

PISA2009



## Reading to learn:

New Zealand 15-year-olds' reading habits, learning approaches and experiences of teaching practices

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MINISTRY OF EDUCATION

*Te Tāhuhu o te Mātauranga*

# An Overview of PISA

## What is PISA?

The Programme for International Student Assessment (PISA) is an international standardised study that assesses and compares how well countries are preparing their 15-year-old<sup>1</sup> students to meet real-life opportunities and challenges.

## What does PISA assess?

PISA assesses three key areas of knowledge and skills – reading literacy, mathematical literacy and scientific literacy – and has a focus on one of these literacy areas each time PISA is administered. The focus of PISA 2009 is reading. In each country students complete a two hour test booklet in the language of their instruction.<sup>2</sup> The term ‘literacy’ is used to emphasise that the assessment is not restricted to assessing how well students, have mastered the content of a specific school curriculum. Instead, PISA focuses on assessing students’ ability to apply their knowledge and skills, and their ability to make decisions in real-life situations as they near the end of their compulsory schooling. PISA defines this approach as assessing the “things that 15-year-old students will need in the future and ... what they can do with what they have learned – reflecting the ability of students to continue learning throughout their lives by applying what they learn in school to non-school environments, evaluating their choices and making decisions.”<sup>3</sup>

## What additional information is gathered?

Background information is also gained in each PISA cycle from questionnaires completed by students and school principals. In addition, in PISA 2009 parents completed a questionnaire. These questionnaires allow for the relationship between contextual information and achievement to be examined.

## How often is PISA administered?

PISA is administered every three years, beginning in 2000. Reading was the main focus in the first cycle. In 2003 the focus was mathematical literacy, in 2006 the focus was scientific literacy and in 2009 it was reading literacy again. Rotating the main focus for each administration of PISA provides in-depth and detailed information on the subject of main focus along with an ongoing source of achievement data on the two minor subjects.

## Who participates in PISA?

Around 470,000 15-year-old students from 65<sup>4</sup> countries or economies, including the 34 Organisation for Economic Co-operation and Development (OECD) member countries, participated in PISA 2009. In New Zealand 4,643 students from 163 schools took part. Students and schools were randomly selected. A two-tiered stratified sampling method was used to ensure the sample was representative. Schools were randomly selected based on the following characteristics: size, decile, location (urban or rural), authority (state or independent) and

type (co-educational or single-sex). As a result, every 15-year-old had roughly the same chance of selection.

## Why participate in PISA?

PISA assesses students who have completed around 10 years of compulsory schooling, which means the PISA results are an important source of information in New Zealand. PISA measures progress towards the Government’s goals of:

- building a world-leading education system that equips all New Zealanders with the knowledge, skills and values to be successful citizens in the 21st century
- reducing systemic underachievement in education
- driving the improvement of educational performance across New Zealand’s education system to improve education outcomes for all young New Zealanders.

PISA not only allows measurement of New Zealand’s progress on these goals over time, but also allows measurement of New Zealand’s performance relative to other countries in equipping students with skills and reducing disparities in achievement. The PISA data contributes to the evidence to shape the direction of teaching and learning in schools, focus on quality and effective teaching making our world-class education system even better.

## Who organises PISA?

PISA is an initiative of the OECD and a collaborative effort of the participating countries. Two consortia were responsible for developing and overseeing PISA 2009 at the international level. The consortium responsible for development of the cognitive assessment and the implementation of the study was led by the Australian Council for Educational Research (ACER), and included Westat (USA), The National Institute for Educational Research in Japan, cApStAn Linguistic Quality Control, (Belgium), Unité d’analyse des systèmes et des pratiques d’enseignement (aSPe, Belgium) and the Deutsches Institut für Internationale Pädagogische Forschung (DIPF, Germany). CITO Institute for Educational Measurement (Netherlands) led the consortium responsible for the development of the questionnaires and included the University of Twente (Netherlands), the University of Jyväskylä’s Institute for Educational Research (Finland) and the Direction de l’Evaluation de la Prospective et de la Performance (DEPP, France). In New Zealand, the Comparative Education Research Unit within the Ministry of Education’s Research Division is responsible for PISA.

## How did the OECD ensure the PISA data were of high quality?

A number of quality assurance procedures were put in place, both nationally and internationally, to ensure the data were as high a quality as possible. These included: rigorous training of staff; high-quality documentation; monitoring of sampling procedures; quality checks and monitoring at a number of stages, including during administration of the tests; multiple coding and data entry procedures; and data cleaning and checking procedures. Further details of international procedures will be found in the PISA 2009 Technical Report (forthcoming).

1 Students are aged between 15-years-3-months and 16-years-2-months. As most students are aged 15, they are referred to as ‘15-year-olds’ for brevity.

2 In New Zealand PISA was administered only in English.

3 OECD. (2009). *Assessment Framework - Key Competencies in Reading, Mathematics and Science*, p.9. Paris: OECD.

4 The countries and economies participating in PISA 2009 are listed on the back page of this report.



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The Ministry of Education is very grateful to the 191 schools that participated in the PISA 2009 main study or field trial, to the staff who very generously volunteered to co-ordinate the study in their school, and to the students who took part in the assessment. Your efforts have provided New Zealand with a valuable resource.

I would like to thank the PISA 2009 Advisory Group for their invaluable expertise and support: Adrienne Alton-Lee, Cathy Diggins, Earl Irving, Ed Strafford, Fred Bishop, Jit Cheung, Rachel Wikaira, Sarah Jones, Stephanie Nicols, Steve Benson and Sue McDowall.

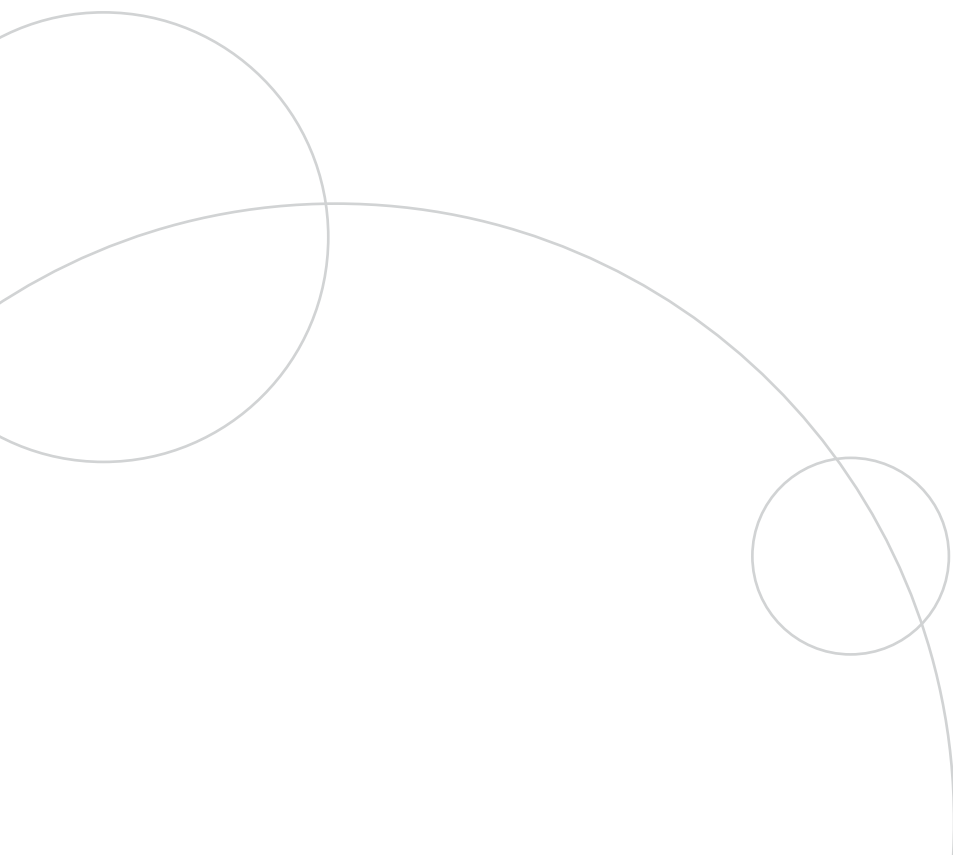
I would also like to acknowledge the education sector union representatives' contribution to New Zealand's review of the new PISA reading questions, and Christina Thornley, Earl Irving and Ian MacDonald's (New Zealand's PISA Reading Item Development Group) work on developing reading questions, one of which successfully progressed through to the PISA question bank.

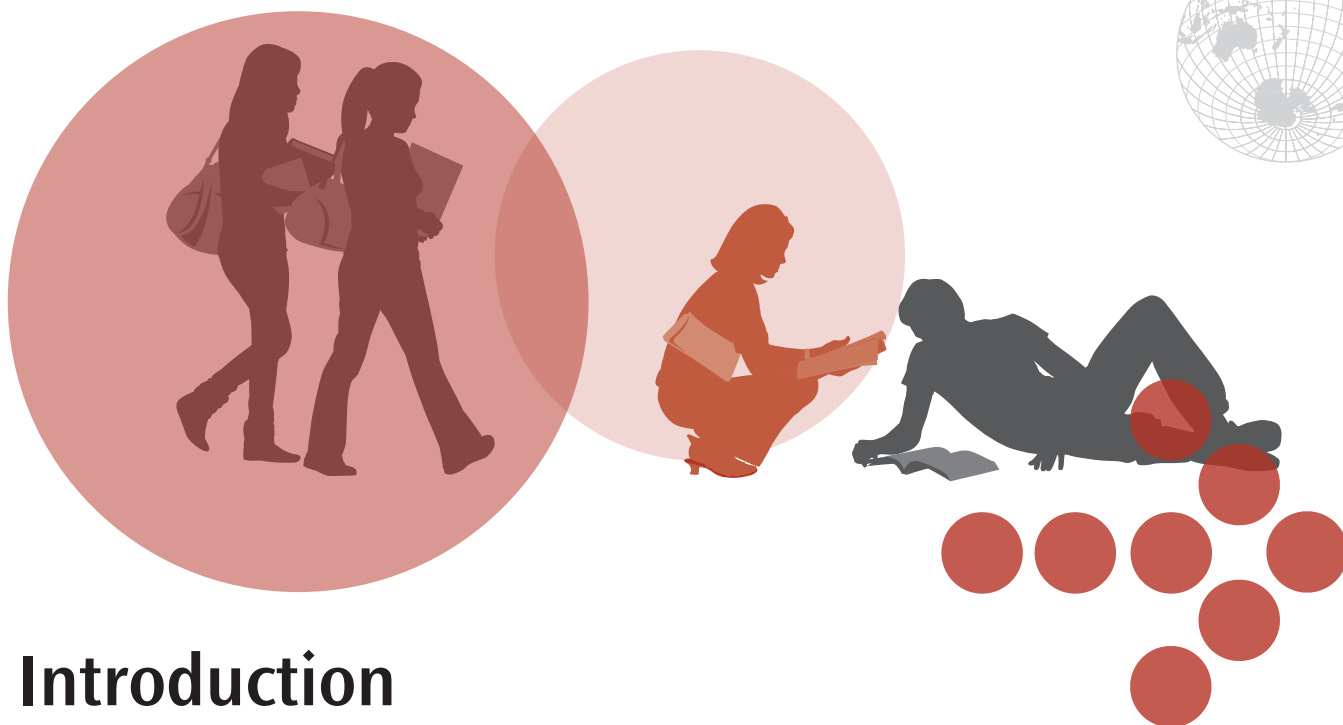
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# Introduction

## ❖ The importance of reading literacy

To participate fully in 21st century life it is critical that students acquire the skills that will enable them to access, understand, evaluate and reflect on information in all learning areas. This is why reading literacy is so important. As *The New Zealand Curriculum* (p. 18) notes, “all learning areas (with the possible exception of languages) require students to receive, process, and present ideas or information using the English language as a medium”. Students must master the particular literacy skills required for each learning area before they can move fully from ‘learning to read’ to ‘reading to learn’ (Carnegie Council on Advancing Adolescent Literacy 2010).

Reading literacy begins at home and is cultivated during the very early stages of a child’s life, in both formal and informal settings in the community, and in early childhood education centres. This is a process that continues throughout schooling and into adult life. PISA defines reading literacy as “understanding, using, reflecting on and engaging with written texts, in order to achieve one’s goal, to develop one’s knowledge and potential, and to participate in society” (OECD 2010a, p. 37).

The rigorous and robust data gained from the PISA assessment enable the measurement of learning *outcomes* at the system level after students have completed approximately 10 years of schooling. The rich contextual data gained from the student, school and parent background questionnaires and analysed by achievement level contribute to the evidence base that *informs* teaching and learning at both primary and secondary school levels.

## ❖ About this report

This report presents evidence from PISA 2009 for primary and secondary school leaders, teachers and policy makers who are concerned with enhancing student learning. In particular, it indicates that the following factors have the potential to raise students’ reading skills:

- involving parents and whānau in their child’s learning, during the early stages of their life, and also throughout their schooling
- fostering and nurturing students’ reading enjoyment
- encouraging students to read for enjoyment, in a wide range of materials
- providing a classroom environment that is conducive to learning
- extending students’ reading skills by providing challenging texts and scaffolding students to tackle complex reading tasks (particularly students with weaker reading skills)
- empowering students with the knowledge of the most effective strategies that will enable and promote their learning.

