1

Effective Learners, Proficient Readers

This chapter examines how engaging in reading activities and approaching learning positively relates to reading proficiency. More specifically, it looks at how much students enjoy reading, how much time they spend reading for enjoyment, and what they read for enjoyment. The chapter also examines the extent to which 15-year-olds have "learned how to learn" as indicated by their knowledge and use of specific learning strategies, such as understanding, remembering and summarising. Students' reading and learning habits are then related to their reading performance.

The ability to transmit information in written form as well as orally is one of humankind's greatest assets. Sharing information across time and space without being limited by the strength of one's voice, the size of a venue or the accuracy of memory has been fundamental to human progress. And yet, learning how to read and write requires effort, because it cannot be achieved without mastering a collection of complex skills. As Pinker notes (1995), "Children are wired for sound, but print is an optional accessory that must be painstakingly bolted on".

The brain is biologically primed to acquire language, but writing and reading are relatively recent achievements in human history. As such, exposure to written material does not automatically trigger a set of biological processes that lead to reading proficiency and writing (OECD, 2007a). Becoming a proficient reader is a goal that requires practice and dedication. More than ever, reading is key to acquiring knowledge, and mastery of reading is a precondition for individuals' success in all domains of life (for example, Cunningham and Stanovich, 1998; Smith, Mikulecky, Kibby and Dreher, 2000). The pervasiveness of information technology means that reading proficiency is becoming even more crucial. New media are continually emerging and redefining what it means to be an avid reader and how to teach and learn reading. With information overload becoming a growing problem, people must also learn how to manage a constant flow of information and identify material relevant to their needs.

Reading was the main focus of the PISA 2009 assessment. The PISA assessment was developed to accommodate a wide and deep conception of reading literacy, one that aims to encompass the range of situations in which people read, the different forms in which written text is presented, and the variety of approaches that readers bring to texts. These approaches range from the functional and finite, such as finding a particular piece of practical information, to the more expansive: reading to learn and understand other ways of doing, thinking and being (Volume I, *What Students Know and Can Do*, for a detailed description of the PISA approach to assessing student reading performance).

This chapter examines how engaging in reading activities and approaching learning relates to reading proficiency. The analyses seek to offer pointers on what parents, teachers and school administrators can do to help students become proficient and engaged readers. Figure III.1.1 and Figure III.1.2 illustrate how PISA measures reading habits and approaches to learning. Students who are highly engaged in a wide range of reading activities and who adopt particular strategies to aid them in their learning are more likely than other students to be effective learners and to perform well at school (Guthrie & Wigfield, 2000; Guthrie, Wigfield, & You, in press). Research also shows a strong link between the incidence and intensity of reading practices, reading motivation and reading proficiency among adults (OECD and Statistics Canada, 2000).
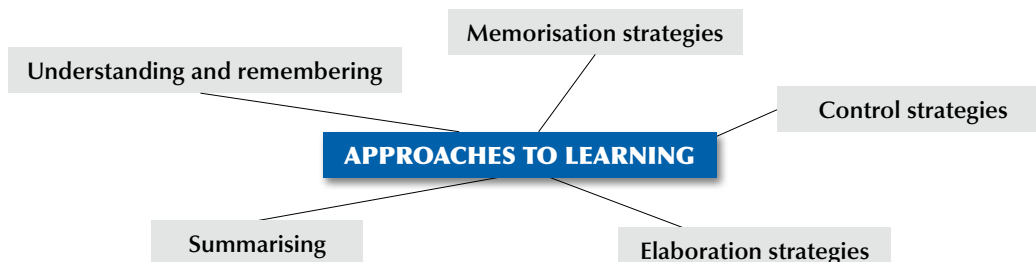
■ Figure III.1.1 ■
How does PISA define "engagement in reading activities"?
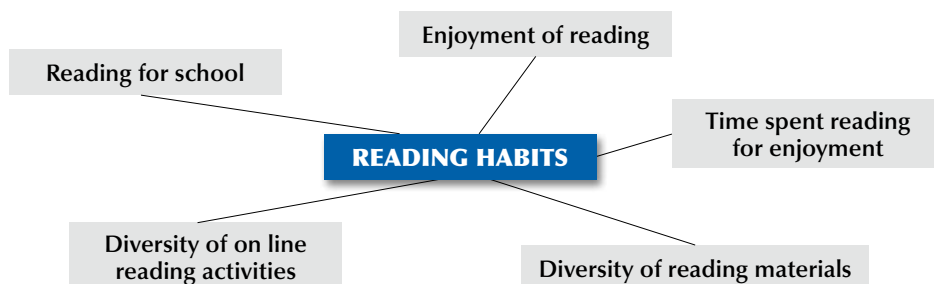
■ Figure III.1.2 ■
How does PISA define "learning strategies"?

Results emerging from this volume suggest that students who read for enjoyment, who self-direct their learning (*i.e.* use control strategies) and particularly students who enjoy reading and who know what they should do when they have to understand, remember and summarise complex information, are students who perform well in the PISA reading assessment. Failure to succeed in academic work at school may result in student disaffection, low levels of practice and failure to develop effective learning strategies (OECD, 2001; Skinner *et al.,* 2009). As Box III.1.1 suggests, PISA cannot determine causal relationships among engagement in reading activities, learning strategies and reading achievement. What PISA can do, however, is indicate the cumulative strength of such relationships among students approaching the end of compulsory education.
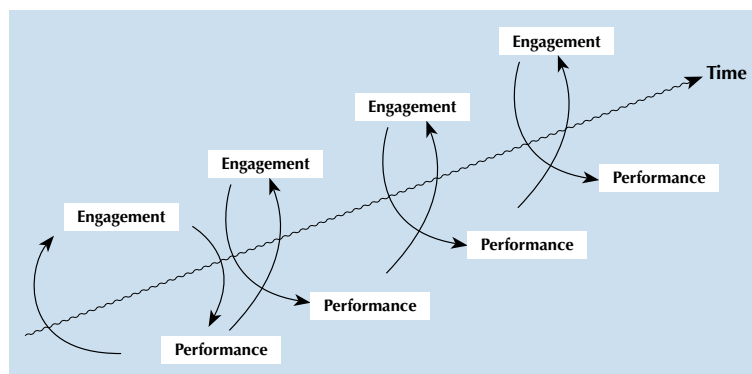

Box III.1.1 **A cycle of engagement in reading activities, learning strategies and reading performance**

Students who are highly engaged in diverse reading activities and who are aware of what strategies work best for reading and understanding texts perform better in the PISA reading assessment. However, this finding cannot be interpreted as direct evidence of a causal relationship between being engaged in reading, adopting effective learning strategies and achieving high levels of reading proficiency. Evidence presented in this chapter rather reflects the cumulative observed association between how engaged students are, the learning strategies they adopt and how well they do.

What does cumulative association mean? Studies in education and applied psychology suggest that reading proficiency is the result of multiple developmental cumulative cycles (Aunola, et al., 2002 for a review). Attitudes towards reading and learning, motivation, engagement in reading activities and reading proficiency are mutually reinforcing. Positive reinforcement operates at two levels. The first reflects the fact that the future depends on the past. Past engagement matters for current and future engagement and past reading performance is also a very good predictor of future reading performance (Fredericks, Blumenfeld, and Paris, 2004; Stanovich, 2004). This suggests that a student's past reading activities will influence his or her future reading activities. Similarly, how effectively the student applied learning strategies in the past is one of the factors that determine how well he or she will apply learning strategies in the future.

The second level indicates that associations among engagement, learning strategies and performance are circular. Engaging in reading activities, adopting effective learning strategies and being a proficient reader are mutually dependent: as students read more they become better readers; and when they read well and expect good performance in reading, they tend to read more and enjoy reading (Nurmi, *et al.,* 2003).

The graph below illustrates how results on associations between how engaged in reading activities students are, the learning strategies they adopt and how well they read should be interpreted in the context of the two levels of reinforcement.

The evidence that emerges from PISA on the positive interplay between engagement in reading activities, the adoption of particular learning strategies and reading performance suggests that preparing students to read well and promoting a passion for reading and effective learning does not necessarily involve trade-offs. Students who are highly engaged and are effective learners are most likely to be proficient readers and proficient readers are also those students that are most engaged and interested in reading.

HOW PISA 2009 EXAMINES ENGAGEMENT IN READING AND APPROACHES TO LEARNING

Most children come to school willing to learn. International surveys of primary school-age children generally reveal high levels of interest in and positive attitudes towards reading, mathematics and science among these students (see Mullis et al, 2007). How can schools foster and strengthen this predisposition and ensure that young adults leave school with the motivation and capacity to continue learning throughout life? Schools can influence students' attitudes towards learning as much by fostering motivation as by imparting knowledge and skills. In fact, many adults with little interest in learning blame their lack of motivation on bad experiences at school in their early years (McKenna, Kear, Ellsworth, 1995). Motivation, engagement and the use of effective learning strategies can be regarded as important outcomes in their own right, as they can affect students' quality of life during their adolescence, and can influence their decision to pursue further education or their capacity to seize labour market opportunities.

This volume looks at how engagement in reading activities and approaches to learning relate to reading performance and analyses the degree to which engagement in reading and approaches to learning could have potential compensatory effects. The volume not only describes the strong positive link that exists between engagement in reading, approaches to learning and reading performance, but illustrates that boys and socio-economically disadvantaged students have lower levels of engagement and approach learning less effectively than girls and socio-economically advantaged students. Chapter 2 of this volume maps countries according to the extent to which their students, in general, and some groups of students in particular, are engaged in reading activities and know about and use learning strategies in their studies. By so doing, Chapter 2 identifies the relationship that 15-year-olds in participating countries and economies have with reading and learning. Chapter 3 suggests that a large part of the gap in reading performance between boys and girls and socio-economically disadvantaged and advantaged students could be closed if they had similar reading and learning habits.

Box III.1.2 **The association between reading habits, approaches to learning and reading performance**

Results presented in the chapter on the relationship between reading performance and students' reading habits and approaches to learning can be used to answer two main policy issues:

How strong is the association between reading performance and reading habits and approaches to learning?
Two indicators can be used to answer this question: the slope and the inter-quartile range.

The slope represents the score point difference that is associated with a change of one unit in reading habits and approaches to learning. This indicator measures how powerful the association is.

- If this number is low, no differences are observed in the reading performance of students with different reading habits and approaches to learning. Students whose reading habits and approaches to learning are similar to those of the average student in the OECD area (index value of 0) have a reading performance that is similar to the reading performance of students who are one standard deviation above the average students in the OECD area with respect to their reading habits and approaches to learning (index value of 1).

- If this number is high and positive, large differences are observed in the reading performance of students with different reading habits and approaches to learning. Students whose reading habits and approaches to learning are similar to those of the average student in the OECD area (index value of 0) have a reading performance that is lower than the reading performance of students who are one standard deviation above the average students in the OECD area with respect to their reading habits and approaches to learning (index value of 1).

The inter-quartile range represents the difference between the students with the highest and those with the lowest reading habits and approaches to learning (*i.e.* those in the top and bottom quartiles of these indicators). This indicator shows how severe inequalities in reading performance between "enthusiastic and unenthusiastic readers" are.

Are reading habits and approaches to learning good predictors of performance?
The proportion of the variation in student performance that is accounted for by engaging in reading and approaches to learning, or "explained variance", helps to answer this question by identifying the proportion of the observed variation in student performance that can be attributed to reading habits and approaches to learning.

- If this number is low, knowing the reading habits of students or how they approach their learning tells very little about their reading performance.

- If this number is high, by knowing the reading habits of students or how they approach their learning one can predict students' reading performance relatively well.

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Box III.1.3 **Interpreting PISA indices**

Comparing countries that are above or below the OECD average on each of the indices of reading engagement and learning strategies:

Indices used to characterise students' engagement in reading activities and awareness and use of learning strategies were constructed so that the average OECD student would have an index value of zero and about two-thirds of the OECD student population would be between the values of -1 and 1 (*i.e.* the index has a standard deviation of 1). Negative values on the index, therefore, do not imply that students responded negatively to the underlying question. Rather, students with negative scores are students who responded less positively than the average response across OECD countries. Likewise, students with positive scores are students who responded more positively than the average student in the OECD area (Annex A1 for a detailed description of how indices were constructed).

Most of the indicators of engagement-in-reading activities and approaches to learning are based on students' self-reports. Such measures can thus suffer from a degree of measurement error because students are asked to assess their level of engagement in reading activities and their use of different learning strategies retrospectively. Apart from potential measurement error, cultural differences in attitudes towards self-enhancement can influence country-level results in engagement-in-reading activities and the use of learning strategies (Bempechat, *et al.,* 2002). The literature consistently shows that response biases, such as social desirability, acquiescence and extreme response choice, are more common in countries with low GDP than in more affluent countries, as they are, within countries, among individuals with lower socio-economic background and less education.

As in the first PISA cycle, many of the self-reported indicators of engagement in reading and approaches to learning and reading are strongly and positively associated with reading performance within countries, but show a weak or negative association with performance at the country level. This may be due to different response biases across countries or the fact that country-level differences in reading performance are due to many factors that go beyond levels of engagement in reading activities and approaches to learning, and that are negatively associated with reading performance and positively associated with engagement in reading and approaches to learning.

PISA 2009 used two indicators aimed at assessing the extent to which students are aware of effective strategies to understand, remember and summarise information. These measures suffer less from self-reported biases because they gauge whether students agree with education experts on what strategies work best to achieve certain goals (Annex A1 for a detailed description of how these indices were constructed). Analyses presented in this volume confirm that these indicators are strongly associated with reading performance both within and across countries. This evidence is in line with previous studies that attempt to measure the influence of self-reported bias in country-level attitudinal scales in previous PISA cycles (Lie and Turmo, 2005), and suggests that self-reported biases may be at least partially responsible for observed cross-country differences in self-reported engagement-in-reading activities and approaches to learning.

Caution is advised when comparing levels of engagement and the use of different learning strategies across countries because students in different countries may not always mean the same thing when answering questions. The *PISA 2009 Technical Report* (OECD, forthcoming) contains a detailed description of all the steps that were taken in PISA 2009 to ensure the highest possible level of cross-country comparability and to assess the validity of cross-country comparisons based on the indices featured in the report.[1]

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ENGAGEMENT IN READING ACTIVITIES AND READING PERFORMANCE

This section examines the relationship between engagement in reading activities and reading performance, focusing on three aspects of how students engage in reading activities:

- how much students enjoy reading;
- how much time students spend reading for enjoyment; and
- what students read for enjoyment.

Are students who enjoy reading better readers?

Being interested in and enjoying a particular subject affects both the degree and the continuity of engagement in learning and the depth of understanding achieved, an effect that research has shown to operate largely independently of students' general motivation to learn.

In all countries – except Kazakhstan – students who enjoy reading the most perform significantly better than students who enjoy reading the least. Figure III.1.3 (Table III.1.1) shows the share of the variation in student reading performance that can be explained by a change in one unit in the *index of enjoyment of reading* and variations in performance on the reading scale across different groups of students. Enjoying or being interested in reading has been found to be associated with high levels of reading proficiency and the use of deep-level reading strategies (Schiefele, 2009). This is a useful measure of the strength in the relationship between students who reported enjoying reading and their reading performance. For each country, four groups of students were identified according to the extent to which they enjoy reading (top quarter, second quarter, third quarter and bottom quarter), as they reported in the PISA questionnaire. For each country, Figure III.1.3 displays the length of the line connecting the reading score of the group of students who enjoy reading the most and the group of students who enjoy reading the least – in other words, the performance gap between the top and the bottom groups. Countries are ranked according to the share of the variation in reading performance that is associated with a one unit change in the enjoyment of reading index; thus, countries on the upper part of Figure III.1.3 are those where a large share of variation in student performance can be explained by how much students reported enjoying reading, while countries where a relatively small share of this variation can be explained by how much students reported enjoying reading are in the lower part of Figure III.1.3.

