



Notes: Shaded bars above and below the mean scores represent the 95% confidence interval. In other words, in the case of the results for your school, we are 95% confident that if your school were to administer the test several times, your mean performance score would fall within this confidence interval.
Schools are weighted by the number of students enrolled. For example, the legend "10% of schools perform **above** this point" refers to the highest-performing schools that account for 10% of the total number of students in the country.
Source: OECD.

Figures 5.13 and 5.14 show your school's performance results in science in the context of the schools that participated in PISA 2009 in Shanghai-China and in Mexico. In addition to mean performance in science, students' average socioeconomic status at these schools is also shown in the figures to allow for meaningful comparisons with your school's results.

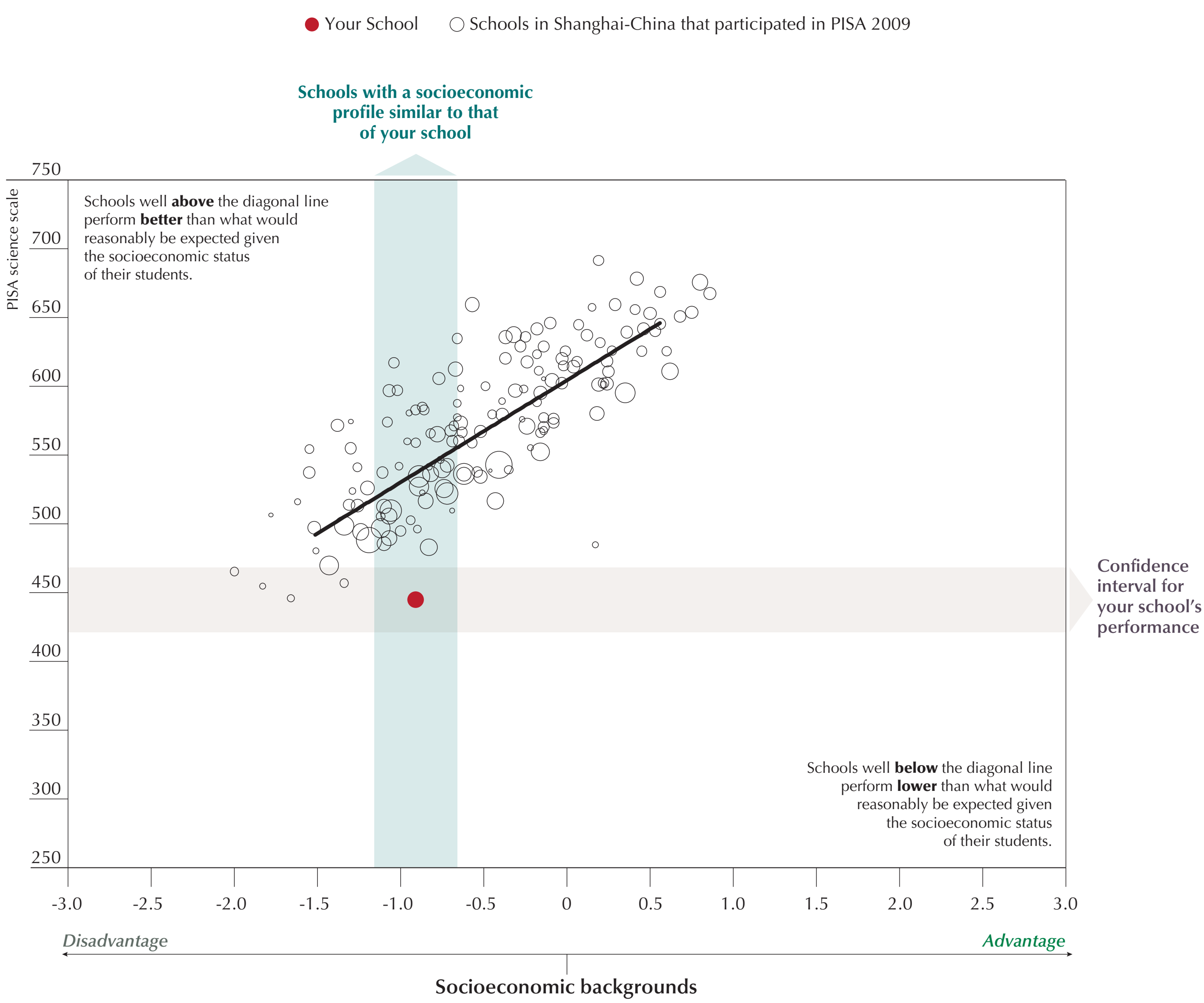
As with the previous bubble charts, performance on the PISA science scale increases from bottom to top (on the *y*-axis) and students' socioeconomic advantage increases from left to right (on the *x*-axis).

As before, the *x*-axis shows the average index values of the PISA index of economic, social and cultural status (ESCS) from -3.0 (very disadvantaged) to +3.0 (socioeconomically advantaged).

Figure 5.13 shows your school's performance in science relative to the schools that participated in Shanghai-China. The figure shows that most of the students and schools in Shanghai-China have a lower socioeconomic status than the OECD average (0.0 on the charts), including the United States (0.17), the United Kingdom (0.20) and Canada (0.50). It is important for you to consider your school's relative position not only vertically (i.e., on the performance scale) but also in terms of socioeconomic status vis-à-vis other schools in Shanghai-China.

This figure also shows that while the average performance in science for Shanghai-China was 575 score points, students in many schools actually show results well above 600 points and some even above 650 points.

Figure 5.13 ■ **How your school's results in science compare with schools in Shanghai-China in PISA 2009**



Note: Size of bubbles is proportional to the number of students enrolled at the school.
Source: OECD.

Figure 5.14 ▪ **How your school's results in science compare with schools in Mexico in PISA 2009**

Note: Size of bubbles is proportional to the number of students enrolled at the school.
Source: OECD.

Schools with similar socioeconomic backgrounds to yours are indicated by the vertical *light-blue* band. The confidence interval for your school's results is indicated by the horizontal *gray* band. The size of the bubbles indicates the number of students enrolled at each school.

A diagonal trend line is also shown to help the reader understand school performance in relation to socio-economic backgrounds. Schools above the diagonal line perform better than what would reasonably be expected given their students' socioeconomic status. Schools below the line perform lower than what would reasonably be expected given their students' socioeconomic status.

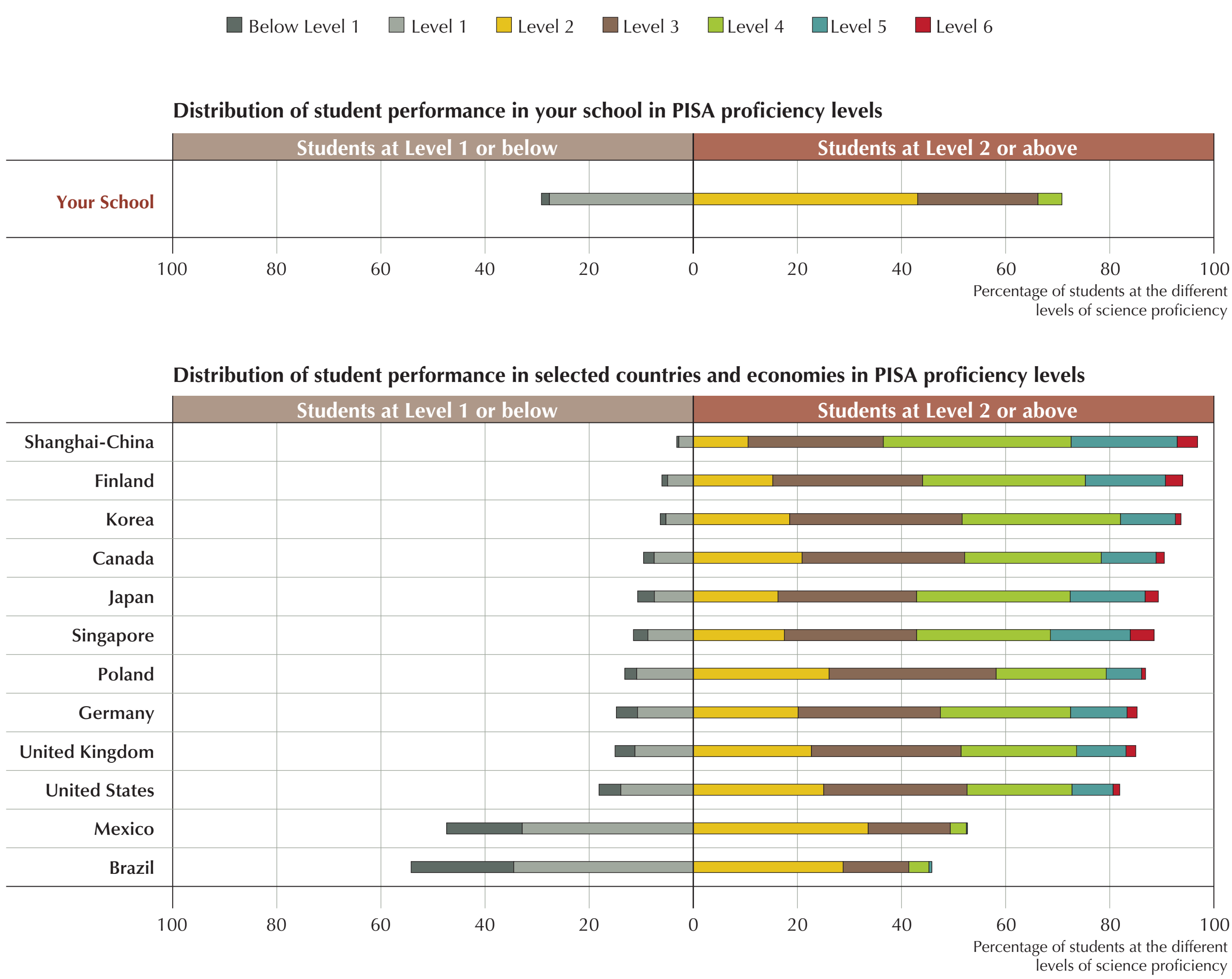
When considering your school's relative performance in science in the context of two very different-performing education systems such as Shanghai-China's and Mexico's, it is important to remember that the position of your school's results in terms of science performance (*y*-axis) and students' socioeconomic status (*x*-axis) does not change between Figures 5.13 and 5.14. What changes is the relative position of your school in relation to those in either country based on their students' performance and socioeconomic status.

When looking at the group of schools that fall within the blue band that indicates schools that serve students who have similar socioeconomic status as measured by the PISA index, it is useful for you to identify whether there are many or few schools above and below your school along the blue band. Similarly, it is useful to look at the horizontal gray band to identify the schools that have a similar average performance as your school. Are there many or few schools that have similar performance results in science as your school, and are they serving students from more or less advantaged socioeconomic backgrounds? How does your school compare once you look at your relative position in these charts?

Student performance at your school across science proficiency levels

The performance estimates for your school in reading, mathematics and science are based on the average of the students who were tested. To go beyond these performance means, it is useful to look at the different levels of performance in science reached by different groups of students at your school. As described in Figure 2.10, *The six levels of science proficiency in PISA*, it is useful to consider the types of tasks that students can do at different proficiency levels of performance.

Figure 5.15 ▪ **How the distribution of student performance at your school compares with student performance in selected countries and economies in science in PISA 2009**



Countries are ranked in ascending order of the percentage of ***students below Level 2.***
Source: OECD (2010), *PISA 2009 Results: What Students Know and Can Do – Student Performance in Reading, Mathematics and Science (Volume I)*, OECD Publishing.

Students who reach proficiency Levels 5 and 6 are top performers even when compared with their peers around the world, and these students can consistently identify, explain and apply scientific knowledge in a variety of complex life situations. These students clearly and consistently demonstrate advanced scientific thinking and reasoning, and they show a willingness to use their understanding in support of solutions to unfamiliar scientific and technological situations. Students at this level can also use well-developed inquiry abilities, link knowledge appropriately and bring critical insights to situations. They can also construct explanations based on evidence and arguments based on their critical analysis.

Proficiency Level 2 is considered by PISA as a baseline level at which students begin to demonstrate the science competencies that will enable them to participate actively in life situations related to science and technology. Although students below this level might be able to present scientific explanations that are obvious and that follow explicitly from the given evidence, they do not demonstrate the baseline proficiency in science that would enable them to be successful in science-related endeavors.

Your school's results in terms of the distribution of student performance across proficiency levels in science are presented in Figure 5.15, which shows the percentage of 15-year-olds at your school who reached the six proficiency levels. The figure shows a dark vertical line at the 0% value of the *x*-axis, such that the percentage of students at *Level 1 or below* is found on the left-hand side and the percentage of students at *Level 2 or above* is on the right-hand side.

The lower part of the figure shows the distribution of student performance across science proficiency levels in selected countries and economies that participated in PISA 2009. Countries and economies in this part of the figure are ranked in ascending order of the percentage of students below baseline proficiency Level 2 in science. As with your school's results, the dark line at 0% separates the two sides of the figure: the percentages of students at science proficiency Level 2 and above are found on the right-hand side of the figure, while those at Level 1 and below are on the left.

When looking at this figure, it might be useful for you to consider whether your school seems particularly effective in stimulating students to achieve at world-class levels (Levels 5 and 6) at the same time that it ensures that no students are falling behind and performing below proficiency Level 2. Similarly, a school may show results that indicate a solid distribution of students at Levels 2, 3 and 4, while not showing students who achieve at the highest levels internationally.

Box 5.5 **Teacher-to-teacher peer learning in Japan and Shanghai-China**

For teachers in East Asian education systems, the tradition of lesson study, where teachers review lesson plans in group settings, means that they are not alone. Teachers are expected to work together in a disciplined way to improve the quality of the lessons they teach. East Asian school systems realize that by learning from each other, teachers not only learn different methods that are effective in the classroom, but they are also more at ease with and willing to modify their approaches in order to optimize learning (OECD, 2012f). As part of the preparation for the second International Summit on the Teaching Profession in March 2012, the OECD produced a background report, *Preparing Teachers and Developing School Leaders for the 21st Century: Lessons from Around the World,* highlighting several examples from East Asian school systems that appear to have positive results on effective teaching and learning strategies.

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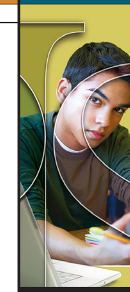


Illustrating best practice in Japan and Shanghai-China

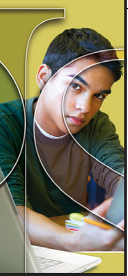
In Japan, when a new subject is added to the national curriculum, groups of teachers and researchers review research and curriculum materials and refine their ideas in pilot classrooms for over a year before holding a public research lesson, which can be viewed electronically by hundreds of teachers, researchers and policy makers. By working to improve the quality of the lessons, teachers whose practice lags behind that of the leaders can see what good practice entails and, because their colleagues know who the poor performers are and engage them in discussions, the poor performers have both the incentive and the means to improve.

Schools in Shanghai-China provide another example of how teachers effectively discuss best practices in a group setting. During the course of their careers, teachers in Shanghai are involved in subject-based "teaching-study groups" to improve teaching on a day-to-day basis. There are carefully planned sessions when the study group meets to draw up very detailed lesson schemes for a particular topic for the following week. The lesson plan serves not only as a guide for the teacher during the lesson, but also as documentation of the teachers' professional performance. During actual teaching, teachers may observe each other or may be observed by peers, particularly when a change in curriculum introduces a new topic; teachers may also be observed by new teachers, so they may learn from more experienced colleagues for mentoring purposes, or by the school principal for monitoring or for constructive development assistance. Sometimes, teachers are expected to teach demonstration lessons, called public lessons, for a large number of other teachers to observe and comment upon.

To learn more about how schools can foster teacher-to-teacher peer learning, go to:

- *Preparing teachers and developing school leaders for the 21st century: Lessons from around the World*
- *Strong Performers and Successful Reformers in Education: Shanghai, China – Raising standards by getting strong-performing schools to help weaker ones*

Source: Organisation for Economic Co-operation and Development (OECD) (2012f), *Preparing teachers and developing school leaders for the 21st century: Lessons from around the World*, OECD Publishing.



ADDITIONAL EXAMPLES FROM AROUND THE WORLD

Box 5.6 **Fostering the potential of immigrant students and English-language learners in schools**

The best way to measure how well immigrants are integrated into a society is to look carefully at how their children adjust to and assimilate into their environment. Previous PISA cycles show that children of immigrant parents who have the same educational attainment, or similar socioeconomic backgrounds as non-immigrant parents, perform almost as well as or sometimes even better than non-immigrant children even after accounting for factors such as language barriers (OECD, 2012g). In a number of countries, however, many immigrant parents have lower educational attainment than non-immigrant parents and are often employed in low-skilled occupations. Thus, policy makers and schools must address the social and educational difficulties of immigrant children who come from disadvantaged socioeconomic backgrounds.

Results from previous PISA cycles show that certain approaches taken by policy makers and educators might have an enormous impact on the learning outcomes of immigrant children from disadvantaged backgrounds. A recent publication by the OECD, *Untapped Skills: Realising the Potential of Immigrant Students* (OECD, 2012g), delves into the effective policies that educators and policy makers have considered to help close the gap between immigrant and non-immigrant students.

- ***Facilitating the transition for disadvantaged immigrant students to a new language and a new learning environment is a critical challenge.*** Students who arrive later in age in a host country might have more difficulty learning a new language and adjusting to a new learning environment with different curricula and educational standards. Policies that favor earlier arrival of immigrant children whenever possible might help these children adjust more easily to a new education system. In addition, immigrant children who arrive young in a host country benefit significantly from attending pre-primary school, as they can more easily adapt to a new language and a different curriculum at a younger age. On average in the OECD, a second-generation student who has attended pre-primary education has a reading score 23 points higher than one who did not (OECD, 2012g).

  PISA results also show that students who speak their language of origin outside of school perform on average 30 score points lower in reading than non-immigrant children. Schools and teachers who convey the importance to parents of exposing their children at home to reading material in the host country's language will produce better reading outcomes even after taking into account parental education and language.

- ***Schools and educators should seek actively to support their students' increased exposure to the host-country language, both within and out of school.*** English-language learning strategies need to be reinforced both for very young immigrant children and for students who arrive later with little knowledge of the host-country language. Continuous language support throughout all levels of education is particularly helpful to ensure successful transitions from one level of education to another. While students generally acquire communicative language skills relatively quickly, developing the distinct academic language used in school environments takes significantly longer (OECD, 2010a).

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In addition, the language skills of parents might be insufficient to allow them to help their children with their schoolwork. This is particularly relevant in the age of the Internet, when media in the language of the country of origin are more easily accessible in immigrant households than ever before. Parents should be made aware of this and be invited to participate so that the home environment contributes to higher exposure to the host-country language and to improving student learning outcomes.

- ***Schools should also look at diversity as a resource for rather than an obstacle to successful teaching and learning.*** School leaders and teachers often do not feel qualified and sufficiently supported to teach students with multi-cultural, bilingual and diverse learning needs. In order to close the achievement gap, institutional changes must be made at the school level, including changes in language teaching, school leadership, teaching methodologies and school-home co-operation. Not only is more exposure to the host country's language of value, but improving written and oral communication in immigrant students' mother tongue is also essential to developing a positive and appreciative approach to diversity and identity. This involves seeing students' language capacities as part of their social and cultural identity and welcoming these as a tool for learning and understanding (OECD, 2010a).

  With a whole-school approach, support for immigrant students should be provided not only in specialized courses but also in an integrated way across the curriculum and throughout all school activities. Schools should develop new ways of communicating and collaborating, such as offering immigrants' languages as an option within the curriculum as well as language classes geared toward parents so as to better engage them in their children's progress.

- ***The concentration of students in disadvantaged schools in certain geographic areas has a powerful effect on reading outcomes, for both immigrant and non-immigrant students***. Arriving immigrants might not always have the opportunity to choose their housing freely, because of housing costs, lower salaries or limited borrowing capacity. School composition greatly reflects these disadvantaged areas, as 47% of 15-year-olds on average across OECD countries are in schools where the principal reported that residence in a particular area was either a prerequisite or high priority for admittance (OECD, 2010a). PISA results also show that attending disadvantaged schools can have more negative effects for children of immigrants than for children of non-immigrants since lower proficiency in the language of the host country may compound the disadvantage "penalty" and not all immigrant students start speaking the host-country language at an early age, nor is the host-country language necessarily spoken in the home. On average in disadvantaged schools across OECD countries, immigrant students score 10 points lower than native students in reading literacy (OECD, 2012g).

  How can the quality of teaching and learning be improved in schools with high concentrations of immigrants? By providing additional resources such as additional teaching staff, afterschool support and bilingual education offers, policy makers and educators will help ease the negative impacts of a high concentration of immigrant students in disadvantaged schools. In addition, working closely with parents from immigrant backgrounds, schools and teachers will help parents feel not only more implicated in their children's education but also more involved in their community.

  Last but not least, another area that policy makers can look into involves implementing incentives that would incite schools to co-operate and/or take steps to more evenly balance the distribution of immigrant students.

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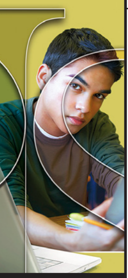


Knowing your options in North Carolina, United States

Districts in North Carolina provide a good example of encouraging immigrant parents to learn about different schools in their area. One school district ran school choice campaigns to encourage immigrant parents to exercise school choice. Features of the campaign included a district-wide information fair, school choice information stands in shopping areas, and information hotlines in English, Spanish and Vietnamese. In another school district, officials used paid advertisements, outreach to news media and face-to-face communication to get out their message about public school choice options (OECD, 2010a).

To find out more about how immigrant students and language learners can reach their full potential, go to:

- PISA in Focus 11: *How are school systems adapting to increasing numbers of immigrant students?*
- PISA in Focus 22: *How do immigrant students fare in disadvantaged schools?*
- *Untapped Skills: Realising the Potential of Immigrant Students*

Sources: Organisation for Economic Co-operation and Development (OECD) (2010a), *Closing the Gap for Immigrant Students: Policies, Practice and Performance*, OECD Publishing.

OECD (2012g), *Untapped Skills: Realising the Potential of Immigrant Students*, OECD Publishing.

Box 5.7 A commitment to inclusion: An example from schools in Finland

Every year hundreds of educators and policy makers travel to Helsinki, Finland, in order to learn, firsthand, the "secret" of Finland's success in education. Not only have Finnish secondary students achieved high performance scores in PISA across the board since 2000, but the gap between the highest- and lowest-performing students within schools is small, and there is little variation among schools or among pupils of differing family backgrounds (OECD, 2010f). Although it is clear that one educational system cannot simply be replicated in another country with very different contexts, the success of schools in Finland in attempting to include all students in a trajectory of success can provide relevant insights to schools and local educators in other countries.

First, schools are at the heart of communities in Finland. They provide a daily hot meal for every student, plus health and dental care and psychological counseling, among other services, for students and their families. Everyone is involved in the success of students. Principals undertake their share of the teaching load, and teachers not only assess their students on an ongoing basis but also focus on helping students take on more responsibility for their own learning. Students are expected to work in teams on projects, cutting across traditional subject or disciplinary lines (OECD, 2011c).

Educators' commitment to the inclusion of all students, especially those who may need extra help, can be considered one of the key factors behind the success of Finnish schools. Every school has a "special teacher," a specially trained teacher whose job is to work closely with class teachers to identify students in need of extra help and to work individually or in small groups with these students to provide the support they need to keep up with their classmates.

Every comprehensive school also has a "pupils' multi-professional care group" that meets at least twice a month for two hours (OECD, 2011c). The group consists of the principal, the special teacher, the school nurse, the school psychologist, a social worker and the teachers whose students are being discussed. During these meetings the teachers can raise any concerns they might have in their classes, whether they be about the learning environment or individual students. By discussing these issues, the group identifies students who might need help beyond what the school can provide. They then ensure that the family receives the proper care for their child, whether it be medical, social or psychological. In this way the school principal and the staff are not only aware of every student at their school, but are also implicated in their success along with the parents.