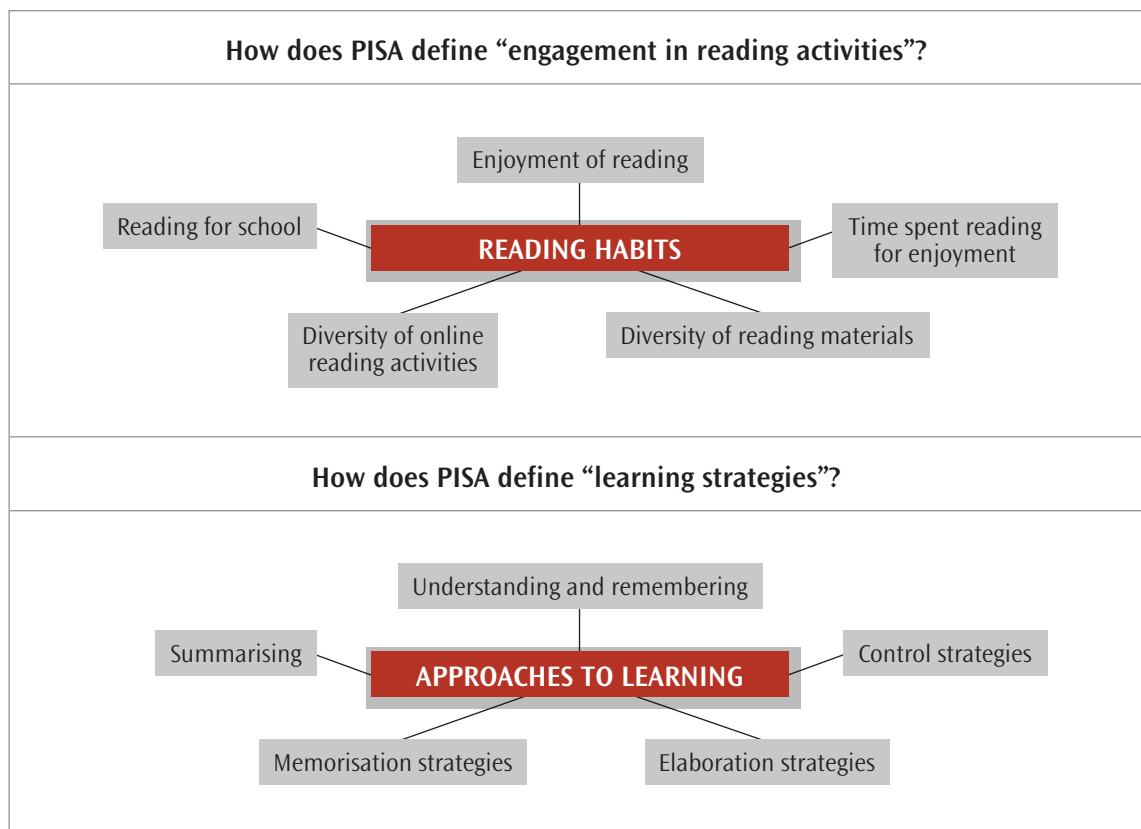
This report investigates the **reading habits** and **learning approaches** examined in PISA 2009, with a focus on gender and a particular emphasis on boys. It also briefly examines the attitudes of the 15-year-olds' parents/whānau to reading, and their (or someone else in the home's) involvement in literacy-related activities with the child during their first year of schooling and when they are 15-years-old. Teaching practices used in the students' English classes, student–teacher relationships and the disciplinary climate in the classroom are also examined.

## Structure

The report is divided into three parts. Part 1 begins with a brief examination of 15-year-olds' early childhood education experiences, their early home literacy-related activities, and other family influences examined in PISA (sections 1.1 and 1.2). Sections 1.3 to 1.5 then look at three of the five reading habits shown in Figure 1. (Reading for school is discussed in Part 2, and online reading materials are not examined in depth in this report.<sup>5</sup>)

Part 2 focuses on teaching and learning, and it begins by examining 15-year-olds' reports on the types of reading tasks they undertake as part of their schoolwork (section 2.1). It then investigates students' views on the extent to which their teachers use structuring, scaffolding and motivational practices in their English classes (section 2.2), the classroom climate, and their relationship with their teachers (section 2.3). Sections 2.4 and 2.5 examine the approaches to learning shown in Figure 1.

**Figure 1: Reading habits and approaches to learning**



Source: OECD 2010b, p. 26.

Finally, Part 3 summarises the findings and presents a model of PISA reading profiles.



**While New Zealand 15-year-olds' overall reading performance was very strong, 21% of boys and 8% of girls were below PISA's baseline proficiency levels.**



## ❖ Overview of PISA 2009 reading literacy results

The Organisation for Economic Cooperation and Development (OECD) released the PISA 2009 results for the 65 participating countries and economies on 6 December 2010, and New Zealand published a summary of the reading, scientific and mathematical literacy results on that date (Telford & May 2010).

Overall, New Zealand 15-year-olds' reading performance was very strong. New Zealand's mean reading score of 521 points was substantially better than the average across the 34 OECD member countries (493 points)<sup>6</sup> and than 56 of the 64 other participating countries and economies, including the United Kingdom and the United States.

New Zealand's mean score was statistically similar to three OECD countries (Canada, Japan and Australia) and one partner country<sup>7</sup> (Singapore). Only two OECD countries (Korea and Finland) and two partner economies (Hong Kong-China and Shanghai-China) achieved a better result.<sup>8</sup>

In PISA 2009 New Zealand 15-year-old boys scored on average 499 points and girls scored 544 points. This disparity is consistent with results from the three previous administrations of PISA, which show that, overall at age 15 years, New Zealand boys' reading literacy skills are much weaker than girls'. Although this phenomenon was evident in all of the 62 countries and three economies participating in PISA 2009, in New Zealand the disparity was relatively large at 46 score points, which is equivalent to more than one year of schooling.<sup>9</sup> Among PISA's high-performing countries and economies, only Finland had a larger gender difference (55 points).

New Zealand boys (21%) were more than twice as likely as girls (8%) to have reading literacy skills that according to PISA are below the baseline competencies necessary for effective and productive participation in the 21st century (below PISA's proficiency Level 2, OECD 2010a, p. 13). Conversely, only 12% of New Zealand boys were proficient at the two highest levels (Level 5 and 6) and 20% of girls were proficient at these levels (see Appendix 5, p. 90).

Reading differences in favour of girls were evident among Asian, Pākehā/European, Māori and Pasifika students (with 39, 41, 50 and 60 average score point differences, respectively). The disparity was also evident in national studies<sup>10</sup> and in the Progress in International Reading Literacy Study (PIRLS), an international study that looks at younger (Year 5) students.<sup>11</sup> It is interesting to note that in PIRLS 2005/2006, at the Year 5 level the gender disparity was smaller (24 points). This finding suggests that as New Zealand learners transition through schooling the disparity may increase in favour of girls.

While factors such as socio-economic background and home language influence reading literacy performance, further analysis of the PISA 2009 data showed that reading enjoyment and knowing about effective learning strategies play a relatively key role in mediating gender difference.<sup>12</sup>

This is why we have focused on these factors in the analysis presented in this report.

<sup>6</sup> Mean reading scores often appear in parenthesis throughout this report.

<sup>7</sup> Non-OECD countries are referred to as 'partner countries'.

<sup>8</sup> For more detail, see Telford & May 2010.

<sup>9</sup> According to PISA, 39 score points is equivalent to one year of schooling (OECD 2010a).

<sup>10</sup> For example, the National Education Monitoring Programme (NEMP) and Assessment Tools for Teaching and Learning (asTTle); see Satherley, 2006.

<sup>11</sup> PIRLS is an international study that assesses Year 5 students. It is conducted under the auspices of the International Association for the Evaluation of Educational Achievement (IEA).

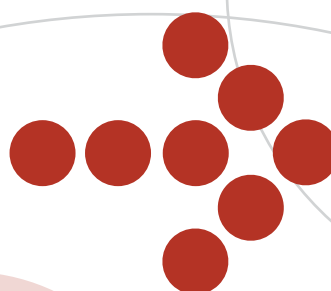
<sup>12</sup> Finland, Sweden, Estonia, Iceland, Austria and Germany are also noted as countries where reading enjoyment and knowledge of effective learning strategies play a relatively key role in mediating gender difference. For further detail see OECD 2010c, pp. 88–89.





## Part 1

# Fifteen-year-olds' reading habits and early educational influences





Students who have participated in ECE are on average stronger readers at age 15.

## 1.1 Fifteen-year-olds' early educational experiences

Part 1 begins by examining 15-year-olds' participation in early childhood education (ECE)<sup>13</sup> and some home literacy-related activities that children often participate in when they start school. The aim is to investigate whether there is any evidence to suggest that early educational experiences have a residual influence on reading skills after the completion of at least 10 years of schooling.

As stated in the early childhood education curriculum, *Te Whāriki*, early childhood is

a period of momentous significance for all people growing up in [our] culture ... By the time this period is over, children will have formed conceptions of themselves as social beings, as thinkers, and as language users, and they will have reached certain important decisions about their own abilities and their own worth. (Donaldson et al, cited in Ministry of Education 1996, p. 3)

As part of the background questionnaire, students were asked whether they had attended an early childhood centre, such as kindergarten, te kōhanga reo or playcentre. Information on whether the 15-year-olds were involved in literacy-related activities at home during their first year of primary schooling was gained from the questionnaire their parents/whānau were asked to complete.<sup>14</sup>

### ❖ Early childhood education

More than two-thirds (69%) of the 15-year-olds had attended ECE for more than one year, close to one-quarter of students (22%) had attended for up to one year, and just 9% reported that they had never attended.

Generally, students at age 15 who had attended ECE for more than one year had stronger reading skills, scoring on average 532 points, which was well above the average for New Zealand students overall and 60 points above their peers who were never involved in ECE. At age 15 the 9% of students without any ECE experience were likely to have very weak reading skills (472 points).<sup>15</sup>

Students who attended ECE for up to one year, on average, were weaker readers (517 points) than those who had attended for a longer period. Nevertheless, overall they still scored 45 points above 15-year-olds with no ECE experience.

<sup>13</sup> The majority of the students who participated in PISA attended ECE during 1997, 1998 or 1999 (students eligible to participate in PISA were aged between 15 years 3 months and 16 years 2 months at the time of the assessment, July and August 2009).

<sup>14</sup> Seventy-five percent of the 15-year-olds' parents/whānau responded to the questionnaire. The Parent Questionnaire is an additional questionnaire offered to participating countries. Eight OECD member countries (Denmark, Germany, Hungary, Italy, Korea, New Zealand and Portugal) and six partner countries (Croatia, Hong Kong-China, Lithuania, Macao-China, Panama and Qatar) participated.

<sup>15</sup> This finding is consistent with the Competent Children Study (see Wylie, Hodgen, Hipkins, & Vaughan 2008).



Students whose parents/whānau are involved early in their learning are on average stronger readers.

### Early childhood education, by gender

The percentage of boys and girls who reported that they participated in ECE for more than one year, one year or less, or never or hardly ever, and their corresponding mean reading scores, are presented in Figure 2. The graph shows that fewer 15-year-old boys (67%) than girls (71%) participated in ECE for more than one year.

**Figure 2: Time spent in early childhood education, by gender**

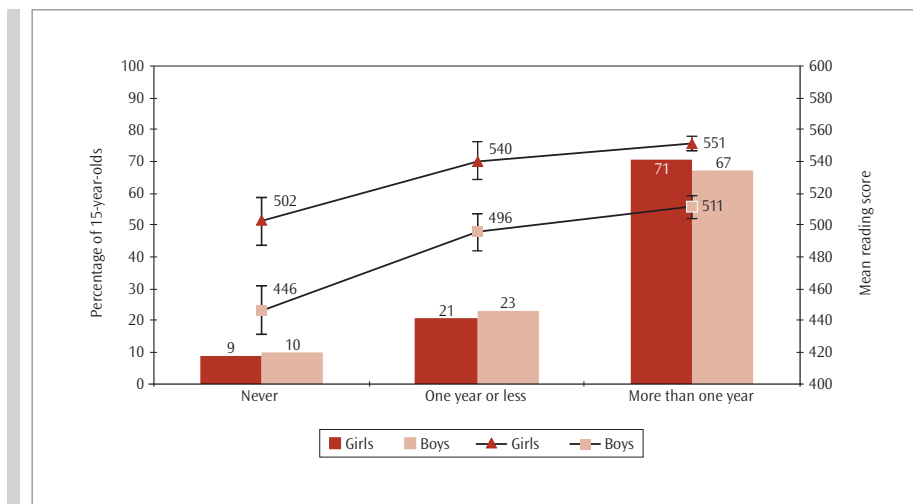


Figure 2 clearly shows that at age 15 a gender disparity persists regardless of the time students spent at ECE. The findings also show that the 15-year-old boys and girls who attended ECE, particularly those who attended for more than one year, had significantly stronger reading scores than their counterparts who never attended. However, it is important to note that ECE participation is confounded by factors such as socio-economic background and home language, as are other factors examined in this report. Nevertheless, boys who had never participated (446 points) were generally found to be very weak readers. Their mean reading score was 50 points lower than that of boys who attended for up to one year, and 65 points lower than that of their male counterparts who attended for more than one year.