What is meant by a difference of, say, 70 points between the scores of two different groups of students? What does such a difference translate into? Box III.1.4 can be used to visualise the different ways in which a given difference in PISA score points can be used and thought of.

Box III.1.4 **Interpreting differences in PISA scores: how large a gap?**

In PISA 2009, student performance in reading is described through seven proficiency levels (Levels 1b, 1a, 2, 3, 4, 5 and 6). A difference of about 73 score points represents one proficiency level on the PISA reading scale. This can be considered a comparatively large difference in student performance. For example, as described in Volume I, *What Students Know and Can Do*, and the PISA 2009 assessment framework, students proficient at Level 3 on the overall reading literacy scale are capable of completing moderately complex reading tasks, such as locating multiple pieces of information, making links between different parts of a text, and relating the text to familiar knowledge. Meanwhile, students proficient at Level 2 on the reading literacy scale are able to locate information that meets several conditions, to make comparisons or contrasts around a single feature, to work out what a well-defined part of a text means, even when the information is not prominent, and to make connections between the text and personal experience.

For the 32 OECD countries in which a sizeable number of 15-year-olds in the PISA samples were enrolled in at least two different grade levels, the difference between students in the two grades implies that one school year corresponds to an average of 39 score points on the PISA reading scale (Table A1.2).

The difference in performance on the reading scale between the countries with the highest and lowest mean performance is 242 score points, and the performance gap between the countries with the fifth highest and the fifth lowest mean performance is 154 score points.

In relation to the overall distribution of students on the PISA reading scale, one hundred points represent one standard deviation, which means that two-thirds of the OECD student population has scores within 100 points of the OECD mean.

Across OECD countries, 18% of student variation in reading performance can be explained by differences in how much students reported enjoying reading. The explained variation in reading performance is higher than 20 percentage points in 16 OECD countries and one partner economy. In Australia, New Zealand, France, Ireland, Sweden, Finland, Iceland, the United Kingdom, Switzerland, Austria, Norway, the Czech Republic, Germany, Luxembourg and Belgium, and the partner country Singapore, the quarter of students who enjoy reading the most can perform reading tasks that are more than 1.5 proficiency levels higher than students who enjoy reading the least.

The difference between the top and the bottom quarters on the *index of enjoyment of reading* shows what large inequalities in reading performance there are between enthusiastic and unenthusiastic readers in all countries. Table III.1.1 also shows the score point difference that is associated with a change in one unit in the *index of enjoyment of reading*.[2] On average across OECD countries, a difference of one unit on the *index of enjoyment of reading* corresponds to 40 points on the PISA reading scale, or the equivalent of an average school year's progress.

■ Figure III.1.3 ■
Relationship between enjoying reading and performance in reading

Legend: | Bottom quarter | ■ Third quarter | ◆ Second quarter | ▶ Top quarter

% of variance explained in student performance

Country	% of variance
Finland	27
Australia	26
Ireland	24
Switzerland	22
New Zealand	22
Norway	22
Iceland	22
Sweden	22
Chinese Taipei	22
United Kingdom	22
Denmark	21
Germany	21
France	21
Estonia	21
Czech Republic	21
Hungary	20
Canada	20
Austria	20
Poland	19
Liechtenstein	18
Lithuania	18
OECD average	18
Spain	18
Korea	18
United States	17
Slovenia	17
Luxembourg	17
Singapore	17
Greece	17
Latvia	17
Netherlands	17
Belgium	17
Italy	16
Japan	15
Russian Federation	15
Slovak Republic	14
Portugal	14
Hong Kong-China	14
Croatia	14
Dubai (UAE)	14
Shanghai-China	12
Albania	12
Macao-China	11
Montenegro	10
Serbia	9
Bulgaria	9
Chile	8
Israel	8
Thailand	8
Uruguay	7
Trinidad and Tobago	7
Qatar	7
Turkey	6
Jordan	5
Romania	5
Brazil	5
Azerbaijan	4
Mexico	4
Argentina	4
Indonesia	3
Kyrgyzstan	2
Peru	2
Panama	1
Colombia	1
Tunisia	0
Kazakhstan	0

Axis: 250 300 350 400 450 500 550 600
Mean score

Countries are ranked in descending order of the percentage of explained variance in student performance.
Source: OECD, *PISA 2009 Database,* Table III.1.1.
StatLink ⟨⟩ http://dx.doi.org/10.1787/888932360176

Figure III.1.4 (Table III.1.2) shows a strong association between how much students enjoy reading and how well they perform in the PISA reading assessment. It places students who have lower-than-average levels of enjoyment of reading across the proficiency levels, detailed in Volume I, *What Students Know and Can Do*, and represents two sample countries, Finland and Japan, where the relationship between enjoyment of reading activities and reading performance is markedly different. In the context of Figure III.1.4, students with low levels of enjoyment of reading are those whose values on the *index of enjoyment in reading* are below the average for their country.

■ Figure III.1.4 ■
How proficient in reading are students who don't enjoy reading?
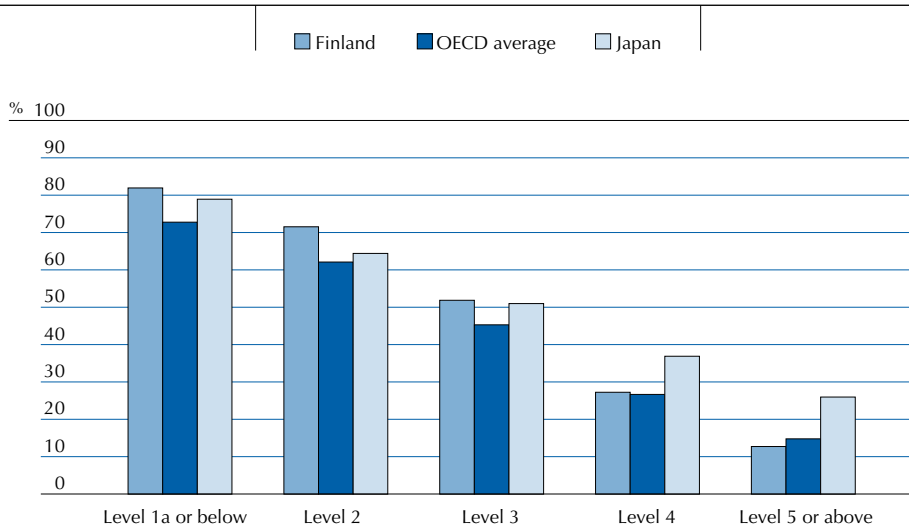
Note: This figure shows the proportion of students with below average levels of enjoyment of reading (compared to the average student in the country), by proficiency level on the reading scale.
Source: OECD, *PISA 2009 Database,* Table III.1.2.
StatLink ⟐ http://dx.doi.org/10.1787/888932360176

In the absence of an association between enjoyment of reading and reading performance, students with average or below-average levels of enjoyment would make up 50% of students in each proficiency level. On average though, students who do not enjoy reading tend to be vastly over-represented in proficiency Levels 1b, 1a, 2 and 3 and are under-represented in Levels 4, 5 and 6. The distribution of students who have lower-than-average levels of enjoyment of reading across the seven proficiency levels is not uniform across countries. In Israel, Belgium, Japan, Portugal, the United States and the Slovak Republic, and in the partner countries and economies Qatar, Brazil, Shanghai-China, Macao-China, Hong Kong-China and Dubai (UAE), the gradient is very gentle, suggesting a weak association between enjoyment of reading and reading performance, while in Australia, the Czech Republic, Estonia and Finland, and the partner economy Chinese Taipei, the gradient is relatively steep.

The association between time spent reading for enjoyment and reading performance

Time spent reading for enjoyment measures how frequently and for how long students read. The amount of time students spend reading for enjoyment provides an indicator of their interest in reading. The frequency of reading is strongly related to reading comprehension (Baker & Wigfield, 1999; Cipielewski & Stanovich, 1992). Stanovich (1986) describes a circular association, the so-called Matthew effect, between reading practices and achievement. Better readers tend to read more because they are more motivated to read, which, in turn, leads to improved vocabulary and comprehension skills.

PISA 2009 asked students how much time they usually spend reading for enjoyment. Students could choose from "I do not read for enjoyment", "I read for up to 30 minutes a day", "I read for more than 30 minutes but less than 60 minutes a day", "I read for between 1 and 2 hours a day" and "I read for more than 2 hours a day".

■ Figure III.1.5 ■

Relationship between time spent reading for enjoyment and performance in reading

○ Do not read for enjoyment
□ Up to 30 minutes a day
◇ More than 30 minutes to less than 60 minutes a day
▮ One to two hours a day
▶ More than two hours a day

Score point difference between students who read up to 30 minutes a day and students who don't read for enjoyment

Country	Score point difference
Iceland	66
Liechtenstein	64
Shanghai-China	63
Belgium	63
France	62
Switzerland	60
Sweden	60
Norway	58
Austria	57
Netherlands	57
Luxembourg	56
Australia	55
Germany	55
Chinese Taipei	55
Finland	54
Slovenia	53
New Zealand	52
Canada	49
Czech Republic	48
Ireland	48
United States	47
United Kingdom	47
Estonia	45
OECD average	44
Japan	44
Singapore	42
Slovak Republic	41
Italy	40
Denmark	39
Hungary	37
Lithuania	36
Croatia	35
Poland	35
Hong Kong-China	34
Korea	32
Portugal	32
Spain	31
Greece	29
Serbia	29
Macao-China	27
Thailand	26
Russian Federation	25
Dubai (UAE)	24
Turkey	24
Latvia	24
Israel	23
Bulgaria	23
Uruguay	22
Montenegro	22
Kyrgyzstan	15
Qatar	14
Chile	12
Romania	12
Jordan	10
Indonesia	10
Brazil	7
Azerbaijan	4
Argentina	4
Albania	4
Mexico	-1
Trinidad and Tobago	-2
Kazakhstan	-2
Panama	-4
Colombia	-5
Tunisia	-11
Peru	-13

250   300   350   400   450   500   550   600
Mean score

Countries are ranked in descending order of the score point difference.
Source: OECD, *PISA 2009 Database,* Table III.1.3.
StatLink http://dx.doi.org/10.1787/888932360176

Students who read for enjoyment tend to be more proficient readers than students who do not read for enjoyment in all PISA participating countries. Figure III.1.5 (Table III.1.3) shows the average score in the PISA 2009 reading assessment for five groups of students in each country: students who do not read for enjoyment; students who read for up to 30 minutes per day; students who spend between half an hour and one hour daily reading for enjoyment; students who spend between one and two hours; and a group of extremely dedicated readers who reported spending more than two hours per day reading for enjoyment. Countries are ranked by the length of the line connecting the average score of the group of students who read for less than 30 minutes a day for enjoyment and the group of students who do not read for enjoyment.

On average across OECD countries, over one-third of students – and 40% or more in Austria, the Netherlands, Luxembourg, Switzerland, Belgium, Japan, the Czech Republic, the United States, Ireland, Germany, the Slovak Republic, Norway and in the partner countries Liechtenstein and Argentina – reported that they did not read for enjoyment at all.[3] The average performance for these students on the reading scale, 460 points, is well below the average for the OECD as a whole. Another one-third of students across OECD countries read for 30 minutes or less per day. Their mean performance, 504 points, is in line with the OECD average of 493 points. A further 17% of students across OECD countries read for between half-an-hour and one hour per day, with performance levels of 527 points. Students who reported reading for longer, between one and two hours per day, or assiduous readers, who read for enjoyment for more than two hours daily, score 532 and 527 points, respectively (Table III.1.3).

In more than two-thirds of countries that participated in PISA, the score point difference associated with at least some daily reading for enjoyment is far greater than the score point difference associated with increasing amounts of time spent reading. The gap in performance between students who read for enjoyment for 30 minutes or less per day and students who do not read for enjoyment is more than 30 points in 36 countries; in Iceland, Belgium, France, the partner country Liechtenstein and the partner economy Shanghai-China, it is above 60 points. However, the performance gap between students who read for enjoyment between 30 minutes and one hour and students who read 30 minutes or less is above 30 points in only eight countries: Australia, Ireland, New Zealand, Germany, the Czech Republic, and the partner countries and economy Bulgaria, Qatar and Dubai (UAE). In no country is the performance gap between students who read for enjoyment between one and two hours per day and students who read between half-an-hour and one hour per day more than 20 points.

Figure III.1.5 indicates that, in most countries, the score point difference between students who spend less than 30 minutes per day reading for enjoyment and students who spend no time reading for enjoyment is greater than the score point difference between students who spend half an hour to an hour reading for enjoyment and students who spend less than 30 minutes. In general, the score point difference between different groups of students decreases as students spend more time reading for enjoyment. This may mean that the returns on the time students spend reading for enjoyment decrease as time invested by students increases or, alternatively, that poor readers need more time to read a text. Of course, it is not just how long students spend reading, but also the types of materials and their levels of complexity that are relevant. This is considered in the next section.

Results presented in Figure III.1.5 indicate that reading for enjoyment is associated with reading proficiency. The low reading performance among students who do not read for enjoyment calls for education systems to encourage reading both in and outside of school. The existence of a threshold effect and in how fast students of different abilities are able to access written information means that the focus should remain on encouraging students to read daily for enjoyment rather than on how much time they spend reading.

The association between the material students read and reading performance

There has been considerable debate as to which type of reading may be most effective in fostering reading skills and improving reading performance. The results from PISA suggest that, although the students who reported reading fiction are more likely to have higher scores in the 2009 PISA reading assessment, it is the students who read a wide variety of materials who perform particularly well in reading. Table III.1.6 illustrates that in all countries except for Turkey and the partner country Kazakhstan, these students perform better on the PISA reading scale than students who show less diverse reading patterns.

PISA 2009 offers a valuable opportunity to explore the association between what students report reading in their free time and reading performance and although it cannot establish causal relations, it offers a glimpse of how proficient in reading students who read different materials are. PISA 2009 asked students to indicate how often they read magazines, comic books, fiction (novels, narratives, stories), non-fiction and newspapers, *because they want*

to. Students could indicate that they read each material "Never or almost never", "A few times a year", "About once a month", "Several times a month" and "Several times a week".

Table III.1.6 shows how students who reported reading fiction and non-fiction books regularly, *i.e.* several times a month or several times a week, are particularly likely to perform well in the PISA reading assessment. Findings emerging from analyses of the association between what students reported reading for enjoyment and their reading performance are in line with evidence suggesting that some reading materials may nurture reading proficiency more than others (Smith, 1996; OECD 2002). More specifically, reading long and complex texts, such as fiction and non-fiction books, appears to be particularly associated with how well both students and adults read.