To find out more about how schools in Finland attempt to include all students in a trajectory of success, go to:

- *Strong Performers and Successful Reformers in Education: Maintaining a strongly supportive school system in which teachers and students share responsibility for results*
- *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States*

Sources: Organisation for Economic Co-operation and Development (OECD) (2010f), *PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science (Volume I)*, OECD Publishing.

OECD (2011c), *Lessons from PISA for the United States: Strong Performers and Successful Reformers in Education*, OECD Publishing.

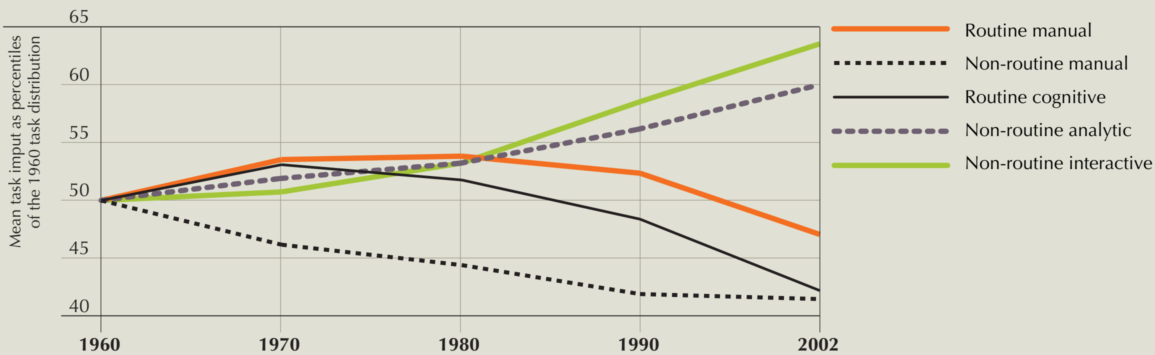
Box 5.8 Learning – and teaching – in the 21st century: Implications for educators

What is different today?

Across many education systems, there is increasing awareness of the need to allow students to acquire the knowledge and develop the skills and competencies they will need as adult citizens in globally competitive knowledge-based economies. Innovation in curricular content has not kept pace with other dramatic changes in many education systems. Some education systems have reviewed and modified their curricula, sometimes considerably, but the most recent PISA results show that school systems are not always successful in preparing students for the kinds of competencies and skills that are the foundation for success as continuing students, as skilled workers and as citizens (OECD, 2008).

Education systems in many countries, including the United Kingdom and the United States for example, were established for a workforce that may no longer play the same roles in today's economies. The following figure shows how the demand for skills has dramatically changed in the United States in the past 50 years and how routine manual tasks have given way to non-routine analytical and interactive tasks:

Figure D ▪ **Changes in the types of task input demanded in the labor market in the United States economy since 1960**



Sources: Autour, Levy and Murnane (2003) and updated in Levy, 2010, *How Technology Changes Demands for Human Skills, OECD Education Working Paper,* No. 4, OECD Publishing.

The links between 21st-century skills, competencies and Deeper Learning

In the context of education reform efforts in many countries, including the United States, one designation for these types of 21st-century competencies and skills is "Deeper Learning" that has been defined in a recent report by the National Research Council (NRC) as "the process through which a person becomes capable of taking what was learned in one situation and applying it to new situations – in other words, learning for 'transfer'" (NRC, 2012).

There are also other examples and applications of the same general approach internationally, such as the Canadian Education Association's focus on students' intellectual engagement as part of "deep conceptual learning" (Dunleavy and Milton, 2010) and the focus of the Specialist Schools and Academies Trust in the United Kingdom on "assessment for learning, student voice, and learning to learn" to achieve "high meta-cognitive control and generic skills of learning" (Sims, 2006).

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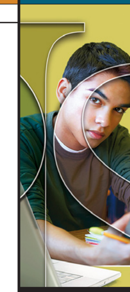

Another approach, advocated by the Partnership for 21st-Century Skills (P21) and EdLeader21, focuses on "the 4 Cs" – *Critical thinking*, *Communication*, *Collaboration* and *Creativity* – as required competencies for success in college, career and citizenship today (Greenhill and Kay, 2013). In most of these frameworks, non-cognitive competencies such as resilience, conscientiousness, metacognition and self-direction are also emphasized as critical for positive adult outcomes in life and career.

Implications for educators today

Not only must knowledge and information that are shared in schools, and skills that are developed, provide students with a foundational base, but schools must also help prepare students for the challenges they will face in the future as university students, as workers and as citizens. Schools and local educators must increasingly shift from a model that required routine practices to one that prepares students *today* to compete for jobs *tomorrow* that require a work ethic, collaboration, good communication, listening skills, social responsibility, critical thinking and problem solving (Greenhill and Kay, 2013). Curricular content therefore needs to be re-examined in order to see what changes are necessary to provide children with the knowledge, skills, and character traits they need to succeed in the 21st century.

The NRC report sets out three broad domains of competence: *cognitive*, *intrapersonal* and *interpersonal* and notes that available empirical evidence suggests that these can be taught and learned. For educators, the report also notes that emerging empirical evidence suggests the following teaching methods:

- Employing multiple and varied representations of concepts and tasks (representations, simulations, diagrams and teacher support)
- Encouraging questioning, explanation and elaboration by students
- Engaging students in challenging tasks and providing guidance in their own learning processes
- Employing relevant examples and clear cases that students can model
- Fostering student motivation by linking learning to interests and real-world applications of knowledge and skills, and
- Employing formative assessments that can inform teachers and students to adjust teaching and learning strategies.

In short, schools and educators today need to not only help students successfully enter the workforce of the 21st century, but they must also help students become effective lifelong learners.

To find out more about 21st-century learning and teaching, go to:

- *Preparing teachers and developing school leaders for the 21st century: Lessons from Around the World – Background Report for the International Summit on the Teaching Profession*
- *The National Research Council Report, Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*
- *EdLeader21*
- *Partnership for 21st Century Skills*

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Sources: Autour, D.H., F. Levy, and R.J. Murnane (2003), "The Skill Content of Recent Technological Change: An Empirical Exploration." *Quarterly Journal of Economics* 118:1279-1334.

Dunleavy, J. and P. Milton (2010), "Student Engagement for Effective Teaching and Deep Learning," *Education Canada*, Vol. 48 (5), Canadian Education Association.

Greenhill, V. and K. Kay (2013), *The Leader's Guide to 21st-Century Education: 7 Steps for Schools and Districts*, Pearson Education Inc.

Levy (2010), "How Technology Changes Demands for Human Skills," *OECD Education Working Paper*, No. 4, OECD Publishing.

National Research Council (2012), "Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century," National Academic Press.

Partnership for 21st Century Skills (2011).

OECD (2008), *21st-Century Learning: Research, Innovation and Policy: Directions from Recent OECD Analyses*, OECD Publishing.

OECD (2012f), *Preparing Teachers and Developing School Leaders for the 21st Century: Lessons from Around the World*, OECD Publishing.

Sims, E. (2006), *A New Shape for Schooling? Deep Learning*, Specialist Schools and Academies Trust.

Box 5.9 What PISA shows regarding student achievement in mathematics

Results from PISA have shown that certain learning and teaching strategies are associated with higher student performance in mathematics. During PISA 2003, when mathematics was the major domain in PISA for the first time, disciplinary climate was the leading teaching-related variable that showed a strong association with better performance. Learning environments have improved across OECD countries and economies since 2003, but PISA 2012 results show that the disciplinary climate tends to be better in schools not suffering from teacher shortages (OECD, 2013a).

PISA shows that factors such as lack of punctuality, students' confidence in their ability to perform and their anxiety when dealing with mathematics problems consistently play a large role when it comes to performance. School leaders and local educators are increasingly looking at how effective strategies can be fostered within schools and classrooms to enhance the learning environment and improve learning outcomes, in particular for students from disadvantaged backgrounds (OECD, 2012a). The following are some of the findings from PISA with regards to students' achievement in mathematics:

- ***Although many students reported a strong sense of belonging in PISA 2012, more than one in three students across OECD countries reported that they had arrived late for school in the two weeks prior to the PISA test, and more than one in four students reported that they had skipped classes or days of school during the same period*.**

  While it is clear that being tardy for school and skipping classes are negatively associated with student performance, there is little difference in the prevalence of truancy between advantaged and disadvantaged students. Across OECD countries, 19% of disadvantaged students reported that they had skipped classes, compared with 17% of advantaged students. Arriving late for school is associated with a 27-point lower score in mathematics, while skipping classes or days of school is

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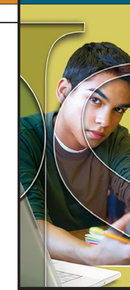

associated with a 37-point lower score in mathematics – the equivalent of almost one full year of formal schooling.

PISA shows that teacher-student relations help prevent truancy and are strongly associated with students' engagement with and at school.

In almost all countries and economies that participated in PISA, students who attend schools with better teacher-student relations are less likely to report that they had arrived late during the two weeks prior to the PISA test. Moreover, in all countries and economies, among students with equal performance and similar socioeconomic status, ***those who attend schools with better teacher-student relations reported a stronger sense of belonging and greater intrinsic motivation to learn mathematics.***

- PISA results indicate that ***a student's strong sense of his or her own ability to learn mathematics is strongly associated with performance. Students who are more perseverant and more open to problem solving perform at higher levels in mathematics.***

  For example, students who feel they can handle a lot of information, who are quick to understand and seek explanations for things and who like to solve complex problems score 30 points higher in mathematics, on average, than those who are less open to problem solving. Among high achievers, the difference between the two groups of students is even greater – an average of 38 score points, nearly the equivalent of a year's schooling.

  Parents' expectations are also positively associated not only with students' mathematics performance but also with positive dispositions toward learning.

  Across the 11 countries and economies that distributed questionnaires to parents, students whose parents have high expectations for them – who expect them to earn a university degree and work in a professional or managerial capacity later on – tend to have more perseverance, greater intrinsic motivation to learn mathematics and more confidence in their own ability to solve mathematics problems than students of similar socioeconomic status and academic performance whose parents hold less ambitious expectations for them.

- PISA results have also shown that ***student attitudes such as motivation and confidence are strongly associated with higher performance, while a student's negative self-belief can manifest itself in anxiety toward mathematics. Some 30% of students reported that they feel helpless when doing mathematics problems.***

  In many countries, students' motivation, self-belief and disposition toward learning mathematics are positively associated not only with how well they perform in mathematics but also with how much better these students perform compared with other students in their school. On the other hand, across OECD countries, greater mathematics anxiety is associated with a 34-point lower score in mathematics – the equivalent of almost one year of school. Between 2003 and 2012, mathematics self-efficacy tended to increase in those countries that also showed reductions in students' level of mathematics anxiety.

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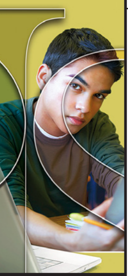


- PISA results also reveal that ***even when girls perform as well as boys in mathematics, they report less perseverance, less openness to problem solving, less motivation to learn mathematics and higher levels of anxiety toward mathematics than boys, on average; they are also more likely than boys to attribute failure in mathematics to themselves rather than to external factors***.

  In 38 participating countries and economies, the average girl underperforms in mathematics compared with the average boy by 11 score points. In addition, across OECD countries 15% of boys compared with 11% of girls achieve at the highest levels of proficiency in mathematics. However, PISA reveals that the gender gap, even among the highest-achieving students, is considerably narrower when comparing boys and girls with similar levels of drive, motivation and self-belief in mathematics.

Last but not least, teachers' knowledge, skills and approaches to mathematics (and science) should continuously be updated so that concepts taught in the classroom remain relevant. Exchanging information, resources and expertise among educators and others such as researchers and universities may help keep curricula current. Local educators and school leaders should foster effective teaching and learning strategies that address issues such as disciplinary problems, additional instruction time in school and ways to boost students' confidence in their ability to solve mathematics problems.

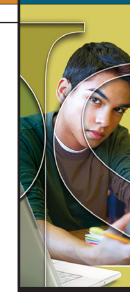
The importance of these factors with regard to students' mathematics performance is the reason that the results for your school include information on disciplinary climate, teacher-student relations and students' attitudes toward learning (e.g., instrumental motivation and self-efficacy in mathematics and science).

To find out more about effective teaching and learning strategies in the classroom, go to:

- PISA Brief on Gender: *Are boys and girls equally prepared for life?*
- PISA in Focus 35: *Who are the school truants?*
- *PISA 2012 Results: Ready to Learn – Students' Engagement, Drive and Self-Beliefs (Volume III)*
- *Creating Effective Teaching and Learning Environments: First Results from TALIS*

Sources: Organisation for Economic Co-operation and Development (OECD) (2009a), *Creating Effective Teaching and Learning Environments: First Results from TALIS*, OECD Publishing.

OECD (2013a), *PISA 2012 Results: Volumes I-IV*, OECD Publishing.



Box 5.10 **What PISA shows regarding student achievement in science**

Educators across OECD countries are mindful of today's challenges of meeting a growing demand for science-related qualifications among young adults entering the workforce. In 2006, PISA focused on science by assessing students' skills and knowledge of and about science; by looking at their attitudes and engagement with science; by looking at their general appreciation of science and personal beliefs as science learners; and by evaluating whether the students thought science would be valuable for their future. While 15-year-olds in OECD countries generally reported a positive disposition toward science, only one in three students on average across OECD countries (37%) reported that they would like to work in a career involving science and only one in five (21%) reported that they would aspire to a career in advanced science. One challenge facing educators, therefore, is to ensure that students are motivated and well prepared to achieve scientific excellence in the future (OECD, 2007). How can schools foster and strengthen engagement in science-related areas and ensure that young adults leave school with the motivation and capacity to continue learning throughout life? The following are some of the insights from previous PISA cycles regarding factors surrounding student interest and achievement in science:

- ***Overall, there is a strong and direct relationship between science performance and frequency of participation in student-initiated science activities in each of the OECD countries.***

  Exposure to science and engaging in science-related activities outside of school are two possible explanations for differences in student outcomes. When compared with the lowest performers in science, for the OECD countries, top performers in science – students who reach at least Level 5 and can consistently demonstrate use of their scientific understanding in support of solutions to unfamiliar scientific situations – receive about two extra hours per week of instruction in science. PISA 2006 also asked students how often they pursued activities related to science outside of school, such as watching TV programs about science or obtaining books on scientific topics. It was found that top performers in science engage in science-related activities more often than any other performance group.

  As science activities mostly take place outside of school, they are more likely to be associated with students' socioeconomic backgrounds. PISA thus also looked at what happened to student performance in science after accounting for students' socioeconomic backgrounds. *PISA results show that in all countries, student-initiated science activities maintain a strong statistical relationship with performance*. Educators and schools can explore ways of encouraging all students to engage in science-related activities outside of school with the aim of helping strong performers to excel and become top performers, in turn improving science performance overall.

- ***Student experiences and dedication are important drivers of performance in science, as are student attitudes and motivations.***

  Interest in a subject can influence the intensity with which a student engages in learning. To measure students' general interest in science and their interest in specific science topics, PISA 2006 asked students to provide information on their level of interest in subjects ranging from human biology to physics and on their general interest in the ways scientists design experiments. At least 50% of top performers on average across OECD countries reported being interested in all science topics they were asked about. Interest in and enjoyment of particular subjects – what PISA calls *intrinsic motivation* – affect both the degree and continuity of engagement in learning and students' depth of understanding. Furthermore, future science motivation may be an important indicator of the proportion of students likely to pursue further science studies and/or careers. Results from PISA 2006 show that students generally enjoy learning science, with an average of 80% of top performers

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reporting that they were both interested in learning about science and had fun doing so. PISA results suggest that ***educators should set a high priority on exploring and designing strategies to enable students to enjoy science.***

- Students' belief in their own ability to effectively handle tasks – what PISA calls *self-efficacy* – is often considered an important outcome of schooling. ***In 49 of 57 countries (including all OECD countries) a one-unit increase in the index of self-efficacy in science represents an increase of at least 20 score points on average.*** Confidence in their abilities in various subjects can bolster students' motivation, learning behaviors and general expectations for their future. Self-efficacy centers on the kind of confidence needed for students to successfully master specific learning tasks, and thus is not simply a reflection of a student's abilities and performance. The relationship between students' self-efficacy and student performance may be reciprocal; students with higher academic ability can be more confident and greater confidence, in turn, can improve their academic ability. A strong sense of self-efficacy can also affect students' willingness to take on challenging tasks and persist in tackling them; it can thus have a key impact on motivation.
- Overall, the majority of students in participating countries reported that they valued science in general; however, students also indicated that they do not necessarily relate science to their own lives or behavior. For example, while 75% of students on average reported that science helped them to understand things around them, fewer reported they thought they would use science as adults (64% on average) and only 57% of students on average agreed that science was very relevant to them. ***In contrast, 80% of top performers reported that they would use science in many ways as adults.***

  An implication of this evidence is that the pool of talent for future science workers might be increased by seeking to raise top and strong performers' motivation to learn science. In addition, by showing students that learning science is useful for further study and that opportunities exist for rewarding careers in science may also help incite students to see the benefits of learning science.
- ***PISA 2006 results also show that female students are much less likely to choose scientific study and science careers than males.*** It is therefore instructive to look at future-oriented science aspirations according to gender. Of the 28 OECD countries included in this comparison, 12 showed that male top performers in science had significantly higher aspirations to use science in the future. Yet, the overall aspiration pattern among science top and strong performers is the same for both sexes. So, the goal of increasing the numbers of adults engaged in the study and pursuit of scientific activities by fostering aspirations is valid for both.
- Educators and schools also would like to know how well they prepare students for future science-related careers. While at least 80% reported that their schools had prepared them well for science-related careers, only 34% of top performers in science reported being informed about employers or companies that hire people to work in science-related careers. In short, ***top performers perceived themselves to be well prepared by their schools for a science-related career, but not as informed about the careers available.*** This is an area where schools can develop ways to give students information about future job prospects.

Fostering interest and motivation in science is an important policy goal. Efforts to this end may relate to improved instructional techniques and a more engaging learning environment at school, but they can also extend to students' lives outside school, such as making more and better content on the Internet more accessible or encouraging students to read more science-fiction novels, adventure stories or mysteries based on scientific and technical knowledge, ingenuity and solutions with characters (OECD, 2009c).

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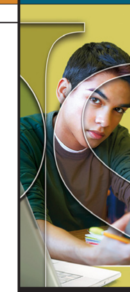


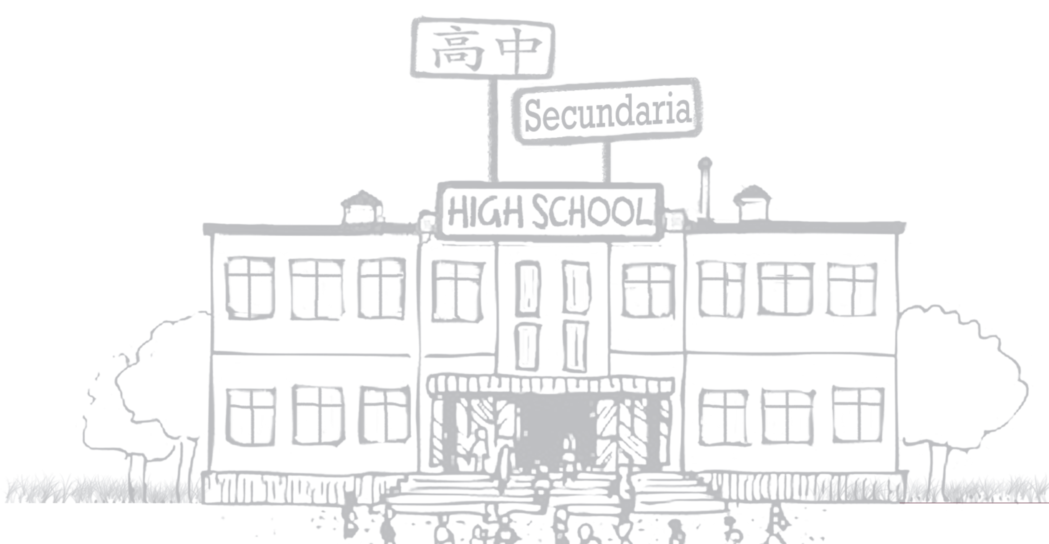
By and large, educational excellence goes hand in hand with promoting student engagement in and enjoyment of science learning, both inside and outside the school. The payoff is quite significant: a large and diverse talent pool ready to take up the challenge of a career in science. In today's global economy, it is the opportunity to compete on innovation and technology.

To find out more about what PISA shows regarding the highest-performing students in science, go to:

- *PISA 2006: Science Competencies for Tomorrow's World, Vol.1*
- *Top of the Class – High Performers in Science in PISA 2006*

Sources: Organisation for Economic Co-operation and Development (OECD) (2007), *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1*, OECD Publishing.

OECD (2009c), *Top of the Class – High Performers in Science in PISA 2006*, OECD Publishing.



References

Autour, D.H., F. Levy, and **R.J. Murnane** (2003), "The Skill Content of Recent Technological Change: An Empirical Exploration." *Quarterly Journal of Economics,* 118:1279-1334.

Blech, C. and **J. Funke,** (2010), "You cannot have your cake and eat it, too: How induced goal conflicts affect complex problem solving," *Open Psychology Journal 3*, pp. 42-53.

Brochu, P., T. Gluszynski and **T. Knighton** (2010), *Measuring Up: Canadian Results of the OECD PISA Study: The Performance of Canada's Youth in Reading, Mathematics and Science,* Ministry of Industry, Canada.

Dunleavy, J. and **P. Milton** (2010), "Student Engagement for Effective Teaching and Deep Learning," *Education Canada,* Vol. 48 (5), Canadian Education Association.
www.cea-ace.ca

Eccles, J.S. (1994), "Understanding women's educational and occupational choice: Applying the Eccles et al. model of achievement-related choices," *Psychology of Women Quarterly,* Vol. 18, Blackwell Publishing, Oxford, pp. 585-609.

Education Today (2011), "Can Disadvantaged Students Beat the Odds against Them?," OECD, 8 February 2011.
https://community.oecd.org/community/educationtoday/blog/2011/02/08/can-disadvantaged-students-beat-the-odds-against-them

Greenhill, V. and **K. Kay** (2013), *The Leader's Guide to 21st-Century Education: 7 Steps for Schools and Districts*, Pearson Education Inc.

Klieme, E. (2004), "Assessment of cross-curricular problem-solving competencies," In Moskowitz, H. and M. Stephens (eds.) *Comparing Learning Outcomes. International Assessments and Education Policy* (pp. 81-107). London: Routledge Falmer.

Levy, F. (2010), *How Technology Changes Demands for Human Skills, OECD Education Working Papers,* No. 4, OECD Publishing.
www.oecd.org/education/highereducationandadultlearning/45052661.pdf

Mayer, R.E. and **M.C. Wittrock** (2006), "Problem Solving," In Alexander, P.A. and P.H. Winne (eds.) *Handbook of Educational Psychology (2nd ed.)* (ch. 13). Mahwah, N.J.: Lawrence Erlbaum Associates.

Mayer, V.J. (ed.) (2002), *Global Science Literacy*, Dordrecht, The Netherlands: Kluwer Academic Publishers.