### ❖ Parent/whānau involvement in early home literacy-related activities

The types of early home literacy-related activities examined in the PISA assessment, the percentage of 15-year-olds frequently involved in these activities (ie, at least once a week) during their first year of schooling, and their corresponding mean literacy scores are given in Table 1.<sup>16</sup>

<sup>16</sup> The mean reading score of students whose parents/whānau completed and returned the questionnaire was significantly higher (538) than the mean score for New Zealand students overall (521). Therefore these findings should be treated with some caution.

This table shows that among the parents/whānau of the 15-year-olds who responded to the questionnaire, almost all reported that they read books frequently to their child during the first year of schooling. Furthermore, the large majority of parents/whānau were frequently involved with their child in the other early home literacy-related activities examined in PISA.

It can also be seen that students who had been involved on a regular basis in these early home literacy-related activities when they began school generally had a strong reading performance at age 15 years (540 score points or higher). *Read books* had the strongest association. Students whose parents/whānau read books to them at least once a week scored on average more than 60 score points above the 4% whose parents/whānau read to them less often.

**Table 1: Parent/whānau involvement in home literacy-related activities with their 15-year-old during the first year of school**

Early home literacy-related activities	Students involved in activities at least once a week		Students involved in activities less than once a week
	%	Mean score	Score point difference
Read books	96	541 (2.1)	<b>-63</b> (8.7)
Talk about things you had done	93	541 (2.1)	<b>-44</b> (8.1)
Write letters or words	88	542 (2.2)	<b>-37</b> (6.1)
Read signs and labels aloud	82	545 (2.3)	<b>-39</b> (4.5)
Tell stories	82	543 (2.2)	<b>-22</b> (5.2)
Sing songs	78	543 (2.4)	<b>-20</b> (4.6)
Talk about what you [parent/s] had read	77	544 (2.3)	<b>-22</b> (4.1)
Play with alphabet toys (eg, blocks with letters of the alphabet)	74	540 (2.4)	<b>-9</b> (4.5)
Play word games	70	545 (2.3)	<b>-22</b> (4.1)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is statistically significant.

Standard errors appear in parenthesis.

Students whose parents/whānau indicated that they would frequently *talk about things you had done* or *write letters or words* or *read signs and labels aloud* with them had an overall reading advantage of at least 37 score points, an advantage that, according to PISA, is equivalent to almost one year of schooling. The mean score advantage on the other five activities listed in Table 1, apart from playing with alphabet toys, was approximately 20 points.

The PIRLS study administered a questionnaire to the parents/whānau of the Year 5 students who participated in the study. Parents/whānau were asked about their involvement with their child in early home literacy-related activities, six of which were the same as those asked in PISA: *read books*, *tell stories*, *sing songs*, *play with the alphabet toys*, *play word games*, and *read signs and labels aloud*. The questions differed slightly on two aspects.<sup>17</sup>

<sup>17</sup> In PIRLS, parents/whānau were asked how often they, or someone else in the home, had engaged in the activities with their child 'before they started school', rather than 'during the first year of school'. Second, parents/whānau were asked to respond on a three-point scale ('often', 'sometimes', 'never or almost never'), and not, as in PISA, on a four-point scale.



The PIRLS study also found that the majority of New Zealand parents/whānau recognise the importance of their role as 'first teachers'. Compared to other participating countries, New Zealand had one of the largest proportions of Year 5 students at the high level of the index that measures parent/whānau responses (74%), substantially more than the international average (54%). Furthermore, students at the high level of the index on average scored well above the 22% of students at the medium level (Chamberlain 2007).

### Parent/whānau involvement in early home literacy-related activities, by gender

New Zealand 15-year-old boys and girls were equally likely to have been involved in six of the nine early home literacy-related activities. However, Table 2 shows that boys' parents/whānau were slightly less likely than girls' parents/whānau to report that they would sing songs, write letters or words, or play word games with them when they were youngsters.

**Table 2: Parent/whānau involvement in home literacy-related activities with their 15-year-old during the first year of schooling, by gender**

	Boys			Girls		
	Involved in activities at least once a week		Involved in these activities less often	Involved in activities at least once a week		Involved in these activities less often
	%	Mean score	Score point difference	%	Mean score	Score point difference
Write letters or words	86	522 (3.7)	<b>-31</b> (8.1)	90	561 (2.7)	<b>-35</b> (7.6)
Sing songs	75	522 (4.0)	<b>-17</b> (7.5)	80	561 (2.8)	<b>-17</b> (5.0)
Play word games	67	525 (4.0)	<b>-21</b> (6.3)	73	563 (2.9)	<b>-18</b> (5.3)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is statistically significant.

Standard errors appear in parenthesis.

The findings in this section support the claim that early home literacy-related activities build language skills, which are the critical building blocks for reading and school success (Turner & Prochnow 2009). At the same time, it is essential that parent/whānau involvement is a positive experience: it is important that parents and whānau hold positive beliefs about their child's potential, and that their child's skill and motivational development are nurtured and enabling. If parents/whānau hold negative beliefs and their involvement is control-based and person-focused, home involvement is likely to have a detrimental effect on a child's learning.

The Ministry of Education's Te Kete Ipurangi (TKI) websites provides useful resources on the ways in which children can be motivated to engage in reading and writing.<sup>18</sup>

<http://literacyonline.tki.org.nz/Literacy-Online/Teacher-needs/Pedagogy/Motivating-learners>

and how to support children's reading:

<http://home-schoolpartnerships.tki.org.nz/Initiatives-that-have-been-effective/Reading-Together>.

**The next section explores further ways in which parents and whānau can influence their child's reading skills.**

<sup>18</sup> This resource was jointly produced by the New Zealand Association for the Teaching of English (NZATE) and the New Zealand Reading Association (NZRA).



Students with parents/whānau who hold positive attitudes towards reading and spend time reading for enjoyment on average are on average stronger readers.

## 1.2 Parent/whānau influences at age 15-years

To examine whether parent/whānau attitudes towards reading were associated with their 15-year-olds' reading skills, the parent questionnaire asked parents/whānau a number of questions in relation to their own reading habits.

### ❖ Parent/whānau reading enjoyment

Parents/whānau were asked to indicate their level of agreement with three positive reading attitudinal statements and one negative statement, which the 15-year-olds were also presented with: *reading is one of my favourite hobbies*; *I feel happy if I receive a book as a present*; *I enjoy going to a bookstore or a library*; and *for me, reading is a waste of time*.

Among the parents/whānau who responded, approximately 80 to 90% agreed or strongly agreed with the three positive statements and around one-half of these parents/whānau strongly agreed. Only 2% thought reading was a waste of time (see Table 3).

Typically, the 15-year-olds whose parents/whānau agreed or strongly agreed with the positive statements had a reading advantage of at least 30 points above those whose parents/whānau did not. Furthermore, the students whose parents/whānau strongly agreed had a very strong mean reading score of approximately 560 points, which was at least another 30 points above those whose parents/whānau simply agreed.

The PIRLS assessment also examined parent/whānau attitudes towards reading. Year 5 students at the high level of the PIRLS Parents Attitudes Toward Reading Index<sup>19</sup> achieved a reading score that was, on average, significantly better than that of their peers at the medium or low level of the index (Chamberlain 2007).

### Parent/whānau reading enjoyment, by gender

Table 3 shows that the achievement pattern for both boys and girls was broadly similar to that found for students overall.

<sup>19</sup> The PIRLS Parents Attitudes Towards Reading index was derived from parents' (or caregivers') level of agreement to the following five statements: I read only if I have to; I read only if I need information; I like talking about books with other people; I like to spend my spare time reading; and reading is an important activity in my home.

**Table 3: Parent/whānau attitudes towards reading, by student gender**

Parent/whānau attitudes towards reading	15-year-olds overall			Boys			Girls		
	Agreed / strongly agreed		Disagreed / strongly disagreed	Agreed / strongly agreed		Disagreed / strongly disagreed	Agreed / strongly agreed		Disagreed / strongly disagreed
	%	Mean score	Score point difference	%	Mean score	Score point difference	%	Mean score	Score point difference
I enjoy going to a bookstore or a library	90	543 (2.3)	<b>-45</b> (6.6)	91	523 (3.8)	<b>-52</b> (10.3)	89	563 (2.8)	<b>-45</b> (7.4)
I feel happy if I receive a book as a present	89	542 (2.2)	<b>-32</b> (5.7)	90	521 (3.5)	<b>-31</b> (8.2)	88	562 (2.7)	<b>-35</b> (6.6)
Reading is one of my favourite hobbies	81	544 (2.4)	<b>-30</b> (4.8)	82	524 (3.8)	<b>-33</b> (6.9)	80	564 (2.8)	<b>-31</b> (5.7)
For me, reading is a waste of time	2	~	~	1	~	~	2	~	~

Notes: Values that are bolded indicate that the score point difference in mean reading scores is statistically significant.

Standard errors appear in parenthesis.

~ The proportion of parents or whānau who agreed that reading is a waste of time was too small for analysis.

The findings from PISA and PIRLS highlight the importance of the role of parents and whānau in modelling their value of reading and the significance of creating a reading culture in the home. It is particularly important that from an early age fathers role-model their value and appreciation of reading to their sons.

### ❖ Time parents/whānau spent reading for enjoyment

Parents/whānau were also asked how often they read for enjoyment on a **weekly** basis. More than half of them reported that they spent at least 6 hours a week reading for enjoyment.<sup>20</sup>

**Table 4: Parent/whānau time spent reading on a weekly basis, 15-year-olds overall and by gender**

Time parents/whānau spent reading for enjoyment on a weekly basis	15-year-olds overall		Boys		Girls	
	%	Mean score	%	Mean score	%	Mean score
More than 10 hours	24	548 (4.3)	26	526 (6.8)	23	572 (5.0)
6–10 hours	30	549 (3.1)	31	533 (5.2)	29	566 (4.0)
1–5 hours	37	530 (3.3)	36	505 (4.7)	38	553 (3.9)
Less than 1 hour	8	504 (7.2)	7	480 (11.1)	10	520 (9.3)

Note: Standard errors appear in parenthesis.

As shown in Table 4, students with parents/whānau who read for up to one hour a week had on average an advantage of 26 score points over their peers whose parents/whānau read less often.

<sup>20</sup> As noted earlier, 75% of the 15-year-olds' parents/whānau completed the questionnaire, and the mean reading score of their 15-year-olds was significantly higher than the mean score for New Zealand students overall. Therefore these results should be read with some caution.



Students with parents/whānau who are involved in their academic and non-academic activities at age 15 on average are stronger readers.

### Time parents/whānau spent reading daily for enjoyment, by gender

The table also shows that the time that parents/whānau spent reading for enjoyment was positively associated with both boys' and girls' reading performance. These findings highlight the importance of the parent/whānau in role-modelling their reading enjoyment.

### ❖ Parent/whānau involvement in their 15-year-old's academic and non-academic activities

As shown in Table 5, more than 80% of the students' parents/whānau reported that they or someone else in the home frequently (at least once a week) spent time just talking to their 15-year-old, ate dinner around a table with them, discussed books, films or television programmes, or discussed how well they were doing at school.

Students whose parents/whānau *discuss political or social issues* or *discuss books, films or television programmes* or *spend time just talking to your child* at least once a week had on average an advantage of 24 points or more over those where this happened less often. However, there was no evidence to suggest that 15-year-olds' reading skills were associated with their parents/whānau frequently going to a bookstore or library with them, discussing how well they were doing at school or eating dinner around a table with them.

**Table 5: Parent/whānau involvement in their 15-year-old's academic and non-academic activities, 15-year-olds overall**

Academic and non-academic activities	Students involved in activities at least once a week		Students involved in activities less often
	%	Mean score	Score point difference
Spend time just talking to your child	97	539 (2.1)	<b>-24 (9.7)</b>
Discuss how well your child is doing at school	88	538 (2.1)	<b>-2 (5.3)</b>
Eat dinner with your child around a table	84	538 (2.2)	<b>-1 (4.9)</b>
Discuss books, films or television programmes	84	543 (2.2)	<b>-27 (5.0)</b>
Discuss political or social issues	68	549 (2.7)	<b>-32 (3.9)</b>
Help your child with his/her homework	47	530 (3.3)	<b>15 (3.9)</b>
Talk with your child about what he/she is reading on his/her own	45	543 (3.1)	<b>-8 (3.6)</b>
Go to a bookstore or library with your child	14	545 (5.2)	<b>-8 (5.2)</b>

Notes: Values that are bolded indicate that the score point difference in mean reading scores is statistically significant.

Standard errors appear in parenthesis.