Figure III.1.6 presents the reading performance of students who report reading regularly, either several times a month or several times a week, and for their enjoyment, different types of material: magazines, comic books, fiction (novels, narratives, stories), non-fiction, and newspapers.[4] Compared to someone who reports not reading fiction for enjoyment, reading fiction for a student's own enjoyment appears to be positively associated with higher performance in the PISA 2009 reading assessment, while reading comic books is associated with little improvement in reading proficiency in some countries, and with lower overall reading performance in other countries (Table III.1.24).

Students who reported reading fiction for their own enjoyment several times a month or several times a week are more proficient readers than students who do not read fiction, or who reported reading fiction only occasionally in all countries except Mexico and the partner countries Colombia, Jordan, Tunisia, Peru, Kazakhstan, Brazil, Argentina and Panama (Table III.1.24).[5] The performance difference is 36 points or more – or half a proficiency level – in as many as 36 countries and 73 points or more – or one proficiency level – in five countries: Sweden, Australia, Luxembourg, Austria and Finland. Fifteen-year-olds who reported reading non-fiction for their own enjoyment at least several times a month generally have higher reading scores than students who do not. The score point difference associated with reading non-fiction, however, appears to be lower than the score point difference observed for fiction: it is higher than 50 points only in Spain and the partner country Croatia. In 14 countries, no difference could be observed; but in Turkey and in the partner countries Kazakhstan and Peru, reading non-fiction books is negatively associated with reading performance.

Reading magazines and newspapers for enjoyment on a regular basis is also associated with higher reading scores, although, as in the case of non-fiction books, the score point difference between reading these materials frequently and not reading or reading them only sporadically is lower than in the case of fiction. For example, the score point difference between students who reported reading newspapers several times a month or several times a week and students who reported not reading newspapers or reading them once a month or less is 35 points or more only in Iceland, Israel and Sweden and the partner country Peru. Similarly, the score point difference between students who read magazines several times a month or several times a week and students who do not read magazines or read them once a month or less is above 35 points only in six countries: the Netherlands, Hungary, Finland, the Slovak Republic and the partner countries Bulgaria and Montenegro.

Reading comic books**,** on the other hand, is generally associated with low levels of reading. proficiency. Students who reported reading comics several times a month or several times a week have lower reading scores than students who reported not reading comic books in 33 countries. The difference in performance between students who reported reading and students who reported not reading comic books is very negative – 30 points or more – in Estonia and the partner countries Kazakhstan, the Russian Federation and Bulgaria. In 14 countries – Belgium, Norway, Italy, Iceland, Switzerland, France, the Netherlands, Denmark, Sweden, Finland and the partner countries and economy Jordan, Thailand, Indonesia and Macao-China – students who reported reading comics regularly achieve higher scores than students who reported not reading comic books regularly. The causal nature of this relationship cannot be established by PISA. It may well be that students with lower performance levels find comic books, with a lighter reading load, more accessible.

Students who reported reading fiction and who may also have reported reading other material, except for comic books, were the students who achieved the highest scores in the reading scale: on average, over 100 points more than students who read nothing in Iceland, Austria, Sweden, Switzerland, Finland, the Slovak Republic, France, Luxembourg and the partner country and economy Bulgaria and Dubai (UAE) (Figure III.1.7 and Table III.1.9). On average, students across the OECD who reported reading fiction and any other material regularly, but not comic books, have a reading score of 538 points in the reading assessment. In most countries, these students have reading scores that place them more than one proficiency level above students who do not read any material regularly.

■ Figure III.1.6 [Part 1/2] ■

Relationship between the types of materials students read and performance in reading

OECD average 53 score points	OECD average -2 score points	OECD average 22 score points
Fiction	**Comic books**	**Non-fiction**

Fiction	Comic books	Non-fiction
Sweden	Belgium	Croatia
Australia	Norway	Spain
Luxembourg	Italy	Slovenia
Austria	Jordan	Sweden
Finland	Iceland	Netherlands
France	Switzerland	Lithuania
Czech Republic	Thailand	Bulgaria
Switzerland	France	Poland
Germany	Netherlands	Australia
United Kingdom	Denmark	Portugal
Iceland	Sweden	Slovak Republic
New Zealand	Finland	Iceland
Ireland	Indonesia	Ireland
Norway	Japan	Korea
Belgium	Macao-China	Chinese Taipei
Slovenia	Qatar	Serbia
Liechtenstein	Singapore	Chile
Slovak Republic	Slovak Republic	United Kingdom
Canada	Colombia	Estonia
Poland	Spain	Indonesia
Spain	Czech Republic	Finland
Netherlands	Azerbaijan	Trinidad and Tobago
Lithuania	Canada	Czech Republic
Greece	Chinese Taipei	Uruguay
Croatia	Australia	Macao-China
United States	Greece	Hong Kong-China
Singapore	Liechtenstein	Latvia
Dubai (UAE)	Portugal	Denmark
Italy	Luxembourg	Japan
Japan	Argentina	Greece
Bulgaria	Trinidad and Tobago	Thailand
Denmark	Hong Kong-China	New Zealand
Portugal	Germany	Montenegro
Russian Federation	Chile	Mexico
Estonia	Korea	Albania
Chinese Taipei	Montenegro	Singapore
Hong Kong-China	Uruguay	Luxembourg
Hungary	Mexico	Canada
Macao-China	Croatia	Russian Federation
Qatar	Slovenia	Hungary
Korea	Peru	Brazil
Israel	Panama	Italy
Trinidad and Tobago	United States	Belgium
Montenegro	Romania	Israel
Albania	Hungary	Liechtenstein
Serbia	Kyrgyzstan	Austria
Latvia	Poland	Romania
Thailand	Turkey	Dubai (UAE)
Romania	Brazil	Shanghai-China
Chile	Shanghai-China	Colombia
Shanghai-China	Tunisia	Kyrgyzstan
Indonesia	New Zealand	Switzerland
Kyrgyzstan	Austria	Germany
Uruguay	Dubai (UAE)	Qatar
Azerbaijan	United Kingdom	Norway
Turkey	Albania	Panama
Panama	Serbia	Argentina
Argentina	Ireland	Tunisia
Brazil	Israel	Azerbaijan
Kazakhstan	Latvia	France
Peru	Lithuania	Jordan
Tunisia	Estonia	United States
Jordan	Bulgaria	Peru
Mexico	Russian Federation	Turkey
Colombia	Kazakhstan	Kazakhstan

Score point difference (axes: -40, -20, 0, 20, 40, 60, 80)

Note: Score point differences that are statistically significant are marked in a darker tone.
Countries are ranked in ascending order of the score point differences.
Source: OECD, *PISA 2009 Database,* Table III.1.24.

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■ Figure III.1.6 [Part 2/2] ■

Relationship between the types of materials students read and performance in reading

Magazines — OECD average 15 score points

Countries (ascending order):
Bulgaria, Netherlands, Hungary, Montenegro, Finland, Slovak Republic, Romania, Lithuania, Sweden, Uruguay, Peru, Poland, Panama, Belgium, Argentina, Serbia, Kyrgyzstan, Latvia, Chile, Brazil, Israel, Iceland, Jordan, Thailand, Slovenia, Switzerland, France, Denmark, Croatia, Indonesia, Qatar, Dubai (UAE), Estonia, Greece, Shanghai-China, Norway, Mexico, Azerbaijan, Luxembourg, Trinidad and Tobago, Albania, Tunisia, Liechtenstein, Kazakhstan, Czech Republic, Italy, Austria, Russian Federation, Spain, Canada, Singapore, Germany, United States, Colombia, Ireland, Korea, Macao-China, United Kingdom, Portugal, Turkey, Chinese Taipei, Japan, Hong Kong-China, Australia, New Zealand

Score point difference: -40, -20, 0, 20, 40, 60, 80

Newspapers — OECD average 16 score points

Countries (ascending order):
Iceland, Israel, Sweden, Peru, Shanghai-China, Kyrgyzstan, Jordan, Bulgaria, Netherlands, Liechtenstein, Korea, Trinidad and Tobago, Singapore, Macao-China, Hong Kong-China, Uruguay, Chinese Taipei, Chile, Switzerland, Japan, Norway, Croatia, Tunisia, Estonia, Austria, Montenegro, Turkey, Italy, Dubai (UAE), Finland, Serbia, Hungary, Poland, Germany, Indonesia, Belgium, Azerbaijan, Latvia, Brazil, Denmark, Lithuania, France, Thailand, Australia, Qatar, Slovak Republic, Argentina, Canada, Spain, Romania, Slovenia, Czech Republic, New Zealand, Mexico, United States, Luxembourg, Greece, Panama, United Kingdom, Colombia, Albania, Russian Federation, Kazakhstan, Portugal, Ireland

Score point difference: -40, -20, 0, 20, 40, 60, 80

Note: Score point differences that are statistically significant are marked in a darker tone.
Countries are ranked in ascending order of the score point differences.
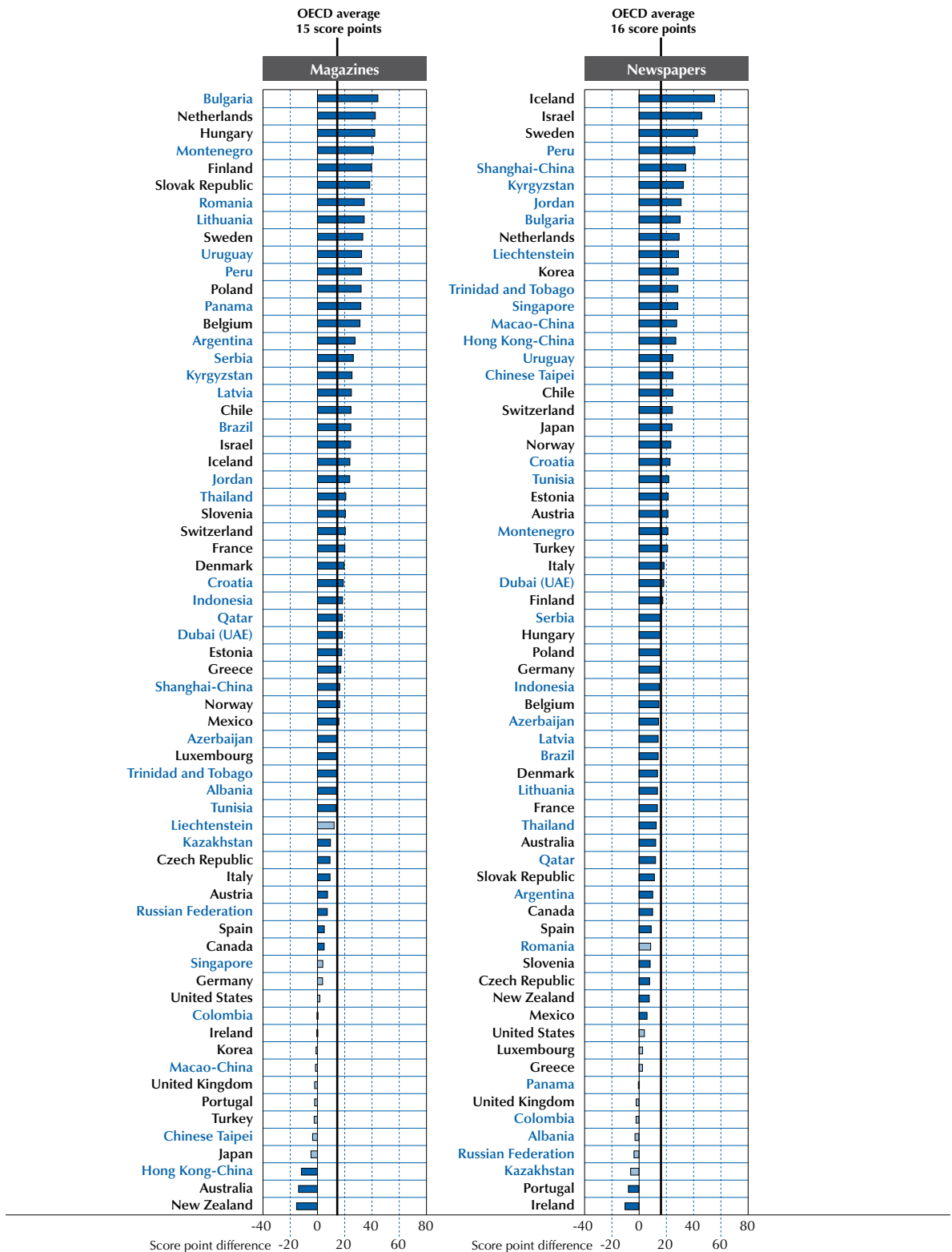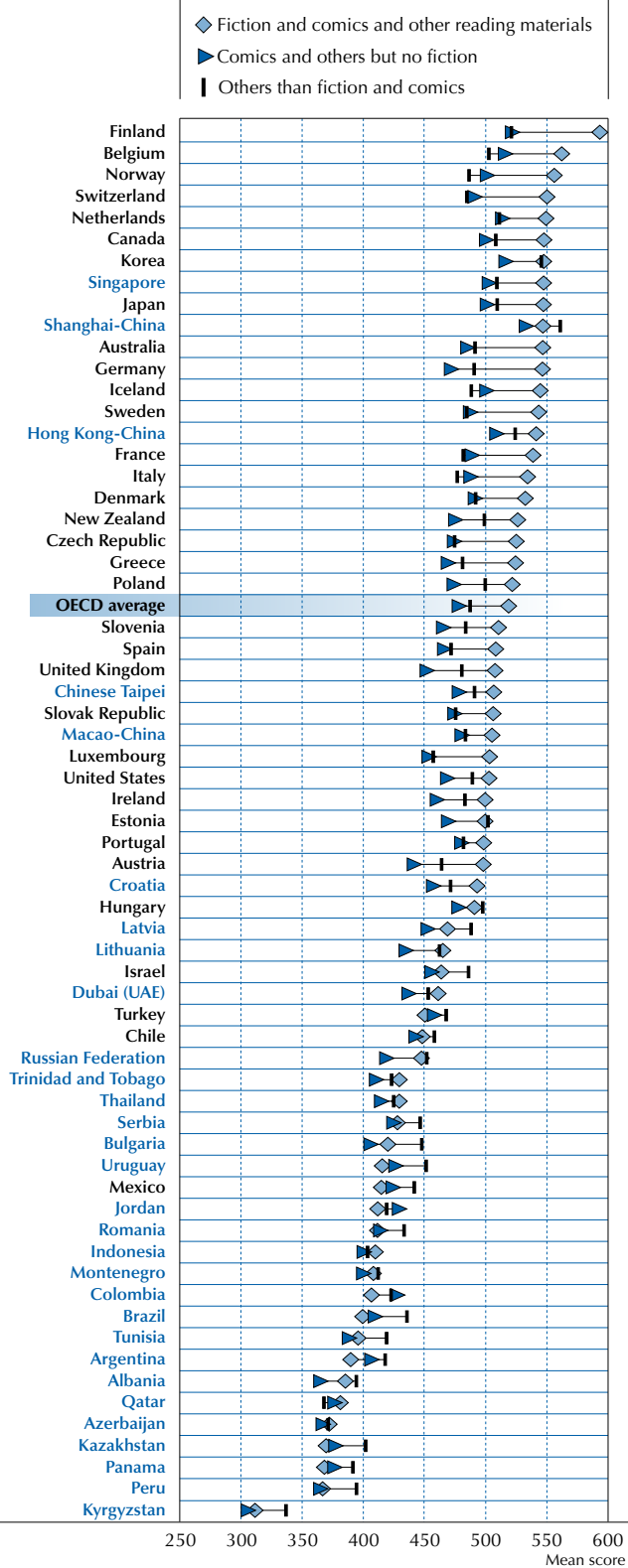Source: OECD, *PISA 2009 Database,* Table III.1.24.