Ministry of Education (2010), *Report of the Secondary Education Review and Implementation (SERI) Committee***,** Ministry of Education, Singapore.
www.moe.gov.sg/media/press/files/2010/12/report-secondary-education-review-and-implementation-committee.pdf

National Research Council (2012), "Developing Transferable Knowledge and Skills in the 21st Century," National Academic Press.
http://sites.nationalacademies.org/DBASSE/BOTA/Education_for_Life_and_Work/index.htm

Organisation for Economic Co-operation and Development (OECD) (2001), *Knowledge and Skills for Life: First Results from the OECD Programme for International Student Assessment,* OECD Publishing.
http://www.oecd.org/edu/preschoolandschool/programmeforinternationalstudentassessmentpisa/33691596.pdf

OECD (2002), *Reading for Change: Performance and Engagement across Countries: Results from PISA 2000,* OECD Publishing.
http://www.oecd.org/edu/preschoolandschool/programmeforinternationalstudentassessmentpisa/33690904.pdf

OECD (2007), *PISA 2006: Science Competencies for Tomorrow's World,* Vol. 1, OECD Publishing.
http://dx.doi.org/10.1787/9789264040014-en

OECD (2008), *21st-Century Learning: Research, Innovation and Policy Direction from Recent OECD Analyses*, OECD Publishing.
www.oecd.org/site/educeri21st/40554299.pdf

OECD (2009a), *Creating Effective Teaching and Learning Environments: First Results from TALIS,* OECD Publishing.
http://www.oecd.org/edu/school/43023606.pdf

OECD (2009b), *Evaluating and Rewarding the Quality of Teachers: International Practices*, OECD Publishing.
http://dx.doi.org/10.1787/9789264034358-en

OECD (2009c), *Top of the Class – High Performers in Science in PISA 2006,* OECD Publishing.
http://dx.doi.org/10.1787/9789264060777-en

OECD (2010a)*, Closing the Gap for Immigrant Students: Policies, Practice and Performance*, OECD Publishing.
http://dx.doi.org/10.1787/9789264075788-en

OECD (2010b), *The High Cost of Low Educational Performance: The Long-Run Economic Impact of Improving PISA Outcomes Source*, OECD Publishing.
http://www.oecd.org/pisa/44417824.pdf

OECD (2010c), *Lessons from PISA for Mexico: Strong Performers and Successful Reformers in Education,* OECD Publishing.
http://dx.doi.org/10.1787/9789264107243-en

OECD (2010d), *Mathematics Teaching and Learning Strategies in PISA*, OECD Publishing.
http://www.oecd.org/edu/school/programmeforinternationalstudentassessmentpisa/46052236.pdf

OECD (2010e), *Pathways to Success: How Knowledge and Skills at Age 15 Shape Future Lives in Canada,* OECD Publishing.
http://browse.oecdbookshop.org/oecd/pdfs/free/9810031E.pdf

OECD (2010f), *PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science (Volume I)*, PISA, OECD Publishing.
http://dx.doi.org/10.1787/9789264091450-en

OECD (2010g), *PISA 2009 Results: Overcoming Social Background: Equity in Learning Opportunities and Outcomes (Volume II)*, PISA, OECD Publishing.
http://dx.doi.org/10.1787/9789264091504-en

OECD (2010h), *PISA 2009 Results: Learning to Learn: Student Engagement, Strategies and Practices (Volume III)*, PISA, OECD Publishing.
www.oecd.org/pisa/pisaproducts/48852630.pdf

OECD (2010i), *PISA 2009 Results: What Makes a School Successful? Resources, Policies and Practices (Volume IV)*, PISA, OECD Publishing.
http://dx.doi.org/10.1787/9789264091559-en

OECD (2010j), *PISA 2009 Results: Learning Trends: Changes in Student Performance Since 2000 (Volume V)*, PISA, OECD Publishing.
http://dx.doi.org/10.1787/9789264091580-en

OECD (2011a), *Against the Odds: Disadvantaged Students Who Succeed in School*, OECD Publishing.
http://dx.doi.org/10.1787/9789264090873-en

OECD (2011b), *Education at a Glance 2011: OECD Indicators*, OECD Publishing.
www.oecd.org/edu/eag2011

OECD (2011c), *Lessons from PISA for the United States: Strong Performers and Successful Reformers in Education,* OECD Publishing.
http://dx.doi.org/10.1787/9789264096660-en

OECD (2011d), *PISA 2009 Results: Students On Line: Digital Technologies and Performance (Volume VI)*, OECD Publishing.
http://dx.doi.org/10.1787/9789264112995-en

OECD (2012a), *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies,* OECD Publishing.
http://dx.doi.org/10.1787/9789264177338-en

OECD (2012b), *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*, OECD Publishing.
http://dx.doi.org/10.1787/9789264130852-en

OECD (2012c), *Innovative Learning Environment Project*, OECD Publishing.
http://www.oecd.org/edu/ceri/innovativelearningenvironments.htm

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OECD (2012d), *Lessons from PISA for Japan: Strong Performers and Successful Reformers in Education,* OECD Publishing.
http://dx.doi.org/10.1787/9789264118539-en

OECD (2012e), *Let's Read Them a Story! The Parent Factor in Education,* OECD Publishing.
www.oecd-ilibrary.org/content/book/9789264176232-en

OECD (2012f), *Preparing Teachers and Developing School Leaders for the 21st-Century: Lessons from Around the World,* OECD Publishing.
http://dx.doi.org/10.1787/9789264174559-en

OECD (2012g), *Untapped Skills: Realising the Potential of Immigrant Students*, OECD Publishing.
http://dx.doi.org/10.1787/9789264172470-en

OECD (2013a), PISA 2012 Results: *Volumes I-IV,* OECD Publishing.
http://www.oecd.org/pisa/keyfindings/pisa-2012-results.htm

OECD (2013b), *Lessons from PISA 2012 for the United States,* Strong Performers and Successful Reformers in Education, OECD Publishing.
http://www.oecd.org/pisa/keyfindings/PISA2012_US%20report_ebook%28eng%29.pdf

Shanghai Education (2011), "A Survey of Basic Education in Shanghai," Shanghai Municipal Education Commission.
www.shmec.gov.cn/english/list.php?type=Overview&area_id=&article_id=63905

Sims, E. (2006), *A New Shape for Schooling? Deep Learning,* Specialist Schools and Academies Trust.
https://registration.livegroup.co.uk/ssatnationalconference/About/02-Deep-learning-1-Emma-Sims.pdf

U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD) (2007-08), "State Nonfiscal Survey of Public Elementary/Secondary Education," version 1b.
http://nces.ed.gov/ccd/pdf/StNfis071bgen.pdf

U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD) (2010-11), "State Nonfiscal Public Elementary/Secondary Education Survey," version 1a.
http://nces.ed.gov/ccd/pdf/STnonfis101agen.pdf

Zimmerman, B.J. (1999), "Commentary: toward a cyclically interactive view of self-regulated learning," *International Journal of Educational Research,* Vol. 31, Issue 6, Elsevier Ltd., pp. 545-551.

Annex A

THE *OECD TEST FOR SCHOOLS* (BASED ON PISA) IN THE UNITED STATES 2013-2014

Your school's results in this report were obtained from your decision to participate in the current cycle of testing in the United States of the *OECD Test for Schools* (based on PISA). You are therefore part of a select group of schools that willingly took part in the assessment that offers a unique tool for local, national and international benchmarking for improvement.

It is therefore important to note that the over 300 schools that have participated in the current cycle of testing in the United States are not statistically representative of schools in the country – there is of course a factor of self-selection because districts and schools freely chose to participate; hence, aggregate results of the schools that participated in the current cycle of testing in the United States are not presented in the school reports.

As the accredited service provider and partner for this cycle of testing in the United States, the OECD Secretariat selected CTB/McGraw-Hill based on its experience in conducting the pilot trial of the assessment in 2012. CTB/McGraw-Hill was responsible for the test administration and quality-assurance procedures during all phases of the testing with the schools and districts. As such, the entity organised the testing sessions directly with participating schools and the *school co-ordinators* named by each. CTB/McGraw-Hill also conducted the coding, scoring and data management of the school data. Lastly, the research team at CTB/McGraw-Hill also developed the analytical outputs for the school reports based on the specifications and guidance from the OECD.

The following table provides a summary of your school's participation in the OECD Test for Schools

School name	CESAR E. CHAVEZ HIGH SCHOOL	
Unique identifer	113810229	
District/local authority	Houston Independent School District	
Location	A large city (with over 1,000,000 people)	
State	Texas	
Country	United States	
School type	Public	
Total number of students enrolled	2,949	
Percentage of students eligible for free- or reduced-price lunches through the National School Lunch Program	50	
Test date(s)	March 14, 2014	
Student sample	100	The percentage of students that were tested at this school compared to the sample is less than 80%.
Number of students tested	66	

Annex B

OVERVIEW OF THE *OECD TEST FOR SCHOOLS* (BASED ON PISA)

The assessment instruments used as part of the *OECD Test for Schools* (based on PISA) consist of seven *booklets* of test questions in reading, mathematics and science, a *student questionnaire* that each student was expected to fill out on the day of testing and a *school questionnaire* that was filled out by school authorities at each participating school.

The test questions (items) that students responded to consisted of 141 items: 47 in reading, 40 in mathematics and 54 in science. A typical student is estimated to take approximately 92 minutes to answer the questions in each of the three subject domains, without breaks! As this is clearly not possible, the test questions were organized into clusters of questions that were then organized into booklets, for a total of seven different test booklets. Each student, however, was expected to respond to only one test booklet, which the test administrators gave to him or her. With this design, each booklet takes 120 minutes to complete, to match the PISA main studies and provide students a similar test experience.

The 141 items that make up the test were developed and selected based on the PISA assessment frameworks and the design blueprints for the test. An important part of the test design was to arrive at questions that mirror the questions used in the PISA 2009 main study with regard to *aspect*, *text format* and *text type* variables for reading; *process*, *content* and *context* variables for mathematics items; and *competency*, *knowledge about* and *knowledge of science* variables.

For the development of the test, item-response types were also a design factor during item development and for the final instruments. The goal was to mirror as closely as possible the distribution of response types of the main PISA 2009 study. One important aspect of the final assessment items of the *OECD Test for Schools* is that all three domains are equally represented in terms of testing time (approximately 92 minutes per subject domain as described above), which is the PISA standard for minor domains in every cycle.

Table A. **Items included in assessment by subject domain and response types**

	READING	MATHEMATICS	SCIENCE	Total	%
Simple Multiple Choice	19	11	18	**48**	**34**
Complex Multiple Choice	7	3	15	**25**	**18**
Constructed Response – Manual	5	25	1	**31**	**22**
Constructed Response – Expert	16	1	20	**37**	**26**
Totals	47	40	54	**141**	

Like the international PISA test, the *OECD Test for Schools* is developed around units. A unit consists of stimulus material, including texts, diagrams, tables and/or graphs, followed by questions on various aspects of the text, diagram, table or graph, with the questions constructed so tasks that students have to undertake are as close as possible to those they might come across in the real world. Example questions developed for the test are included in Section 2, and you can see all of the publicly available PISA questions in the publication *Take the Test: Sample Questions from OECD's PISA Assessments*.

Annex C

EXAMPLES OF TEST QUESTIONS

This annex provides examples of test questions that are indicative of the types of questions students had to work through in the assessment. For a more complete set of PISA test questions, readers are invited to look through the reading, mathematics and science items included in *Take the Test: Sample Questions from OECD's PISA Assessments*, *Try the Test: Explore PISA 2012 Mathematics and Problem Solving Test Questions*, and the *PISA 2012 report Volume I*.

EXAMPLES OF TEST QUESTIONS

Reading

Indian Mystic is ranked between medium and difficult on the item map. It asks students to integrate and interpret information gathered from a text and form a broad understanding.

1. INDIAN MYSTIC CLAIMS NOT TO EAT FOR 70 YEARS

By Benamin Radford, LiveScience

An 82-year-old man in India is claiming to have not had anything to eat or drink since 1940 – and doctors from the Indian military are allegedly studying him to learn his secret.

The man, Prahlad Jani, is being observed in a Gujarat hospital. Jani claims to be a breatharian – someone who does not need to eat or drink, because he draws nourishment from the air and from meditation.

As remarkable as his story is, Jani is not the first, nor the only, person to claim such a supernatural power. The claim that people can live without food or water is called inedia, and is actually somewhat of a common claim among religious fakirs of India. Unfortunately, none of the cases have withstood scientific scrutiny. The human body needs both food and water to function; it's as simple as that.

It's easy for anyone to claim that he or she has not had anything to eat or drink for the past few weeks or months (or years). But unless the person has been carefully and continuously watched during that time, it's impossible to prove the assertion.

Several people who have claimed to survive without food or water were later caught eating and drinking. It can take only a few seconds to eat something, and other than in specific areas such as prisons, conducting a close around-the-clock surveillance on a person is not easy. Often the person will ask for privacy to sleep or go to the bathroom (which is suspicious in its own right) – and then snack surreptitiously. One well-known breatharian advocate in the 1980s, a man named Wiley Brooks, claimed he did not eat yet was caught consuming junk food.

This is not the first time that Jani has made this claim. He was examined in 2003, for about a week, during which time he apparently did not eat or exercise – but he did lose weight. If Jani's abilities are real, it seems odd that he would lose weight during the time that his food intake was being monitored. If he truly gets all the sustenance he needs from air and meditation, there's no reason he would lose weight when he doesn't eat.

Reports claim that Prahlad Jani "has now spent six days without food or water under strict observation and doctors say his body has not yet shown any adverse effects from hunger or dehydration." Assuming the claim is true – and it's not clear just how strict the observation is – Jani's inedia so far remains unproven. If he really doesn't need food or water, he should be under close observation for months or years to prove it. Given that he claims not to have consumed anything since World War II, this shouldn't be a problem.

Refer to the newspaper article “Indian Mystic” on the previous page to answer the questions that follow.

INDIAN MYSTIC – *QUESTION 1*

What is the author’s attitude toward the idea that people can survive without food and water? Give a reason for your answer by using information from the article.

Scoring

Question intent

Integrate and interpret: *Develop an interpretation*

Identify an author’s attitude in a persuasive text.

Full Credit

Refers to the idea that the author does not believe in inedia and provides evidence to support this. May quote directly from the text.

- The author doesn’t believe people can survive without food or drink because he says the human body needs both food and water to function: it’s as simple as that.
- The author doesn’t believe in inedia. He says it’s easy for anyone to claim they haven’t had any food or water for weeks or months.
- He uses examples of people making similar claims being caught eating or drinking so he doesn’t believe in this.
- He doesn’t trust Jani because he says he lost weight while he was being monitored and that wouldn’t happen if it was real.

No Credit

Gives an insufficient or vague response.

- He doesn’t agree.
- The author doesn’t believe Jani.
- He thinks it is untrue.
- It’s unproven.

Shows inaccurate comprehension of the material or gives an implausible or irrelevant response.

- He thinks it might be true but we need more studies.
- The author thinks Jani is amazing.
- He thinks the doctors didn’t do a good job.

Comment

The intent of the question is to identify an author’s attitude in a persuasive text. Students are required to detect, understand and refer to methods of conveying an attitude in a text, instances of which are varied and spread across the extent of the text. The item relates to a continuous text of the type *argumentation*, and has a *personal situation* (i.e., it relates to the intellectual interests of the reader). It requires students to integrate and interpret elements of a text that presents what is intended to be a rational argument about what is perceived to be an irrational position. Reading literacy is applied to a real-world (but unusual) investigation of a social phenomenon. The item can be considered as not difficult. While the item allows for sophisticated responses to textual features such as the connotation of vocabulary, credit for responses could also be achieved through the recognition of direct statements of opinion. This wide range of credit-worthy responses contributes to the relative easiness of the item.

Mobile Phone Plans is ranked medium on the item map. It asks students to integrate and develop an interpretation with information gathered from a text as well as recognize different descriptions in a text.

2. MOBILE PHONE PLANS

DIGI 1 Mobile Phone Contract Plans (1 year)

Digi 1 – *Your number 1 mobile phone company*

PLANS	Minimum monthly commitment fee	Call charges (per minute)[1]		SMS charges (per SMS)[2]		Benefits
		Digi 1 to Digi 1	Digi 1 to others	Digi 1 to Digi 1	Digi 1 to others	
FREEDOM Want a lower monthly access fee? This is the best plan!	1,200 zeds	Peak (7 a.m. – 7 p.m.): 6 zeds Off Peak (7 p.m. – 7 a.m.): 3 zeds	Peak (7 a.m. – 7 p.m.): 6 zeds Off Peak (7 p.m. – 7 a.m.): 6 zeds	1 zed	3 zeds	▪ 600 zeds talk time each month – Value Extras™ not included. ▪ Access to one of the Value Extras™ add-ons for only 200 zeds extra per month.
FLEXI FIRST This plan gives you more for less!	1,800 zeds	3.5 zeds	4 zeds	2 zeds	3 zeds	▪ 1,800 zeds talk time each month – Value Extras™ not included. ▪ Choose one of the Value Extras™ add-ons for free!
VALUE PLUS Keep on talking and never miss a call again.	5,000 zeds	2 zeds	3 zeds	0.5 zeds	4 zeds	▪ 5,000 zeds talk time each month. ▪ Free 5-minute calls to other Digi 1 numbers. ▪ Choose one of the Value Extras™ add-ons for free.

1. Calls are charged in 30-second blocks for all rate plans.
2. SMS charges to international mobiles are 10 zeds/SMS on all plans.

FREE VALUE ADDED SERVICES

- You get Caller Line Identification Presentation and Voicemail.

VALUE EXTRAS™ ADD-ON PACKAGES

WEEKEND	Receive 50% off on all Digi 1 to Digi 1 weekend calls for only 200 zeds extra a month.
TEN	Free SMSs and free 10-minute off peak* calls to TEN of your favorite Digi 1 numbers for only 200 zeds extra a month.
SMS	500 SMSs to Digi 1 numbers for only 200 zeds extra a month.

*7 p.m. – 7 a.m. weekdays.

"Mobile Phone Plans" contains information about the yearly contract plans a mobile phone company, Digi 1, offers in a country, Zedland.

Use "Mobile Phone Plans" to answer the questions that follow.

MOBILE PHONE PLANS – *QUESTION 1*

List two advantages the Value Plus plan offers over the Flexi First plan.

1. ....

2. ....

Scoring

Question intent

Integrate and interpret: *Develop an interpretation*

Recognize different descriptions in a text.

Full Credit

Refers to two or more of the following, in any order:

- Value of included calls/SMSs each month;
- SMS charges to other Digi 1 customers;
- Call costs;
- Free calls.
- 1. It includes 5,000 zeds of call value each month.
- 2. The calls and SMS charges to other Digi 1 numbers are lower.
- 1. It includes more talk time each month.
- 2. It includes free calls to other Digi 1 numbers.
- 1. The calls and SMS charges to other Digi 1 numbers are lower.
- 2. It includes free calls to other Digi 1 numbers.
- The call and SMS charges to other Digi 1 numbers are lower and the cost of calls and SMS is included in the monthly fee.
- It includes free calls to other Digi 1 numbers and it includes more value in the monthly fee.

Partial Credit

Refers to one of either value of calls included, SMS costs, call costs or free calls:

- It includes 5,000 zeds of value each month.
- The fees for the calls are cheaper.
- The SMSs to other Digi 1 numbers are cheaper.
- It includes free calls.

No Credit

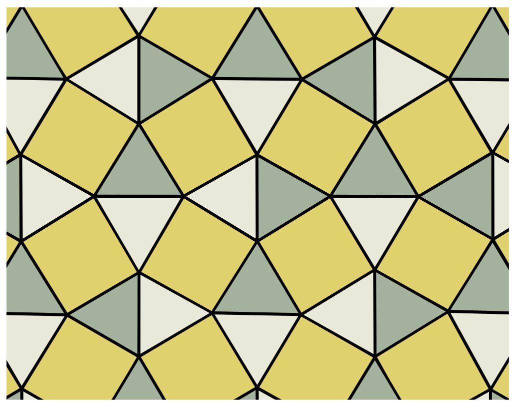
Shows inaccurate comprehension of the material or gives an implausible or irrelevant response.

- It is better value than the Flexi First plan. *[Irrelevant.]*
- You never miss a call again. *[Irrelevant.]*
- You get a free add-on. *[Inaccurate.]*
- You have more zeds.

Mathematics

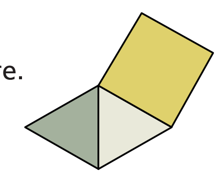
Tiling Pattern is ranked between medium and difficult on the item map. It asks a student to look at space and shape in order to find an interior angle.

5. TILING PATTERN



This is a tiling pattern on a floor.

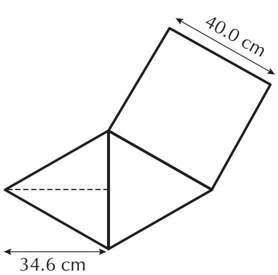
A shape that repeats within the pattern is shown here.



The repeating shape is a square and two equilateral triangles joined together.

TILING PATTERN – *QUESTION 2*

The height of each triangle and the length of the sides are shown.



What is the area of the repeating shape?

Show your work.

....

....

....

Area = ... cm²

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Scoring

Question intent

> ***Description:*** *Calculate area of compound shape within a given tessellation*
> ***Mathematical content area:*** *Space and shape*
> ***Context:*** *Societal*
> ***Process category:*** *Employing*

Full Credit

2,984 [*work not required*]

Partial Credit

Work shows correct method but **one** error made.

- 2 x 20 x 34.6 + 40 x 40 or equivalent shown but one calculation error made
- 2 x 40 x 34.6 + 40 x 40 correctly evaluated (4,368) [*forgot to halve base*]
- 20 x 34.6 [*one triangle only*] + 40 x 40 correctly evaluated giving 2,292

Work shows correct method but **incomplete.**

- 2 x 20 x 34.6 + 40 x 40 or equivalent shown but not evaluated
- 2 x 20 x 34.6 + 40 x 40 = 1,384 + ………

No Credit

Other responses.

Missing.

Which Formula is ranked medium on the item map. It asks students to create a correct formula in a context based on a linear relationship between fixed and variable costs.

6. WHICH FORMULA

Steph and Jawad run their own businesses.

Steph makes greeting cards and sells them at a market each Sunday.

Jawad is a gardener.

FORMULA?

Jawad's total charge for a gardening job is:

- a fixed charge of 20 zeds plus
- an hourly charge of 30 zeds per hour.

Write a formula that shows how Jawad's total charge, C, relates to *h*, the number of hours he spends on a job.

....

....

Scoring

Question intent

Description: *Create a correct formula in a context based on a linear relationship between fixed and variable costs*
Reporting category: *Formulating*
Mathematical content area: *Change and relationships*
Context: *Occupational*

Full Credit

An expression that shows an understanding of the relationship between total charge, fixed charge, hourly charge and hours

- C = 30*h* + 20
- C = 20 + *h* × 30
- Charge = 30 zeds x number of hours + 20 zeds

Partial Credit

An expression that shows an understanding of the relationship between total charge, hourly charge and hours *[omits fixed charge]*

- C = 30*h*
- C = *h* × 30
- Charge = 30 zeds x number of hours

No Credit

Other responses.
Missing.

Comment

This question presents students with an informal linear algebra situation in a familiar *occupational* context involving costs and charges. The world of work is becoming increasingly familiar and important for many 15-year-olds and the relationship between costs and charges, both fixed and variable, is an important one. To gain credit for this task, students need to create a correct formula in a context based on a linear relationship between fixed and variable costs. The intention of this item is to assess whether students can interpret the information provided in context, see the underlying relationships, then express the relationships symbolically using conventional algebraic notation and conventions, hence the content categorization *change and relationships*. Because the students are only required to formulate the equation and are not required to perform any calculations, perform any algebraic manipulations or use the equation in any way, the item process is categorized as formulate. Despite being a routine style of algebra question presented in an informal way, only about one out of two 15-year-olds would be expected to correctly write down the correct algebraic equation. This is partly because in most countries algebra is still a relatively new topic in school curricula for 15-year-olds. However, this is also because rather than assessing routine algebraic manipulations, the item requires genuine understanding of the underlying structure of an algebraic formula.

Science

Oil Spills is ranked medium on the item map. It asks a student to identify scientific issues related to the environment.

3. OIL SPILLS

Oil spills from ships can seriously pollute oceans, beaches and rivers. After an oil spill, booms and floating sponges are used to reduce pollution effects.

An investigation into the effect of bacteria on oil in water is made in 5 steps.

Step 1	Half fill a screw top jar with seawater.
Step 2	Add a sample of oil to the jar.
Step 3	Add some liquid containing bacteria.
Step 4	Seal the jar and leave it for several days.
Step 5	Observe the contents of the jar.

OIL SPILLS – *QUESTION 4*

What parts of this investigation do not model a real oil spill in the ocean?

Scoring

Full Credit

Responses should focus on the fact that seawater in a sealed jar does not have the same conditions as real seawater.

- Doesn't model seawater because it is in a sealed container.