The 47% of students whose parents/whānau frequently helped them with homework were likely to have weaker reading skills. Other studies show that parents/whānau are more likely to help with homework if their child's academic achievement is relatively weak.<sup>21</sup>

21 This is consistent with other studies; for example, see Cox & Kennedy 2008, and Wylie, Thompson, & Lye 2001.



## Parent/whānau involvement in their 15-year-old's academic and non-academic activities, by gender

As Table 6 shows, parents/whānau were equally likely to be involved with their 15-year-old sons as they were with their daughters in most of the educational and social activities. *Go to a bookstore or library with your child* and *talk with your child about what he/she is reading on his/her own* were the two exceptions: approximately 5% more of the girls' parents/whānau than boys' parents/whānau reported that they frequently participated in these activities with their 15-year-old.

**Table 6: Parent/whānau involvement in academic and non-academic activities, by gender**

Academic and non-academic activities	Boys			Girls		
	Involved in activities at least once a week		Involved in activities less often	Involved in activities at least once a week		Involved in activities less often
	%	Mean score	Score point difference	%	Mean score	Score point difference
Spend time just talking to your child	97	~	~	96	~	~
Discuss how well your child is doing at school	88	518 (3.7)	-4 (7.1)	88	558 (2.7)	-2 (6.8)
Eat dinner with your child around a table	85	518 (3.7)	-4 (7.0)	83	558 (3.0)	0 (6.7)
Discuss books, films or television programmes	83	522 (3.7)	<b>-26</b> (7.5)	85	562 (2.8)	<b>-27</b> (6.7)
Discuss political or social issues	69	530 (4.5)	<b>-36</b> (6.4)	67	568 (3.1)	<b>-30</b> (4.5)
Help your child with his/her homework	46	506 (5.4)	<b>22</b> (6.4)	47	552 (3.6)	<b>10</b> (4.8)
Talk with your child about what he/she is reading on his/her own	43	520 (5.7)	-3 (6.2)	48	562 (3.4)	<b>-8</b> (4.0)
Go to a bookstore or library with your child	11	524 (9.0)	-7 (8.8)	17	559 (5.9)	-1 (5.9)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is statistically significant.

Standard errors appear in parenthesis.

~ Because only a small proportion of the boys' and girls' parents/whānau did not spend time talking with their child, there is insufficient evidence for comparisons. Therefore these results are not reported.

Girls on average showed a small reading advantage if their parents/whānau talked with them about what they were reading on their own. There was no evidence to suggest that this type of interaction was associated with boys' reading performance. Nor was there evidence to suggest that the association found for boys and girls on the other activities differed from that found for students overall. On the other activities, the achievement pattern for both boys and girls was similar to that found for students overall.

Information on the ways in which parents and whānau can support their teenager's education is available on the Ministry of Education's website:

<http://www.minedu.govt.nz/Parents/YourTeen/WaysToGetInvolved.aspx>

The next section explores 15-year-olds' attitudes towards reading.



Students who enjoy reading are on average very strong readers.

Boys are less likely than girls to enjoy reading.

## 1.3 Do our 15-year-olds enjoy reading?

To gain an overall picture of the extent to which 15-year-olds enjoy reading, PISA asked students for their level of agreement to a series of statements about their attitudes towards reading.<sup>22</sup> Parent/whānau reading attitudes towards five of the statements were also sought (see pp. 14-16).

### ❖ Reading enjoyment

To ensure that reading enjoyment captured both positive and negative attitudes, six of the eleven reading attitudinal statements were positively framed and the other five were negatively framed. The six positive statements are listed in Table 7.

This table shows that:

- approximately half or more of New Zealand 15-year-olds were happy if they received a book as a present, enjoyed going to a bookstore or library, and liked expressing their opinions about books they read
- well over one-third responded positively to the three other reading attitudinal statements.

**Table 7: Positive reading attitudes, 15-year-olds overall**

Positive attitudes towards reading (strongly agreed or agreed with the statements)	Strongly agreed or agreed		Strongly disagreed or disagreed
	%	Mean score	Score point difference
I feel happy if I receive a book as a present	57	550 (2.7)	<b>-64</b> (3.4)
I enjoy going to a bookstore or a library	54	549 (3.1)	<b>-58</b> (4.2)
I like to express my opinions about books I have read	49	548 (3.2)	<b>-49</b> (3.4)
I like talking about books with other people	43	557 (3.2)	<b>-59</b> (3.3)
Reading is one of my favourite hobbies	38	564 (3.3)	<b>-65</b> (3.9)
I like to exchange books with my friends	38	555 (3.3)	<b>-52</b> (3.7)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is statistically significant.

Standard errors appear in parenthesis.

<sup>22</sup> New Zealand findings on students' reading enjoyment were also reported in the PISA 2009 summary report; see Telford & May 2010, pp. 19–21.



Students who were positive about reading were in general particularly strong readers and achieved a mean score that was well above that of their peers who held negative views (see Table 7). The advantage ranged from 49 score points for students who liked to express their opinions about books they had read, to 65 score points for those who considered reading to be one of their favourite hobbies.

**Table 8: Negative reading attitudes, 15-year-olds overall**

Negative attitudes towards reading	Strongly agreed or agreed		Strongly disagreed or disagreed
	%	Mean score	Score point difference
I read only to get information I need	40	467 (2.4)	<b>92</b> (2.9)
I read only if I have to	38	471 (3.0)	<b>84</b> (3.1)
I find it hard to finish books	31	470 (3.2)	<b>76</b> (3.5)
I cannot sit still and read for more than a few minutes	18	453 (3.5)	<b>85</b> (3.9)
For me, reading is a waste of time	18	464 (4.4)	<b>72</b> (5.0)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is statistically significant.

Standard errors appear in parenthesis.

However, as illustrated in Table 8:

- more than one-third of 15-year-olds read only to get the information they need and read only if they have to
- close to one-third found it hard to finish reading books
- nearly one in five reported they could not sit still for more than a few minutes to read or thought reading was a waste of time.

Students who held negative reading attitudes were generally weak readers. At most they scored on average 471 score points, a score that was well below the overall mean reading score for New Zealand students (521) and well below the OECD average reading score (493).

As shown in Table 8, on average the disadvantage for students who held negative views relative to those who did not ranged from 72 score points on *for me, reading is a waste of time* to 92 score points on the statement *I read only to get information I need*.

Overall, there was a substantial gap of 127 score points in reading performance between the quarter of students who were positive about reading and the quarter who were the least positive, which is equivalent to more than three years of schooling<sup>23</sup> (for more detail, see Appendix 1, p. 73).

### Reading enjoyment, by gender

New Zealand boys were much more likely than girls to disagree or strongly disagree with the positive statements that related to reading enjoyment. As illustrated in Table 9:

- approximately half as many boys as girls agreed or strongly agreed that they liked talking about books with other people, liked exchanging books with their friends, and reading was one of their favourite hobbies
- although boys tended to be more positive about receiving a book as a present, going to a bookstore or a library and expressing their opinions about books than they were about the three other activities, girls were still much more positive.

<sup>23</sup> As noted earlier, according to PISA 39 score points is equivalent to 1-years of schooling.

**Table 9: Positive attitudes towards reading, by gender**

Positive attitudes towards reading	Boys			Girls		
	Strongly agreed or agreed			Strongly agreed or agreed		
	%	Mean score	Score point difference	%	Mean score	Score point difference
I feel happy if I receive a book as a present	48	532 (4.5)	<b>-60</b> (5.0)	65	564 (3.0)	<b>-56</b> (4.3)
I enjoy going to a bookstore or a library	42	528 (5.2)	<b>-46</b> (6.1)	67	563 (3.1)	<b>-56</b> (4.5)
I like to express my opinions about books I have read	39	526 (5.7)	<b>-39</b> (5.9)	59	563 (3.2)	<b>-43</b> (3.7)
I like talking about books with other people	30	536 (6.3)	<b>-50</b> (5.9)	56	568 (3.2)	<b>-52</b> (4.1)
Reading is one of my favourite hobbies	26	544 (5.5)	<b>-57</b> (5.9)	50	574 (3.7)	<b>-58</b> (4.5)
I like to exchange books with my friends	22	529 (6.6)	<b>-35</b> (6.9)	55	566 (3.5)	<b>-46</b> (4.1)

Notes: Values that are bolded indicate that the score point difference between students who strongly agreed/agree and those who strongly disagreed or disagreed is statistically significant.

Standard errors appear in parenthesis.

Tables 9 and 10 show that boys were more likely to hold negative attitudes than girls. Interestingly, the gap in mean reading scores among boys and among girls on most of the reading enjoyment statements were broadly similar, regardless of whether the statement was positive or negative. Nevertheless, boys' mean reading scores were significantly below the girls'.

**Table 10: Negative attitudes towards reading, by gender**

Negative attitudes	Boys			Girls		
	Strongly agreed or agreed			Strongly agreed or agreed		
	%	Mean score	Score point difference	%	Mean score	Score point difference
I read only to get information that I need	51	458 (3.3)	<b>87</b> (4.2)	28	485 (3.4)	<b>84</b> (4.5)
I read only if I have to	48	461 (3.4)	<b>77</b> (3.7)	28	489 (4.3)	<b>78</b> (5.2)
I find it hard to finish books	33	452 (4.7)	<b>74</b> (4.8)	28	493 (3.3)	<b>72</b> (3.7)
For me, reading is a waste of time	25	454 (5.2)	<b>63</b> (6.5)	12	485 (6.4)	<b>68</b> (6.6)
I cannot sit still and read for more than a few minutes	22	440 (4.7)	<b>79</b> (5.5)	14	474 (5.9)	<b>82</b> (6.6)

Notes: Values that are bolded indicate that the score point difference between students who strongly agreed/agree and those who strongly disagreed or disagreed is statistically significant.

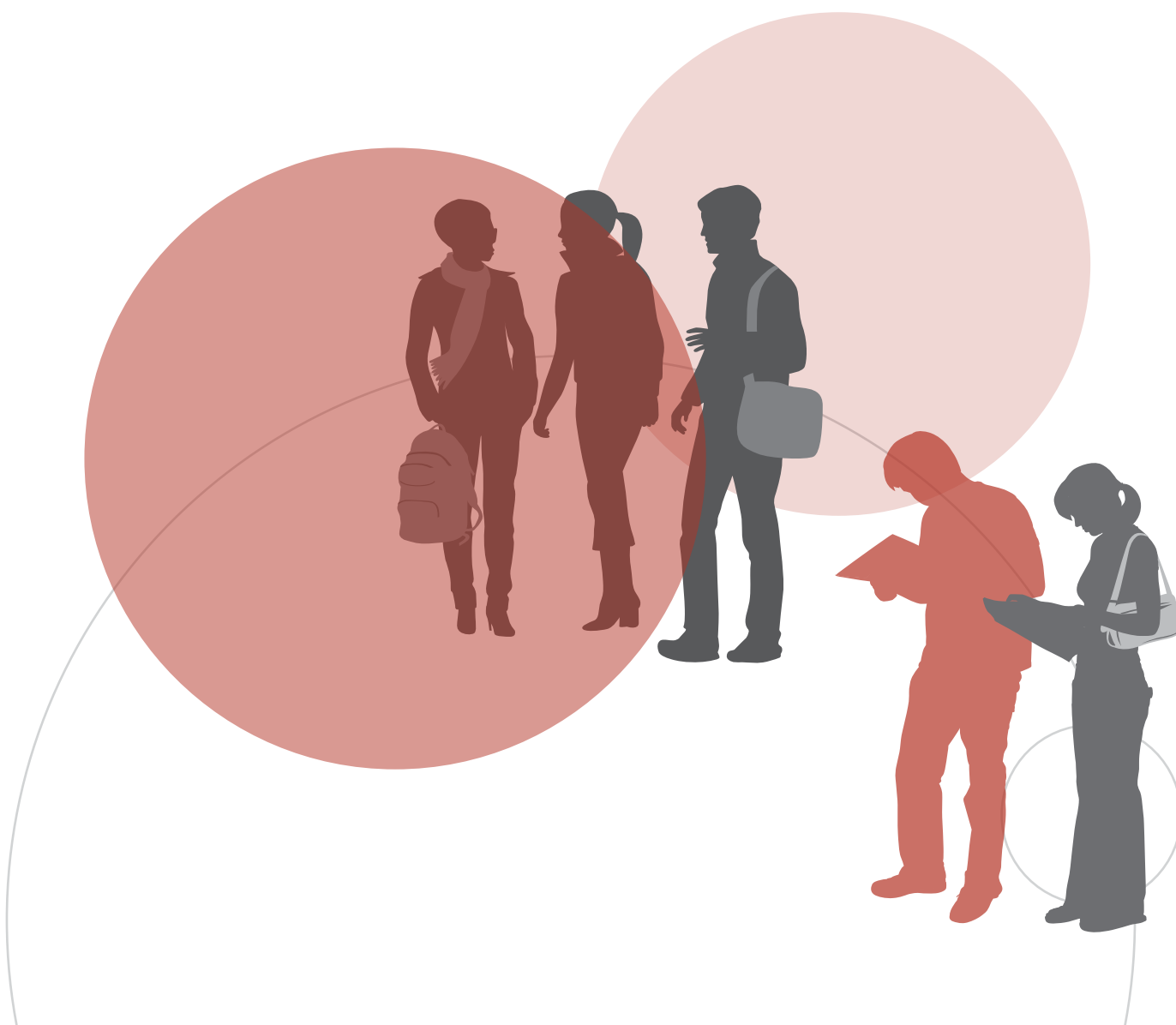
Standard errors appear in parenthesis.