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■ Figure III.1.7 ■
Performance on the reading scale of students who read different materials

◇ Fiction and comics and other reading materials
▶ Comics and others but no fiction
▎ Others than fiction and comics

Note: Liechtenstein does not feature in this figure, because of small sample size issues.
Countries are ranked in descending order of the mean performance of students who read fiction, comics and other reading materials.
Source: OECD, *PISA 2009 Database,* Table III.1.9.
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Students in Israel, Turkey and Mexico, and in the partner countries Colombia, Serbia, Latvia, Romania, Tunisia, Panama, Kyrgyzstan, Peru, Bulgaria, Argentina, Kazakhstan Uruguay and Brazil who reported reading fiction and comic books and who may also read other materials, such as magazines, newspapers and non-fiction regularly, score at least 15 score points lower on the reading scale than students who only read magazines, newspapers and non-fiction. This variation is not due to different patterns of reading comic books among boys and girls. Indeed, in several countries, boys and girls who reported reading comic books and who may also read magazines, newspapers and non-fiction, have lower scores than when they reported reading only magazines, newspapers and non-fiction. The reading performance of boys who reported reading fiction, comic books and who may also read other material is lower than the reading performance of boys who reported reading only magazines, newspapers and non-fiction in 26 countries. This suggests that in the vast majority of countries, comic books are not associated with better reading performance, even when they may help inspire students who are less engaged and motivated to read, such as boys, to try other reading material, such as fiction.

In most countries, proficient readers are not only those students who enjoy reading and who read for enjoyment regularly, but they are also those students who are versatile readers. Students who are familiar with several written codes and practice reading a variety of styles appear to master reading better than students who are more restricted in their reading habits. Figure III.1.8 appears to contradict commonly held beliefs about how what one reads influences reading proficiency. While it is true that regularly reading some materials, such as fiction, is associated with better reading proficiency (Figure III.1.6), reading other materials, such as newspapers and magazines, does so too if it complements other types of texts.

For each country, four groups of students were identified on the basis of them reporting the extent to which they read a diversity of materials (top quarter, second quarter, third quarter and bottom quarter). Countries on the upper part of Figure III.1.8 are those where the diversity of material read explains a large share of the variance in reading performance among students in each country.

Figure III.1.8 (Table III.1.10) also suggests that the association between the variety of reading material and reading proficiency is generally large: the gap between the group of students with the most varied reading patterns and the group with the least varied reading patterns corresponds to one PISA proficiency level or more in Sweden, Iceland, the Netherlands, Finland, Belgium, France and Switzerland, and is still 36 points or more – half a proficiency level – in 42 countries.

Diversity of reading materials explains a very high share – 10% or more – of the overall variance in reading performance in Finland, Sweden, the Netherlands and Iceland (Figure III.1.8). Table III.1.10 also reports the score point difference that is associated with a change in one unit in the *index of diversity of reading materials*. The score point difference represents the average difference in PISA scores that two students can expect to have when one student has reading patterns that are similar to those of the average student in the OECD area (index value of 0) and the other reads a greater variety of reading materials than five out of six students in the OECD area (index value of 1). On average across OECD countries, a difference of one unit on the *index of diversity of reading materials* corresponds to 22 points on the PISA reading scale. In Finland, Sweden, France and Iceland however, a difference of one unit on the *index of diversity of reading materials* corresponds to more than 30 points.
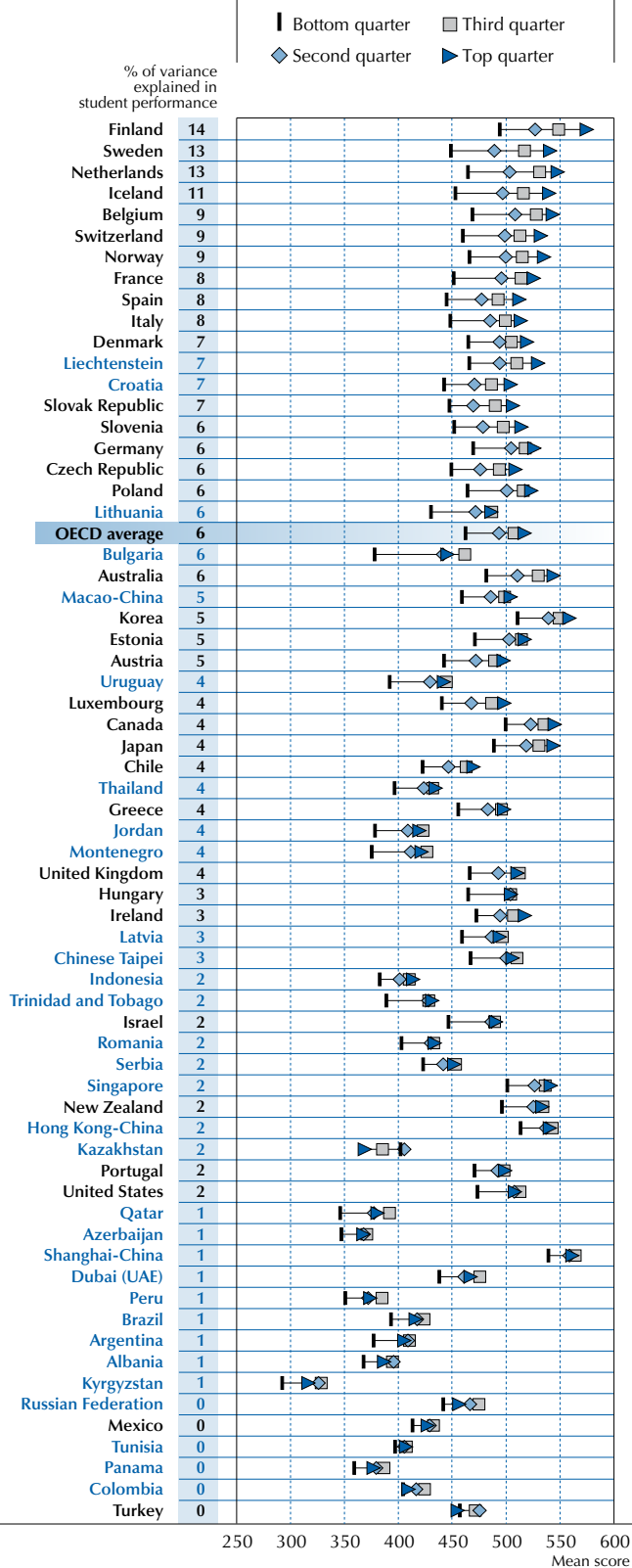
Students with relatively undiversified reading patterns[6] are over-represented among students who are only able to perform at Levels 1b, 1a, 2 and 3 and under-represented at the higher proficiency Levels 4, 5 and 6 (Table III.1.11). As Table III.1.11 suggests, the link between diversity of reading materials and reading proficiency is particularly marked in the Netherlands, Finland and Sweden.

Online reading and reading performance of print texts

Students' engagement in reading is also indicated by the diversity of the material that students read online and by the amount of time they spend accessing online material. Online reading is becoming increasingly popular among many adolescents (Mills, 2010). Students who are extensively engaged in these activities, such as reading e-mails, chatting on line, reading news on line, using an online dictionary or encyclopaedia, participating in online group discussions and searching for information online, either because they access several types of online material or because they access online material regularly, are generally more proficient readers than students who do little online reading.

■ Figure III.1.8 ■

Relationship between diversity in reading habits and performance in reading

| Bottom quarter | ■ Third quarter |
| ◆ Second quarter | ▶ Top quarter |

% of variance
explained in
student performance

Finland	14
Sweden	13
Netherlands	13
Iceland	11
Belgium	9
Switzerland	9
Norway	9
France	8
Spain	8
Italy	8
Denmark	7
Liechtenstein	7
Croatia	7
Slovak Republic	7
Slovenia	6
Germany	6
Czech Republic	6
Poland	6
Lithuania	6
OECD average	6
Bulgaria	6
Australia	6
Macao-China	5
Korea	5
Estonia	5
Austria	5
Uruguay	4
Luxembourg	4
Canada	4
Japan	4
Chile	4
Thailand	4
Greece	4
Jordan	4
Montenegro	4
United Kingdom	4
Hungary	3
Ireland	3
Latvia	3
Chinese Taipei	3
Indonesia	2
Trinidad and Tobago	2
Israel	2
Romania	2
Serbia	2
Singapore	2
New Zealand	2
Hong Kong-China	2
Kazakhstan	2
Portugal	2
United States	2
Qatar	1
Azerbaijan	1
Shanghai-China	1
Dubai (UAE)	1
Peru	1
Brazil	1
Argentina	1
Albania	1
Kyrgyzstan	1
Russian Federation	0
Mexico	0
Tunisia	0
Panama	0
Colombia	0
Turkey	0

250   300   350   400   450   500   550   600
Mean score

Countries are ranked in descending order of the percentage of explained variance in student performance.
Source: OECD, *PISA 2009 Database,* Table III.1.10.
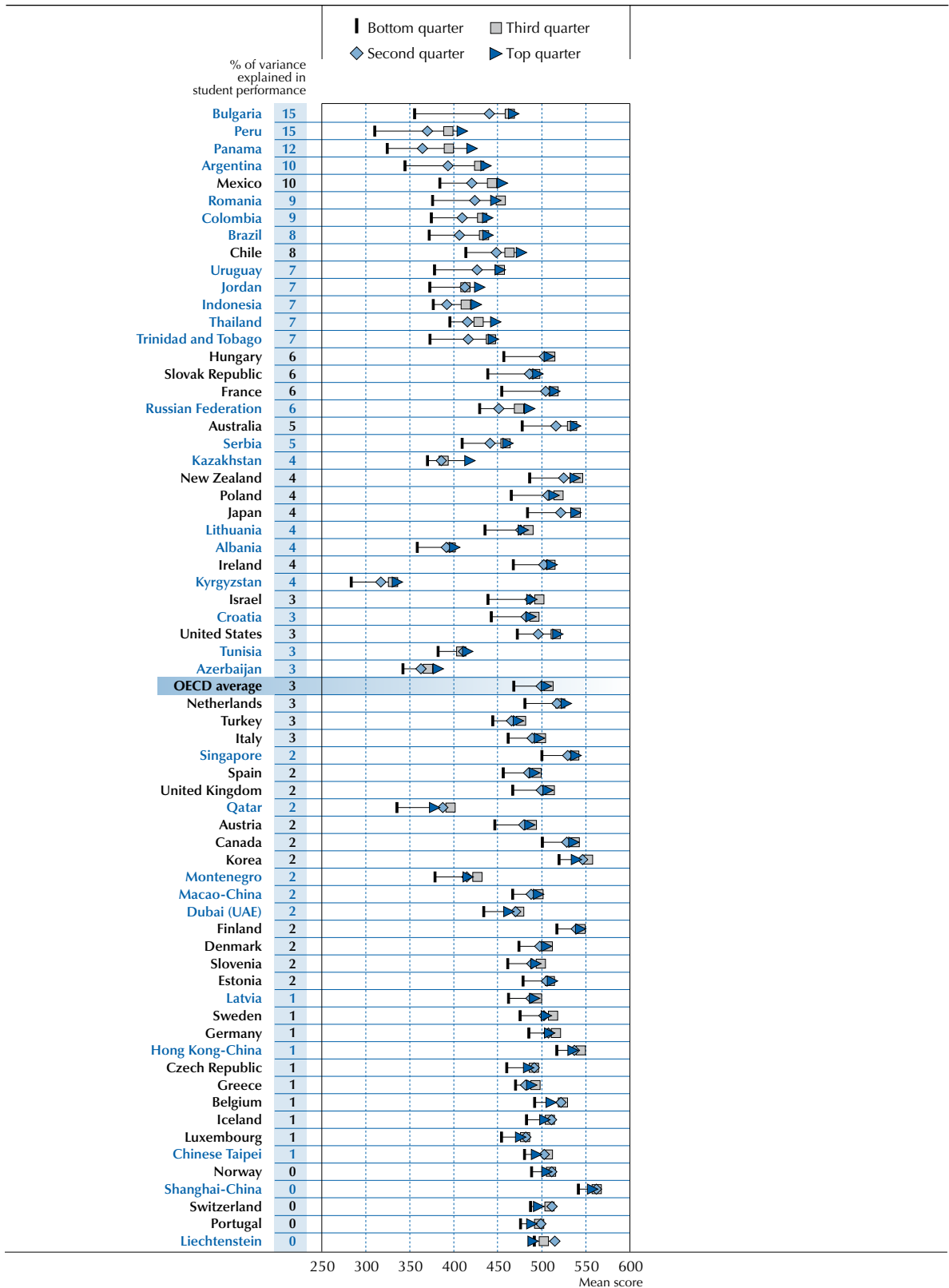*StatLink* ⌨ http://dx.doi.org/10.1787/888932360176

■ Figure III.1.9 ■
Relationship between reading on line and performance in reading

| Bottom quarter | ☐ Third quarter |
| ◇ Second quarter | ▶ Top quarter |

% of variance
explained in
student performance

Country	%
Bulgaria	15
Peru	15
Panama	12
Argentina	10
Mexico	10
Romania	9
Colombia	9
Brazil	8
Chile	8
Uruguay	7
Jordan	7
Indonesia	7
Thailand	7
Trinidad and Tobago	7
Hungary	6
Slovak Republic	6
France	6
Russian Federation	6
Australia	5
Serbia	5
Kazakhstan	4
New Zealand	4
Poland	4
Japan	4
Lithuania	4
Albania	4
Ireland	4
Kyrgyzstan	4
Israel	3
Croatia	3
United States	3
Tunisia	3
Azerbaijan	3
OECD average	3
Netherlands	3
Turkey	3
Italy	3
Singapore	2
Spain	2
United Kingdom	2
Qatar	2
Austria	2
Canada	2
Korea	2
Montenegro	2
Macao-China	2
Dubai (UAE)	2
Finland	2
Denmark	2
Slovenia	2
Estonia	2
Latvia	1
Sweden	1
Germany	1
Hong Kong-China	1
Czech Republic	1
Greece	1
Belgium	1
Iceland	1
Luxembourg	1
Chinese Taipei	1
Norway	0
Shanghai-China	0
Switzerland	0
Portugal	0
Liechtenstein	0

250   300   350   400   450   500   550   600
Mean score

Countries are ranked in descending order of the percentage of explained variance in student performance.
Source: OECD, *PISA 2009 Database,* Table III.1.12.

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Volume VI of this report, *Students On Line: Reading and Using Digital Information* explains how PISA measures and reports student performance in digital reading and analyses what students participating in this assessment can do. However, PISA 2009 also examined the extent to which students are engaged in online reading activities for enjoyment by asking students how often they were involved in the following activities: reading emails; chatting on line; reading online news; using an online dictionary or encyclopaedia (*e.g.* <Wikipedia®>); searching online information to learn about a particular topic; taking part in online group discussions or forums; and searching for practical information online (*e.g.* schedules, events, tips, recipes). Students could indicate that they read each material "never or almost never", "several times a month", "several times a week" or "several times a day". Students could also indicate that they did not know what the activity was.