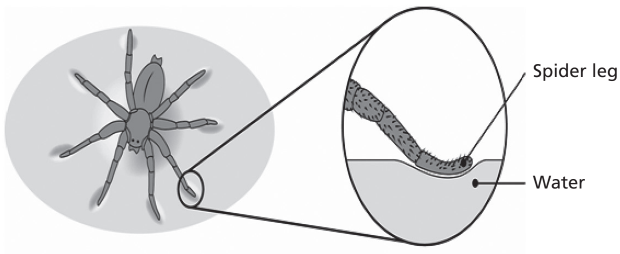
No Credit

Other responses.

Missing.

Floating is ranked between medium and difficult on the item map. It asks students to explain a phenomenon scientifically.

4. FLOATING



Spider or insect walking on water

Metal paper clip floating on water in a glass

FLOATING – *QUESTION 3*

Look at the pictures of the spider and the metal paper clip. What is the reason that both the spider and the paper clip can stay on top of the water?

....

....

Scoring

Question intent

Item type: *Open-response*

Competency: *Explaining phenomena scientifically*

Knowledge category: *Physical Systems-Knowledge of science*

Application area: *Frontiers of science and technology*

Setting: *Personal*

Full Credit

Mentions the surface tension of the water and/or expresses the idea of the weight of the object being spread over a large area.

- The water exerts a force that acts on the spider leg and the paper clip. The weight of the spider or the paper clip is not enough to overcome this force.
- The force of gravity on the spider and the paper clip is not enough to break the surface tension of the water.
- There is a force holding the water molecules together. If the object laying on the surface is not heavy enough then it will not break through and sink.

No Credit

Responses that do not meet the criteria for code 1.

- The spider and the paper clip are less dense than water.

Missing.

Comment

This item from the *Floating* unit is an example of a difficult question to which only about one out of five students are expected to answer correctly with full credit. Students are asked to use knowledge of science where a correct response requires an explanation of an observed scientific phenomenon: that objects with a density greater than water are able to float on water. Visual clues to assist students with their response are provided in the question stimulus. Students need to have only a broad understanding of the concept of surface tension; it is not necessary to use this term in the response to gain credit. Students needed to discriminate between aspects of the visual clues and thus a response that focused on buoyancy, for example, would not gain credit. Surface chemistry is a rapidly evolving field of science; hence the question is classified as *frontiers of science and technology*.

For a more complete set of PISA test questions, readers are invited to look through the reading, mathematics and science items included in the OECD publication:

- *PISA Take the Test: Sample Questions from OECD's PISA Assessments*

Annex D

TABLES OF RESULTS FROM PISA 2012 FOR COUNTRIES AND ECONOMIES

The tables included in this annex present summary results for all countries and economies that participated in PISA 2009 and 2012. These tables represent only a small fraction of the information provided in multiple volumes of the PISA 2012 results. To put your school's results further in context, the reader is invited to use the tables in this annex to explore basic results from PISA 2012 for a wide range of countries and economies, including the selected group of countries and economies presented throughout the report. More detailed results for all participating countries and economies can be found on the PISA website.

Notes regarding Cyprus

Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognized 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.

A note regarding Israel

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.

Table 1 PISA 2012 – Percentage of students at each proficiency level on the reading scale

	All students															
	Below Level 1b (less than 262.04 score points)		Level 1b (from 262.04 to less than 334.75 score points)		Level 1a (from 334.75 to less than 407.47 score points)		Level 2 (from 407.47 to less than 480.18 score points)		Level 3 (from 480.18 to less than 552.89 score points)		Level 4 (from 552.89 to less than 625.61 score points)		Level 5 (from 625.61 to less than 698.32 score points)		Level 6 (above 698.32 score points)	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
OECD																
Australia	0.9	(0.1)	3.1	(0.2)	10.2	(0.4)	21.6	(0.5)	29.1	(0.5)	23.3	(0.5)	9.8	(0.5)	1.9	(0.2)
Austria	0.8	(0.2)	4.8	(0.6)	13.8	(0.8)	24.2	(0.9)	29.6	(0.9)	21.2	(0.9)	5.2	(0.6)	0.3	(0.1)
Belgium	1.6	(0.3)	4.1	(0.4)	10.4	(0.6)	20.4	(0.6)	27.3	(0.7)	24.4	(0.7)	10.4	(0.5)	1.4	(0.2)
Canada	0.5	(0.1)	2.4	(0.2)	8.0	(0.4)	19.4	(0.6)	31.0	(0.7)	25.8	(0.6)	10.8	(0.5)	2.1	(0.2)
Chile	1.0	(0.2)	8.1	(0.8)	23.9	(1.1)	35.1	(1.1)	24.3	(1.1)	6.9	(0.6)	0.6	(0.1)	0.0	(0.0)
Czech Republic	0.6	(0.3)	3.5	(0.6)	12.7	(0.9)	26.4	(1.3)	31.3	(1.2)	19.4	(1.1)	5.3	(0.5)	0.8	(0.2)
Denmark	0.8	(0.3)	3.1	(0.4)	10.7	(0.8)	25.8	(0.9)	33.6	(0.8)	20.5	(0.9)	5.1	(0.6)	0.4	(0.1)
Estonia	0.2	(0.1)	1.3	(0.3)	7.7	(0.6)	22.7	(0.9)	35.0	(1.1)	24.9	(1.1)	7.5	(0.7)	0.9	(0.2)
Finland	0.7	(0.2)	2.4	(0.4)	8.2	(0.6)	19.1	(0.8)	29.3	(0.7)	26.8	(0.8)	11.3	(0.6)	2.2	(0.3)
France	2.1	(0.4)	4.9	(0.4)	11.9	(0.7)	18.9	(0.8)	26.3	(0.8)	23.0	(0.7)	10.6	(0.6)	2.3	(0.4)
Germany	0.5	(0.2)	3.3	(0.4)	10.7	(0.7)	22.1	(0.9)	29.9	(0.9)	24.6	(0.9)	8.3	(0.6)	0.7	(0.2)
Greece	2.6	(0.4)	5.9	(0.6)	14.2	(0.8)	25.1	(1.1)	30.0	(1.0)	17.2	(1.2)	4.6	(0.6)	0.5	(0.1)
Hungary	0.7	(0.2)	5.2	(0.6)	13.8	(0.9)	24.3	(1.2)	29.9	(1.0)	20.4	(1.0)	5.3	(0.7)	0.4	(0.1)
Iceland	2.3	(0.3)	5.4	(0.5)	13.3	(0.6)	24.7	(0.9)	29.9	(1.1)	18.6	(1.1)	5.2	(0.4)	0.6	(0.2)
Ireland	0.3	(0.1)	1.9	(0.4)	7.5	(0.7)	19.6	(1.2)	33.4	(1.2)	26.0	(0.9)	10.1	(0.7)	1.3	(0.3)
Israel	3.8	(0.6)	6.9	(0.7)	12.9	(1.0)	20.8	(0.9)	25.3	(0.8)	20.6	(1.0)	8.1	(0.8)	1.5	(0.3)
Italy	1.6	(0.2)	5.2	(0.3)	12.7	(0.5)	23.7	(0.6)	29.7	(0.5)	20.5	(0.6)	6.1	(0.3)	0.6	(0.1)
Japan	0.6	(0.2)	2.4	(0.4)	6.7	(0.7)	16.6	(0.9)	26.7	(1.0)	28.4	(1.1)	14.6	(1.0)	3.9	(0.6)
Korea	0.4	(0.1)	1.7	(0.4)	5.5	(0.6)	16.4	(0.9)	30.8	(1.0)	31.0	(1.1)	12.6	(1.0)	1.6	(0.3)
Luxembourg	2.0	(0.2)	6.3	(0.3)	13.8	(0.8)	23.4	(0.7)	25.8	(0.6)	19.7	(0.6)	7.5	(0.3)	1.4	(0.2)
Mexico	2.6	(0.2)	11.0	(0.5)	27.5	(0.7)	34.5	(0.6)	19.6	(0.5)	4.5	(0.3)	0.4	(0.1)	0.0	(0.0)
Netherlands	0.9	(0.5)	2.8	(0.5)	10.3	(0.9)	21.0	(1.3)	29.2	(1.3)	26.1	(1.4)	9.0	(0.7)	0.8	(0.2)
New Zealand	1.3	(0.3)	4.0	(0.5)	11.0	(0.7)	20.8	(0.8)	26.3	(1.1)	22.7	(1.1)	10.9	(0.6)	3.0	(0.4)
Norway	1.7	(0.3)	3.7	(0.4)	10.8	(0.7)	21.9	(1.0)	29.4	(1.4)	22.3	(1.2)	8.5	(0.6)	1.7	(0.3)
Poland	0.3	(0.1)	2.1	(0.4)	8.1	(0.7)	21.4	(0.9)	32.0	(0.9)	26.0	(1.0)	8.6	(0.8)	1.4	(0.4)
Portugal	1.3	(0.3)	5.1	(0.5)	12.3	(1.0)	25.5	(1.2)	30.2	(1.5)	19.7	(1.1)	5.3	(0.6)	0.5	(0.1)
Slovak Republic	4.1	(0.8)	7.9	(0.8)	16.2	(1.1)	25.0	(1.1)	26.8	(1.4)	15.7	(1.0)	4.1	(0.6)	0.3	(0.2)
Slovenia	1.2	(0.1)	4.9	(0.4)	15.0	(0.7)	27.2	(0.8)	28.4	(0.9)	18.2	(0.6)	4.7	(0.5)	0.3	(0.1)
Spain	1.3	(0.2)	4.4	(0.4)	12.6	(0.5)	25.8	(0.8)	31.2	(0.7)	19.2	(0.6)	5.0	(0.3)	0.5	(0.1)
Sweden	2.9	(0.4)	6.0	(0.6)	13.9	(0.7)	23.5	(0.9)	27.3	(0.7)	18.6	(0.9)	6.7	(0.5)	1.2	(0.2)
Switzerland	0.5	(0.1)	2.9	(0.3)	10.3	(0.6)	21.9	(0.9)	31.5	(0.7)	23.8	(0.8)	8.2	(0.6)	1.0	(0.2)
Turkey	0.6	(0.2)	4.5	(0.6)	16.6	(1.1)	30.8	(1.4)	28.7	(1.3)	14.5	(1.4)	4.1	(0.8)	0.3	(0.1)
United Kingdom	1.5	(0.3)	4.0	(0.5)	11.2	(0.8)	23.5	(1.0)	29.9	(1.1)	21.3	(1.1)	7.5	(0.6)	1.3	(0.2)
United States	0.8	(0.2)	3.6	(0.5)	12.3	(0.9)	24.9	(1.0)	30.5	(0.9)	20.1	(1.1)	6.9	(0.6)	1.0	(0.2)
OECD total	1.1	(0.1)	4.4	(0.2)	13.1	(0.3)	24.2	(0.3)	28.4	(0.3)	20.2	(0.3)	7.4	(0.2)	1.2	(0.1)
OECD average	1.3	(0.1)	4.4	(0.1)	12.3	(0.1)	23.5	(0.2)	29.1	(0.2)	21.0	(0.2)	7.3	(0.1)	1.1	(0.0)
Partners																
Albania	12.0	(0.8)	15.9	(1.0)	24.4	(1.2)	24.7	(1.0)	15.9	(0.7)	5.9	(0.6)	1.1	(0.2)	0.1	(0.1)
Argentina	8.1	(0.8)	17.7	(1.2)	27.7	(1.3)	27.3	(1.1)	14.6	(0.9)	4.0	(0.6)	0.5	(0.2)	0.1	(0.0)
Brazil	4.0	(0.4)	14.8	(0.6)	30.4	(0.8)	30.1	(0.8)	15.8	(0.6)	4.4	(0.4)	0.5	(0.1)	0.0	(0.0)
Bulgaria	8.0	(1.1)	12.8	(1.2)	18.6	(1.1)	22.2	(1.2)	21.4	(1.1)	12.7	(1.0)	3.8	(0.6)	0.5	(0.2)
Colombia	5.0	(0.8)	15.4	(1.0)	31.0	(1.3)	30.5	(1.2)	14.5	(0.9)	3.2	(0.5)	0.3	(0.1)	0.0	c
Costa Rica	0.8	(0.2)	7.3	(1.0)	24.3	(1.2)	38.1	(1.4)	22.9	(1.4)	6.0	(0.8)	0.6	(0.2)	0.0	c
Croatia	0.7	(0.2)	4.0	(0.6)	13.9	(1.0)	27.8	(1.1)	31.2	(1.2)	17.8	(1.1)	4.2	(0.7)	0.2	(0.1)
Cyprus*	6.1	(0.3)	9.7	(0.4)	17.0	(0.6)	25.1	(0.8)	24.9	(0.7)	13.2	(0.6)	3.5	(0.3)	0.5	(0.1)
Hong Kong-China	0.2	(0.1)	1.3	(0.2)	5.3	(0.6)	14.3	(0.8)	29.2	(1.2)	32.9	(1.4)	14.9	(1.0)	1.9	(0.4)
Indonesia	4.1	(0.8)	16.3	(1.3)	34.8	(1.6)	31.6	(1.5)	11.5	(1.3)	1.5	(0.5)	0.1	(0.1)	0.0	c
Jordan	7.5	(0.8)	14.9	(0.8)	28.3	(1.0)	30.8	(1.1)	15.5	(0.8)	2.9	(0.6)	0.1	(0.1)	0.0	c
Kazakhstan	4.2	(0.5)	17.3	(1.2)	35.6	(1.1)	31.3	(1.1)	10.4	(0.9)	1.2	(0.2)	0.0	(0.0)	0.0	c
Latvia	0.7	(0.2)	3.7	(0.5)	12.6	(1.0)	26.7	(1.3)	33.1	(1.1)	19.1	(0.9)	3.9	(0.6)	0.3	(0.1)
Liechtenstein	0.0	c	1.9	(1.0)	10.5	(1.8)	22.4	(3.4)	28.6	(4.5)	25.7	(2.4)	10.4	(2.4)	0.6	c
Lithuania	1.0	(0.2)	4.6	(0.5)	15.6	(1.1)	28.1	(1.1)	31.1	(0.9)	16.3	(0.8)	3.1	(0.3)	0.2	(0.1)
Macao-China	0.3	(0.1)	2.1	(0.2)	9.0	(0.4)	23.3	(0.6)	34.3	(0.7)	24.0	(0.6)	6.4	(0.5)	0.6	(0.2)
Malaysia	5.8	(0.6)	16.4	(1.0)	30.5	(1.0)	31.0	(1.1)	13.6	(1.1)	2.5	(0.5)	0.1	(0.1)	0.0	c
Montenegro	4.4	(0.5)	13.2	(0.6)	25.7	(0.9)	29.2	(0.8)	19.9	(0.8)	6.6	(0.5)	0.9	(0.2)	0.0	(0.0)
Peru	9.8	(0.9)	20.6	(1.1)	29.5	(1.0)	24.9	(1.0)	11.4	(1.0)	3.3	(0.6)	0.5	(0.2)	0.0	c
Qatar	13.6	(0.3)	18.9	(0.5)	24.6	(0.4)	21.9	(0.5)	13.5	(0.4)	5.8	(0.2)	1.4	(0.1)	0.2	(0.1)
Romania	2.5	(0.4)	10.3	(0.8)	24.4	(1.3)	30.6	(1.1)	21.8	(1.2)	8.7	(0.9)	1.5	(0.4)	0.1	c
Russian Federation	1.1	(0.2)	5.2	(0.5)	16.0	(1.0)	29.5	(1.1)	28.3	(1.0)	15.3	(0.9)	4.2	(0.5)	0.5	(0.1)
Serbia	2.6	(0.4)	9.3	(0.7)	21.3	(1.1)	30.8	(1.2)	23.3	(1.1)	10.5	(0.8)	2.0	(0.4)	0.2	(0.1)
Shanghai-China	0.1	(0.1)	0.3	(0.1)	2.5	(0.3)	11.0	(0.9)	25.3	(0.8)	35.7	(1.1)	21.3	(1.0)	3.8	(0.7)
Singapore	0.5	(0.1)	1.9	(0.3)	7.5	(0.4)	16.7	(0.7)	25.4	(0.7)	26.8	(0.8)	16.2	(0.7)	5.0	(0.4)
Chinese Taipei	0.6	(0.1)	2.5	(0.3)	8.4	(0.7)	18.1	(0.8)	29.9	(0.9)	28.7	(1.0)	10.4	(0.7)	1.4	(0.3)
Thailand	1.2	(0.3)	7.7	(0.8)	24.1	(1.0)	36.0	(1.1)	23.5	(1.1)	6.7	(0.8)	0.8	(0.2)	0.1	(0.0)
Tunisia	6.2	(0.9)	15.5	(1.2)	27.6	(1.3)	31.4	(1.4)	15.6	(1.1)	3.5	(0.7)	0.2	(0.1)	0.0	c
United Arab Emirates	3.3	(0.3)	10.4	(0.6)	21.8	(0.7)	28.6	(0.7)	24.0	(0.8)	9.7	(0.6)	2.1	(0.3)	0.2	(0.1)
Uruguay	6.4	(0.7)	14.7	(0.8)	25.9	(0.9)	28.9	(1.0)	17.4	(0.7)	5.7	(0.6)	0.9	(0.3)	0.0	c
Viet Nam	0.1	(0.1)	1.5	(0.5)	7.8	(1.1)	23.7	(1.4)	39.0	(1.5)	23.4	(1.5)	4.2	(0.7)	0.4	(0.2)

Source: OECD, *PISA 2012 Database*, Table 1.4.1a.
*See notes at the beginning of this Annex.
StatLink http://dx.doi.org/10.1787/888932935724

Table 2 PISA 2012 – Mean score, variation and gender differences in student performance in reading