Of concern is that

- approximately half of New Zealand boys read only if they had to or read only to get the information they needed
- one-quarter considered reading a waste of time
- at least one 15-year-old boy in five reported that they could not sit still and read for more than a few minutes.

**The next section examines whether 15-year-olds read daily for enjoyment.**





Students who spend time reading daily for enjoyment are on average stronger readers.

Boys are less likely than girls to read daily for enjoyment.

## 1.4 Do our 15-year-olds read daily for their enjoyment?

The time students spend reading for enjoyment is a strong indicator of their reading competency. As pointed out in volume 3 of the OECD report's *Learning to Learn* (2010b, p. 32), “better readers tend to read more because they are more motivated to read, which in turn, leads to improved vocabulary and comprehension skills.” This phenomenon is commonly referred to as the ‘Mathew effect’ (Merton 1968).

This section focuses on the extent to which 15-year-olds’ reading skills are associated with the amount of time they usually spend reading for enjoyment on a **daily** basis (never read for enjoyment, 30 minutes or less a day, between 30 and 60 minutes a day, 1 to 2 hours a day, or more than 2 hours a day).

### ❖ Time spent reading for enjoyment

Table 11 below shows that at least two-thirds of New Zealand 15-year-olds reported that they read for enjoyment on a daily basis (69%), and that on average the 36% of students who spent 30 minutes or longer a day reading were very strong readers (558 score points or higher). Interestingly, there was no overall advantage for students who read for longer than two hours a day over those who read from one to two hours a day.

**Table 11: Time spent reading daily for enjoyment, 15-year-olds overall**

Time spent on reading	%	Mean score
More than 2 hours a day	6	573 (6.9)
1–2 hours a day	10	574 (4.8)
30–60 minutes a day	20	558 (3.8)
30 minutes or less a day	33	525 (3.9)
I do not read for enjoyment	31	472 (3.4)

*Note: Standard errors appear in parenthesis.*

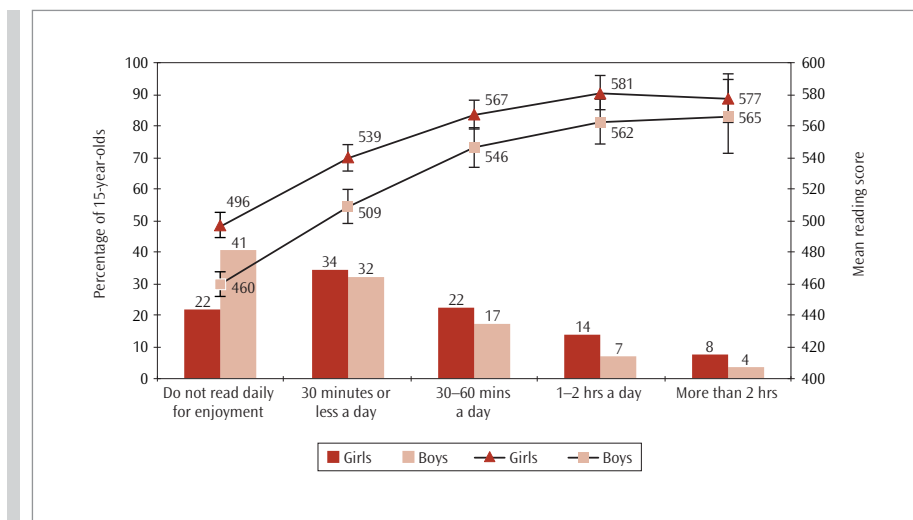
Reading for up to 30 minutes each day was also likely to promote strong reading skills (525). However, students who never read daily for enjoyment were typically poor readers, scoring nearly 50 points lower than the overall reading score for New Zealand 15-year-olds.



### Time spent reading daily for enjoyment, by gender

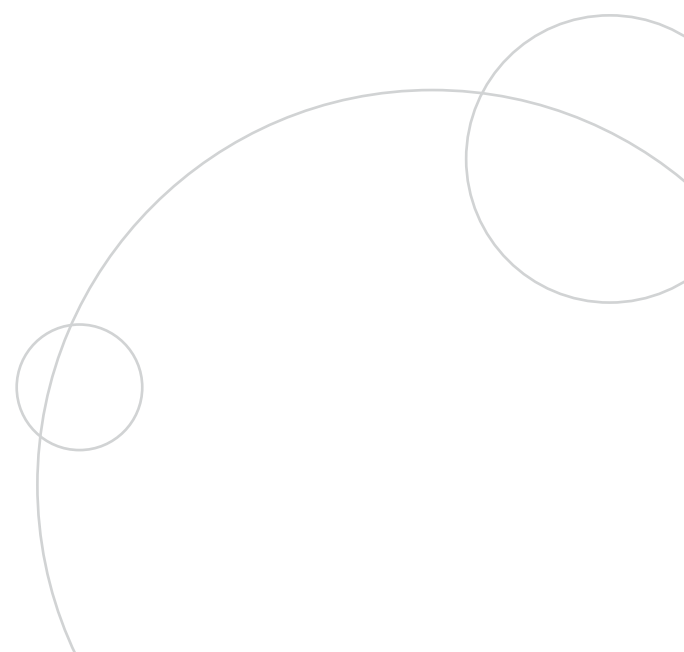
Figure 3 below shows that well over one-third of New Zealand boys (41%) never read for enjoyment on a daily basis – close to twice the percentage of girls (22%). It can also be seen that boys who never read daily for enjoyment were typically very weak readers. Boys who read for at least 30 minutes a day were generally much stronger readers, and boys who read for up to one hour were even stronger readers. However, as found for students overall, there was no statistically significant evidence to show that boys and girls who read for longer than two hours a day had an advantage in reading over those who read for one to two hours.

**Figure 3: Time spent reading daily for enjoyment, by gender**



Interestingly, on average the 4% of boys who read for more than two hours a day achieved a reading score (565) that was not statistically different (577) from the 8% of girls who read for this length of time. However, as Figure 3 clearly shows, boys who spent a similar time to girls reading for enjoyment, apart from those who read for more than two hours, typically had weaker reading skills than their female counterparts.

Table 12 compares the proportion of New Zealand boys, girls and students overall who spent time reading for enjoyment on a daily basis and their corresponding mean reading scores with the results for their OECD counterparts. It is clear that in New Zealand the advantage for students who read on a daily basis was greater than it was on average across OECD countries, and this was the case for both boys and girls.



**Table 12: Time spent reading daily for enjoyment, New Zealand compared to OECD mean, by gender**

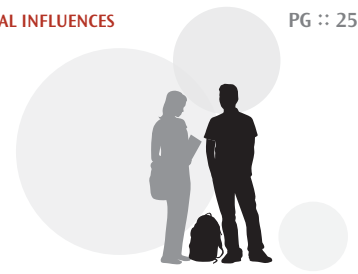
New Zealand 15-year-olds and the OECD average	Read daily		Did not read daily
	%	Mean score	Score point difference
<b>15-year-olds overall</b>			
New Zealand	69	546 (2.7)	<b>-73</b>
OECD average	63	517 (0.5)	<b>-57</b>
<b>Boys</b>			
New Zealand	59	529 (4.1)	<b>-70</b>
OECD average	52	500 (0.7)	<b>-50</b>
<b>Girls</b>			
New Zealand	78	558 (3.0)	<b>-62</b>
OECD average	73	528 (0.6)	<b>-52</b>

Notes: Values that are *bolded* indicate that the score point difference in mean reading scores is statistically significant.

Standard errors appear in parenthesis.

The next section investigates the types of reading materials 15-year-olds read for enjoyment.





**Fifteen-year-olds read magazines (53%) and newspapers (53%) more often than fiction (44%), non-fiction (25%) or comic books (12%).**

**Approximately one in six never or hardly ever read these materials.**

**Boys read newspapers and magazines the most.**



## 1.5 What types of reading materials do our students read for enjoyment?

The types of reading materials that 15-year-olds read for enjoyment were examined to assess whether particular types of reading material promote students' reading skills. The students were asked how often they read fiction, non-fiction books, newspapers, magazines and comic books because they wanted to (never or almost never, a few times a year, about once a month, several times a month, or several times a week).

### ❖ Fiction books

Students who read fiction on a regular basis (at least several times a month) were very strong readers. Typically, the more frequently students read fiction, the better their reading performance.

**Table 13: Reading fiction books, 15-year-olds overall**

Read fiction	%	Mean score
Several times a week	22	582 (3.9)
Several times a month	22	536 (3.9)
About once a month	23	513 (3.0)
A few times a year	22	498 (3.7)
Never or almost never	11	448 (5.4)

*Note: Standard errors appear in parenthesis.*

As Table 13 illustrates, similar proportions of students read fiction several times a week, several times a month, once a month or a few times a year. Around one in ten never or almost never read fiction for enjoyment.

It can also be seen that the 22% of students who read fiction several times a week were exceptionally strong readers (582), achieving a reading score that was on average 60 points above the reading score for New Zealand 15-year-olds overall (521). Students who only read fiction several times a month had relatively strong reading skills (536).

Even students who only read fiction for enjoyment a few times a year had a mean reading score (498) similar to the OECD average for 15-year-olds overall (493). However, the mean reading performance of those who never or almost never read fiction was very poor (448).



Students who read fiction books regularly are on average very strong readers.

Boys are less likely than girls to read fiction.

**Table 14: Reading fiction books regularly, New Zealand compared to OECD, 15-year-olds overall and by gender**

	Read fiction at least several times a month		Read fiction less than several times a month
	%	Mean score	Score point difference
<b>New Zealand 15-year-olds and the OECD average</b>			
<b>15-year-olds overall</b>			
New Zealand	44	559 (3.0)	<b>-65</b>
OECD average	31	533 (0.6)	<b>-53</b>
<b>Boys</b>			
New Zealand	35	543 (5.0)	<b>-64</b>
OECD average	21	518 (1.0)	<b>-51</b>
<b>Girls</b>			
New Zealand	54	569 (3.6)	<b>-52</b>
OECD average	40	541 (0.7)	<b>-43</b>

*Note: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.*

*Standard errors appear in parenthesis.*

As shown in Table 14, proportionally more New Zealand 15-year-olds regularly (ie, at least several times a month) read fiction than the average across the 34 OECD countries. The table also illustrates that New Zealand's regular fiction readers scored well above the mean score for regular fiction readers across OECD countries.

### Reading fiction books, by gender

It can also be seen from Table 14 above that boys were much less likely than girls to read fiction regularly. While just over one-third of boys read fiction on a regular basis, at least half of the girls were regular fiction readers.

Figure 4 shows that although there was no statistically significant difference between the mean reading scores of boys who read fiction a few times a year and about once a month, overall, the more often boys and girls read fiction for enjoyment, the better their reading score.

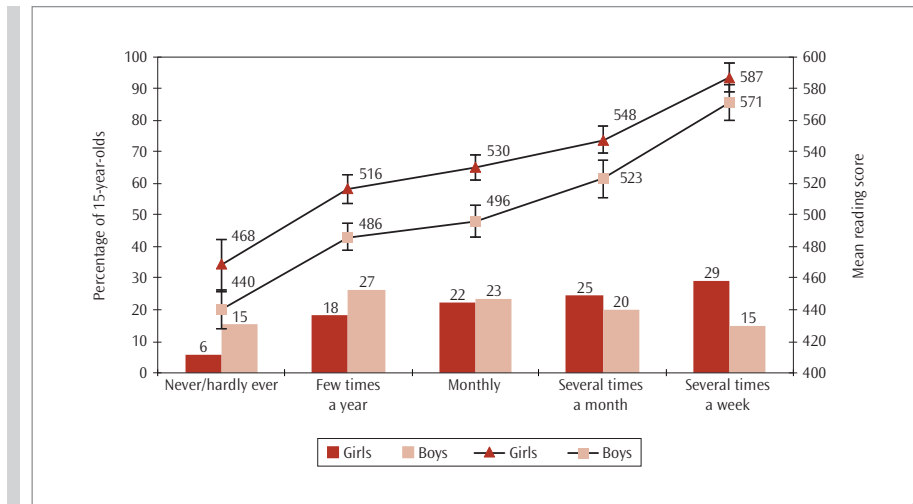


Students who read non-fiction books regularly are on average stronger readers.



Boys and girls are equally likely to read non-fiction books.

Figure 4: Reading fiction books, by gender



### ❖ Non-fiction books

As shown in Table 15, approximately half of the students reported that they read non-fiction books for enjoyment at least once a month, one-third read them a few times a year, and one in six never or almost never read them.