Figure III.1.9 (Table III.1.12) illustrates that, in 45 countries, the extent to which students reported reading online explains less than 5% of the student variation in reading performance and that in general, the difference in the reading performance of students who reported being the most engaged in reading activities and the group that reports being the least engaged in each country is smaller than the gap observed for differences in how much students reported enjoying reading or the time students allocate to reading for enjoyment.

Reading online is associated with better reading performance in all PISA participating countries and economies, excluding Liechtenstein. Although the score point difference that is associated with online reading is quantitatively small, results presented in Figure III.1.9 disprove commonly held beliefs that students who engage too much in online reading are poorer readers of print texts. In all the countries that participated in PISA 2009, the score point difference that is associated with a one unit difference in the *index of online reading activities* is lower than 30 points; but it is at least 20 points in Australia, France, New Zealand, Hungary, the Slovak Republic, the Netherlands, Ireland and the partner countries Bulgaria, Argentina and Uruguay.

APPROACHES TO LEARNING AND READING PERFORMANCE

Countries vary widely in the extent to which different learning strategies are used by students in general and by some particular groups of students. Within the OECD countries, girls are more knowledgeable than boys about effective ways to understand, remember and summarise texts. Girls also use memorisation and control strategies more than boys, while boys rely more than girls on elaboration strategies. Students from socio-economically advantaged backgrounds know more about and report using learning strategies more than students from socio-economically disadvantaged backgrounds, although memorisation strategies are used to the same extent by students from all socio-economic backgrounds (Chapter 2 of this volume for a detailed description of whether students in general, and some groups of students in particular, have high levels of engagement in reading activities and know how to approach their learning effectively).

This section examines the relationship between awareness and the use of learning strategies and reading performance. The learning strategies examined in the context of PISA 2009 are:

- awareness of the most effective strategies to understand and remember information;
- awareness of the most effective strategies to summarise information;
- use of control strategies;
- use of memorisation strategies; and
- use of elaboration strategies.

The association between strategies to understand and remember information and reading performance

PISA 2009 assessed the extent to which students were aware that doing things like "after reading the text, I discuss its content with other people", "I underline important parts of the text" and "I summarise the text in my own words" were effective strategies to understand and remember information, while doing things like "I concentrate on the parts of the text that are easy to understand", "I quickly read through the text twice" and "I read the text aloud to another person" were less effective strategies. In order to determine the relative effectiveness of different strategies, PISA 2009 consulted reading experts in participating countries. Student awareness of what strategies were effective was then established by comparing the rating of students with those of the experts. Annex A1 describes in detail how the index was constructed.

Across the OECD countries, an increase of one unit on the *index of understanding and remembering information* is associated with a performance difference of 35 points or more in 25 countries. The relationship appears to be particularly strong in the case of Belgium and Switzerland. Most of these countries perform above the OECD average in the PISA 2009 reading assessment. The association between the extent to which students are aware of appropriate strategies to understand and remember information and how well they read is strongest in countries where students generally read the best. Figure III.10 (Tables I.2.3 and III.1.14) illustrates how countries in which the average student is aware that "discussing the content of a text they just read with other people", "underlining important parts of a text and summarising the text in their own words" are effective strategies to understand and remember information are also the countries where students tend to perform better in the PISA reading assessment.
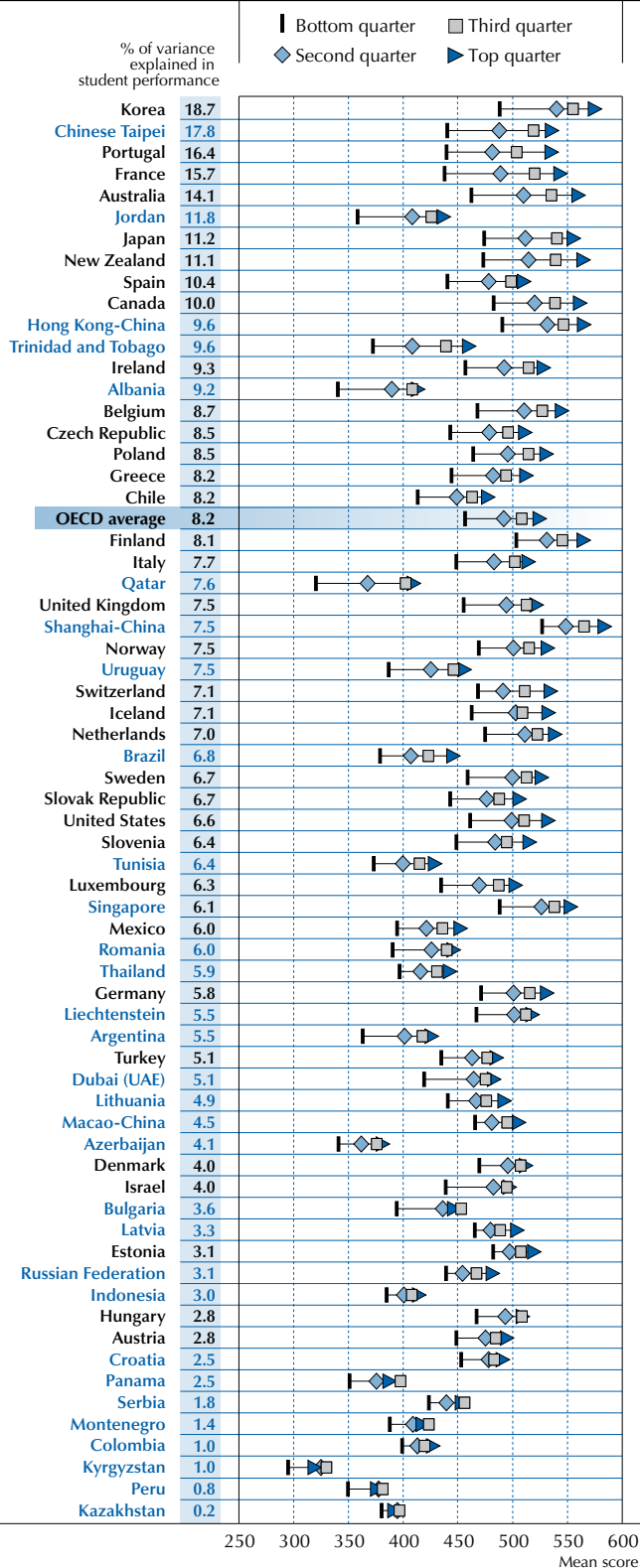
■ Figure III.1.10 ■

**Association between awareness of effective strategies
to understand and remember information and performance in reading**
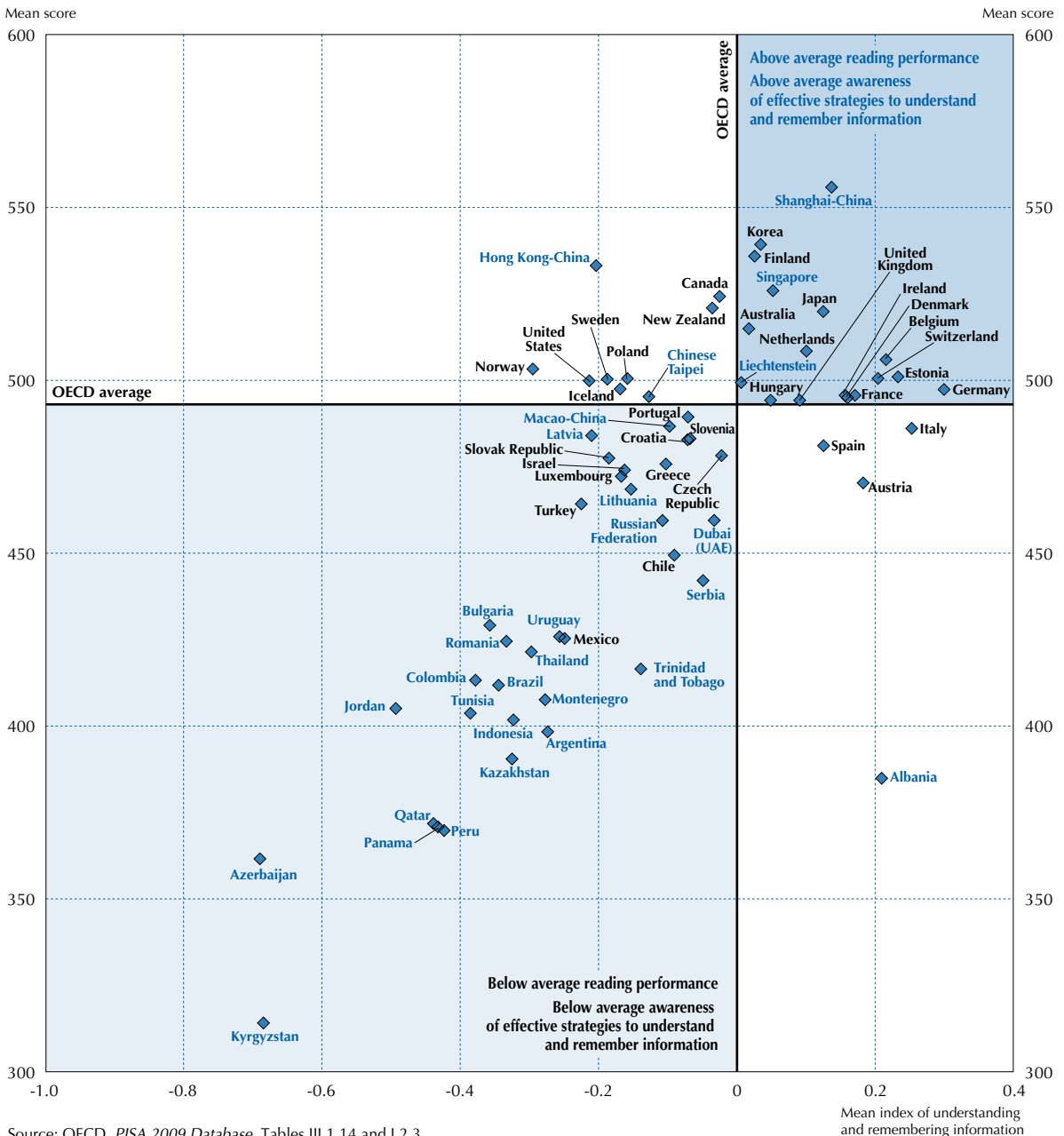
Source: OECD, *PISA 2009 Database,* Tables III.1.14 and I.2.3.
StatLink ⌂⌂⌂ http://dx.doi.org/10.1787/888932360176

■ Figure III.1.11 ■

How students' awareness of effective strategies to understand and remember information relates to their reading performance

	% of variance explained in student performance					
	Bottom quarter	Third quarter	Second quarter	Top quarter		

Country	% of variance
Korea	18.7
Chinese Taipei	17.8
Portugal	16.4
France	15.7
Australia	14.1
Jordan	11.8
Japan	11.2
New Zealand	11.1
Spain	10.4
Canada	10.0
Hong Kong-China	9.6
Trinidad and Tobago	9.6
Ireland	9.3
Albania	9.2
Belgium	8.7
Czech Republic	8.5
Poland	8.5
Greece	8.2
Chile	8.2
OECD average	8.2
Finland	8.1
Italy	7.7
Qatar	7.6
United Kingdom	7.5
Shanghai-China	7.5
Norway	7.5
Uruguay	7.5
Switzerland	7.1
Iceland	7.1
Netherlands	7.0
Brazil	6.8
Sweden	6.7
Slovak Republic	6.7
United States	6.6
Slovenia	6.4
Tunisia	6.4
Luxembourg	6.3
Singapore	6.1
Mexico	6.0
Romania	6.0
Thailand	5.9
Germany	5.8
Liechtenstein	5.5
Argentina	5.5
Turkey	5.1
Dubai (UAE)	5.1
Lithuania	4.9
Macao-China	4.5
Azerbaijan	4.1
Denmark	4.0
Israel	4.0
Bulgaria	3.6
Latvia	3.3
Estonia	3.1
Russian Federation	3.1
Indonesia	3.0
Hungary	2.8
Austria	2.8
Croatia	2.5
Panama	2.5
Serbia	1.8
Montenegro	1.4
Colombia	1.0
Kyrgyzstan	1.0
Peru	0.8
Kazakhstan	0.2

250   300   350   400   450   500   550   600
Mean score

Countries are ranked in descending order of the percentage of explained variance in student performance.
Source: OECD, *PISA 2009 Database,* Table III.1.14.
StatLink ⌐⌐⌐ http://dx.doi.org/10.1787/888932360176

■ Figure III.1.12 ■

How proficient in reading are students who are not aware of effective strategies to understand and remember information?
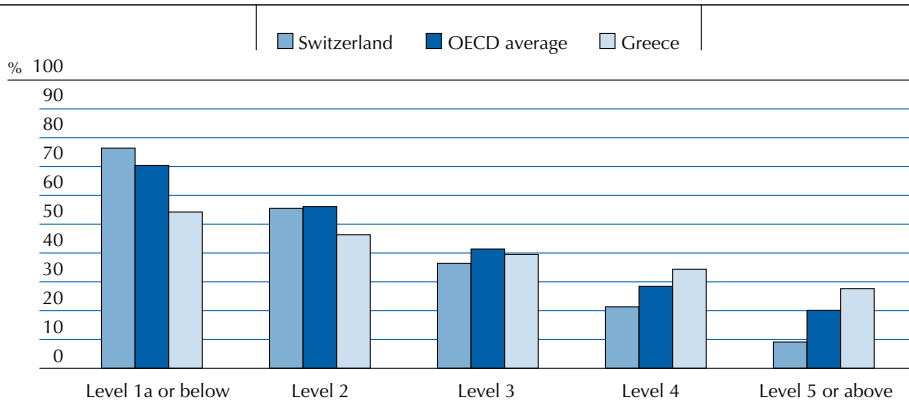
■ Switzerland   ■ OECD average   □ Greece

Note: This figure shows the proportion of students with below average levels of enjoyment of reading (compared to the average student in the country), by proficiency level on the reading scale.
Source: OECD, *PISA 2009 Database,* Table III.1.15.
StatLink ⌨ http://dx.doi.org/10.1787/888932360176

Within each country, these students tend to perform better on the PISA reading scale than those who do not (Figures III.1.11 and III.1.12, and Tables III.1.14 and III.1.15). In Switzerland, Belgium, Germany, the Netherlands and the partner country Liechtenstein, over 20% of the overall variation in student reading performance can be explained by differences in students' level of awareness of effective strategies to understand and remember information. In all but 10 countries, over 10% of the overall variation in student reading performance can be explained by differences in students' level of awareness of effective strategies to understand and remember information. In all countries except for Greece, Turkey, Canada and the partner countries and economies Azerbaijan, Tunisia, Macao-China, Jordan, Indonesia, Thailand and Shanghai-China, students who use appropriate strategies to understand and remember information the most perform 70 points or more higher – or one full proficiency level – in the PISA reading assessment than students who use them the least. The association is most marked in Belgium, Switzerland, Austria, Luxembourg, Germany and the partner countries and economy Liechtenstein, Dubai (UAE) and Trinidad and Tobago. In these countries, the quarter of students who use appropriate understanding and remembering strategies for learning the most are, on average, more than 105 points, or one-and-a-half proficiency levels, ahead of the quarter of students who use them the least. These results do not only hold within countries, they are also mirrored in the performance patterns across countries. At the OECD average level, the difference between the top and bottom quarters is 90 points.