		All students				Gender differences						Percentiles											
		Mean score		Standard deviation		Boys		Girls		Difference (B – G)		5th		10th		25th		75th		90th		95th	
		Mean	S.E.	S.D.	S.E.	Mean score	S.E.	Mean score	S.E.	Score dif.	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.
OECD	Australia	512	(1.6)	97	(1.0)	495	(2.3)	530	(2.0)	**-34**	(2.9)	347	(3.0)	386	(2.4)	448	(2.2)	579	(1.9)	634	(2.3)	664	(3.1)
	Austria	490	(2.8)	92	(1.8)	471	(4.0)	508	(3.4)	**-37**	(5.0)	329	(6.3)	365	(5.1)	427	(3.9)	557	(3.0)	603	(2.5)	629	(3.7)
	Belgium	509	(2.3)	102	(1.7)	493	(3.0)	525	(2.7)	**-32**	(3.5)	326	(6.3)	373	(4.3)	444	(3.2)	583	(2.2)	633	(2.3)	660	(2.5)
	Canada	523	(1.9)	92	(0.9)	506	(2.3)	541	(2.1)	**-35**	(2.1)	363	(3.4)	403	(2.8)	464	(2.2)	587	(2.2)	638	(2.6)	667	(2.7)
	Chile	441	(2.9)	78	(1.4)	430	(3.8)	452	(2.9)	**-23**	(3.3)	310	(4.6)	339	(4.2)	388	(3.8)	496	(3.3)	541	(3.3)	567	(3.4)
	Czech Republic	493	(2.9)	89	(1.9)	474	(3.3)	513	(3.4)	**-39**	(3.7)	344	(6.0)	378	(4.7)	434	(3.7)	554	(3.6)	604	(3.8)	634	(4.3)
	Denmark	496	(2.6)	86	(2.2)	481	(3.3)	512	(2.6)	**-31**	(2.8)	347	(6.9)	385	(5.1)	442	(3.5)	555	(2.4)	602	(2.8)	629	(4.4)
	Estonia	516	(2.0)	80	(1.2)	494	(2.4)	538	(2.3)	**-44**	(2.4)	381	(4.4)	412	(3.4)	463	(3.0)	571	(2.4)	618	(2.8)	645	(4.3)
	Finland	524	(2.4)	95	(1.3)	494	(3.1)	556	(2.4)	**-62**	(3.1)	360	(5.7)	399	(4.3)	463	(3.5)	590	(2.3)	639	(2.5)	669	(3.5)
	France	505	(2.8)	109	(2.3)	483	(3.8)	527	(3.0)	**-44**	(4.2)	312	(7.7)	358	(5.4)	435	(4.3)	584	(3.6)	639	(3.9)	669	(5.0)
	Germany	508	(2.8)	91	(1.7)	486	(2.9)	530	(3.1)	**-44**	(2.5)	346	(5.2)	384	(4.8)	447	(3.6)	574	(3.1)	621	(3.2)	646	(3.3)
	Greece	477	(3.3)	99	(2.1)	452	(4.1)	502	(3.1)	**-50**	(3.7)	302	(8.8)	346	(6.0)	416	(4.5)	545	(3.4)	597	(3.9)	626	(4.5)
	Hungary	488	(3.2)	92	(1.9)	468	(3.9)	508	(3.3)	**-40**	(3.6)	327	(6.0)	363	(5.2)	427	(4.6)	555	(3.3)	603	(3.9)	630	(4.7)
	Iceland	483	(1.8)	98	(1.4)	457	(2.4)	508	(2.5)	**-51**	(3.3)	308	(5.7)	352	(4.1)	422	(2.9)	551	(2.9)	602	(2.4)	631	(3.2)
	Ireland	523	(2.6)	86	(1.7)	509	(3.5)	538	(3.0)	**-29**	(4.2)	373	(7.1)	410	(5.7)	469	(3.6)	582	(2.7)	631	(3.2)	659	(3.2)
	Israel	486	(5.0)	114	(2.5)	463	(8.2)	507	(3.9)	**-44**	(7.9)	282	(9.5)	329	(7.5)	414	(6.8)	568	(4.5)	624	(4.5)	656	(4.8)
	Italy	490	(2.0)	97	(0.9)	471	(2.5)	510	(2.3)	**-39**	(2.6)	317	(3.5)	359	(2.9)	427	(2.6)	559	(2.1)	609	(2.2)	636	(2.1)
	Japan	538	(3.7)	99	(2.3)	527	(4.7)	551	(3.6)	**-24**	(4.1)	364	(7.7)	409	(6.5)	475	(4.8)	607	(3.8)	658	(4.4)	689	(5.1)
	Korea	536	(3.9)	87	(2.0)	525	(5.0)	548	(4.5)	**-23**	(5.4)	382	(8.6)	424	(6.2)	483	(4.3)	596	(4.1)	640	(4.0)	665	(4.8)
	Luxembourg	488	(1.5)	105	(1.0)	473	(1.9)	503	(1.8)	**-30**	(2.0)	304	(3.8)	347	(2.7)	418	(2.4)	564	(2.2)	620	(2.3)	651	(2.4)
	Mexico	424	(1.5)	80	(1.0)	411	(1.7)	435	(1.6)	**-24**	(1.4)	288	(3.0)	319	(2.5)	370	(1.9)	479	(1.8)	525	(1.9)	552	(2.0)
	Netherlands	511	(3.5)	93	(3.0)	498	(4.0)	525	(3.5)	**-26**	(3.1)	349	(8.3)	386	(6.6)	451	(5.1)	579	(3.7)	625	(3.6)	650	(3.8)
	New Zealand	512	(2.4)	106	(1.6)	495	(3.3)	530	(3.5)	**-34**	(5.0)	332	(4.7)	374	(4.9)	443	(3.2)	586	(3.1)	645	(4.0)	679	(4.9)
	Norway	504	(3.2)	100	(1.9)	481	(3.3)	528	(3.9)	**-46**	(3.3)	330	(8.1)	375	(4.8)	442	(4.0)	573	(3.4)	627	(3.9)	658	(4.2)
	Poland	518	(3.1)	87	(1.6)	497	(3.7)	539	(3.1)	**-42**	(2.9)	366	(5.9)	404	(4.6)	461	(3.2)	579	(3.6)	626	(4.8)	655	(6.2)
	Portugal	488	(3.8)	94	(1.9)	468	(4.2)	508	(3.7)	**-39**	(2.7)	320	(6.9)	362	(6.0)	429	(4.9)	554	(3.5)	604	(3.5)	631	(3.8)
	Slovak Republic	463	(4.2)	104	(3.3)	444	(4.6)	483	(5.1)	**-39**	(4.6)	274	(10.4)	321	(8.4)	396	(6.8)	538	(4.1)	591	(5.2)	620	(5.5)
	Slovenia	481	(1.2)	92	(0.9)	454	(1.7)	510	(1.8)	**-56**	(2.7)	324	(2.9)	362	(2.5)	420	(1.9)	548	(2.1)	598	(2.5)	626	(3.7)
	Spain	488	(1.9)	92	(1.1)	474	(2.3)	503	(1.9)	**-29**	(2.0)	327	(4.6)	367	(3.6)	430	(2.6)	552	(2.1)	601	(2.3)	630	(2.1)
	Sweden	483	(3.0)	107	(1.8)	458	(4.0)	509	(2.8)	**-51**	(3.6)	297	(6.5)	343	(5.4)	416	(4.3)	558	(3.3)	614	(4.2)	647	(4.2)
	Switzerland	509	(2.6)	90	(1.1)	491	(3.1)	527	(2.5)	**-36**	(2.6)	352	(4.6)	388	(3.9)	451	(3.3)	573	(2.8)	622	(3.2)	648	(3.9)
	Turkey	475	(4.2)	86	(2.4)	453	(4.6)	499	(4.3)	**-46**	(4.0)	335	(5.3)	365	(4.6)	417	(4.0)	534	(5.6)	588	(6.8)	620	(7.9)
	United Kingdom	499	(3.5)	97	(2.3)	487	(4.5)	512	(3.8)	**-25**	(4.6)	330	(7.4)	372	(7.0)	438	(4.8)	567	(3.4)	619	(3.8)	650	(4.3)
	United States	498	(3.7)	92	(1.6)	482	(4.1)	513	(3.8)	**-31**	(2.6)	342	(7.2)	378	(4.8)	436	(4.5)	561	(3.9)	614	(4.0)	646	(4.7)
	OECD total	495	(1.1)	97	(0.5)	479	(1.3)	511	(1.2)	**-32**	(0.9)	329	(1.9)	367	(1.5)	430	(1.4)	563	(1.3)	618	(1.2)	649	(1.5)
	OECD average	496	(0.5)	94	(0.3)	478	(0.6)	515	(0.5)	**-38**	(0.6)	332	(1.1)	372	(0.9)	435	(0.7)	563	(0.5)	613	(0.6)	642	(0.7)
Partners	Albania	394	(3.2)	116	(2.0)	387	(3.8)	401	(3.7)	**-15**	(4.0)	189	(9.0)	247	(7.2)	325	(4.8)	473	(3.2)	536	(3.4)	572	(4.3)
	Argentina	396	(3.7)	96	(2.3)	377	(4.5)	414	(3.6)	**-38**	(3.6)	233	(7.6)	274	(5.4)	332	(4.5)	462	(4.1)	516	(4.4)	549	(5.1)
	Brazil	410	(2.1)	85	(1.2)	394	(2.4)	425	(2.2)	**-31**	(1.9)	271	(3.1)	302	(2.8)	353	(2.4)	468	(2.7)	520	(3.0)	552	(3.6)
	Bulgaria	436	(6.0)	119	(2.8)	403	(6.3)	472	(5.6)	**-70**	(5.2)	233	(9.2)	275	(8.0)	353	(8.2)	523	(6.0)	585	(6.1)	619	(6.3)
	Colombia	403	(3.4)	84	(1.9)	394	(3.9)	412	(3.8)	**-19**	(3.5)	262	(6.5)	295	(5.4)	348	(4.0)	460	(3.7)	509	(4.5)	540	(5.0)
	Costa Rica	441	(3.5)	74	(1.6)	427	(3.9)	452	(3.5)	**-25**	(2.6)	315	(5.4)	344	(5.4)	391	(4.3)	490	(4.2)	536	(5.0)	563	(4.9)
	Croatia	485	(3.3)	86	(2.1)	461	(4.1)	509	(3.3)	**-48**	(4.0)	337	(5.9)	370	(5.1)	427	(4.4)	546	(3.8)	593	(4.9)	622	(5.1)
	Cyprus*	449	(1.2)	111	(1.3)	418	(1.9)	481	(1.9)	**-64**	(3.0)	249	(4.0)	297	(3.3)	378	(2.4)	528	(2.1)	583	(2.6)	616	(3.3)
	Hong Kong-China	545	(2.8)	85	(1.8)	533	(3.8)	558	(3.3)	**-25**	(4.7)	391	(6.4)	430	(5.4)	493	(4.4)	604	(3.0)	648	(3.4)	672	(4.1)
	Indonesia	396	(4.2)	75	(2.7)	382	(4.8)	410	(4.3)	**-28**	(3.4)	270	(7.8)	299	(6.1)	346	(4.7)	447	(4.6)	492	(6.1)	517	(7.3)
	Jordan	399	(3.6)	91	(2.5)	361	(5.5)	436	(3.1)	**-75**	(6.3)	237	(8.4)	280	(6.4)	343	(4.5)	462	(3.2)	510	(4.6)	537	(6.4)
	Kazakhstan	393	(2.7)	74	(1.4)	374	(3.4)	411	(2.6)	**-37**	(2.9)	268	(4.0)	297	(4.4)	344	(3.1)	444	(3.4)	487	(3.5)	511	(4.1)
	Latvia	489	(2.4)	85	(1.7)	462	(3.3)	516	(2.7)	**-55**	(4.0)	341	(5.9)	375	(5.6)	434	(3.0)	548	(2.9)	593	(2.8)	619	(4.1)
	Liechtenstein	516	(4.1)	88	(4.2)	504	(6.2)	529	(5.8)	**-24**	(8.7)	360	(9.7)	391	(9.5)	452	(7.8)	584	(6.9)	630	(10.6)	649	(13.7)
	Lithuania	477	(2.5)	86	(1.5)	450	(2.8)	505	(2.6)	**-55**	(2.3)	331	(5.1)	363	(4.0)	419	(3.9)	538	(2.8)	585	(3.1)	612	(3.6)
	Macao-China	509	(0.9)	82	(0.7)	492	(1.4)	527	(1.1)	**-36**	(1.7)	366	(3.3)	400	(2.4)	457	(1.8)	566	(1.4)	611	(1.6)	637	(2.1)
	Malaysia	398	(3.3)	84	(1.5)	377	(3.9)	418	(3.3)	**-40**	(3.1)	255	(4.7)	288	(4.4)	343	(3.7)	457	(3.9)	503	(4.3)	530	(5.2)
	Montenegro	422	(1.2)	92	(1.3)	391	(2.3)	453	(1.5)	**-62**	(3.1)	267	(4.8)	301	(3.0)	360	(2.5)	487	(1.8)	540	(3.4)	571	(4.1)
	Peru	384	(4.3)	94	(2.3)	373	(4.0)	395	(5.4)	**-22**	(4.3)	231	(5.2)	263	(5.1)	319	(4.7)	447	(5.2)	504	(6.4)	540	(8.5)
	Qatar	388	(0.8)	113	(0.8)	354	(1.1)	424	(1.2)	**-70**	(1.6)	203	(2.4)	242	(2.0)	310	(1.7)	465	(1.9)	535	(2.3)	575	(2.3)
	Romania	438	(4.0)	90	(2.0)	417	(4.5)	457	(4.2)	**-40**	(4.1)	290	(5.3)	322	(4.4)	375	(4.4)	501	(5.5)	555	(5.3)	586	(6.3)
	Russian Federation	475	(3.0)	91	(1.5)	455	(3.5)	495	(3.2)	**-40**	(3.0)	323	(4.8)	359	(4.5)	415	(4.0)	537	(3.9)	592	(4.2)	623	(5.1)
	Serbia	446	(3.4)	93	(2.0)	423	(3.9)	469	(3.8)	**-46**	(3.8)	290	(6.0)	325	(5.5)	384	(4.4)	509	(4.1)	566	(4.6)	596	(5.6)
	Shanghai-China	570	(2.9)	80	(1.8)	557	(3.3)	581	(2.8)	**-24**	(2.5)	431	(5.1)	463	(4.6)	518	(3.6)	626	(2.8)	667	(3.5)	690	(4.7)
	Singapore	542	(1.4)	101	(1.2)	527	(1.9)	559	(1.9)	**-32**	(2.6)	369	(3.6)	408	(2.9)	475	(2.1)	614	(2.1)	668	(3.2)	698	(3.7)
	Chinese Taipei	523	(3.0)	91	(1.8)	507	(4.3)	539	(4.3)	**-32**	(6.4)	361	(5.5)	399	(5.2)	467	(4.4)	587	(2.8)	633	(3.6)	659	(4.7)
	Thailand	441	(3.1)	78	(1.8)	410	(3.6)	465	(3.3)	**-55**	(3.2)	310	(5.0)	341	(4.4)	389	(3.5)	494	(3.7)	541	(4.4)	569	(6.2)
	Tunisia	404	(4.5)	88	(2.5)	388	(5.0)	418	(4.4)	**-31**	(3.1)	252	(7.2)	286	(7.1)	346	(5.9)	466	(4.5)	515	(5.6)	543	(6.5)
	United Arab Emirates	442	(2.5)	95	(1.1)	413	(3.9)	469	(3.2)	**-55**	(4.8)	281	(3.9)	316	(3.7)	376	(3.1)	508	(2.8)	562	(3.1)	595	(3.4)
	Uruguay	411	(3.2)	96	(2.0)	392	(3.9)	428	(3.2)	**-35**	(3.5)	248	(5.8)	285	(5.3)	348	(4.3)	477	(3.0)	534	(4.1)	564	(5.5)
	Viet Nam	508	(4.4)	74	(2.6)	492	(5.0)	523	(4.0)	**-31**	(2.6)	379	(9.6)	411	(8.2)	462	(5.4)	559	(3.9)	599	(5.0)	623	(5.3)

Source: OECD, *PISA 2012 Database*, Table 1.4.3a.
Note: Values that are statistically significant are indicated in bold.
*See notes at the beginning of this Annex.
StatLink http://dx.doi.org/10.1787/888932935724

Table 3 PISA 2012 – Percentage of students at each proficiency level in mathematics

	All students													
	Below Level 1 (below 357.77 score points)		Level 1 (from 357.77 to less than 420.07 score points)		Level 2 (from 420.07 to less than 482.38 score points)		Level 3 (from 482.38 to less than 544.68 score points)		Level 4 (from 544.68 to less than 606.99 score points)		Level 5 (from 606.99 to less than 669.30 score points)		Level 6 (above 669.30 score points)	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
OECD														
Australia	6.1	(0.4)	13.5	(0.6)	21.9	(0.8)	24.6	(0.6)	19.0	(0.5)	10.5	(0.4)	4.3	(0.4)
Austria	5.7	(0.6)	13.0	(0.7)	21.9	(0.9)	24.2	(0.8)	21.0	(0.9)	11.0	(0.7)	3.3	(0.4)
Belgium	7.0	(0.6)	12.0	(0.5)	18.4	(0.6)	22.4	(0.7)	20.6	(0.6)	13.4	(0.7)	6.1	(0.4)
Canada	3.6	(0.3)	10.2	(0.4)	21.0	(0.6)	26.4	(0.6)	22.4	(0.5)	12.1	(0.5)	4.3	(0.3)
Chile	22.0	(1.4)	29.5	(1.0)	25.3	(1.0)	15.4	(0.8)	6.2	(0.6)	1.5	(0.2)	0.1	(0.0)
Czech Republic	6.8	(0.8)	14.2	(1.0)	21.7	(0.8)	24.8	(1.1)	19.7	(0.9)	9.6	(0.7)	3.2	(0.3)
Denmark	4.4	(0.5)	12.5	(0.7)	24.4	(1.0)	29.0	(1.0)	19.8	(0.7)	8.3	(0.6)	1.7	(0.3)
Estonia	2.0	(0.3)	8.6	(0.6)	22.0	(0.8)	29.4	(0.8)	23.4	(0.9)	11.0	(0.7)	3.6	(0.4)
Finland	3.3	(0.4)	8.9	(0.5)	20.5	(0.7)	28.8	(0.8)	23.2	(0.8)	11.7	(0.6)	3.5	(0.3)
France	8.7	(0.7)	13.6	(0.8)	22.1	(1.0)	23.8	(0.8)	18.9	(0.8)	9.8	(0.5)	3.1	(0.4)
Germany	5.5	(0.7)	12.2	(0.8)	19.4	(0.8)	23.7	(0.8)	21.7	(0.7)	12.8	(0.7)	4.7	(0.5)
Greece	14.5	(0.9)	21.2	(0.8)	27.2	(1.0)	22.1	(0.9)	11.2	(0.8)	3.3	(0.4)	0.6	(0.1)
Hungary	9.9	(0.8)	18.2	(1.0)	25.3	(1.2)	23.0	(1.0)	14.4	(0.9)	7.1	(0.7)	2.1	(0.5)
Iceland	7.5	(0.5)	14.0	(0.8)	23.6	(0.9)	25.7	(0.9)	18.1	(0.8)	8.9	(0.6)	2.3	(0.4)
Ireland	4.8	(0.5)	12.1	(0.7)	23.9	(0.7)	28.2	(0.9)	20.3	(0.8)	8.5	(0.5)	2.2	(0.2)
Israel	15.9	(1.2)	17.6	(0.9)	21.6	(0.9)	21.0	(0.9)	14.6	(0.9)	7.2	(0.7)	2.2	(0.4)
Italy	8.5	(0.4)	16.1	(0.5)	24.1	(0.5)	24.6	(0.6)	16.7	(0.5)	7.8	(0.4)	2.2	(0.2)
Japan	3.2	(0.5)	7.9	(0.7)	16.9	(0.8)	24.7	(1.0)	23.7	(0.9)	16.0	(0.9)	7.6	(0.8)
Korea	2.7	(0.5)	6.4	(0.6)	14.7	(0.8)	21.4	(1.0)	23.9	(1.2)	18.8	(0.9)	12.1	(1.3)
Luxembourg	8.8	(0.5)	15.5	(0.5)	22.3	(0.7)	23.6	(0.7)	18.5	(0.6)	8.6	(0.4)	2.6	(0.2)
Mexico	22.8	(0.7)	31.9	(0.6)	27.8	(0.5)	13.1	(0.4)	3.7	(0.2)	0.6	(0.1)	0.0	(0.0)
Netherlands	3.8	(0.6)	11.0	(0.9)	17.9	(1.1)	24.2	(1.2)	23.8	(1.1)	14.9	(1.0)	4.4	(0.6)
New Zealand	7.5	(0.6)	15.1	(0.7)	21.6	(0.8)	22.7	(0.8)	18.1	(0.8)	10.5	(0.7)	4.5	(0.4)
Norway	7.2	(0.8)	15.1	(0.9)	24.3	(0.8)	25.7	(1.0)	18.3	(1.0)	7.3	(0.6)	2.1	(0.3)
Poland	3.3	(0.4)	11.1	(0.8)	22.1	(0.9)	25.5	(0.9)	21.3	(1.1)	11.7	(0.8)	5.0	(0.8)
Portugal	8.9	(0.8)	16.0	(1.0)	22.8	(0.9)	24.0	(0.8)	17.7	(0.9)	8.5	(0.7)	2.1	(0.3)
Slovak Republic	11.1	(1.0)	16.4	(0.9)	23.1	(1.1)	22.1	(1.1)	16.4	(1.1)	7.8	(0.6)	3.1	(0.5)
Slovenia	5.1	(0.5)	15.0	(0.7)	23.6	(0.9)	23.9	(1.0)	18.7	(0.8)	10.3	(0.6)	3.4	(0.4)
Spain	7.8	(0.5)	15.8	(0.6)	24.9	(0.6)	26.0	(0.6)	17.6	(0.6)	6.7	(0.4)	1.3	(0.2)
Sweden	9.5	(0.7)	17.5	(0.8)	24.7	(0.9)	23.9	(0.8)	16.3	(0.7)	6.5	(0.5)	1.6	(0.3)
Switzerland	3.6	(0.3)	8.9	(0.6)	17.8	(1.1)	24.5	(1.0)	23.9	(0.8)	14.6	(0.8)	6.8	(0.7)
Turkey	15.5	(1.1)	26.5	(1.3)	25.5	(1.2)	16.5	(1.0)	10.1	(1.1)	4.7	(0.8)	1.2	(0.5)
United Kingdom	7.8	(0.8)	14.0	(0.8)	23.2	(0.8)	24.8	(0.8)	18.4	(0.8)	9.0	(0.6)	2.9	(0.4)
United States	8.0	(0.7)	17.9	(1.0)	26.3	(0.8)	23.3	(0.9)	15.8	(0.9)	6.6	(0.6)	2.2	(0.3)
OECD total	9.1	(0.2)	16.9	(0.3)	23.3	(0.3)	22.2	(0.3)	16.5	(0.3)	8.6	(0.2)	3.3	(0.1)
OECD average	8.0	(0.1)	15.0	(0.1)	22.5	(0.1)	23.7	(0.2)	18.1	(0.1)	9.3	(0.1)	3.3	(0.1)
Partners														
Albania	32.5	(1.0)	28.1	(1.0)	22.9	(0.9)	12.0	(0.9)	3.6	(0.3)	0.8	(0.2)	0.0	(0.0)
Argentina	34.9	(1.9)	31.6	(1.2)	22.2	(1.4)	9.2	(0.9)	1.8	(0.4)	0.3	(0.1)	0.0	c
Brazil	35.2	(0.9)	31.9	(0.7)	20.4	(0.7)	8.9	(0.5)	2.9	(0.3)	0.7	(0.2)	0.0	(0.0)
Bulgaria	20.0	(1.5)	23.8	(0.9)	24.4	(1.1)	17.9	(0.9)	9.9	(0.8)	3.4	(0.5)	0.7	(0.2)
Colombia	41.6	(1.7)	32.2	(1.0)	17.8	(0.9)	6.4	(0.6)	1.6	(0.3)	0.3	(0.1)	0.0	(0.0)
Costa Rica	23.6	(1.7)	36.2	(1.2)	26.8	(1.3)	10.1	(1.0)	2.6	(0.5)	0.5	(0.2)	0.1	(0.1)
Croatia	9.5	(0.7)	20.4	(1.0)	26.7	(0.9)	22.9	(1.1)	13.5	(0.8)	5.4	(0.8)	1.6	(0.5)
Cyprus*	19.0	(0.6)	23.0	(0.7)	25.5	(0.6)	19.2	(0.6)	9.6	(0.4)	3.1	(0.2)	0.6	(0.2)
Hong Kong-China	2.6	(0.4)	5.9	(0.6)	12.0	(0.8)	19.7	(1.0)	26.1	(1.1)	21.4	(1.0)	12.3	(0.9)
Indonesia	42.3	(2.1)	33.4	(1.6)	16.8	(1.1)	5.7	(0.9)	1.5	(0.5)	0.3	(0.2)	0.0	c
Jordan	36.5	(1.6)	32.1	(0.9)	21.0	(1.0)	8.1	(0.6)	1.8	(0.3)	0.5	(0.3)	0.1	(0.1)
Kazakhstan	14.5	(0.9)	30.7	(1.4)	31.5	(0.9)	16.9	(1.1)	5.4	(0.8)	0.9	(0.3)	0.1	(0.0)
Latvia	4.8	(0.5)	15.1	(1.0)	26.6	(1.3)	27.8	(0.9)	17.6	(0.9)	6.5	(0.6)	1.5	(0.3)
Liechtenstein	3.5	(1.3)	10.6	(1.8)	15.2	(2.5)	22.7	(2.8)	23.2	(3.0)	17.4	(3.2)	7.4	(1.9)
Lithuania	8.7	(0.7)	17.3	(0.9)	25.9	(0.8)	24.6	(1.0)	15.4	(0.7)	6.6	(0.5)	1.4	(0.2)
Macao-China	3.2	(0.3)	7.6	(0.5)	16.4	(0.7)	24.0	(0.7)	24.4	(0.9)	16.8	(0.6)	7.6	(0.3)
Malaysia	23.0	(1.2)	28.8	(1.1)	26.0	(0.9)	14.9	(0.9)	6.0	(0.7)	1.2	(0.3)	0.1	(0.1)
Montenegro	27.5	(0.6)	29.1	(1.1)	24.2	(1.1)	13.1	(0.7)	4.9	(0.5)	0.9	(0.2)	0.1	(0.1)
Peru	47.0	(1.8)	27.6	(0.9)	16.1	(1.0)	6.7	(0.7)	2.1	(0.4)	0.5	(0.2)	0.0	(0.0)
Qatar	47.0	(0.4)	22.6	(0.5)	15.2	(0.4)	8.8	(0.3)	4.5	(0.3)	1.7	(0.2)	0.3	(0.1)
Romania	14.0	(1.2)	26.8	(1.2)	28.3	(1.1)	19.2	(1.1)	8.4	(0.8)	2.6	(0.4)	0.6	(0.3)
Russian Federation	7.5	(0.7)	16.5	(0.8)	26.6	(1.0)	26.0	(1.0)	15.7	(0.8)	6.3	(0.6)	1.5	(0.3)
Serbia	15.5	(1.2)	23.4	(0.9)	26.5	(1.1)	19.5	(1.0)	10.5	(0.7)	3.5	(0.5)	1.1	(0.3)
Shanghai-China	0.8	(0.2)	2.9	(0.5)	7.5	(0.6)	13.1	(0.8)	20.2	(0.8)	24.6	(1.0)	30.8	(1.2)
Singapore	2.2	(0.2)	6.1	(0.4)	12.2	(0.7)	17.5	(0.7)	22.0	(0.6)	21.0	(0.6)	19.0	(0.5)
Chinese Taipei	4.5	(0.5)	8.3	(0.6)	13.1	(0.6)	17.1	(0.6)	19.7	(0.8)	19.2	(0.9)	18.0	(1.0)
Thailand	19.1	(1.1)	30.6	(1.2)	27.3	(1.0)	14.5	(1.2)	5.8	(0.7)	2.0	(0.4)	0.5	(0.2)
Tunisia	36.5	(1.9)	31.3	(1.1)	21.1	(1.2)	8.0	(0.8)	2.3	(0.7)	0.7	(0.3)	0.1	(0.1)
United Arab Emirates	20.5	(0.9)	25.8	(0.8)	24.9	(0.7)	16.9	(0.6)	8.5	(0.5)	2.9	(0.3)	0.5	(0.1)
Uruguay	29.2	(1.2)	26.5	(0.8)	23.0	(0.9)	14.4	(0.9)	5.4	(0.6)	1.3	(0.3)	0.1	(0.1)
Viet Nam	3.6	(0.8)	10.6	(1.3)	22.8	(1.3)	28.4	(1.5)	21.3	(1.2)	9.8	(1.0)	3.5	(0.7)

Source: OECD, *PISA 2012 Database*, Table I.2.1a.
*See notes at the beginning of this Annex.
StatLink http://dx.doi.org/10.1787/888932935724

Table 4 PISA 2012 – Mean score, variation and gender differences in student performance in mathematics