Table 15: Reading non-fiction books, 15-year-olds overall

Read non-fiction books	%	Mean score
Several times a week	8	539 (6.9)
Several times a month	18	538 (3.9)
About once a month	26	527 (3.4)
A few times a year	33	528 (3.2)
Never or almost never	16	481 (4.9)

Note: Standard errors appear in parenthesis.

Reading non-fiction books on a regular basis was positively associated with reading performance. Interestingly, students who read non-fiction either several times a week or several times a month achieved a mean score that was virtually the same. However, this mean score was significantly better than that of students who read non-fiction books less often.

Students who read non-fiction books once a month and a few times a year also achieved a mean score that was virtually the same. They scored lower than their peers who read non-fiction more often, but well above those who never or almost never read this type of material.

**Table 16: Reading non-fiction books regularly, New Zealand compared to OECD, 15-year-olds overall and by gender**

New Zealand 15-year-olds and the OECD average	Read non-fiction at least several times a month		Read non-fiction less than several times a month
	%	Mean score	Score point difference
<b>15-year-olds overall</b>			
New Zealand	#25	538 (3.4)	<b>-21</b>
OECD average	19	513 (0.7)	<b>-22</b>
<b>Boys</b>			
New Zealand	24	531 (5.2)	<b>-39</b>
OECD average	18	499 (1.0)	<b>-27</b>
<b>Girls</b>			
New Zealand	27	545 (4.3)	1
OECD average	19	527 (0.9)	<b>-15</b>

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

# This value appears inconsistent with the figures shown in Table 15 due to rounding.

As Table 16 shows, proportionally more New Zealand students regularly read non-fiction books than on average across the 34 OECD countries. However, mean score differences between regular and non-regular readers in New Zealand and on average across OECD countries were about the same.

### Reading non-fiction books, by gender

Table 16 also shows that New Zealand 15-year-old boys and girls were equally likely to read non-fiction books regularly for enjoyment. Boys who regularly read non-fiction books were in general stronger readers than boys who read them less often. Boys who were regular non-fiction readers scored on average well above the mean reading score for boys overall (499), and 39 points above their counterparts who read non-fiction books less often.

Figure 5 illustrates that while there was no difference between the mean scores of boys who read this type of reading material a few times a year and about once a month, generally the more boys read non-fiction books the better their mean reading performance. However, this was not the case for girls. Overall, girls' reading performance was not associated with reading non-fiction books regularly.

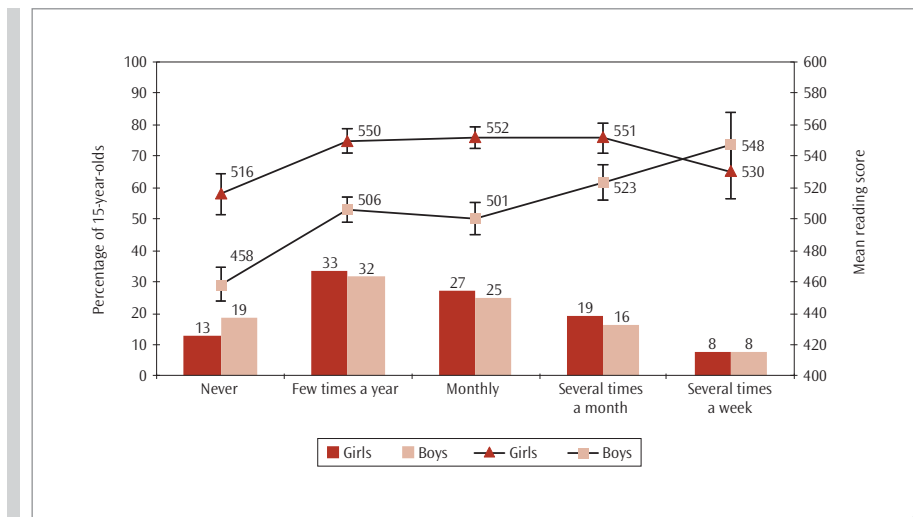


Students with strong or weak reading skills are equally likely to read newspapers.



Boys and girls are equally likely to read newspapers.

Figure 5: Reading non-fiction books, by gender



### ❖ Newspapers<sup>24</sup>

Approximately one-quarter of New Zealand 15-year-olds read newspapers at least several times a week, another quarter read them several times a month, and one in five read them about once a month, as can be seen in Table 17.

Table 17: Reading newspapers, 15-year-olds overall

Read newspapers	%	Mean score
Several times a week	27	521 (4.3)
Several times a month	26	532 (3.2)
About once a month	20	527 (3.5)
A few times a year	16	517 (4.9)
Never or almost never	12	506 (4.9)

Note: Standard errors appear in parenthesis.

<sup>24</sup> Students were not specifically asked whether they read the reading materials in the print or electronic medium. However, the questionnaire contained a question that was specific to reading news online, and those results are reported at the end of this subsection.

Just over half of New Zealand 15-year-olds read newspapers regularly (as shown in Table 18 below), proportionally fewer than the OECD average. It can also be seen that in New Zealand, reading the newspaper regularly was not associated with mean reading performance. Therefore, New Zealand's weak readers were equally likely as its strong readers to read newspapers on a regular basis. This was not the case on average across OECD countries: regular newspaper readers were more likely to be those with stronger reading skills.

**Table 18: Reading newspapers regularly, New Zealand compared to OECD average, 15-year-olds overall and by gender**

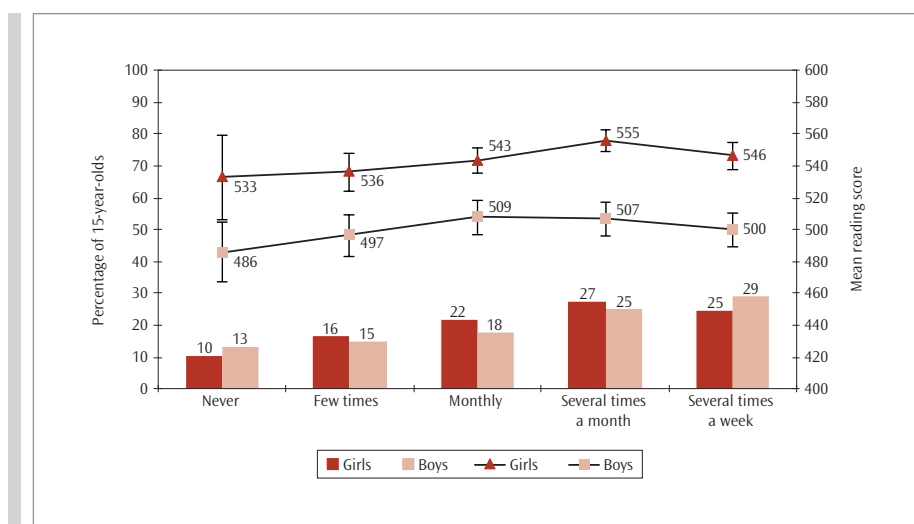
New Zealand 15-year-olds and the OECD average	Read newspapers at least several times a month		Read newspapers less than several times a month	
	%	Mean score	Score point difference	
<b>15-year-olds overall</b>				
New Zealand	53	526 (2.8)	-8	
OECD average	62	501 (0.5)	<b>-16</b>	
<b>Boys</b>				
New Zealand	54	503 (4.6)	-5	
OECD average	66	484 (0.6)	<b>-25</b>	
<b>Girls</b>				
New Zealand	52	551 (3.1)	<b>-13</b>	
OECD average	59	520 (0.6)	<b>-13</b>	

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different. Standard errors appear in parenthesis.

### Reading newspapers, by gender

Table 18 also shows that New Zealand girls and boys were equally likely to read newspapers regularly. It is also clear from Table 18 and Figure 6 that boys' reading performance was not associated with regular newspaper reading. Interestingly, this was not the case for girls: as shown in Table 18, girls who regularly read newspapers were more likely to have much stronger reading skills than girls who read them less often.

**Figure 6: Reading newspapers, by gender**





Students who read magazines regularly are on average weaker readers.

Boys are less likely than girls to read magazines.

“

### Reading the news online

Students were also asked whether they read the news online, and 27% of the students reported that they did so at least several times a week. These students were more likely to have stronger reading skills (539) than those who did not (517).

Boys' and girls' reading performance was positively associated with regularly reading the news online, and they were equally likely to do this. However, the association was more marked for boys (30 points) than it was for girls (13 points).

### ❖ Magazines

As can be seen in Table 19, over half of the students read magazines at least several times a month and one-quarter read them about once a month. Typically, students who read magazines several times a week were weaker readers, scoring on average at least 20 points less than their peers who read them less often.

**Table 19: Reading magazines, 15-year-olds overall**

Read magazines	%	Mean score
Several times a week	21	501 (3.4)
Several times a month	33	524 (3.3)
About once a month	25	534 (3.5)
A few times a year	16	530 (5.0)
Never or almost never	7	524 (8.3)

*Notes: Percentage values do not sum to 100 due to rounding.*

*Standard errors appear in parenthesis.*

The mean reading score of New Zealand 15-year-olds who regularly read magazines (at least several times a month), as Table 20 shows, was 16 points lower than those who did not regularly read them. This difference was somewhat different to the average across the 34 OECD member countries, where regular readers were those with stronger reading skills: it is clear that overall in OECD countries boys with stronger reading skills were more likely to regularly read magazines.

**Table 20: Reading magazines regularly, New Zealand compared to OECD average, 15-year-olds overall and by gender**

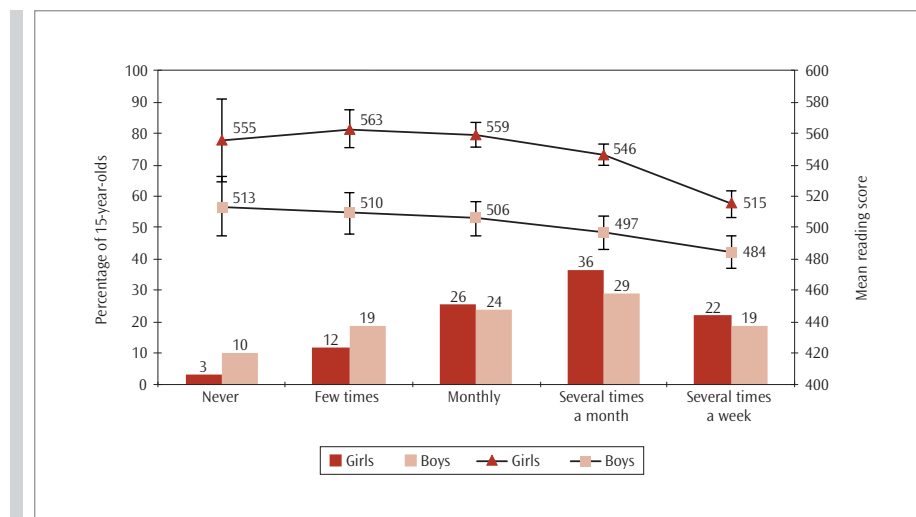
New Zealand 15-year-olds and the OECD average	Read magazines at least several times a month		Read magazines less than several times a month
	%	Mean score	Score point difference
<b>15-year-olds overall</b>			
New Zealand	53	515 (2.6)	<b>16</b>
OECD average	58	501 (0.5)	<b>-15</b>
<b>Boys</b>			
New Zealand	48	492 (4.0)	<b>17</b>
OECD average	51	484 (0.7)	<b>-17</b>
<b>Girls</b>			
New Zealand	59	535 (2.9)	<b>25</b>
OECD average	65	514 (0.6)	<b>0</b>

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different. Standard errors appear in parenthesis.

### Reading magazines, by gender

Table 20 also shows that proportionally fewer New Zealand boys than girls read magazines regularly. Figure 7 illustrates that both boys and girls who regularly read magazines (ie, at least several times a month) were more likely to have weaker reading skills than their respective male and female peers, and this was more marked for girls.

**Figure 7: Reading magazines, by gender**



Students who read comics are on average weaker readers.

Boys are more likely than girls to read comics regularly.

“

## Comics

As illustrated in Table 21, just 11% of New Zealand students were regular comic readers (at least several times a month) and more than half of the students never or almost never read them.

**Table 21: Reading comics, 15-year-olds overall**

Read comics	%	Mean score
Several times a week	4	504 (9.6)
Several times a month	7	506 (6.5)
About once a month	11	510 (5.0)
A few times a year	24	525 (3.6)
Never or almost never	54	529 (2.8)

Note: Standard errors appear in parenthesis.

On average across the 34 OECD countries, proportionally more students were regular comic readers, and, as shown in Table 22 below, there was only a small difference between the mean reading scores of those who regularly read comics and those who did not, compared with New Zealand overall.