The association between strategies to summarise information and reading performance

PISA 2009 assessed the extent to which students were aware that doing things like "I carefully check whether the most important facts in the text are represented in the summary" and "I read through the text, underlining the most important sentences. Then I write them in my own words as a summary" are the most effective strategies, that "I write a summary. Then I check that each paragraph is covered in the summary, because the content of each paragraph should be included" and "before writing the summary, I read the text as many times as possible" are moderately effective, while "I try to copy out accurately as many sentences as possible" is the least effective strategy to summarise information. Annex A1 describes in detail how the index on strategies to understand and remember information was constructed.

Figure III.1.13 (Tables III.1.16 and I.2.3) shows that high-performing countries are also those where students generally know how to summarise information. Countries where students have a better understanding that doing things like checking whether the most important facts in the text are represented in the summary, underlining the most important sentences and then rewriting them in a reworded format are useful ways to summarise information, while copying accurately as many sentences as possible is not particularly useful, are countries where students are generally more proficient readers. The positive relationship between the awareness of effective summarising strategies and reading performance is also clearly evident within OECD countries. Across these countries, an increase of one unit on the *index of summarising* is associated with a performance difference of 42 points on the PISA reading scale and a difference of 35 points or more in as many as 48 countries.

■ Figure III.1.13 ■
Association between awareness of effective strategies to summarise information and performance in reading
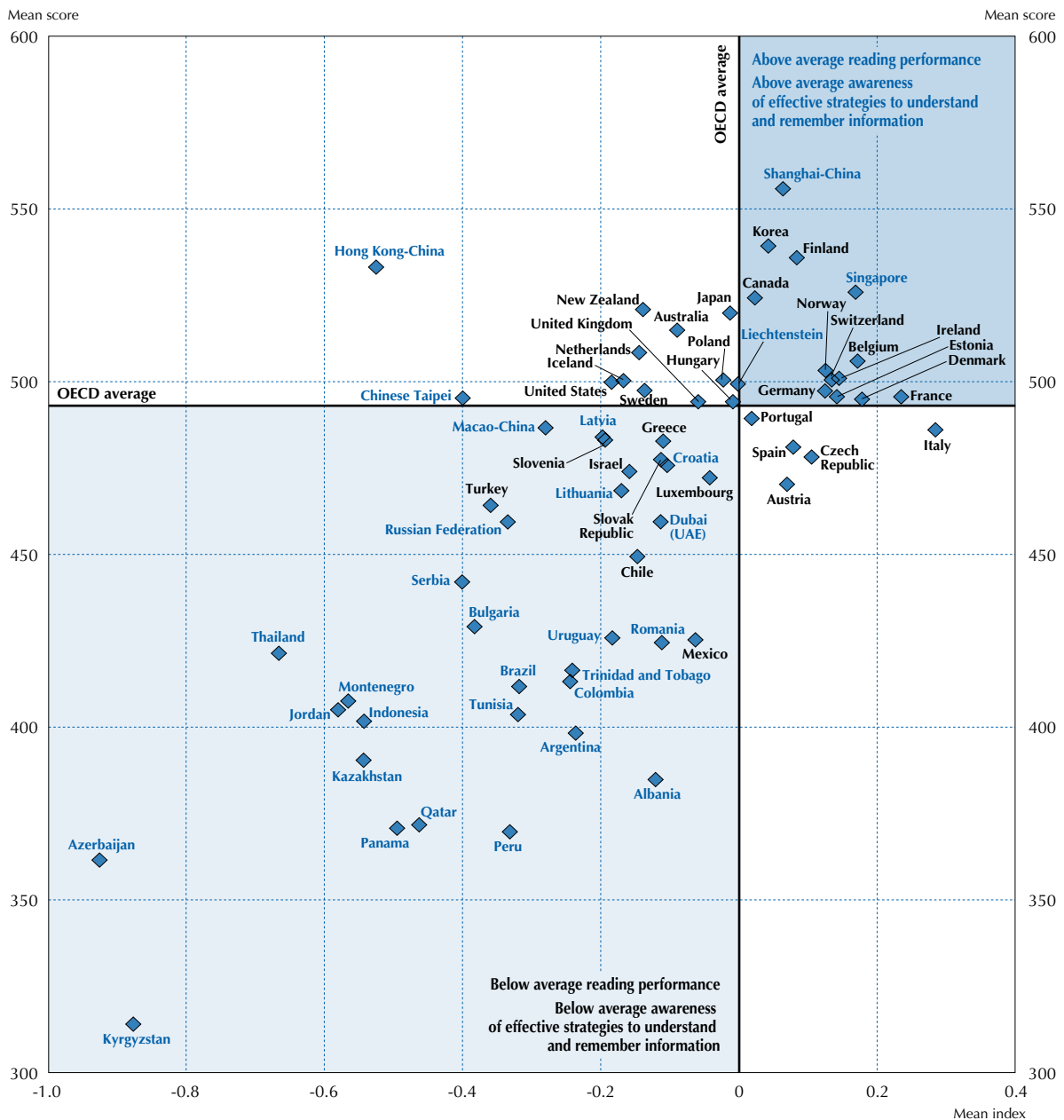
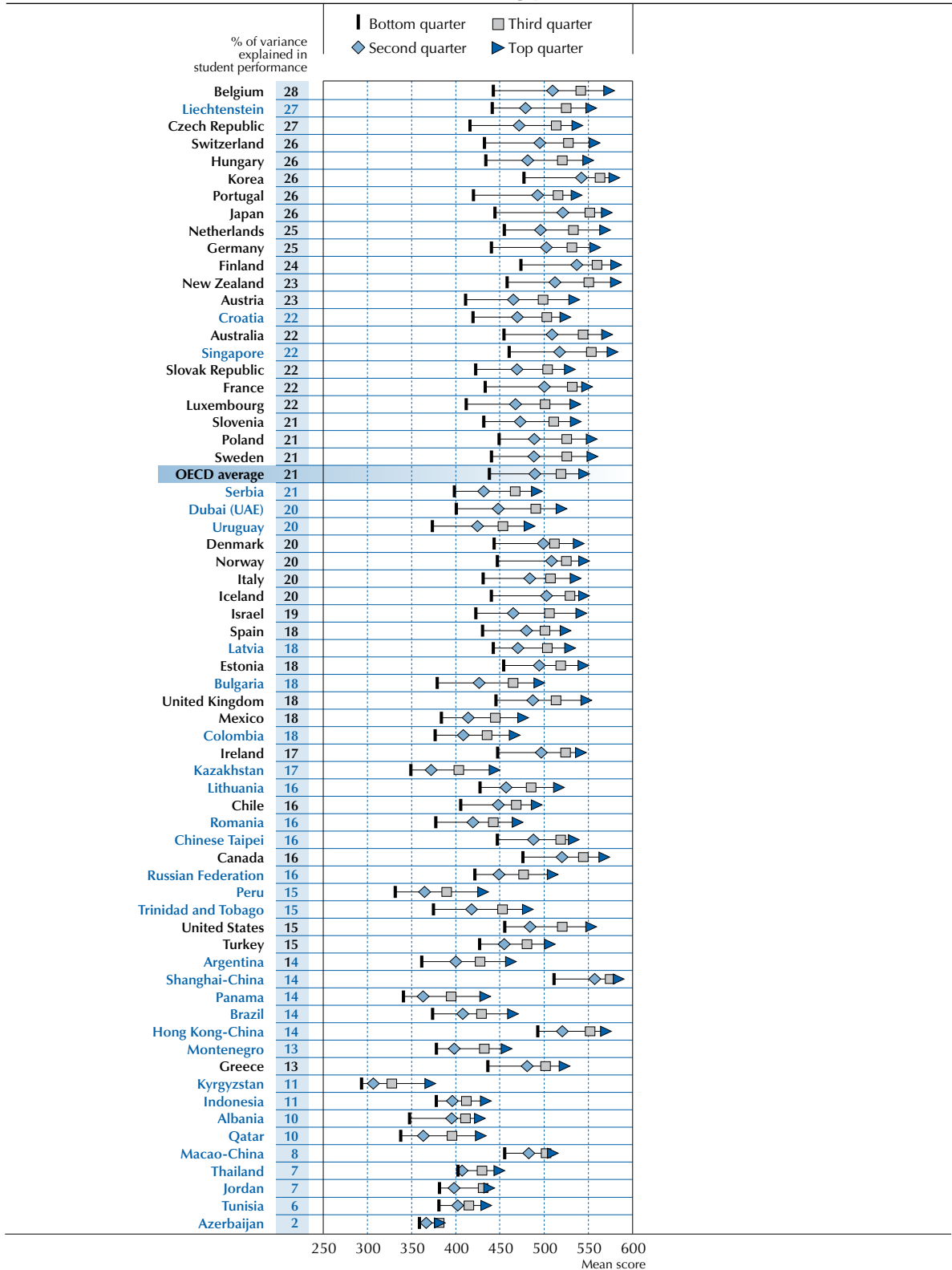Source: OECD, *PISA 2009 Database,* Tables III.1.16 and I.2.3.
StatLink http://dx.doi.org/10.1787/888932360176

Within countries, students who are aware of what strategies are effective for summarising information tend to achieve higher scores than students who are not aware of these strategies. Across OECD countries, the difference in reading performance between those students who know the most about which strategies are best for summarising information and those who know the least is 107 points. Figure III.1.14 (Table III.1.16) indicates that the average difference in reading performance between the top and the bottom quarters of students in terms of their awareness of the relative effectiveness of different strategies to summarise a text is below 50 points only in the partner countries Azerbaijan and Thailand, and is as much as 120 points in the OECD countries Belgium, Japan, Switzerland, Luxembourg, New Zealand, Austria and the Czech Republic.

■ Figure III.1.14 ■

How students' awareness of effective strategies to summarise information relates to their reading performance

Legend
▌ Bottom quarter　　■ Third quarter
◆ Second quarter　　▶ Top quarter

% of variance explained in student performance

Country	%
Belgium	28
Liechtenstein	27
Czech Republic	27
Switzerland	26
Hungary	26
Korea	26
Portugal	26
Japan	26
Netherlands	25
Germany	25
Finland	24
New Zealand	23
Austria	23
Croatia	22
Australia	22
Singapore	22
Slovak Republic	22
France	22
Luxembourg	22
Slovenia	21
Poland	21
Sweden	21
OECD average	21
Serbia	21
Dubai (UAE)	20
Uruguay	20
Denmark	20
Norway	20
Italy	20
Iceland	20
Israel	19
Spain	18
Latvia	18
Estonia	18
Bulgaria	18
United Kingdom	18
Mexico	18
Colombia	18
Ireland	17
Kazakhstan	17
Lithuania	16
Chile	16
Romania	16
Chinese Taipei	16
Canada	16
Russian Federation	16
Peru	15
Trinidad and Tobago	15
United States	15
Turkey	15
Argentina	14
Shanghai-China	14
Panama	14
Brazil	14
Hong Kong-China	14
Montenegro	13
Greece	13
Kyrgyzstan	11
Indonesia	11
Albania	10
Qatar	10
Macao-China	8
Thailand	7
Jordan	7
Tunisia	6
Azerbaijan	2

Mean score: 250　300　350　400　450　500　550　600

Countries are ranked in descending order of the percentage of explained variance in student performance.
Source: OECD, *PISA 2009 Database,* Table III.1.16.
StatLink ⌸ http://dx.doi.org/10.1787/888932360176

The association between the use of memorisation, elaboration and control strategies and reading performance

Self-regulated learning – measured by PISA through students' use of control strategies – is consistently associated with higher performance in the PISA reading assessment. Within each country, students who reported beginning the learning process by figuring out what they needed to learn, who ensured that they understood what they read, tried to figure out which concepts they had not fully grasped, attempted to remember the most important points in a text and sought additional clarifying information when they did not understand something they had read, tended to perform better on the PISA reading scale than those who do not. The association is most marked in France, Australia, Portugal and New Zealand, among OECD countries, and in the partner economy Chinese Taipei, where the quarter of students who use these strategies for learning the most are, on average, 90 points or more ahead of the quarter who use them least (Figure III.1.16 and Table III.1.18). Only in the partner countries Kazakhstan, Kyrgyzstan, Peru, Colombia, Indonesia, Montenegro and Serbia is the performance gap between students who reported using control strategies the most and those who reported using them the least lower than 35 points. At the OECD average level, the difference between the top and bottom quarters is 68 points.

■ Figure III.1.15 ■
How PISA 2009 assesses students' use of learning strategies

MEMORISATION STRATEGIES

Memorisation strategies refer to the memorisation of texts and contents in all their details and repeated reading.

Items of the index of memorisation strategies:
- When I study, I try to memorise everything that is covered in the text
- When I study, I try to memorise as many details as possible
- When I study, I read the text so many times that I can recite it
- When I study, I read the text over and over again

ELABORATION STRATEGIES

Elaboration strategies refer to the transfer of new information to prior knowledge, out-of-school context and personal experiences.

Items of the index of elaboration strategies:
- When I study, I try to relate new information to prior knowledge acquired in other subjects
- When I study, I figure out how the information might be useful outside school
- When I study, I try to understand the material better by relating it to my own experiences
- When I study, I figure out how the text information fits in with what happens in real life

CONTROL STRATEGIES

Control strategies mean to formulate control questions about the purpose of a task or a text and its main concepts. It also means to self-supervise current study activities, particularly whether the reading material was understood.