		All students				Gender differences						Percentiles											
		Mean score		Standard deviation		Boys		Girls		Difference (B – G)		5th		10th		25th		75th		90th		95th	
		Mean	S.E.	S.D.	S.E.	Mean score	S.E.	Mean score	S.E.	Score dif.	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.
OECD	Australia	504	(1.6)	96	(1.2)	510	(2.4)	498	(2.0)	**12**	(3.1)	348	(2.9)	382	(2.3)	437	(2.0)	571	(2.3)	630	(3.0)	663	(3.4)
	Austria	506	(2.7)	92	(1.7)	517	(3.9)	494	(3.3)	**22**	(4.9)	353	(4.1)	384	(3.9)	440	(3.2)	572	(3.5)	624	(3.8)	654	(4.3)
	Belgium	515	(2.1)	102	(1.4)	520	(2.9)	509	(2.6)	**11**	(3.4)	342	(4.5)	378	(3.9)	443	(3.4)	589	(2.8)	646	(2.5)	677	(3.0)
	Canada	518	(1.8)	89	(0.8)	523	(2.1)	513	(2.1)	**10**	(2.0)	370	(2.8)	402	(2.4)	457	(2.1)	580	(2.3)	633	(2.3)	663	(2.7)
	Chile	423	(3.1)	81	(1.5)	436	(3.8)	411	(3.1)	**25**	(3.6)	299	(4.1)	323	(3.7)	365	(3.5)	476	(4.2)	532	(4.2)	563	(4.1)
	Czech Republic	499	(2.9)	95	(1.6)	505	(3.7)	493	(3.6)	**12**	(4.6)	344	(6.4)	377	(4.9)	432	(3.9)	566	(3.3)	621	(3.6)	653	(4.0)
	Denmark	500	(2.3)	82	(1.3)	507	(2.9)	493	(2.3)	**14**	(2.3)	363	(4.6)	393	(4.0)	444	(3.3)	556	(2.7)	607	(3.1)	635	(4.2)
	Estonia	521	(2.0)	81	(1.2)	523	(2.6)	518	(2.2)	**5**	(2.6)	389	(3.5)	417	(3.0)	465	(2.7)	576	(2.7)	626	(3.2)	657	(4.1)
	Finland	519	(1.9)	85	(1.2)	517	(2.6)	520	(2.2)	-3	(2.9)	376	(4.5)	409	(3.3)	463	(2.5)	577	(2.4)	629	(3.1)	657	(3.2)
	France	495	(2.5)	97	(1.7)	499	(3.4)	491	(2.5)	**9**	(3.4)	330	(5.0)	365	(4.7)	429	(2.7)	565	(3.4)	621	(3.5)	652	(3.7)
	Germany	514	(2.9)	96	(1.6)	520	(3.0)	507	(3.4)	**14**	(2.8)	353	(5.4)	385	(4.7)	447	(3.6)	583	(3.6)	637	(3.8)	667	(4.1)
	Greece	453	(2.5)	88	(1.3)	457	(3.3)	449	(2.6)	**8**	(3.2)	308	(4.6)	338	(3.8)	393	(3.6)	513	(2.8)	567	(3.1)	597	(3.7)
	Hungary	477	(3.2)	94	(2.4)	482	(3.7)	473	(3.6)	**9**	(3.7)	327	(4.6)	358	(4.2)	411	(3.3)	540	(4.8)	603	(6.4)	637	(7.9)
	Iceland	493	(1.7)	92	(1.3)	490	(2.3)	496	(2.3)	**-6**	(3.0)	339	(4.1)	372	(2.8)	431	(2.6)	557	(3.0)	612	(3.3)	641	(3.7)
	Ireland	501	(2.2)	85	(1.3)	509	(3.3)	494	(2.6)	**15**	(3.8)	359	(5.0)	391	(3.6)	445	(3.2)	559	(2.4)	610	(2.5)	640	(3.2)
	Israel	466	(4.7)	105	(1.8)	472	(7.8)	461	(3.5)	12	(7.6)	292	(7.3)	328	(5.7)	393	(5.1)	541	(5.3)	603	(6.0)	639	(6.1)
	Italy	485	(2.0)	93	(1.1)	494	(2.4)	476	(2.2)	**18**	(2.5)	333	(2.6)	366	(2.2)	421	(2.3)	550	(2.7)	607	(3.0)	639	(3.4)
	Japan	536	(3.6)	94	(2.2)	545	(4.6)	527	(3.6)	**18**	(4.3)	377	(6.1)	415	(5.1)	473	(4.2)	603	(4.4)	657	(5.1)	686	(5.5)
	Korea	554	(4.6)	99	(2.1)	562	(5.8)	544	(5.1)	**18**	(6.2)	386	(7.4)	425	(5.8)	486	(4.8)	624	(5.1)	679	(6.0)	710	(7.5)
	Luxembourg	490	(1.1)	95	(0.9)	502	(1.5)	477	(1.4)	**25**	(2.0)	334	(3.3)	363	(3.0)	422	(1.5)	558	(1.6)	613	(2.2)	644	(2.3)
	Mexico	413	(1.4)	74	(0.7)	420	(1.6)	406	(1.4)	**14**	(1.2)	295	(1.8)	320	(1.9)	362	(1.6)	462	(1.7)	510	(2.0)	539	(2.1)
	Netherlands	523	(3.5)	92	(2.1)	528	(3.6)	518	(3.9)	**10**	(2.8)	367	(4.8)	397	(5.5)	457	(5.1)	591	(4.3)	638	(3.7)	665	(4.0)
	New Zealand	500	(2.2)	100	(1.2)	507	(3.2)	492	(2.9)	**15**	(4.3)	340	(4.9)	371	(3.6)	428	(3.2)	570	(2.8)	632	(3.0)	665	(4.4)
	Norway	489	(2.7)	90	(1.3)	490	(2.8)	488	(3.4)	2	(3.0)	341	(5.1)	373	(3.9)	428	(2.9)	552	(3.3)	604	(3.4)	638	(5.1)
	Poland	518	(3.6)	90	(1.9)	520	(4.3)	516	(3.8)	4	(3.4)	373	(3.9)	402	(2.8)	454	(3.3)	580	(4.9)	636	(6.0)	669	(7.1)
	Portugal	487	(3.8)	94	(1.4)	493	(4.1)	481	(3.9)	**11**	(2.5)	333	(4.5)	363	(4.2)	421	(5.0)	554	(4.3)	610	(3.9)	640	(4.1)
	Slovak Republic	482	(3.4)	101	(2.5)	486	(4.1)	477	(4.1)	**9**	(4.5)	314	(6.7)	352	(6.2)	413	(4.2)	553	(4.7)	613	(5.3)	647	(6.7)
	Slovenia	501	(1.2)	92	(1.0)	503	(2.0)	499	(2.0)	3	(3.1)	357	(3.9)	384	(2.5)	434	(2.0)	566	(2.1)	624	(2.9)	655	(4.3)
	Spain	484	(1.9)	88	(0.7)	492	(2.4)	476	(2.0)	**16**	(2.2)	339	(3.6)	370	(3.1)	424	(2.6)	546	(2.1)	597	(2.4)	626	(2.0)
	Sweden	478	(2.3)	92	(1.3)	477	(3.0)	480	(2.4)	-3	(3.0)	329	(4.4)	360	(3.5)	415	(2.9)	543	(2.7)	596	(2.9)	627	(3.6)
	Switzerland	531	(3.0)	94	(1.5)	537	(3.5)	524	(3.1)	**13**	(2.7)	374	(3.9)	408	(3.3)	466	(3.4)	597	(3.6)	651	(4.3)	681	(4.7)
	Turkey	448	(4.8)	91	(3.1)	452	(5.1)	444	(5.7)	8	(4.7)	313	(4.3)	339	(3.3)	382	(3.6)	507	(8.0)	577	(9.7)	614	(9.4)
	United Kingdom	494	(3.3)	95	(1.7)	500	(4.2)	488	(3.8)	**12**	(4.7)	336	(4.7)	371	(5.0)	429	(4.2)	560	(3.7)	616	(4.1)	648	(5.1)
	United States	481	(3.6)	90	(1.3)	484	(3.8)	479	(3.9)	5	(2.8)	339	(4.2)	368	(3.9)	418	(3.7)	543	(4.4)	600	(4.3)	634	(5.4)
	OECD total	487	(1.1)	98	(0.5)	493	(1.3)	481	(1.2)	**12**	(1.1)	331	(1.3)	362	(1.2)	417	(1.3)	555	(1.5)	617	(1.4)	651	(1.6)
	OECD average	494	(0.5)	92	(0.3)	499	(0.6)	489	(0.5)	**11**	(0.6)	343	(0.8)	375	(0.7)	430	(0.6)	558	(0.6)	614	(0.7)	645	(0.8)
Partners	Albania	394	(2.0)	91	(1.4)	394	(2.6)	395	(2.6)	-1	(3.3)	236	(5.9)	278	(4.8)	338	(3.0)	454	(2.4)	510	(3.5)	540	(3.5)
	Argentina	388	(3.5)	77	(1.7)	396	(4.2)	382	(3.4)	**14**	(2.9)	264	(5.5)	292	(4.6)	337	(3.8)	440	(4.5)	488	(4.1)	514	(4.3)
	Brazil	391	(2.1)	78	(1.6)	401	(2.2)	383	(2.3)	**18**	(1.8)	275	(2.7)	298	(2.0)	337	(1.9)	440	(2.7)	495	(4.5)	530	(5.5)
	Bulgaria	439	(4.0)	94	(2.2)	438	(4.7)	440	(4.2)	-2	(4.1)	290	(5.7)	320	(4.8)	372	(4.7)	503	(5.2)	565	(5.6)	597	(6.2)
	Colombia	376	(2.9)	74	(1.7)	390	(3.4)	364	(3.2)	**25**	(3.2)	262	(4.8)	285	(4.0)	326	(2.8)	423	(3.6)	474	(4.8)	506	(5.4)
	Costa Rica	407	(3.0)	68	(1.8)	420	(3.6)	396	(3.1)	**24**	(2.4)	301	(3.8)	323	(3.8)	361	(3.6)	449	(3.9)	496	(5.1)	525	(6.9)
	Croatia	471	(3.5)	88	(2.5)	477	(4.4)	465	(3.7)	**12**	(4.1)	334	(4.2)	360	(3.3)	408	(3.6)	531	(4.5)	589	(7.3)	623	(8.8)
	Cyprus*	440	(1.1)	93	(0.8)	440	(1.5)	440	(1.6)	0	(2.2)	287	(2.8)	320	(2.6)	376	(1.6)	503	(2.0)	561	(2.1)	595	(3.1)
	Hong Kong-China	561	(3.2)	96	(1.9)	568	(4.6)	553	(3.9)	**15**	(5.7)	391	(5.9)	430	(6.2)	499	(4.7)	629	(3.5)	679	(4.2)	709	(4.3)
	Indonesia	375	(4.0)	71	(3.3)	377	(4.4)	373	(4.3)	5	(3.4)	266	(4.9)	288	(4.2)	327	(3.8)	418	(5.2)	469	(7.8)	501	(12.4)
	Jordan	386	(3.1)	78	(2.7)	375	(5.4)	396	(3.1)	**-21**	(6.3)	263	(4.4)	290	(4.0)	335	(3.2)	435	(3.3)	485	(4.3)	514	(6.8)
	Kazakhstan	432	(3.0)	71	(1.8)	432	(3.4)	432	(3.3)	0	(2.9)	319	(3.1)	343	(2.5)	383	(2.8)	478	(4.4)	527	(5.7)	554	(6.0)
	Latvia	491	(2.8)	82	(1.5)	489	(3.4)	493	(3.2)	-4	(3.6)	360	(4.8)	387	(4.4)	434	(3.3)	546	(3.8)	597	(3.7)	626	(4.6)
	Liechtenstein	535	(4.0)	95	(3.7)	546	(6.0)	523	(5.8)	**23**	(8.8)	370	(16.8)	403	(11.2)	470	(8.0)	606	(5.0)	656	(9.2)	680	(12.5)
	Lithuania	479	(2.6)	89	(1.4)	479	(2.8)	479	(3.0)	0	(2.4)	334	(3.9)	364	(3.5)	418	(3.1)	540	(3.3)	596	(3.5)	627	(4.0)
	Macao-China	538	(1.0)	94	(0.9)	540	(1.4)	537	(1.3)	3	(1.9)	379	(3.9)	415	(2.8)	476	(1.7)	605	(1.7)	657	(2.3)	685	(2.4)
	Malaysia	421	(3.2)	81	(1.6)	416	(3.7)	424	(3.7)	**-8**	(3.8)	294	(3.4)	319	(3.2)	363	(3.1)	474	(4.3)	530	(4.9)	562	(5.6)
	Montenegro	410	(1.1)	83	(1.1)	410	(1.6)	410	(1.6)	0	(2.4)	280	(2.7)	306	(2.0)	352	(1.7)	465	(2.0)	520	(2.7)	552	(3.2)
	Peru	368	(3.7)	84	(2.2)	378	(3.6)	359	(4.8)	**19**	(3.9)	237	(4.0)	264	(3.4)	311	(3.6)	421	(4.9)	478	(6.7)	517	(7.6)
	Qatar	376	(0.8)	100	(0.7)	369	(1.1)	385	(0.9)	**-16**	(1.4)	230	(2.1)	257	(1.7)	306	(1.3)	440	(1.7)	514	(1.9)	560	(2.5)
	Romania	445	(3.8)	81	(2.2)	447	(4.3)	443	(4.0)	4	(3.6)	322	(3.9)	344	(3.5)	386	(3.8)	497	(4.8)	553	(6.1)	588	(7.4)
	Russian Federation	482	(3.0)	86	(1.6)	481	(3.7)	483	(3.1)	-2	(3.0)	341	(4.2)	371	(3.9)	423	(3.1)	540	(3.6)	595	(4.7)	626	(5.3)
	Serbia	449	(3.4)	91	(2.2)	453	(4.1)	444	(3.7)	**9**	(3.9)	306	(4.4)	335	(4.1)	386	(3.7)	508	(4.4)	567	(5.8)	603	(6.7)
	Shanghai-China	613	(3.3)	101	(2.3)	616	(4.0)	610	(3.4)	6	(3.3)	435	(6.9)	475	(5.8)	546	(4.4)	685	(3.5)	737	(3.5)	765	(5.6)
	Singapore	573	(1.3)	105	(0.9)	572	(1.9)	575	(1.8)	-3	(2.5)	393	(3.6)	432	(3.6)	501	(2.7)	650	(1.9)	707	(2.3)	737	(2.5)
	Chinese Taipei	560	(3.3)	116	(1.9)	563	(5.4)	557	(5.7)	5	(8.9)	363	(5.6)	402	(4.8)	478	(4.8)	645	(3.4)	703	(4.9)	738	(5.1)
	Thailand	427	(3.4)	82	(2.1)	419	(3.6)	433	(4.1)	**-14**	(3.6)	302	(3.8)	328	(3.1)	372	(2.6)	476	(4.8)	535	(7.3)	575	(8.6)
	Tunisia	388	(3.9)	78	(3.1)	396	(4.3)	381	(4.0)	**15**	(2.7)	267	(4.7)	292	(4.3)	334	(3.7)	437	(4.5)	488	(7.3)	523	(11.6)
	United Arab Emirates	434	(2.4)	90	(1.2)	432	(3.8)	436	(3.0)	-5	(4.7)	297	(3.0)	323	(2.5)	370	(2.9)	494	(2.9)	555	(3.9)	591	(3.4)
	Uruguay	409	(2.8)	89	(1.7)	415	(3.5)	404	(2.9)	**11**	(3.1)	267	(5.0)	297	(4.1)	347	(3.0)	470	(3.6)	526	(3.8)	558	(6.4)
	Viet Nam	511	(4.8)	86	(2.7)	517	(5.6)	507	(4.7)	**10**	(3.0)	371	(8.1)	401	(7.4)	454	(5.3)	568	(5.5)	623	(6.8)	654	(7.9)

Source: OECD, *PISA 2012 Database*, Table 1.2.3a.
Note: Values that are statistically significant are indicated in bold.
*See notes at the beginning of this Annex.
StatLink http://dx.doi.org/10.1787/888932935724

Table 5 PISA 2012 – Percentage of students at each proficiency level in science

	All students													
	Below Level 1 (below 334.94 score points)		Level 1 (from 334.94 to less than 409.54 score points)		Level 2 (from 409.54 to less than 484.14 score points)		Level 3 (from 484.14 to less than 558.73 score points)		Level 4 (from 558.73 to less than 633.33 score points)		Level 5 (from 633.33 to less than 707.93 score points)		Level 6 (above 707.93 score points)	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
OECD														
Australia	3.4	(0.3)	10.2	(0.4)	21.5	(0.5)	28.5	(0.7)	22.8	(0.6)	10.9	(0.5)	2.6	(0.3)
Austria	3.6	(0.5)	12.2	(0.9)	24.3	(1.0)	30.1	(0.9)	21.9	(0.8)	7.0	(0.6)	0.8	(0.2)
Belgium	5.9	(0.5)	11.8	(0.6)	21.5	(0.6)	28.7	(0.7)	23.0	(0.7)	8.1	(0.4)	0.9	(0.2)
Canada	2.4	(0.2)	8.0	(0.4)	21.0	(0.7)	32.0	(0.5)	25.3	(0.6)	9.5	(0.5)	1.8	(0.2)
Chile	8.1	(0.8)	26.3	(1.1)	34.6	(1.1)	22.4	(1.0)	7.5	(0.6)	1.0	(0.1)	0.0	(0.0)
Czech Republic	3.3	(0.6)	10.5	(1.0)	24.7	(1.0)	31.7	(1.2)	22.2	(1.0)	6.7	(0.5)	0.9	(0.2)
Denmark	4.7	(0.5)	12.0	(0.7)	25.7	(0.8)	31.3	(0.9)	19.6	(0.8)	6.1	(0.7)	0.7	(0.2)
Estonia	0.5	(0.1)	4.5	(0.4)	19.0	(0.9)	34.5	(0.9)	28.7	(1.0)	11.1	(0.7)	1.7	(0.3)
Finland	1.8	(0.3)	5.9	(0.5)	16.8	(0.7)	29.6	(0.8)	28.8	(0.7)	13.9	(0.6)	3.2	(0.4)
France	6.1	(0.7)	12.6	(0.7)	22.9	(1.1)	29.2	(1.1)	21.3	(0.9)	6.9	(0.7)	1.0	(0.2)
Germany	2.9	(0.5)	9.3	(0.7)	20.5	(0.8)	28.9	(0.9)	26.2	(1.0)	10.6	(0.8)	1.6	(0.3)
Greece	7.4	(0.7)	18.1	(1.1)	31.0	(1.1)	28.8	(1.0)	12.2	(0.8)	2.3	(0.4)	0.2	(0.1)
Hungary	4.1	(0.6)	14.0	(1.0)	26.4	(1.1)	30.9	(1.2)	18.7	(1.0)	5.5	(0.7)	0.5	(0.2)
Iceland	8.0	(0.6)	16.0	(0.7)	27.5	(0.9)	27.2	(0.9)	16.2	(0.7)	4.6	(0.6)	0.6	(0.2)
Ireland	2.6	(0.4)	8.5	(0.8)	22.0	(1.2)	31.1	(1.0)	25.0	(0.9)	9.3	(0.6)	1.5	(0.3)
Israel	11.2	(1.1)	17.7	(0.9)	24.8	(0.9)	24.4	(1.2)	16.1	(1.1)	5.2	(0.6)	0.6	(0.2)
Italy	4.9	(0.3)	13.8	(0.5)	26.0	(0.6)	30.1	(0.7)	19.1	(0.6)	5.5	(0.4)	0.6	(0.1)
Japan	2.0	(0.4)	6.4	(0.6)	16.3	(0.8)	27.5	(0.9)	29.5	(1.1)	14.8	(0.9)	3.4	(0.5)
Korea	1.2	(0.2)	5.5	(0.6)	18.0	(1.0)	33.6	(1.1)	30.1	(1.2)	10.6	(0.9)	1.1	(0.4)
Luxembourg	7.2	(0.4)	15.1	(0.7)	24.2	(0.6)	26.2	(0.6)	19.2	(0.5)	7.0	(0.5)	1.2	(0.2)
Mexico	12.6	(0.5)	34.4	(0.6)	37.0	(0.6)	13.8	(0.5)	2.1	(0.2)	0.1	(0.0)	0.0	c
Netherlands	3.1	(0.5)	10.1	(0.8)	20.1	(1.3)	29.1	(1.3)	25.8	(1.2)	10.5	(1.0)	1.3	(0.3)
New Zealand	4.7	(0.4)	11.6	(0.8)	21.7	(0.9)	26.4	(0.9)	22.3	(0.9)	10.7	(0.6)	2.7	(0.3)
Norway	6.0	(0.6)	13.6	(0.7)	24.8	(0.8)	28.9	(0.9)	19.0	(0.8)	6.4	(0.6)	1.1	(0.2)
Poland	1.3	(0.3)	7.7	(0.7)	22.5	(1.0)	33.1	(0.9)	24.5	(1.0)	9.1	(0.8)	1.7	(0.4)
Portugal	4.7	(0.7)	14.3	(1.1)	27.3	(1.0)	31.4	(1.3)	17.8	(1.1)	4.2	(0.5)	0.3	(0.1)
Slovak Republic	9.2	(0.9)	17.6	(1.1)	27.0	(1.3)	26.2	(1.6)	15.0	(1.0)	4.3	(0.6)	0.6	(0.2)
Slovenia	2.4	(0.2)	10.4	(0.5)	24.5	(1.0)	30.0	(1.0)	23.0	(0.9)	8.4	(0.7)	1.2	(0.2)
Spain	3.7	(0.3)	12.0	(0.5)	27.3	(0.6)	32.8	(0.6)	19.4	(0.5)	4.5	(0.3)	0.3	(0.1)
Sweden	7.3	(0.6)	15.0	(0.8)	26.2	(0.8)	28.0	(0.8)	17.2	(0.8)	5.6	(0.4)	0.7	(0.1)
Switzerland	3.0	(0.3)	9.8	(0.6)	22.8	(0.8)	31.3	(0.7)	23.7	(0.9)	8.3	(0.7)	1.0	(0.2)
Turkey	4.4	(0.5)	21.9	(1.3)	35.4	(1.4)	25.1	(1.3)	11.3	(1.3)	1.8	(0.3)	0.0	c
United Kingdom	4.3	(0.5)	10.7	(0.9)	22.4	(1.0)	28.4	(1.0)	23.0	(0.9)	9.3	(0.7)	1.8	(0.3)
United States	4.2	(0.5)	14.0	(1.1)	26.7	(1.1)	28.9	(1.1)	18.8	(1.1)	6.3	(0.6)	1.1	(0.2)
OECD total	4.8	(0.2)	14.6	(0.3)	25.7	(0.3)	27.5	(0.3)	19.3	(0.4)	6.9	(0.2)	1.2	(0.1)
OECD average	4.8	(0.1)	13.0	(0.1)	24.5	(0.2)	28.8	(0.2)	20.5	(0.2)	7.2	(0.1)	1.1	(0.0)
Partners														
Albania	23.5	(1.0)	29.6	(0.9)	28.5	(1.2)	14.4	(0.8)	3.6	(0.4)	0.4	(0.1)	0.0	(0.0)
Argentina	19.8	(1.4)	31.0	(1.5)	31.1	(1.3)	14.8	(1.2)	3.0	(0.4)	0.2	(0.1)	0.0	c
Brazil	18.6	(0.8)	35.1	(0.8)	30.7	(0.8)	12.5	(0.7)	2.8	(0.4)	0.3	(0.1)	0.0	c
Bulgaria	14.4	(1.3)	22.5	(1.2)	26.3	(1.1)	22.5	(1.1)	11.2	(0.8)	2.8	(0.5)	0.3	(0.1)
Colombia	19.8	(1.4)	36.3	(1.1)	30.8	(1.1)	11.0	(0.8)	1.9	(0.2)	0.1	(0.1)	0.0	c
Costa Rica	8.6	(0.8)	30.7	(1.3)	39.2	(1.3)	17.8	(1.1)	3.4	(0.6)	0.2	(0.1)	0.0	c
Croatia	3.2	(0.4)	14.0	(0.7)	29.1	(1.0)	31.4	(1.2)	17.6	(1.2)	4.3	(0.7)	0.3	(0.2)
Cyprus*	14.4	(0.5)	23.7	(0.7)	30.3	(0.9)	21.3	(0.7)	8.4	(0.4)	1.8	(0.3)	0.2	(0.1)
Hong Kong-China	1.2	(0.2)	4.4	(0.5)	13.0	(0.7)	29.8	(1.1)	34.9	(1.0)	14.9	(0.9)	1.8	(0.4)
Indonesia	24.7	(2.0)	41.9	(1.4)	26.3	(1.5)	6.5	(1.0)	0.6	(0.3)	0.0	c	0.0	c
Jordan	18.2	(1.2)	31.4	(1.0)	32.2	(1.0)	15.0	(0.9)	3.0	(0.6)	0.2	(0.2)	0.0	c
Kazakhstan	11.3	(1.0)	30.7	(1.5)	36.8	(1.2)	17.8	(1.2)	3.3	(0.4)	0.2	(0.1)	0.0	c
Latvia	1.8	(0.4)	10.5	(0.9)	28.2	(1.2)	35.1	(1.0)	20.0	(1.0)	4.0	(0.5)	0.3	(0.1)
Liechtenstein	0.8	(0.7)	9.6	(1.9)	22.0	(3.9)	30.8	(3.8)	26.7	(2.6)	9.1	(1.5)	1.0	(1.0)
Lithuania	3.4	(0.5)	12.7	(0.8)	27.6	(1.0)	32.9	(1.1)	18.3	(0.9)	4.7	(0.5)	0.4	(0.1)
Macao-China	1.4	(0.2)	7.4	(0.5)	22.2	(0.6)	36.2	(0.8)	26.2	(0.7)	6.2	(0.3)	0.4	(0.1)
Malaysia	14.5	(1.1)	31.0	(1.2)	33.9	(1.1)	16.5	(1.1)	3.7	(0.5)	0.3	(0.1)	0.0	c
Montenegro	18.7	(0.7)	32.0	(1.0)	29.7	(0.9)	15.4	(0.8)	3.8	(0.5)	0.4	(0.1)	0.0	c
Peru	31.5	(1.6)	37.0	(1.3)	23.5	(1.3)	7.0	(0.9)	1.0	(0.3)	0.0	c	0.0	c
Qatar	34.6	(0.4)	28.0	(0.6)	19.6	(0.7)	11.2	(0.4)	5.1	(0.4)	1.3	(0.1)	0.1	(0.0)
Romania	8.7	(0.8)	28.7	(1.3)	34.6	(1.2)	21.0	(1.1)	6.2	(0.8)	0.9	(0.3)	0.0	c
Russian Federation	3.6	(0.4)	15.1	(1.0)	30.1	(1.1)	31.2	(0.9)	15.7	(1.0)	3.9	(0.5)	0.3	(0.2)
Serbia	10.3	(1.0)	24.7	(1.2)	32.4	(1.2)	22.8	(1.1)	8.1	(0.6)	1.6	(0.4)	0.1	(0.1)
Shanghai-China	0.3	(0.1)	2.4	(0.4)	10.0	(0.9)	24.6	(0.9)	35.5	(1.1)	23.0	(1.1)	4.2	(0.6)
Singapore	2.2	(0.3)	7.4	(0.5)	16.7	(0.7)	24.0	(0.7)	27.0	(0.9)	16.9	(0.9)	5.8	(0.4)
Chinese Taipei	1.6	(0.3)	8.2	(0.6)	20.8	(0.9)	33.7	(1.0)	27.3	(1.0)	7.8	(0.6)	0.6	(0.1)
Thailand	7.0	(0.6)	26.6	(1.3)	37.5	(1.1)	21.6	(1.1)	6.4	(0.7)	0.9	(0.3)	0.1	(0.0)
Tunisia	21.3	(1.5)	34.0	(1.1)	31.1	(1.4)	11.7	(1.0)	1.8	(0.5)	0.1	(0.1)	0.0	c
United Arab Emirates	11.3	(0.8)	23.8	(1.0)	29.9	(0.8)	22.3	(0.9)	10.1	(0.6)	2.3	(0.2)	0.3	(0.1)
Uruguay	19.7	(1.1)	27.2	(0.9)	29.3	(1.0)	17.1	(0.9)	5.6	(0.5)	1.0	(0.2)	0.0	(0.0)
Viet Nam	0.9	(0.3)	5.8	(0.9)	20.7	(1.4)	37.5	(1.5)	27.0	(1.5)	7.1	(0.9)	1.0	(0.3)