**Table 22: Reading comics on a regular basis, New Zealand compared to OECD, 15-year-olds overall and by gender**

	Read comics at least several times a month		Read comics less than several times a month
	%	Mean score	Score point difference
<b>New Zealand 15-year-olds and the OECD average</b>			
<b>15-year-olds overall</b>			
New Zealand	12	506 (5.8)	<b>20</b>
OECD average	22	492 (0.8)	<b>3</b>
<b>Boys</b>			
New Zealand	15	488 (7.2)	16
OECD average	27	481 (0.9)	<b>-8</b>
<b>Girls</b>			
New Zealand	8	538 (7.9)	8
OECD average	18	511 (1.1)	<b>3</b>

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

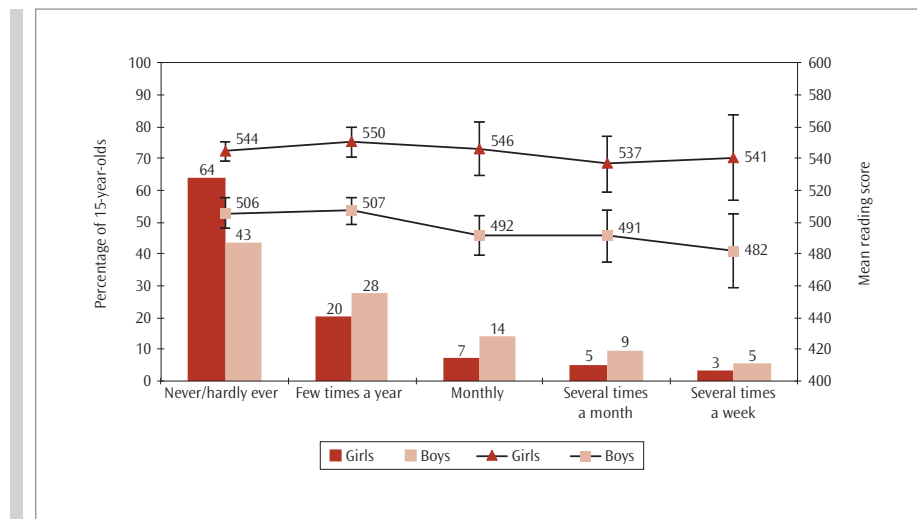
Standard errors appear in parenthesis.

### Reading comics, by gender

Although reading comics was negatively associated with reading literacy for New Zealand students overall, this was not the case for either girls or boys. While boys who regularly read comics scored on average 16 score points lower than boys who read them less often, due to the relatively large standard error there was no significant difference between the scores.

However, on average across OECD countries, boys who were regular comic readers had a small advantage relative to those who were not. For girls, the difference between the readers was just 3 points, and in New Zealand, 8 points.

**Figure 8: Reading comics, by gender**



### ❖ Diverse reading materials

Measurement of the extent to which students read a wide range of materials is based on the frequency with which students reported that they read the five types of reading materials discussed above. To allow for international comparisons, students' reports were summarised on the index of reading diverse materials. These findings are reported in Appendix 1 (see International comparisons, p. 74) of this report, along with the average for OECD countries.

**The next section looks at whether there has been any change since 2000 in the reading habits of New Zealand's 15-year-olds and their peers in other top- or high-performing countries.**



## 1.6 Were there any changes in 15-year-olds' reading habits between 2000 and 2009?

Questions relating to a particular background factor that were asked in the same way in both the PISA 2000 and PISA 2009 questionnaires can be compared across time. In both PISA administrations, questions about students' reading enjoyment, the time they spend and what they read for enjoyment were included in the student questionnaires.

New Zealand has participated in PISA since it began in 2000. Information about the changes in 15-year-olds' reading habits is available for 26 of the 30 OECD countries that participated in both PISA 2000<sup>25</sup> and PISA 2009.<sup>26</sup>

### ❖ Time spent reading on a daily basis

Since 2000 there has been no statistically significant change in the proportion of New Zealand 15-year-olds who read for enjoyment on a daily basis (70% versus 69% for 2009). However, the proportion of boys who read daily for enjoyment in 2009 (59%) when compared to 2000 (63%) decreased by 4 percentage points. For girls, there was no statistically significant change between 2000 (77%) and 2009 (78%).

### ❖ Reading enjoyment

Nine of the 11 attitudinal reading statements asked in PISA 2009 were the same as those asked in PISA 2000, and they are listed in Table 23.<sup>27</sup> New Zealand has had some positive gains in 15-year-olds' attitudes towards reading since 2000, as shown in the table.

New Zealand had a gain of between 4 and 9 percentage points in the proportion of students who were positive about reading, and a decrease in the proportion of students who held negative views (3–6 percentage points on three of the statements). Although there were small gains on the other attitudinal statements, apart from *I read only if I have to*, there is insufficient evidence to judge that the change is meaningful (ie, statistically significant at the 95% confidence level).

25 PISA 2000 here includes countries that participated in PISA 2000 and PISA 2000 plus (PISA 2000 plus was administered in 2001).

26 Although 30 OECD member countries took part in both PISA 2000 and PISA 2009, information for four member countries (the Netherlands, United Kingdom, Luxembourg and Austria) is not available.

27 The reading activities I like to express my opinions about books I have read and I like to exchange books with my friends were not included in the PISA 2000 student background questionnaire.

**Table 23: Changes in reading attitudes between 2000 and 2009, New Zealand compared to OECD, 15-year-olds overall**

Attitudes towards reading	New Zealand	OECD average
	% difference between 2000 and 2009	% difference between 2000 and 2009
<b>Positive attitudes towards reading</b>		
I like talking about books with other people	<b>9</b> (1.4)	<b>1</b> (0.3)
I feel happy if I receive a book as a present	<b>6</b> (1.2)	<b>-2</b> (0.3)
Reading is one of my favourite hobbies	<b>4</b> (1.2)	<b>-3</b> (0.3)
I enjoy going to a bookstore or library	3 (1.5)	<b>-6</b> (0.3)
<b>Negative attitudes towards reading</b>		
I find it hard to finish books	<b>-6</b> (1.2)	<b>-1</b> (0.2)
I read only to get information that I need	<b>-4</b> (1.4)	0 (0.3)
I cannot sit still and read for more than a few minutes	<b>-3</b> (1.0)	0 (0.2)
For me, reading is a waste of time	<b>-1</b> (1.1)	<b>2</b> (0.2)
I read only if I have to	2 (1.3)	<b>4</b> (0.3)

Notes: OECD comparisons are based on 26 OECD member countries.

Standard errors appear in parenthesis.

Values that are bolded indicate that the percentage point difference in the attitudes of students towards reading in 2009 is significantly different from 2000.

## ❖ Reading materials

Table 24 shows that between 2000 and 2009 New Zealand had a gain in the proportion of 15-year-olds who regularly read fiction. The proportion of students who regularly read non-fiction and comics remained about the same. There was a decrease in the proportion of students who read magazines and newspapers for enjoyment on a regular basis.

**Table 24: Changes in the proportion of students who regularly read the five reading materials between 2000 and 2009, New Zealand compared to OECD, 15-year-olds overall**

Reading materials	New Zealand	OECD average
	% difference between 2000 and 2009	% difference between 2000 and 2009
Fiction books	<b>9</b> (1.2)	<b>3</b> (0.2)
Non-fiction books	0 (1.1)	<b>-1</b> (0.2)
Comics	0 (0.8)	<b>-7</b> (0.2)
Newspapers	<b>-13</b> (1.3)	<b>-5</b> (0.3)
Magazines	<b>-17</b> (1.3)	<b>-10</b> (0.2)

Notes: OECD comparisons are based on 26 OECD member countries.

Values that are bolded indicate that the percentage point difference in the proportion of students who read the reading materials in 2009 is significantly different from 2000.

Standard errors appear in parenthesis.



Table 25 shows that since 2000 New Zealand had a gain in the proportion of boys and girls who were regular fiction readers, a gain that was similar for both boys and girls. The fall in the proportion of students who regularly read newspapers was similar for boys and girls. However, this was not the case for magazines: the fall in the proportion of boys who regularly read magazines was twice that of girls.

**Table 25: Changes in the proportion of students who read the five reading materials between 2000 and 2009, New Zealand compared to OECD, by gender**

Reading materials	Boys		Girls	
	New Zealand	OECD average	New Zealand	OECD average
	% difference between 2000 and 2009	% difference between 2000 and 2009	% difference between 2000 and 2009	% difference between 2000 and 2009
Fiction books	<b>8</b> (1.5)	3 (0.3)	<b>11</b> (1.5)	<b>4</b> (0.3)
Non-fiction books	-2 (1.5)	<b>-2</b> (0.3)	2 (1.5)	-1 (0.3)
Comics	-2 (1.3)	-7 (0.3)	2 (0.9)	-7 (0.3)
Newspapers	<b>-14</b> (1.7)	-5 (0.3)	<b>-13</b> (1.9)	<b>-6</b> (0.3)
Magazines	<b>-23</b> (1.7)	<b>-13</b> (0.3)	<b>-11</b> (1.8)	<b>-7</b> (0.3)

Notes: OECD comparisons are based on 26 OECD member countries.

Values that are bolded indicate that the percentage point difference in the proportion of boys and girls who read the reading materials in 2009 is significantly different from 2000.

Standard errors appear in parenthesis.

## ❖ Diverse reading

While proportionally fewer New Zealand students read a wide range of reading materials than in 2000, the decline was for boys and not for girls.<sup>28</sup>

### In the next part

The questionnaire also asked students about the teaching practices that occur in their English classes and the students' approaches to learning. Part 2 examines teaching and learning. The first section begins by looking at the types of literacy tasks students do as part of their schoolwork.

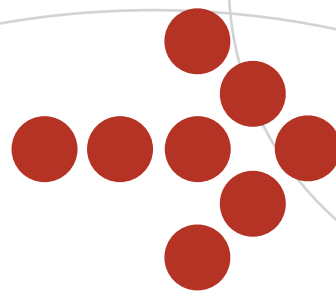
<sup>28</sup> As mentioned earlier, diverse reading was measured on an index that summarised the frequency with which students read the five types of reading materials assessed in PISA. These values are not percentage measurements.





## Part 2

# Teaching and learning



## 2.1 What types of reading literacy activities do our students do for school?

The relationship between 15-year-olds' reading performance and the type of reading activities they do for school was examined for the first time in PISA 2009. As part of the PISA assessment, students were asked how often during the last month<sup>29</sup> (many times, two or three times, once, not at all) they had carried out literacy activities in their English classes or as part of their homework. The literacy areas examined were:

- interpretation of literary texts
- use of texts containing non-continuous materials
- reading activities for a literature course
- use of functional texts.

### ❖ Interpretation of literary texts

Approximately two-thirds of New Zealand 15-year-olds reported that they had carried out the four interpretation of literary text tasks examined in PISA (see Table 26) at least two or three times during the month prior to the assessment. Students with stronger reading skills were more likely to have performed these types of tasks.

**Table 26: Interpretation of literary texts, 15-year-olds overall**

Interpretation of literary texts	Used at least 2 or 3 times a month		Used less often
	%	Mean score	Score point difference
Read fiction [eg, novels, short stories]	65	529 (2.5)	<b>-11</b> (3.4)
Explain the way characters behave in a text	65	534 (2.4)	<b>-25</b> (3.6)
Explain the cause of events in a text	62	533 (2.6)	<b>-21</b> (3.3)
Explain the purpose of a text	62	534 (2.7)	<b>-24</b> (3.7)

*Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.*

*Standard errors appear in parenthesis.*

As shown in Table 26, the association with mean reading performance on the read fiction task was less marked than that found on the other three tasks.

<sup>29</sup> 'Last month' refers to the month prior to the assessment administered in New Zealand schools between 21 July and 31 August 2009.



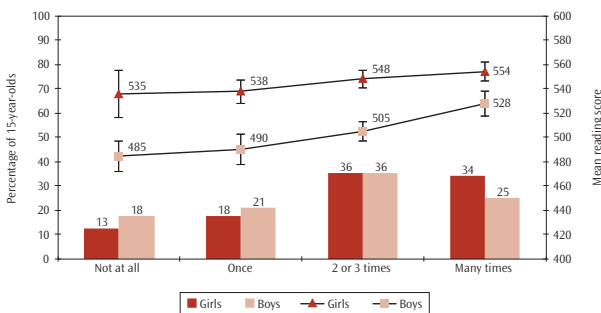
Students who use the interpretation of literary text tasks the most are on average stronger readers.

Boys were less likely than girls to use these tasks.

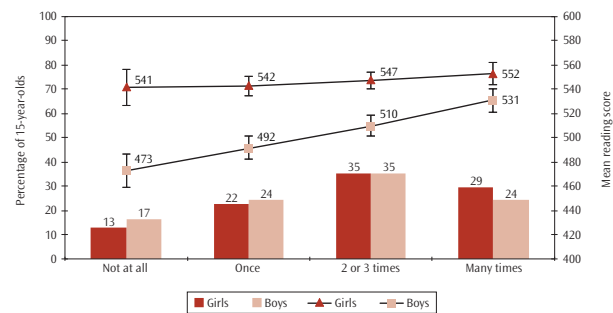
### Interpretation of literary texts, by gender

Figures 9–12 show that boys who regularly performed these types of tasks were on average those with stronger reading skills than those who did not. However, this was not the case for girls: girls with weak or strong reading skills were equally likely to have performed three of the four tasks. *Explain the way characters behave in a text* was the exception: girls with stronger reading skills were more likely to do this task.