Items of the index of control strategies:
- When I study, I start by figuring out what exactly I need to learn
- When I study, I check if I understand what I have read
- When I study, I try to figure out which concepts I still haven't really understood
- When I study, I make sure that I remember the most important points in the text
- When I study and I don't understand something, I look for additional information to clarify this
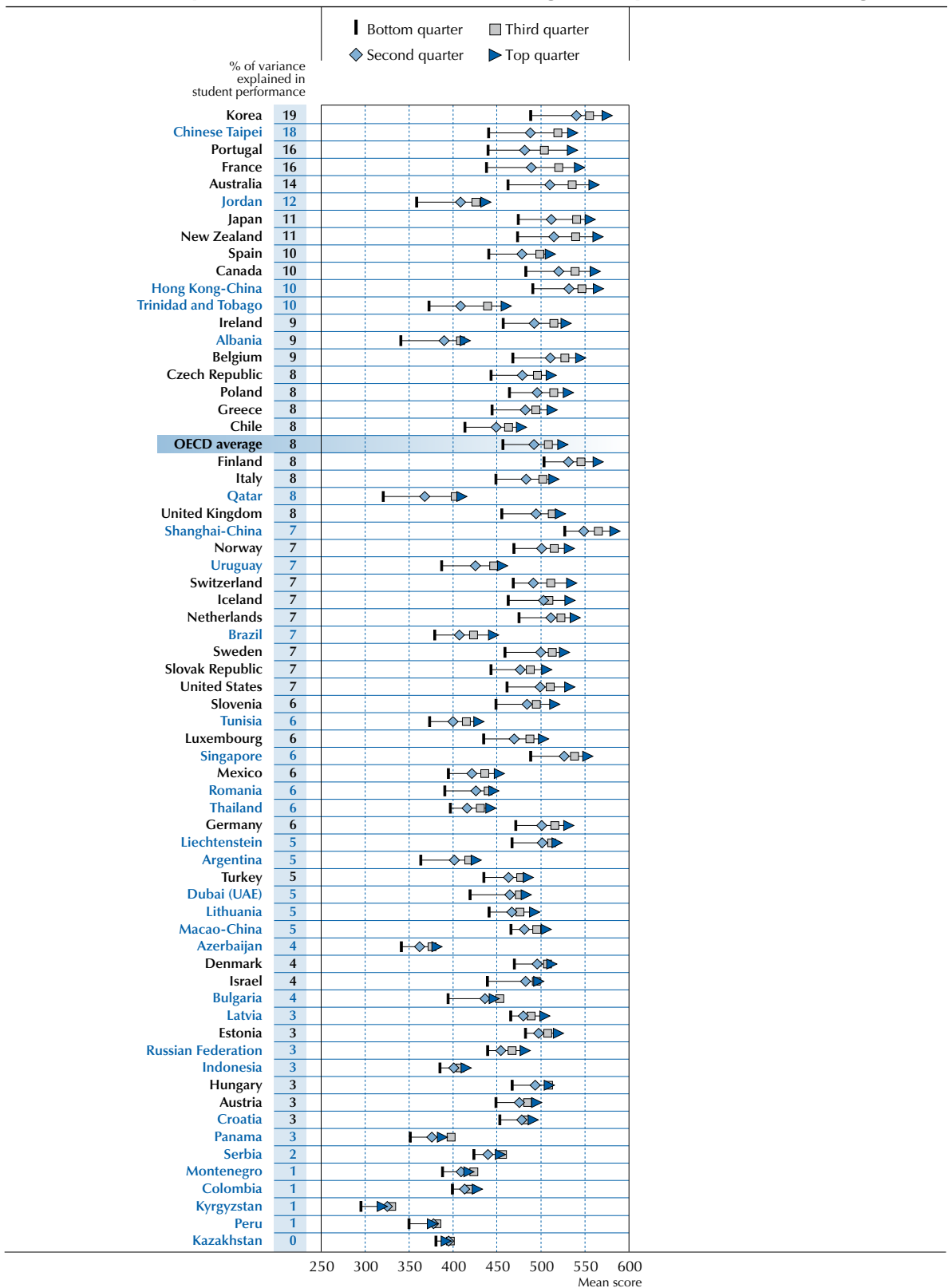
Figure III.16 (Table III.1.18) suggests that, on average across OECD countries, 8% of the variation in students' reading performance can be explained by the extent to which they reported using control strategies. In Korea, Portugal, France, Australia, Japan, New Zealand, Spain, Canada and the partner country and economy Chinese Taipei and Jordan, more than 10% of this variation can be explained by differences in how much students reported using self-regulated learning strategies; in 15 partner countries and economies and five OECD countries, less than 5% of the variation can be so explained.

Control strategies are essential for effective self-regulation of learning because they help students adapt their learning to the particular task at hand. Schools may need to focus on allowing students to manage and control their learning in order to help them develop effective strategies, not only to support their learning at school but also to provide them with the tools to manage their learning later in life.

■ Figure III.1.16 ■
Relationship between the use of control strategies and performance in reading

| Bottom quarter | Third quarter |
| Second quarter | Top quarter |

% of variance
explained in
student performance

Country	%
Korea	19
Chinese Taipei	18
Portugal	16
France	16
Australia	14
Jordan	12
Japan	11
New Zealand	11
Spain	10
Canada	10
Hong Kong-China	10
Trinidad and Tobago	10
Ireland	9
Albania	9
Belgium	9
Czech Republic	8
Poland	8
Greece	8
Chile	8
OECD average	8
Finland	8
Italy	8
Qatar	8
United Kingdom	8
Shanghai-China	7
Norway	7
Uruguay	7
Switzerland	7
Iceland	7
Netherlands	7
Brazil	7
Sweden	7
Slovak Republic	7
United States	7
Slovenia	6
Tunisia	6
Luxembourg	6
Singapore	6
Mexico	6
Romania	6
Thailand	6
Germany	6
Liechtenstein	5
Argentina	5
Turkey	5
Dubai (UAE)	5
Lithuania	5
Macao-China	5
Azerbaijan	4
Denmark	4
Israel	4
Bulgaria	4
Latvia	3
Estonia	3
Russian Federation	3
Indonesia	3
Hungary	3
Austria	3
Croatia	3
Panama	3
Serbia	2
Montenegro	1
Colombia	1
Kyrgyzstan	1
Peru	1
Kazakhstan	0

250   300   350   400   450   500   550   600
Mean score

Countries are ranked in descending order of the percentage of explained variance in student performance.
Source: OECD, *PISA 2009 Database,* Table III.1.18.
StatLink ᴬᴵˢ█ http://dx.doi.org/10.1787/888932360176

Memorisation strategies, such as reading material aloud several times and learning key terms, are important in many tasks, but they commonly lead only to verbatim repetitions of information. Students who rely heavily on memorisation strategies tend to store information as it is, with little further processing. Memorisation strategies are useful when all a learner is asked to do is store information and retrieve it as originally presented. Since research suggests that memorisation strategies do not lead to deep understanding, they do not help develop students' skills to extrapolate the underlying meaning and message of stored information so that new material can be integrated with prior knowledge accumulated on/from diverse contexts (Tables III.1.20 and III.1.21).

Elaboration strategies, such as exploring how the material relates to things one has learned in other contexts, or asking how the information might be applied in other situations, can be used to reach the goal of deep understanding. Elaboration strategies reflect the extent to which students are prepared to use the knowledge acquired at school outside of school. Schools and education systems that ensure that students can use effective elaboration strategies can help equip them for the challenges of an ever-changing world by fostering their ability to become lifelong learners (Tables III.1.22 and III.1.23).

Figure III.17 (Table III.1.20) suggests that in some countries, reading performance relates positively to the use of memorisation strategies, while in other countries, the use of memorisation strategies is associated with lower reading performance. Figure III.17 shows a positive score point difference, in as many as 27 countries, between students who reported using memorisation strategies more frequently than the OECD average and those who use those strategies to the same extent as the OECD average. In 13 countries, students who use memorisation strategies more frequently than the OECD average and those who use those strategies to the same extent as the OECD average perform equally well in reading. In as many as 25 countries, students who use memorisation strategies more are poorer readers than those who are closer to the OECD average in memorisation use strategies.

■ Figure III.1.17 ■
Relationship between the use of memorisation strategies and student performance in reading

The association between the use of memorisation strategies and reading performance is…

Positive			Neither positive nor negative			Negative		
	Score point change per unit of the index of memorisation	S.E.		Score point change per unit of the index of memorisation	S.E.		Score point change per unit of the index of memorisation	S.E.
Thailand	24.8	(1.62)	Hungary	3.3	(2.50)	Netherlands	-21.9	(1.76)
Korea	24.6	(2.47)	New Zealand	3.1	(2.00)	Dubai (UAE)	-20.5	(1.61)
Jordan	20.8	(1.50)	Finland	2.9	(1.68)	Peru	-18.7	(2.31)
Chinese Taipei	20.7	(1.56)	Qatar	1.9	(1.15)	Slovak Republic	-18.1	(2.26)
Albania	13.1	(3.34)	United Kingdom	1.2	(1.59)	Slovenia	-15.9	(1.75)
Kyrgyzstan	12.9	(1.90)	Mexico	-0.1	(0.83)	Turkey	-15.1	(2.03)
Trinidad and Tobago	12.1	(2.03)	Iceland	-1.0	(1.90)	Serbia	-14.7	(1.70)
Brazil	12.1	(1.30)	Tunisia	-1.3	(2.02)	Montenegro	-14.5	(1.86)
Indonesia	11.2	(2.16)	Croatia	-1.4	(1.81)	Singapore	-14.1	(1.42)
France	11.0	(2.68)	Uruguay	-1.4	(1.65)	Belgium	-12.4	(1.46)
Sweden	10.3	(1.97)	Portugal	-2.7	(1.50)	Colombia	-11.5	(2.00)
Luxembourg	10.2	(1.72)	Latvia	-3.0	(2.27)	Italy	-10.1	(1.27)
Australia	9.7	(1.17)	Liechtenstein	-5.5	(7.14)	Denmark	-9.5	(2.01)
Macao-China	9.2	(1.38)				Kazakhstan	-9.0	(2.29)
Hong Kong-China	8.2	(1.77)				Austria	-8.9	(2.00)
Azerbaijan	7.6	(1.68)				Lithuania	-8.4	(2.38)
Poland	7.2	(1.89)				Russian Federation	-7.5	(2.30)
Ireland	7.0	(2.35)				Panama	-6.9	(2.69)
Romania	6.8	(2.01)				Estonia	-6.7	(2.23)
Japan	6.5	(1.82)				Czech Republic	-6.4	(1.55)
Greece	5.3	(1.87)				Switzerland	-5.8	(1.56)
Chile	5.2	(1.79)				Argentina	-5.7	(2.09)
Shanghai-China	4.9	(1.80)				Israel	-5.6	(1.94)
Bulgaria	4.7	(2.04)				Germany	-5.1	(1.78)
Spain	4.2	(1.35)				United States	-4.4	(1.59)
Norway	3.8	(1.53)						
Canada	3.3	(0.99)						

Source: OECD, *PISA 2009 Database*, Table III.1.20.
StatLink ⌐ http://dx.doi.org/10.1787/888932360176

Frequent use of elaboration strategies tends to be positively associated with reading performance: the difference in performance between students who use elaboration strategies the most and students who use them the least is, on average, 14 points across OECD countries. However, the score point difference varies greatly across countries: the top quarter of students are at least 35 points, or half a proficiency level, ahead of the bottom quarter of students in Korea, Japan, Portugal, Norway and the partner country and economies Chinese Taipei, Jordan and Macao-China (Figure III.1.18 and Table IIII.1.22).

■ Figure III.1.18 ■

Relationship between the use of elaboration strategies and performance in reading

| Bottom quarter | ■ Third quarter |
| ◆ Second quarter | ▶ Top quarter |

% of variance explained in student performance

Chinese Taipei	10
Korea	9
Jordan	6
Portugal	5
Macao-China	3
Norway	3
Japan	3
Thailand	3
Shanghai-China	2
Tunisia	2
Finland	2
Albania	2
Azerbaijan	2
Czech Republic	2
Sweden	2
Indonesia	2
Greece	2
Turkey	1
Iceland	1
Spain	1
OECD average	1
Australia	1
Hong Kong-China	1
Denmark	1
Estonia	1
Slovak Republic	1
Israel	1
Poland	1
Romania	1
Kazakhstan	1
Bulgaria	0
Mexico	0
Ireland	0
France	0
Chile	0
Italy	0
Latvia	0
Slovenia	0
United Kingdom	0
Russian Federation	0
Lithuania	0
Brazil	0
Dubai (UAE)	0
Serbia	0
Liechtenstein	0
Canada	0
Peru	0
Argentina	0
Trinidad and Tobago	0
Kyrgyzstan	0
Croatia	0
Netherlands	0
Luxembourg	0
Austria	0
Qatar	0
Uruguay	0
Colombia	0
New Zealand	0
Panama	0
Montenegro	0
Switzerland	0
Singapore	0
Germany	0
Belgium	0
United States	0
Hungary	0

250 300 350 400 450 500 550 600
Mean score

Countries are ranked in descending order of the percentage of explained variance in student performance.
Source: OECD, *PISA 2009 Database,* Table III.2.22.
StatLink 🔗 http://dx.doi.org/10.1787/888932360176

Overall, the data suggest that learning strategies that are most closely related to student reading performance are: strategies to understand and remember information, strategies to summarise information and control strategies. Reported use of elaboration strategies, and particularly memorisation strategies, are associated with improved reading performance in some countries but not in others.

DO OBSERVED ASSOCIATIONS MIRROR THE DEMOGRAPHIC AND SOCIO-ECONOMIC BACKGROUND OF STUDENTS?

Not all students reported being equally engaged in reading activities and using memorisation, elaboration and control strategies to the same extent, nor are they equally aware of the most effective strategies to understand, remember and summarise information. Students also vary considerably in their average performance in the PISA 2009 reading assessment. Volume I, *What Students Know and Can Do*, illustrates how girls generally outperform boys, while Volume II, *Overcoming Social Background*, shows how socio-economically advantaged students are, on average, more proficient readers than students from socio-economically disadvantaged backgrounds. Therefore, the kind of associations presented in the previous sections could mirror not just engagement in reading and the use of appropriate learning strategies but also the socio-economic background of students.

Results presented in Tables III.1.24, III.1.25 and III.1.26 illustrate the extent to which different levels of engagement, use and knowledge of learning strategies are associated with reading performance when adjusting for gender, socio-economic background, students' immigrant status and whether they speak the same language at home as the language in which the PISA assessment was administered.

Overall, results on the relationship between reading performance and higher levels of enjoyment of reading, greater diversity of reading activities, greater use of memorisation, elaboration and control strategies, and greater awareness of the most effective strategies to understand, remember and summarise information do not change substantially when accounting for the socio-economic background of students. In some countries and for some indices, however, accounting for the socio-economic background of students makes a significant difference. For example in the the partner countries and economy Albania, Dubai (UAE) and Bulgaria, the difference between the observed relationship between enjoyment of reading and performance and the relationship that emerges after accounting for the socio-economic background of students exceeds 15 score points on the reading scale.

What do high-performing readers look like?

This section builds on evidence of the strong association between reading performance and what students read for enjoyment, and identifies six profiles of readers based on whether they read comic books, magazines, newspapers, fiction and non-fiction books for enjoyment – as an indicator of how "wide" their reading habits are – as well as on their awareness of effective learning strategies to understand, remember and summarise information – as indicators of how "deep" their reading and learning is. Figure III.1.19 illustrates how the reading process can be characterised along the width and depth dimensions.