Source: OECD, *PISA 2012 Database*, Table 1.5.1a.
*See notes at the beginning of this Annex.
StatLink http://dx.doi.org/10.1787/888932935724

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Table 6 PISA 2012 – Mean score, variation and gender differences in student performance in science

		All students				Gender differences						Percentiles											
		Mean score		Standard deviation		Boys		Girls		Difference (B – G)		5th		10th		25th		75th		90th		95th	
		Mean	S.E.	S.D.	S.E.	Mean score	S.E.	Mean score	S.E.	Score dif.	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.
OECD	Australia	521	(1.8)	100	(1.0)	524	(2.5)	519	(2.1)	5	(3.0)	353	(3.5)	391	(2.6)	453	(2.1)	592	(2.5)	650	(2.7)	682	(2.9)
	Austria	506	(2.7)	92	(1.6)	510	(3.9)	501	(3.4)	9	(5.0)	350	(4.9)	383	(5.3)	442	(3.5)	571	(3.1)	623	(3.4)	650	(3.3)
	Belgium	505	(2.2)	101	(1.5)	507	(3.0)	503	(2.6)	4	(3.6)	326	(5.8)	368	(4.5)	439	(3.3)	577	(2.5)	629	(2.0)	657	(2.7)
	Canada	525	(1.9)	91	(0.9)	527	(2.4)	524	(2.0)	3	(2.1)	370	(3.3)	407	(2.7)	467	(2.1)	588	(2.4)	639	(2.6)	670	(3.3)
	Chile	445	(2.9)	80	(1.5)	448	(3.7)	442	(2.9)	**7**	(3.3)	317	(4.1)	343	(3.8)	388	(3.3)	500	(3.6)	552	(3.7)	581	(3.7)
	Czech Republic	508	(3.0)	91	(2.1)	509	(3.7)	508	(3.5)	1	(4.0)	356	(7.2)	392	(5.5)	449	(4.0)	572	(3.2)	622	(3.7)	650	(3.1)
	Denmark	498	(2.7)	93	(1.7)	504	(3.5)	493	(2.5)	**10**	(2.7)	338	(5.9)	378	(4.3)	438	(3.8)	563	(3.2)	615	(4.1)	644	(3.7)
	Estonia	541	(1.9)	80	(1.1)	540	(2.5)	543	(2.3)	-2	(2.7)	409	(3.0)	439	(3.3)	487	(2.7)	597	(2.6)	645	(3.1)	672	(4.5)
	Finland	545	(2.2)	93	(1.2)	537	(3.0)	554	(2.3)	**-16**	(3.0)	386	(5.7)	424	(3.9)	486	(2.8)	609	(2.4)	662	(2.9)	692	(2.6)
	France	499	(2.6)	100	(2.2)	498	(3.8)	500	(2.4)	-2	(3.7)	323	(7.8)	366	(6.0)	433	(3.4)	570	(3.0)	622	(4.1)	651	(4.7)
	Germany	524	(3.0)	95	(2.0)	524	(3.1)	524	(3.5)	-1	(3.0)	361	(5.6)	397	(4.8)	461	(3.8)	592	(3.1)	642	(3.9)	671	(3.7)
	Greece	467	(3.1)	88	(1.5)	460	(3.8)	473	(3.0)	**-13**	(3.1)	317	(5.2)	352	(5.1)	408	(4.5)	528	(3.5)	578	(3.6)	608	(4.1)
	Hungary	494	(2.9)	90	(1.9)	496	(3.4)	493	(3.3)	3	(3.3)	345	(6.0)	376	(4.6)	432	(4.3)	558	(3.5)	610	(4.7)	639	(4.0)
	Iceland	478	(2.1)	99	(1.5)	477	(2.7)	480	(2.9)	-3	(3.6)	310	(5.0)	348	(3.4)	413	(2.5)	548	(3.2)	603	(3.7)	635	(5.3)
	Ireland	522	(2.5)	91	(1.6)	524	(3.4)	520	(3.1)	4	(4.4)	366	(5.8)	404	(4.8)	462	(3.1)	586	(2.4)	637	(2.6)	666	(3.4)
	Israel	470	(5.0)	108	(2.1)	470	(7.9)	470	(4.0)	-1	(7.6)	286	(8.7)	328	(6.4)	396	(5.7)	548	(5.7)	608	(5.4)	640	(5.1)
	Italy	494	(1.9)	93	(1.1)	495	(2.2)	492	(2.4)	3	(2.5)	336	(3.2)	371	(2.8)	431	(2.5)	559	(2.0)	611	(2.5)	641	(2.6)
	Japan	547	(3.6)	96	(2.2)	552	(4.7)	541	(3.5)	**11**	(4.3)	379	(7.0)	421	(6.4)	485	(4.5)	614	(3.6)	664	(4.3)	693	(4.7)
	Korea	538	(3.7)	82	(1.8)	539	(4.7)	536	(4.2)	3	(5.1)	396	(6.3)	431	(4.9)	485	(4.0)	595	(4.1)	639	(4.3)	664	(5.3)
	Luxembourg	491	(1.3)	103	(1.0)	499	(1.7)	483	(1.7)	**15**	(2.2)	318	(3.6)	355	(3.1)	419	(2.2)	566	(1.9)	624	(2.9)	655	(2.9)
	Mexico	415	(1.3)	71	(0.9)	418	(1.5)	412	(1.3)	**6**	(1.1)	300	(2.6)	325	(2.1)	368	(1.6)	462	(1.5)	505	(1.9)	532	(2.1)
	Netherlands	522	(3.5)	95	(2.2)	524	(3.7)	520	(3.9)	3	(2.9)	357	(5.9)	393	(5.4)	458	(5.0)	591	(3.9)	641	(4.1)	667	(4.0)
	New Zealand	516	(2.1)	105	(1.4)	518	(3.2)	513	(3.3)	5	(4.9)	339	(4.5)	377	(4.5)	444	(3.0)	591	(3.1)	649	(3.0)	682	(3.9)
	Norway	495	(3.1)	100	(1.9)	493	(3.2)	496	(3.7)	-4	(3.2)	325	(6.6)	365	(5.2)	429	(3.7)	564	(3.3)	620	(3.4)	651	(3.9)
	Poland	526	(3.1)	86	(1.5)	524	(3.7)	527	(3.2)	-3	(3.0)	382	(4.7)	415	(4.0)	467	(3.3)	584	(4.0)	637	(5.0)	668	(4.9)
	Portugal	489	(3.7)	89	(1.6)	488	(4.1)	490	(3.8)	-2	(2.6)	337	(6.0)	372	(5.6)	430	(4.8)	551	(3.6)	602	(3.6)	630	(4.1)
	Slovak Republic	471	(3.6)	101	(2.8)	475	(4.3)	467	(4.2)	7	(4.5)	300	(8.5)	339	(5.7)	403	(5.2)	542	(4.0)	599	(4.9)	632	(6.3)
	Slovenia	514	(1.3)	91	(1.2)	510	(1.9)	519	(1.9)	**-9**	(2.8)	364	(3.0)	397	(3.5)	451	(2.2)	578	(2.0)	631	(3.2)	661	(3.3)
	Spain	496	(1.8)	86	(0.9)	500	(2.3)	493	(1.9)	**7**	(2.1)	349	(3.9)	384	(3.1)	440	(2.3)	557	(1.8)	605	(2.0)	632	(2.0)
	Sweden	485	(3.0)	100	(1.5)	481	(3.9)	489	(2.8)	**-7**	(3.3)	314	(5.3)	354	(4.7)	419	(4.1)	554	(3.2)	611	(3.4)	643	(3.1)
	Switzerland	515	(2.7)	91	(1.1)	518	(3.3)	512	(2.7)	**6**	(2.6)	358	(3.8)	394	(3.4)	455	(3.8)	579	(3.1)	630	(3.3)	658	(4.0)
	Turkey	463	(3.9)	80	(1.9)	458	(4.5)	469	(4.3)	**-10**	(4.2)	339	(3.6)	363	(3.5)	407	(3.5)	518	(5.8)	573	(6.3)	602	(5.9)
	United Kingdom	514	(3.4)	100	(1.8)	521	(4.5)	508	(3.7)	**13**	(4.7)	344	(5.8)	384	(4.9)	448	(4.6)	584	(3.5)	639	(3.9)	672	(5.0)
	United States	497	(3.8)	94	(1.5)	497	(4.1)	498	(4.0)	-2	(2.7)	344	(5.4)	377	(4.9)	431	(4.4)	563	(4.2)	619	(4.5)	652	(5.5)
	OECD total	497	(1.2)	98	(0.5)	498	(1.3)	495	(1.2)	**3**	(1.0)	337	(1.6)	371	(1.5)	428	(1.5)	566	(1.4)	623	(1.4)	655	(1.7)
	OECD average	501	(0.5)	93	(0.3)	502	(0.6)	500	(0.5)	**1**	(0.6)	344	(0.9)	380	(0.8)	439	(0.6)	566	(0.6)	619	(0.6)	648	(0.7)
Partners	Albania	397	(2.4)	99	(1.8)	394	(3.0)	401	(2.9)	**-7**	(3.2)	221	(7.0)	271	(5.2)	340	(3.5)	464	(3.0)	517	(3.3)	549	(5.2)
	Argentina	406	(3.9)	86	(2.2)	402	(4.5)	409	(4.0)	-7	(3.4)	262	(7.9)	297	(5.1)	350	(4.6)	464	(4.7)	513	(4.7)	543	(5.2)
	Brazil	405	(2.1)	79	(1.4)	406	(2.3)	404	(2.3)	2	(1.7)	280	(2.9)	306	(2.3)	351	(2.0)	456	(2.8)	507	(3.7)	538	(4.6)
	Bulgaria	446	(4.8)	102	(2.5)	437	(5.6)	457	(4.6)	**-20**	(4.5)	280	(7.5)	315	(5.3)	374	(5.6)	519	(5.1)	580	(6.1)	612	(6.2)
	Colombia	399	(3.1)	76	(1.6)	408	(3.4)	390	(3.6)	**18**	(3.4)	273	(5.2)	302	(4.6)	347	(3.4)	449	(3.5)	497	(4.0)	525	(4.2)
	Costa Rica	429	(2.9)	71	(1.6)	436	(3.5)	424	(3.2)	**12**	(3.2)	315	(4.1)	341	(3.3)	382	(3.6)	476	(3.6)	520	(4.9)	546	(5.5)
	Croatia	491	(3.1)	85	(1.8)	490	(3.9)	493	(3.3)	-2	(3.8)	350	(4.9)	380	(4.0)	433	(3.3)	551	(4.2)	602	(5.2)	630	(5.9)
	Cyprus*	438	(1.2)	97	(1.1)	431	(1.8)	444	(1.7)	**-13**	(2.5)	274	(3.3)	313	(2.9)	373	(2.0)	503	(2.4)	561	(2.5)	594	(3.4)
	Hong Kong-China	555	(2.6)	83	(1.8)	558	(3.6)	551	(3.1)	7	(4.2)	403	(7.1)	446	(5.1)	505	(3.8)	613	(3.0)	655	(3.4)	679	(3.4)
	Indonesia	382	(3.8)	68	(2.3)	380	(4.1)	383	(4.1)	-3	(3.1)	271	(5.5)	297	(4.9)	336	(3.8)	427	(4.7)	471	(6.0)	497	(7.3)
	Jordan	409	(3.1)	83	(2.0)	388	(5.4)	430	(2.9)	**-43**	(6.4)	271	(4.9)	303	(4.4)	355	(3.6)	466	(3.4)	514	(4.2)	542	(6.5)
	Kazakhstan	425	(3.0)	74	(1.5)	420	(3.4)	429	(3.2)	**-9**	(2.9)	303	(4.4)	330	(3.6)	375	(3.4)	475	(3.5)	521	(3.8)	547	(3.8)
	Latvia	502	(2.8)	79	(1.4)	495	(3.6)	510	(2.8)	**-15**	(3.6)	370	(5.5)	400	(4.5)	449	(3.2)	557	(3.6)	603	(3.2)	628	(4.7)
	Liechtenstein	525	(3.5)	86	(4.1)	533	(5.8)	516	(5.7)	17	(9.1)	383	(11.1)	408	(10.0)	464	(8.4)	588	(8.2)	635	(9.3)	656	(12.2)
	Lithuania	496	(2.6)	86	(1.7)	488	(3.0)	503	(2.6)	**-15**	(2.3)	352	(6.3)	383	(4.0)	438	(3.2)	555	(3.0)	605	(3.6)	634	(3.8)
	Macao-China	521	(0.8)	79	(0.7)	520	(1.3)	521	(1.2)	-1	(1.7)	383	(3.9)	416	(2.7)	469	(1.9)	575	(1.7)	619	(1.8)	643	(2.3)
	Malaysia	420	(3.0)	79	(1.4)	414	(3.8)	425	(3.1)	**-11**	(3.5)	293	(3.9)	319	(3.4)	365	(3.4)	473	(3.6)	521	(4.3)	550	(5.2)
	Montenegro	410	(1.1)	84	(1.0)	402	(1.6)	419	(1.6)	**-17**	(2.4)	274	(3.3)	302	(2.9)	352	(1.4)	468	(2.2)	522	(2.3)	552	(3.5)
	Peru	373	(3.6)	78	(1.9)	376	(3.5)	370	(4.6)	6	(4.0)	248	(4.6)	275	(3.8)	321	(3.4)	425	(4.4)	475	(5.4)	504	(6.5)
	Qatar	384	(0.7)	106	(0.7)	367	(1.2)	402	(1.1)	**-35**	(1.7)	222	(1.9)	254	(1.4)	309	(1.3)	453	(1.6)	530	(2.4)	573	(2.8)
	Romania	439	(3.3)	79	(2.0)	436	(3.7)	441	(3.5)	-5	(3.2)	316	(4.0)	340	(3.2)	383	(3.4)	492	(4.6)	543	(5.1)	573	(5.6)
	Russian Federation	486	(2.9)	85	(1.3)	484	(3.5)	489	(2.9)	-6	(2.9)	347	(3.8)	377	(4.1)	428	(3.6)	544	(3.3)	596	(4.9)	627	(5.1)
	Serbia	445	(3.4)	87	(1.9)	443	(4.0)	447	(3.8)	-4	(3.9)	303	(5.6)	333	(5.2)	385	(4.5)	504	(3.5)	558	(3.9)	590	(5.8)
	Shanghai-China	580	(3.0)	82	(1.8)	583	(3.5)	578	(3.1)	5	(2.7)	435	(6.2)	472	(5.4)	527	(3.7)	639	(3.2)	681	(3.2)	704	(3.3)
	Singapore	551	(1.5)	104	(1.2)	551	(2.1)	552	(1.9)	-1	(2.6)	374	(4.0)	412	(3.2)	480	(2.6)	627	(2.6)	681	(3.4)	714	(3.2)
	Chinese Taipei	523	(2.3)	83	(1.4)	524	(3.9)	523	(4.0)	1	(6.4)	379	(4.1)	411	(4.3)	469	(3.8)	582	(2.4)	626	(2.2)	652	(3.1)
	Thailand	444	(2.9)	76	(1.7)	433	(3.3)	452	(3.4)	**-19**	(3.4)	323	(4.3)	349	(3.4)	392	(2.6)	494	(3.8)	544	(5.4)	575	(6.0)
	Tunisia	398	(3.5)	79	(1.9)	399	(3.9)	398	(3.6)	1	(2.9)	267	(4.6)	296	(4.6)	345	(4.1)	452	(4.1)	497	(5.1)	527	(6.5)
	United Arab Emirates	448	(2.8)	94	(1.1)	434	(4.1)	462	(3.7)	**-28**	(5.1)	299	(3.0)	328	(3.2)	382	(3.5)	512	(3.5)	572	(3.4)	605	(3.7)
	Uruguay	416	(2.8)	95	(1.7)	415	(3.4)	416	(3.1)	-1	(3.4)	256	(4.8)	293	(4.2)	352	(3.8)	480	(3.4)	538	(4.3)	572	(5.3)
	Viet Nam	528	(4.3)	77	(2.3)	529	(5.0)	528	(4.1)	1	(2.8)	398	(7.7)	428	(7.0)	478	(5.2)	580	(4.0)	625	(5.5)	652	(6.5)

Source: OECD, *PISA 2012 Database*, Table 1.5.3a.
Note: Values that are statistically significant are indicated in bold.
*See notes at the beginning of this Annex.
StatLink http://dx.doi.org/10.1787/888932935724

Table 7

PISA 2009 – Percentage of students, by reader profile
Results based on students' self-reports
Group 1: "Wide and deep;" Group 2: "Narrow and deep;" Group 3: "Highly restricted and deep;"
Group 4: "Wide and surface;" Group 5: "Narrow and surface;" Group 6: "Highly restricted and surface"

		Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
		%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
OECD	Australia	21.0	(0.5)	13.9	(0.4)	34.2	(0.6)	5.3	(0.2)	8.2	(0.3)	17.5	(0.5)
	Austria	16.6	(0.7)	33.1	(0.8)	24.1	(0.7)	3.4	(0.3)	13.3	(0.5)	9.4	(0.4)
	Belgium	16.6	(0.6)	29.6	(0.6)	32.0	(0.8)	2.0	(0.2)	8.1	(0.4)	11.6	(0.5)
	Canada	23.3	(0.5)	13.4	(0.3)	37.0	(0.5)	6.0	(0.2)	5.8	(0.3)	14.5	(0.4)
	Chile	17.7	(0.6)	19.7	(0.7)	32.5	(0.7)	6.4	(0.4)	7.2	(0.4)	16.5	(0.6)
	Czech Republic	12.5	(0.6)	35.0	(0.8)	28.0	(0.8)	1.5	(0.2)	12.2	(0.7)	10.8	(0.6)
	Denmark	22.0	(0.7)	26.2	(0.7)	30.6	(0.8)	3.8	(0.3)	6.7	(0.4)	10.6	(0.6)
	Estonia	17.8	(0.7)	43.1	(0.9)	19.3	(0.8)	3.1	(0.3)	10.7	(0.5)	6.0	(0.4)
	Finland	20.4	(0.7)	39.3	(0.9)	17.0	(0.6)	2.1	(0.2)	13.4	(0.5)	7.9	(0.5)
	France	18.5	(0.7)	27.5	(0.8)	36.8	(0.8)	1.9	(0.2)	6.2	(0.4)	9.1	(0.6)
	Germany	18.3	(0.7)	22.5	(0.7)	35.9	(0.9)	3.0	(0.3)	8.7	(0.4)	11.6	(0.5)
	Greece	11.6	(0.6)	22.9	(0.7)	38.6	(0.8)	3.2	(0.3)	9.0	(0.5)	14.8	(0.7)
	Hungary	21.3	(0.8)	30.8	(0.9)	20.5	(0.7)	5.7	(0.5)	11.0	(0.5)	10.7	(0.6)
	Iceland	18.4	(0.6)	30.3	(0.8)	20.5	(0.7)	4.5	(0.3)	12.7	(0.5)	13.5	(0.6)
	Ireland	20.2	(0.8)	24.7	(0.8)	34.4	(0.9)	3.0	(0.3)	7.4	(0.5)	10.3	(0.6)
	Israel	16.7	(0.5)	19.7	(0.6)	31.8	(0.9)	5.8	(0.4)	8.5	(0.4)	17.5	(0.7)
	Italy	18.4	(0.4)	20.8	(0.3)	45.2	(0.5)	2.2	(0.1)	3.7	(0.2)	9.7	(0.3)
	Japan	27.9	(0.9)	26.2	(0.6)	19.2	(0.6)	7.2	(0.3)	11.6	(0.7)	7.9	(0.5)
	Korea	25.8	(0.9)	9.3	(0.4)	41.2	(0.9)	5.9	(0.4)	3.2	(0.3)	14.5	(0.7)
	Luxembourg	19.5	(0.6)	30.1	(0.7)	21.7	(0.7)	4.1	(0.3)	13.0	(0.6)	11.7	(0.5)
	Mexico	19.9	(0.3)	16.6	(0.3)	36.0	(0.4)	7.4	(0.2)	5.5	(0.2)	14.7	(0.3)
	Netherlands	14.3	(0.8)	19.8	(1.0)	31.5	(0.9)	4.3	(0.3)	9.7	(0.7)	20.4	(1.3)
	New Zealand	23.9	(0.7)	12.7	(0.6)	30.3	(0.7)	8.5	(0.5)	7.9	(0.4)	16.7	(0.5)
	Norway	19.4	(0.7)	37.0	(0.7)	22.5	(0.7)	2.8	(0.2)	9.8	(0.5)	8.6	(0.5)
	Poland	13.1	(0.6)	37.1	(0.6)	21.7	(0.6)	3.4	(0.3)	14.2	(0.6)	10.6	(0.5)
	Portugal	19.2	(0.6)	24.0	(0.7)	32.1	(0.7)	4.0	(0.3)	9.0	(0.5)	11.7	(0.6)
	Slovak Republic	12.8	(0.6)	39.4	(0.9)	16.8	(0.5)	3.3	(0.3)	17.7	(0.6)	10.0	(0.5)
	Slovenia	10.4	(0.6)	34.5	(0.8)	20.9	(0.7)	2.7	(0.3)	18.7	(0.6)	12.9	(0.5)
	Spain	19.8	(0.5)	18.7	(0.5)	41.5	(0.5)	2.9	(0.2)	5.6	(0.4)	11.6	(0.5)
	Sweden	19.9	(0.7)	22.7	(0.7)	24.3	(0.6)	5.1	(0.3)	12.2	(0.5)	15.6	(0.6)
	Switzerland	20.6	(0.6)	33.2	(0.8)	22.5	(0.6)	3.2	(0.2)	11.3	(0.5)	9.1	(0.5)
	Turkey	24.7	(0.6)	12.8	(0.5)	24.6	(0.8)	15.5	(0.6)	8.2	(0.4)	14.2	(0.6)
	United Kingdom	18.9	(0.6)	20.7	(0.5)	31.1	(0.7)	5.2	(0.3)	10.2	(0.5)	13.9	(0.6)
	United States	19.0	(0.8)	10.9	(0.6)	36.7	(0.8)	6.5	(0.4)	6.4	(0.4)	20.4	(0.8)
	OECD average	18.8	(0.1)	25.2	(0.1)	29.2	(0.1)	4.6	(0.1)	9.6	(0.1)	12.5	(0.1)
Partners	Albania	35.6	(0.9)	14.7	(0.6)	23.4	(1.0)	11.5	(0.9)	6.1	(0.4)	8.7	(0.6)
	Argentina	17.0	(0.8)	22.9	(0.8)	29.5	(0.9)	7.6	(0.5)	9.8	(0.6)	13.1	(0.7)
	Azerbaijan	21.8	(0.9)	10.2	(0.6)	15.1	(0.7)	26.7	(1.0)	10.9	(0.6)	15.3	(0.7)
	Brazil	20.9	(0.5)	15.6	(0.4)	28.9	(0.6)	10.2	(0.4)	7.9	(0.3)	16.4	(0.5)
	Bulgaria	21.6	(1.5)	20.4	(0.8)	20.2	(0.7)	10.4	(0.6)	11.3	(0.6)	16.1	(1.0)
	Colombia	23.9	(1.0)	22.4	(0.8)	20.9	(1.0)	11.2	(0.7)	9.5	(0.5)	12.2	(0.6)
	Croatia	16.6	(0.8)	36.4	(0.7)	15.4	(0.5)	4.7	(0.3)	17.7	(0.6)	9.3	(0.5)
	Dubai (UAE)	29.0	(0.7)	26.5	(0.6)	15.7	(0.6)	9.7	(0.4)	11.5	(0.5)	7.6	(0.3)
	Hong Kong-China	27.7	(0.8)	13.6	(0.6)	12.3	(0.5)	19.2	(0.6)	14.2	(0.6)	13.1	(0.6)
	Indonesia	32.2	(1.0)	10.6	(0.6)	14.3	(0.6)	24.6	(0.9)	6.4	(0.4)	11.9	(0.7)
	Jordan	16.9	(0.6)	17.1	(0.6)	19.7	(0.6)	16.2	(0.7)	11.8	(0.5)	18.3	(0.7)
	Kazakhstan	34.9	(0.8)	10.9	(0.5)	6.3	(0.4)	33.1	(1.0)	9.2	(0.4)	5.6	(0.4)
	Kyrgyzstan	26.6	(1.0)	7.3	(0.4)	9.3	(0.5)	36.0	(0.9)	7.9	(0.5)	12.9	(0.5)
	Latvia	20.3	(0.8)	25.1	(1.0)	17.5	(0.7)	10.1	(0.7)	14.0	(0.6)	13.0	(0.8)
	Liechtenstein	22.9	(2.1)	26.5	(2.5)	20.7	(2.0)	4.6	(1.0)	11.5	(1.8)	13.8	(1.7)
	Lithuania	27.6	(0.7)	25.0	(0.7)	13.4	(0.5)	9.4	(0.4)	15.2	(0.6)	9.4	(0.5)
	Macao-China	20.5	(0.5)	23.0	(0.6)	18.4	(0.5)	9.8	(0.4)	14.4	(0.4)	13.8	(0.5)
	Montenegro	18.6	(0.6)	23.4	(0.6)	12.2	(0.6)	14.1	(0.6)	19.3	(0.5)	12.3	(0.5)
	Panama	20.7	(1.0)	16.7	(1.0)	19.3	(1.3)	16.5	(1.1)	12.6	(0.8)	14.2	(0.9)
	Peru	34.2	(0.8)	16.1	(0.6)	14.6	(0.5)	18.1	(0.7)	8.0	(0.4)	9.1	(0.5)
	Qatar	22.8	(0.4)	19.7	(0.4)	16.4	(0.4)	15.4	(0.4)	14.0	(0.4)	11.7	(0.3)
	Romania	21.4	(0.9)	22.3	(0.8)	29.3	(1.0)	6.3	(0.4)	8.1	(0.6)	12.6	(0.7)
	Russian Federation	33.9	(1.0)	12.0	(0.5)	14.8	(0.5)	18.7	(0.5)	8.9	(0.4)	11.7	(0.6)
	Serbia	16.7	(0.7)	26.4	(0.6)	15.9	(0.6)	9.9	(0.4)	18.8	(0.6)	12.3	(0.4)
	Shanghai-China	41.4	(0.8)	17.4	(0.6)	19.9	(0.7)	10.5	(0.5)	4.3	(0.3)	6.5	(0.4)
	Singapore	39.3	(0.8)	20.0	(0.6)	19.1	(0.5)	7.6	(0.3)	6.7	(0.3)	7.4	(0.4)
	Chinese Taipei	29.1	(0.9)	14.6	(0.6)	15.7	(0.5)	16.6	(0.6)	10.2	(0.4)	13.7	(0.6)
	Thailand	30.7	(0.7)	9.3	(0.5)	6.5	(0.4)	33.6	(0.7)	9.4	(0.5)	10.5	(0.5)
	Trinidad and Tobago	29.1	(0.8)	19.8	(0.7)	19.8	(0.5)	12.2	(0.5)	9.1	(0.4)	10.0	(0.5)
	Tunisia	28.8	(0.8)	15.7	(0.7)	20.3	(0.7)	14.5	(0.8)	8.7	(0.5)	11.9	(0.5)
	Uruguay	18.2	(0.5)	16.8	(0.7)	36.3	(0.6)	5.9	(0.3)	5.2	(0.3)	17.7	(0.6)

Source: OECD, *PISA 2009 Database*, Table III.1.27.
StatLink http://dx.doi.org/10.1787/888932343285

Table 8

PISA 2009 – Reading performance, by reader profile

Results based on students' self-reports

Group 1: "Wide and deep;" Group 2: "Narrow and deep;" Group 3: "Highly restricted and deep;" Group 4: "Wide and surface;" Group 5: "Narrow and surface;" Group 6: "Highly restricted and surface"

		Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
		Mean score	S.E.	Mean score	S.E.	Mean score	S.E.	Mean score	S.E.	Mean score	S.E.	Mean score	S.E.
OECD	Australia	570	(2.9)	**510**	(3.1)	**537**	(2.7)	**496**	(3.9)	**449**	(3.2)	**455**	(2.4)
	Austria	540	(4.3)	**480**	(3.0)	**492**	(4.3)	**437**	(7.8)	**413**	(4.0)	**401**	(5.1)
	Belgium	571	(3.4)	**531**	(2.8)	**515**	(2.7)	**459**	(8.2)	**443**	(4.1)	**427**	(3.8)
	Canada	566	(2.0)	**521**	(2.9)	**536**	(1.6)	**500**	(4.0)	**473**	(3.4)	**468**	(2.4)
	Chile	485	(3.7)	**477**	(3.5)	**454**	(3.7)	**422**	(4.3)	**418**	(5.1)	**399**	(3.9)
	Czech Republic	548	(4.6)	**494**	(2.9)	**495**	(3.8)	**443**	(11.5)	**419**	(4.6)	**408**	(3.3)
	Denmark	535	(2.9)	**508**	(2.6)	**497**	(3.2)	**458**	(5.8)	**441**	(4.4)	**426**	(4.4)
	Estonia	541	(3.4)	**510**	(2.8)	**501**	(3.5)	**464**	(8.5)	**446**	(4.1)	**435**	(6.3)
	Finland	601	(2.5)	**543**	(2.5)	**533**	(3.8)	**522**	(8.2)	**474**	(2.8)	**448**	(4.3)
	France	558	(4.1)	**504**	(3.5)	**499**	(4.5)	**462**	(16.6)	**425**	(6.1)	**393**	(6.4)
	Germany	560	(3.3)	**507**	(3.3)	**518**	(3.0)	**459**	(7.3)	**439**	(5.3)	**430**	(4.5)
	Greece	540	(4.4)	**494**	(4.5)	**492**	(4.9)	**472**	(8.0)	**434**	(7.9)	**431**	(5.7)
	Hungary	539	(3.9)	**513**	(3.4)	**497**	(4.7)	**434**	(9.0)	**453**	(3.8)	**420**	(6.4)
	Iceland	564	(3.1)	**516**	(2.5)	**507**	(3.6)	**479**	(7.1)	**452**	(4.1)	**430**	(3.8)
	Ireland	547	(4.2)	**491**	(3.5)	**507**	(3.5)	**473**	(9.3)	**435**	(6.0)	**435**	(6.2)
	Israel	518	(4.7)	**503**	(4.2)	**490**	(4.2)	**433**	(7.2)	**442**	(5.2)	**419**	(4.8)
	Italy	524	(2.2)	**496**	(1.9)	**493**	(1.7)	**438**	(5.4)	**417**	(4.0)	**400**	(4.6)
	Japan	565	(3.3)	**533**	(3.6)	**543**	(3.4)	**473**	(5.8)	**438**	(7.0)	**431**	(7.2)
	Korea	574	(3.0)	**556**	(4.8)	**551**	(2.9)	**493**	(5.9)	**466**	(6.5)	**468**	(5.6)
	Luxembourg	537	(3.0)	**476**	(2.8)	**490**	(3.1)	**450**	(7.7)	**417**	(4.0)	**398**	(4.9)
	Mexico	446	(2.4)	449	(2.2)	**435**	(2.3)	**381**	(3.1)	**399**	(2.8)	**381**	(2.7)
	Netherlands	575	(4.7)	**550**	(4.7)	**516**	(4.9)	**492**	(7.0)	**472**	(6.7)	**446**	(4.9)
	New Zealand	569	(3.4)	**520**	(4.2)	**548**	(3.5)	**489**	(5.5)	**447**	(5.1)	**462**	(4.1)
	Norway	559	(3.7)	**512**	(2.4)	**505**	(3.0)	**480**	(8.3)	**441**	(4.7)	**419**	(5.4)
	Poland	560	(4.2)	**519**	(2.8)	**500**	(3.5)	**479**	(7.3)	**457**	(3.7)	**432**	(4.9)
	Portugal	532	(3.9)	**501**	(3.1)	**510**	(3.0)	**429**	(6.5)	**420**	(4.0)	**415**	(4.2)
	Slovak Republic	543	(4.8)	**495**	(2.7)	**482**	(4.4)	**452**	(10.0)	**434**	(3.9)	**407**	(5.8)
	Slovenia	555	(3.8)	**504**	(2.4)	**500**	(2.9)	**468**	(7.5)	**440**	(2.9)	**426**	(3.1)
	Spain	532	(2.0)	**489**	(2.4)	**484**	(2.3)	**448**	(6.1)	**422**	(4.4)	**411**	(3.5)
	Sweden	567	(3.3)	**510**	(3.1)	**501**	(4.1)	**483**	(6.6)	**458**	(3.6)	**428**	(3.8)
	Switzerland	562	(3.1)	**508**	(2.5)	**508**	(3.1)	**456**	(7.0)	**432**	(3.1)	**418**	(3.9)
	Turkey	482	(4.1)	480	(4.5)	488	(4.7)	**428**	(3.5)	**439**	(4.9)	**433**	(4.3)
	United Kingdom	548	(3.5)	**492**	(2.9)	**509**	(3.4)	**473**	(5.5)	**441**	(4.5)	**446**	(3.5)
	United States	539	(6.1)	**503**	(4.7)	**516**	(4.1)	**473**	(5.7)	**454**	(5.5)	**458**	(3.5)
	OECD average	546	(0.6)	**506**	(0.6)	**504**	(0.6)	**462**	(1.3)	**440**	(0.8)	**427**	(0.8)
Partners	Albania	410	(4.5)	**392**	(5.2)	**392**	(7.3)	**353**	(5.5)	**348**	(8.4)	**335**	(5.8)
	Argentina	426	(6.9)	426	(5.9)	**404**	(5.3)	**351**	(7.6)	**380**	(6.9)	**359**	(5.9)
	Azerbaijan	372	(4.6)	366	(5.6)	**347**	(4.8)	368	(3.5)	364	(5.3)	**354**	(4.5)
	Brazil	434	(4.5)	440	(3.3)	**425**	(3.3)	**374**	(2.8)	**389**	(4.0)	**372**	(2.8)
	Bulgaria	487	(8.6)	**457**	(6.6)	**426**	(7.3)	**401**	(7.8)	**407**	(6.0)	**367**	(6.6)
	Colombia	419	(5.5)	**438**	(4.5)	429	(4.7)	**368**	(5.4)	**395**	(4.9)	**386**	(3.9)
	Croatia	532	(3.8)	**493**	(3.1)	**479**	(4.4)	**449**	(5.8)	**428**	(3.6)	**405**	(4.8)
	Dubai (UAE)	509	(2.6)	**469**	(2.3)	**461**	(3.3)	**417**	(4.5)	**404**	(3.5)	**382**	(5.0)
	Hong Kong-China	574	(2.7)	**543**	(3.7)	**543**	(4.2)	**518**	(3.1)	**496**	(3.6)	**490**	(4.0)
	Indonesia	423	(4.3)	420	(5.8)	**394**	(4.7)	**389**	(3.9)	**385**	(5.6)	**372**	(3.6)
	Jordan	426	(3.9)	**441**	(3.9)	**409**	(4.9)	**384**	(4.0)	**409**	(4.6)	**374**	(4.2)
	Kazakhstan	420	(4.0)	422	(4.9)	415	(8.7)	**358**	(2.7)	**364**	(4.9)	**355**	(6.6)
	Kyrgyzstan	341	(4.7)	344	(8.1)	**300**	(6.5)	**307**	(3.4)	**311**	(5.1)	**285**	(5.0)
	Latvia	521	(3.9)	**505**	(3.2)	**491**	(4.9)	**456**	(4.9)	**453**	(4.1)	**431**	(4.7)
	Liechtenstein	563	(7.2)	**510**	(8.6)	**495**	(8.7)	**443**	(18.7)	**446**	(13.4)	**444**	(10.6)
	Lithuania	515	(3.0)	**476**	(3.3)	**455**	(4.7)	**455**	(4.3)	**429**	(3.4)	**411**	(4.9)
	Macao-China	522	(2.3)	**495**	(1.9)	**488**	(2.2)	**480**	(3.1)	**466**	(2.2)	**444**	(2.8)
	Montenegro	451	(3.9)	**427**	(3.2)	**398**	(4.6)	**394**	(5.6)	**395**	(2.8)	**358**	(3.9)
	Panama	405	(7.1)	399	(9.9)	**385**	(10.2)	**348**	(8.5)	**360**	(7.6)	**338**	(10.1)
	Peru	389	(4.4)	**405**	(6.4)	**367**	(5.7)	**340**	(3.4)	**349**	(6.8)	**323**	(6.1)
	Qatar	420	(2.9)	**386**	(2.7)	**370**	(3.4)	**351**	(2.9)	**350**	(2.6)	**327**	(3.0)
	Romania	453	(4.9)	447	(4.6)	**430**	(4.1)	**382**	(6.5)	**390**	(7.6)	**368**	(5.6)
	Russian Federation	493	(3.7)	**459**	(4.4)	**470**	(4.8)	**441**	(3.8)	**420**	(4.1)	**411**	(5.6)
	Serbia	484	(3.8)	**465**	(3.1)	**453**	(4.1)	**413**	(4.4)	**414**	(3.3)	**389**	(4.0)
	Shanghai-China	577	(2.9)	571	(3.6)	**554**	(2.9)	**511**	(4.5)	**508**	(5.7)	**491**	(5.3)
	Singapore	566	(1.8)	**525**	(2.9)	**527**	(3.0)	**472**	(4.7)	**452**	(4.7)	**439**	(4.7)
	Chinese Taipei	536	(3.5)	**510**	(3.3)	**504**	(3.3)	**476**	(3.7)	**451**	(3.9)	**442**	(4.5)
	Thailand	446	(3.8)	441	(3.8)	**415**	(5.7)	**411**	(2.4)	**407**	(4.2)	**381**	(3.8)
	Trinidad and Tobago	457	(3.7)	**437**	(4.0)	**415**	(4.3)	**382**	(4.0)	**382**	(5.6)	**356**	(5.0)
	Tunisia	414	(3.5)	421	(4.2)	416	(4.2)	**381**	(3.9)	**393**	(6.1)	**372**	(3.8)
	Uruguay	455	(3.6)	461	(4.1)	**437**	(3.5)	**381**	(5.3)	**392**	(5.8)	**370**	(3.7)

Source: OECD, *PISA 2009 Database*, Table III.1.28.
Notes: Values that are statistically significant are indicated in bold. Performance difference between each group and group 1.
StatLink http://dx.doi.org/10.1787/888932343285

Table 9 PISA 2012 – Response rates

	Final sample – after school replacement		Final sample – students within schools after school replacement				
	Number of responding schools (unweighted)	Number of responding and non-responding schools (unweighted)	Weighted student participation rate after replacement (%)	Number of students assessed (weighted)	Number of students sampled (assessed and absent) (weighted)	Number of students assessed (unweighted)	Number of students sampled (assessed and absent) (unweighted)
	(9)	(10)	(11)	(12)	(13)	(14)	(15)
OECD							
Australia	757	790	87	213,495	246,012	17,491	20,799
Austria	191	191	92	75,393	82,242	4,756	5,318
Belgium	282	294	91	103,914	114,360	9,649	10,595
Canada	840	907	81	261,928	324,328	20,994	25,835
Chile	221	224	95	214,558	226,689	6,857	7,246
Czech Republic	295	297	90	73,536	81,642	6,528	7,222
Denmark	339	366	89	56,096	62,988	7,463	8,496
Estonia	206	206	93	10,807	11,634	5,867	6,316
Finland	311	313	91	54,126	59,653	8,829	9,789
France	223	231	89	605,371	676,730	5,641	6,308
Germany	228	233	93	692,226	742,416	4,990	5,355
Greece	188	192	97	92,444	95,580	5,125	5,301
Hungary	204	208	93	84,032	90,652	4,810	5,184
Iceland	133	140	85	3,503	4,135	3,503	4,135
Ireland	183	185	84	45,115	53,644	5,016	5,977
Israel	172	186	90	91,181	101,288	6,061	6,727
Italy	1,186	1,232	93	473,104	510,005	38,084	41,003
Japan	191	200	96	1,034,803	1,076,786	6,351	6,609
Korea	156	157	99	595,461	603,004	5,033	5,101
Luxembourg	42	42	95	5,260	5,523	5,260	5,523
Mexico	1,468	1,562	94	1,193,866	1,271,639	33,786	35,972
Netherlands	177	199	85	148,432	174,697	4,434	5,215
New Zealand	177	197	85	40,397	47,703	5,248	6,206
Norway	197	208	91	51,155	56,286	4,686	5,156
Poland	182	188	88	325,389	371,434	5,629	6,452
Portugal	187	195	87	80,719	92,395	5,608	6,426
Slovak Republic	231	236	94	50,544	53,912	5,737	6,106
Slovenia	335	353	90	16,146	17,849	7,211	7,921
Spain	902	904	90	334,382	372,042	26,443	29,027
Sweden	209	211	92	87,359	94,784	4,739	5,141
Switzerland	410	422	92	72,116	78,424	11,218	12,138
Turkey	169	170	98	850,830	866,269	4,847	4,939
United Kingdom	505	550	86	528,231	613,736	12,638	14,649
United States	161	207	89	2,429,718	2,734,268	6,094	6,848
Partners							
Albania	204	204	92	39,275	42,466	4,743	5,102
Argentina	219	229	88	457,294	519,733	5,804	6,680
Brazil	837	886	90	2,133,035	2,368,438	19,877	22,326
Bulgaria	187	188	96	51,819	54,145	5,280	5,508
Colombia	352	363	93	507,178	544,862	11,164	12,045
Costa Rica	191	193	89	35,525	39,930	4,582	5,187
Croatia	163	164	92	41,912	45,473	6,153	6,675
Cyprus*	117	131	93	8,719	9,344	5,078	5,458
Hong Kong-China	147	156	93	62,059	66,665	4,659	5,004
Indonesia	206	210	95	2,478,961	2,605,254	5,579	5,885
Jordan	233	233	95	105,493	111,098	7,038	7,402
Kazakhstan	218	218	99	206,053	208,411	5,808	5,874
Latvia	211	213	91	14,579	16,039	5,276	5,785
Liechtenstein	12	12	93	293	314	293	314
Lithuania	216	216	92	30,429	33,042	4,618	5,018
Macao-China	45	45	99	5,335	5,366	5,335	5,366
Malaysia	164	164	94	405,983	432,080	5,197	5,529
Montenegro	51	51	94	7,233	7,714	4,799	5,117
Peru	240	243	96	398,193	414,728	6,035	6,291
Qatar	157	164	100	10,966	10,996	10,966	10,996
Romania	178	178	98	137,860	140,915	5,074	5,188
Russian Federation	227	227	97	1,141,317	1,172,539	6,418	6,602
Serbia	152	160	93	60,366	64,658	4,681	5,017
Shanghai-China	155	155	98	83,821	85,127	6,374	6,467
Singapore	172	176	94	47,465	50,330	5,546	5,887
Chinese Taipei	163	163	96	281,799	292,542	6,046	6,279
Thailand	239	240	99	695,088	702,818	6,606	6,681
Tunisia	152	153	90	108,342	119,917	4,391	4,857
United Arab Emirates	453	460	95	38,228	40,384	11,460	12,148
Uruguay	180	180	90	35,800	39,771	5,315	5,904
Vietnam	162	162	100	955,222	956,517	4,959	4,966

Source: OECD, *PISA 2012 Database*, Table A2.3.
*See note at the beginning of this Annex.
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How Your School Compares Internationally

OECD TEST FOR SCHOOLS (BASED ON PISA)

How prepared are 15-year-old students at your school to continue as lifelong learners, to find and fill jobs of the 21st century and compete and collaborate as citizens in a globalized economy?

The OECD Programme for International Student Assessment (PISA) has evaluated and compared education systems worldwide for more than ten years now, highlighting education systems that have either repeatedly outperformed others or have shown considerable improvement – sometimes within a relatively short period of time.

Increasingly, however, local educators and school staff are just as interested in international benchmarking and improvement as policy makers. The *OECD Test for Schools* (based on PISA) and the school results presented in this report allow local educators to do just that. The report presents performance results in reading, mathematics and science for schools that participated in the assessment, along with contextual information collected from students and school staff. Each school's results are presented in over 40 figures that are unique to each school. Along with performance results, the report attempts to show that the learning climate at school, as well as students' engagement toward learning, are important factors in trying to understand the overall performance of a school.

Because benchmarking is one step toward school improvement, the report also presents examples of relevant school policies and practices from around the world to stimulate reflection and discussions among local educators. The report also includes links that allow the reader one-click access to relevant OECD research, reports and resources.

Contents

Further Reading

PISA in Focus series (OECD, 2013, 2014)
Strong Performers and Successful Reformers in Education: Lessons from PISA 2012 for the United States (OECD, 2013)
PISA 2012 Results (Volumes I-VI) (OECD, 2013, 2014)
Evaluating and Rewarding the Quality of Teachers: International Practices (OECD, 2009)

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