■ Figure III.1.19 ■
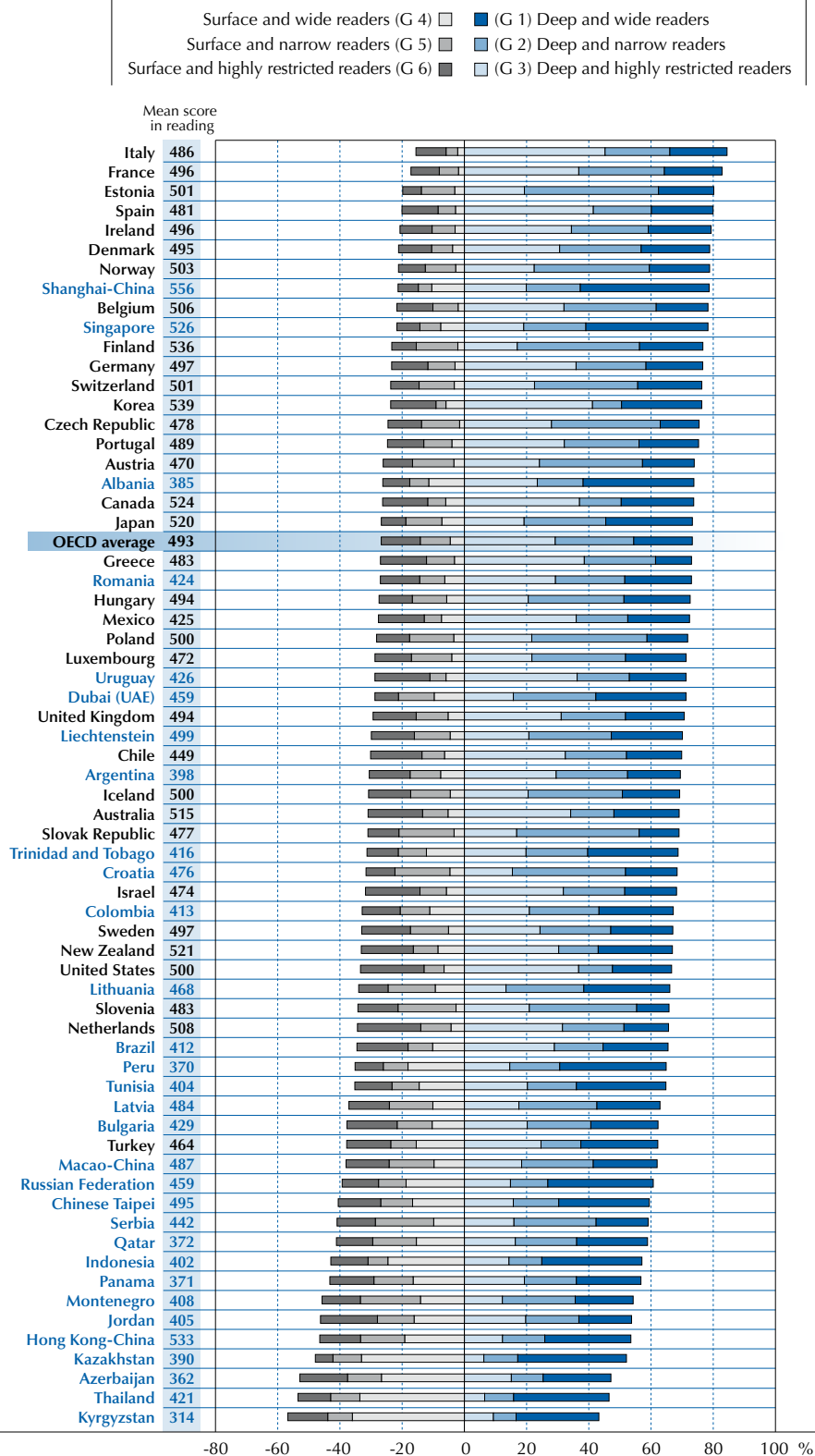**How the reading process can be characterised**
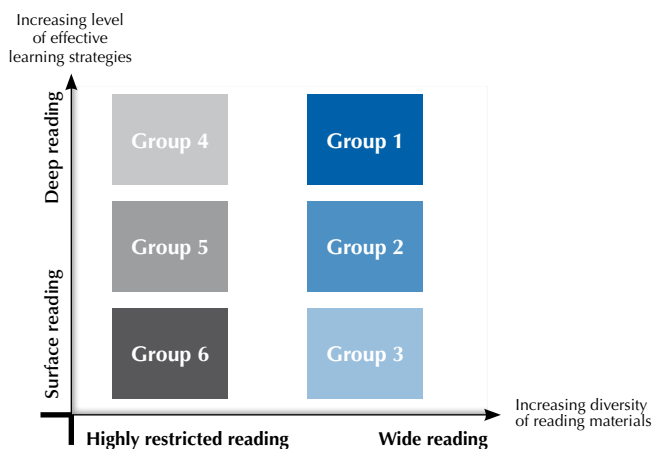
■ Figure III.1.20 ■
Profiles of readers

	Does not read any material regularly	Reads magazines and newspapers regularly	Reads all material regularly
High levels of effective learning strategies	Deep and highly restricted readers	Deep and narrow readers	Deep and wide readers
Low levels of effective learning strategies	Surface and highly restricted readers	Surface and narrow readers	Surface and wide readers

Results presented in previous sections of this chapter indicated that countries differ considerably with respect to whether, how much and what students read for enjoyment, and to what extent students know and use effective learning strategies. This section uses Latent Profile Analysis (Annex A5) to group students into the six profiles shown in Figure III.1.20 and determines whether proficient readers share common characteristics in all PISA participating countries.

- **Group 1 – Deep and wide readers:** Students who have high levels of awareness about effective learning strategies and who read all sorts of materials, including fiction and non-fiction books for enjoyment, can be considered as "deep and wide readers". The average index value of "remembering and understanding" among students in this group is 0.2, and the average of the index value of "summarising" is 0.6. Over 99% of students in this group read fiction at least several times a month and 53% reported reading non-fiction at least several times per month. Students in this group are those who have high levels of awareness about the most effective strategies to understand, remember and summarise information, but who also read all types of materials regularly. An estimated 19% of students across OECD countries are in this group (Table III.1.27).

- **Group 2** – **Deep and narrow readers:** Students in this group are those who have as high levels of awareness about the most effective strategies to understand, remember and summarise information as students in Group 1, but who also read magazines and newspapers regularly: 85% read magazines and 83% read newspapers at least several times per month. They reported rarely reading comic books, fiction and non-fiction books. Across OECD countries, 25% of students are in Group 2 (Table III.1.27).

- **Group 3 – Deep and highly restricted readers:** Students in this group are those who are aware of effective learning strategies, but who do not read any material often. The average of the "remembering and understanding" index is 0.2, and the average of the "summarising" index is 0.6. The only type of material they read frequently is newspapers (37%). A small percentage (26%) frequently reads magazines or comics (12%) or fiction (17%), and an even smaller percentage (6%) reported reading non-fiction. Across OECD countries, 29% of students belong to Group 3 (Table III.1.27).

- **Group 4 – Surface and wide readers:** Students in this group are those who have low levels of awareness of effective strategies to understand, summarise and remember information, but who read all types of materials regularly. The average index value of "remembering and understanding" among students in this group is -0.7, and the average of index value of "summarising" is -1.5. Almost all students in Group 4 read fiction at least several times per month, and 53% of students in Group 4 read non-fiction books regularly. Across OECD countries, 5% of students are in Group 4 (Table III.1.27).

- **Group 5** – **Surface and narrow readers:** Students in this group are those who have little awareness of effective strategies to understand, remember and summarise information (the level of their awareness about effective learning strategies is similar to that of students in Group 4), but who generally read magazines and newspapers for enjoyment regularly (85% read magazines and 83% read newspapers several times per month) and who are also likely to read non-fiction books: about 15% of students in Group 5 reported reading non-fiction books at least several times per month. Across OECD countries, 10% of students are in Group 5 (Table III.1.27).

- **Group 6** – **Surface and highly restricted readers**: Students in this group are those who have low levels of awareness about effective learning strategies and who spend little time reading any type of printed material for enjoyment, especially fiction and non-fiction books. The only type of material these students read frequently is newspapers: 37% reported reading newspapers at least several times per month. Only 17% of students in this group read fiction at least several times a month, and only 6% read non-fiction books regularly – and these are the types of reading materials that are most strongly associated with reading proficiency. Across OECD countries, 13% of students belong to Group 6 (Table III.1.27).

■ Figure III.1.21 ■
Share of students by reader profile

Surface and wide readers (G 4) ☐	(G 1) Deep and wide readers ■
Surface and narrow readers (G 5) ☐	(G 2) Deep and narrow readers ■
Surface and highly restricted readers (G 6) ■	(G 3) Deep and highly restricted readers ☐

Mean score in reading

Country	Score
Italy	486
France	496
Estonia	501
Spain	481
Ireland	496
Denmark	495
Norway	503
Shanghai-China	556
Belgium	506
Singapore	526
Finland	536
Germany	497
Switzerland	501
Korea	539
Czech Republic	478
Portugal	489
Austria	470
Albania	385
Canada	524
Japan	520
OECD average	493
Greece	483
Romania	424
Hungary	494
Mexico	425
Poland	500
Luxembourg	472
Uruguay	426
Dubai (UAE)	459
United Kingdom	494
Liechtenstein	499
Chile	449
Argentina	398
Iceland	500
Australia	515
Slovak Republic	477
Trinidad and Tobago	416
Croatia	476
Israel	474
Colombia	413
Sweden	497
New Zealand	521
United States	500
Lithuania	468
Slovenia	483
Netherlands	508
Brazil	412
Peru	370
Tunisia	404
Latvia	484
Bulgaria	429
Turkey	464
Macao-China	487
Russian Federation	459
Chinese Taipei	495
Serbia	442
Qatar	372
Indonesia	402
Panama	371
Montenegro	408
Jordan	405
Hong Kong-China	533
Kazakhstan	390
Azerbaijan	362
Thailand	421
Kyrgyzstan	314

-80   -60   -40   -20   0   20   40   60   80   100 %

Countries are ranked in descending order of the percentage of students in G1, G2 and G3.
Source: OECD, *PISA 2009 Database,* Tables I.2.3 and III.1.27.
StatLink ⌸ http://dx.doi.org/10.1787/888932360176

What students read and how "wide" their reading habits are may be less indicative of better reading performance than *how* they read or how "deeply" they can read. Practicing reading by reading for enjoyment is most effective when it is accompanied by high levels of critical thinking and strategic learning. Across OECD countries, students who have low levels of awareness about which strategies are most effective for understanding, remembering and summarising information are less proficient readers than those who have high levels of awareness about these strategies, regardless of the students' reading patterns. Students in Groups 1, 2 and 3 are, in fact, more proficient readers, on average, than students in Groups 4, 5 and 6 (Figure III.1.22 and Table III.1.28).

■ Figure III.1.22 ■
How different kinds of readers perform in reading
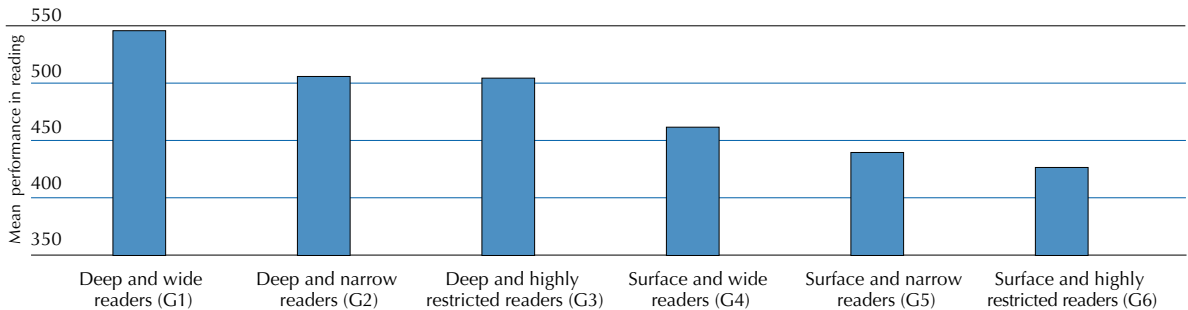
Source: OECD, *PISA 2009 Database,* Table III.1.28.
StatLink http://dx.doi.org/10.1787/888932360176

Students in Group 1 achieve an average of 546 points in the reading assessment. These are students who have high levels of awareness about effective learning strategies and who regularly read all types of materials, including fiction and non-fiction books: they are "wide and deep readers". The improved reading performance that is associated with high levels of knowledge about effective learning strategies is notable in OECD countries in general, but particularly in Iceland, Australia, Finland, the Netherlands, Japan, Slovenia, Sweden, Belgium, Norway, Spain, the Slovak Republic, the Czech Republic, Austria, France and Switzerland, and in the partner country and economy Dubai (UAE) and Bulgaria. Students in Groups 2 and 3, who have high levels of knowledge about learning strategies and who either do not read for enjoyment regularly (Group 3) or read magazines and newspapers regularly (Group 2) attain almost the same score (506 and 504 points, respectively). Students who have low levels of awareness of learning strategies but read diverse materials regularly, *i.e.* those in Group 4, have an average score of 462. Students in Group 5 who have low levels of knowledge about learning strategies but who read magazines and newspapers regularly, achieve marginally higher scores (440). Students in Group 6 (low levels of knowledge about learning strategies and low levels of reading for enjoyment) are the least capable readers. Students in this group achieve 427 points in the PISA reading assessment on average across OECD countries (Table III.1.28).

Figure III.1.23 illustrates how many countries with high overall performance in the PISA 2009 reading assessment are countries where many students can be classified in Groups 1 and 2. For example, in Finland, almost 60% of students belong to Group 1 or Group 2 and 21% belong to either Group 5 or Group 6. Conversely, many of the countries with below-average performance in the 2009 PISA reading assessment have high shares of students in Groups 5 and 6 and few students in Groups 1 and 2. For example, in the partner country Jordan, 30% of students belong to Group 5 or Group 6 and only 34% belong to Groups 1 or 2.

■ Figure III.1.23 ■
Country-level performance in reading and the prevalence of different profiles of readers

Share of deep and wide readers and deep and narrow readers (Groups 1 and 2)

	Mean score in reading
Shanghai-China	556
Korea	539
Finland	536
Hong Kong-China	533
Singapore	526
Canada	524
New Zealand	521
Japan	520
Australia	515
Netherlands	508
Belgium	506
Norway	503
Estonia	501
Switzerland	501
Poland	500
Iceland	500
United States	500
Liechtenstein	499
Sweden	497
Germany	497
Ireland	496
France	496
Chinese Taipei	495
Denmark	495
United Kingdom	494
Hungary	494
OECD average	493
Portugal	489
Macao-China	487
Italy	486
Latvia	484
Slovenia	483
Greece	483
Spain	481
Czech Republic	478
Slovak Republic	477
Croatia	476
Israel	474
Luxembourg	472
Austria	470
Lithuania	468
Turkey	464
Dubai (UAE)	459
Russian Federation	459
Chile	449
Serbia	442
Bulgaria	429
Uruguay	426
Mexico	425
Romania	424
Thailand	421
Trinidad and Tobago	416
Colombia	413
Brazil	412
Montenegro	408
Jordan	405
Tunisia	404
Indonesia	402
Argentina	398
Kazakhstan	390
Albania	385
Qatar	372
Panama	371
Peru	370
Azerbaijan	362
Kyrgyzstan	314

0   10   20   30   40   50   60   70 %

Countries are ranked in descending order of mean reading performance.
Source: OECD, *PISA 2009 Database,* Tables III.1.27 and I.2.3.
StatLink ⟐⟐ http://dx.doi.org/10.1787/888932360176

Notes

1. In PISA 2009, several tests were conducted to determine whether the use of country-specific item parameters improved cross-country comparability of indices. For example, simulation studies indicated that using country-specific item parameters in regression models did not lead to improvements in the comparability of indices across countries. During the estimation procedure, an index of differential item functioning (DIF) across countries is produced that can be used to gauge the amount of DIF for each item across countries. If necessary, the impact of DIF on items can then be tackled using country-specific item parameters. However, simulation studies have shown that introducing country-specific item parameters for DIF items has a negligible impact on the regression coefficients in a two-level regression (students within countries) of background variables (with and without country-specific items) on cognitive scores in reading, math and science.

2. The score point difference represents the average difference in PISA scores that students can expect to have when one student enjoys reading to the same degree as the average student in the OECD area (index value of 0) and the other enjoys reading more than five out of six students in the OECD area do (index value of 1).

3. The scale had the response categories "I do not read for enjoyment", "30 minutes or less each day", "more than 30 minutes to less than 60 minutes each day", "1 to 2 hours each day" and "more than 2 hours each day".

4. Results show the difference in reading performance between students who do not read any material and students who read a particular material, adjusting for other materials a student may also report reading on a regular basis.

5. Results show the difference in reading performance between students who do not read any material and students who read a particular material, adjusting for other materials a student may also report reading on a regular basis.

6. These are students who have values on the *index of diversity of reading activities* that are below the average value for students in their country.