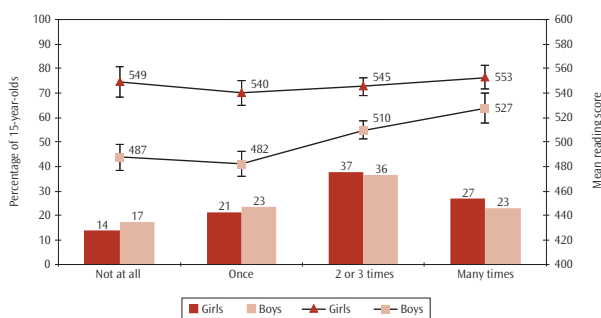
**Figure 9: Explain the way characters behave in a text, by gender**



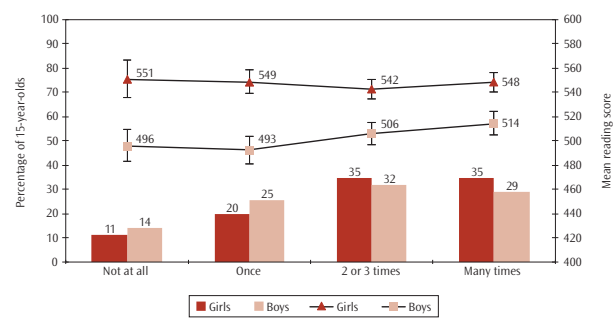
**Figure 10: Explain the purpose of a text, by gender**



**Figure 11: Explain the cause of events in a text, by gender**



**Figure 12: Read fiction, by gender**





Students who use texts containing non-continuous materials are on average stronger readers.  
Boys were less likely than girls to use these texts.

### ❖ Use of texts containing non-continuous materials

PISA examined the extent to which students used texts that contain non-continuous materials that include graphs, tables, maps, and the like. At least two-thirds of New Zealand students reported that they had regularly used two of the four non-continuous materials examined (listed in Table 27). The table shows that students with stronger reading skills were more likely to have used these materials on a regular basis. On three tasks, regular users typically had a reading advantage of at least 21 points.

**Table 27: Use of texts containing non-continuous materials, 15-year-olds overall**

Texts containing non-continuous materials	Used at least 2 or 3 times a month		Used less often
	%	Mean score	Score point difference
Find information from a graph, diagram or table	73	536 (2.3)	<b>-42</b> (4.1)
Read texts that include tables or graphs	67	536 (2.5)	<b>-32</b> (3.6)
Read texts that include diagrams or maps	55	535 (2.6)	<b>-21</b> (3.0)
Describe the way information in a table or graph is organised	42	530 (2.8)	<b>-7</b> (3.2)

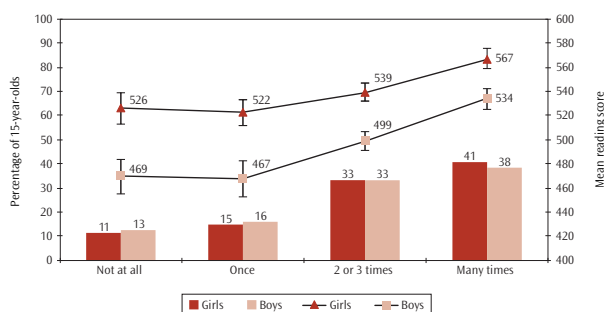
Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.

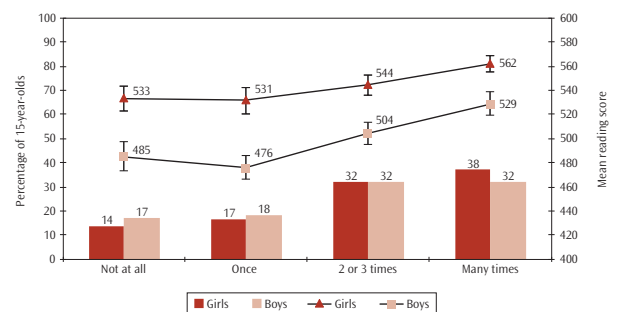
### Non-continuous materials, by gender

As Figures 13 to 16 illustrate, boys with stronger reading skills were more likely to use the four non-continuous materials tasks. This was also the case for girls, apart from the task *describe the way information in a table or graph is organised* (Figure 16), where girls with either weak or strong reading skills were equally likely to do this task.

**Figure 13: Find information from a graph, diagram or table, by gender**



**Figure 14: Read texts that include tables or graphs, by gender**





Students who are involved in reading activities for literature courses are on average weaker readers.  
 Boys were more likely than girls to be involved in these activities.

Figure 15: Read texts that include diagrams or maps, by gender

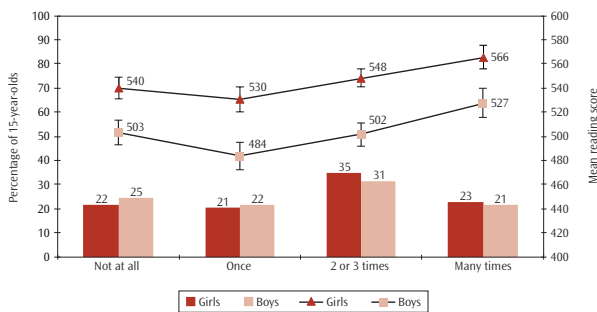
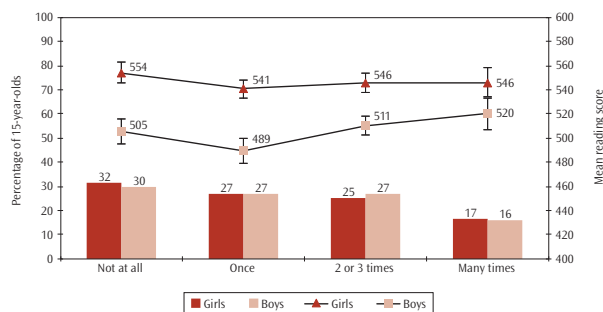


Figure 16: Describe the way information in a table or graph is organised, by gender



### ❖ Reading activities for literature courses

PISA asked students about the extent to which they were involved in reading activities for literature courses. Some of the activities examined in PISA (see Table 28), such as memorising a text by heart, tended to have a lower demand on students' reading literacy knowledge and skills.

New Zealand 15-year-olds were less likely to have been involved in reading activities for literature courses than in the interpretative literary and non-continuous materials tasks. Table 28 shows that less than half the students had been involved in these activities at least two or three times in the month prior to the assessment.

Table 28: Reading activities for literature courses, 15-year-olds overall

Literature course activities	Used at least 2 or 3 times a month		Used less often
	%	Mean score	Score point difference
Read information texts about writers or books	47	518 (2.9)	<b>12</b> (3.3)
Read poetry	31	525 (3.3)	0 (3.7)
Learn about the place of a text in the history of literature	24	509 (3.9)	<b>22</b> (4.2)
Memorise a text by heart [eg, a poem or part of a play]	19	505 (5.6)	<b>26</b> (5.6)
Learn about the life of a writer	17	494 (4.8)	<b>38</b> (4.6)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

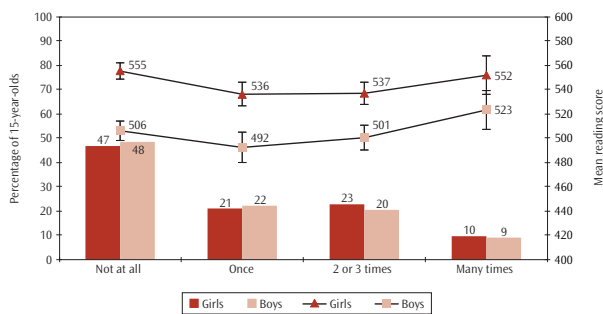
Standard errors appear in parenthesis.

The table also shows that students who had carried out four of the literature course activities were generally weaker readers. *Read poetry* was the exception: the mean reading score of students who regularly read poetry and those who did not was the same.

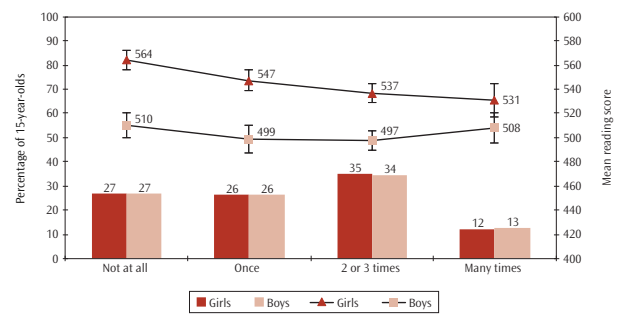
### Reading activities for literature courses, by gender

The reading activities association with boys' and girls' reading performance, as shown in Figures 17 to 21, was similar to that found for students overall; that is, boys and girls with weaker reading skills, apart from the task *read information texts about writers or books*, were more likely to have undertaken these activities. Boys with weak or strong reading skills were equally likely to have performed the task *read information texts about writers or books*.

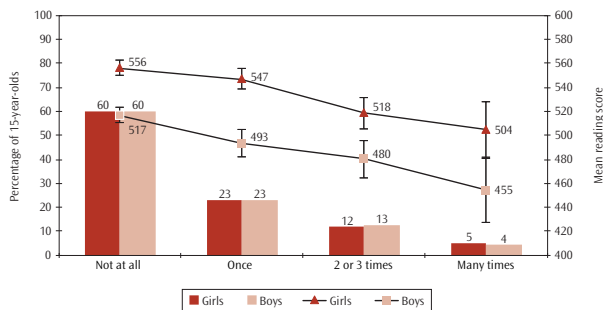
**Figure 17: Read poetry, by gender**



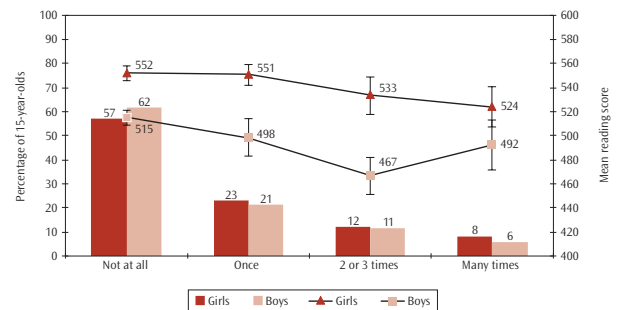
**Figure 18: Read information texts about writers or books, by gender**



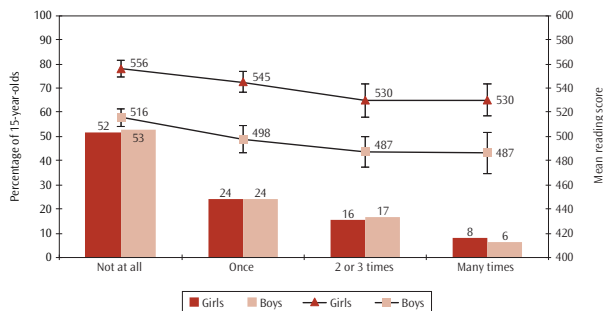
**Figure 19: Learn about the life of a writer, by gender**



**Figure 20: Memorise a text by heart, by gender**



**Figure 21: Learn about the place of a text in the history of literature, by gender**



It is likely that the negative association between literature-course activities and reading performance is because the skill demand of these particular activities tends to be lower than that required for interpreting texts and using non-continuous texts.



Students who use functional texts are on average weaker readers.

Boys and girls are equally likely to use these texts.

## ❖ Use of functional texts

Students were also asked how often they used functional texts as part of their schoolwork: texts that are used in everyday life, such as instructions and advertising material. Less than half of New Zealand students reported that they used the four functional texts at least two or three time during the month prior to the assessment (as shown in Table 29).

**Table 29: Use of functional texts, 15-year-olds overall**

Functional texts	Used at least 2 or 3 times a month		Used less often
	%	Mean score	Score point difference
Read newspaper reports and magazine articles	45	512 (3.3)	<b>24</b> (3.9)
Read advertising material (eg, advertisements in magazines, posters)	44	508 (3.0)	<b>30</b> (3.4)
Explain the connection between different parts of a text (eg, between a written part and a map)	38	527 (3.1)	2 (3.3)
Read instructions or manuals telling how to make or do something (eg, how a machine works)	31	498 (3.7)	<b>39</b> (4.1)

*Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.*

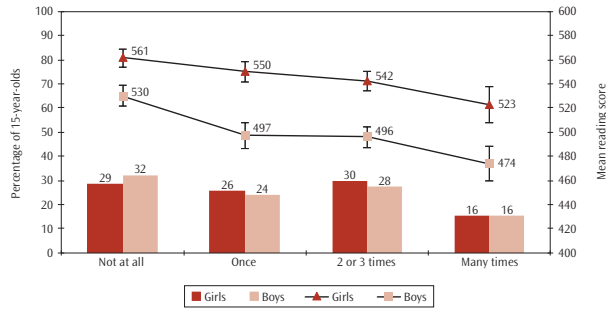
*Standard errors appear in parenthesis.*

The table also shows that three of the tasks were more likely to be carried out by students with weaker reading skills. The third task, *explain the connection between different parts of a text*, was not associated with mean reading performance: both weak and strong readers were equally likely to have undertaken this task.

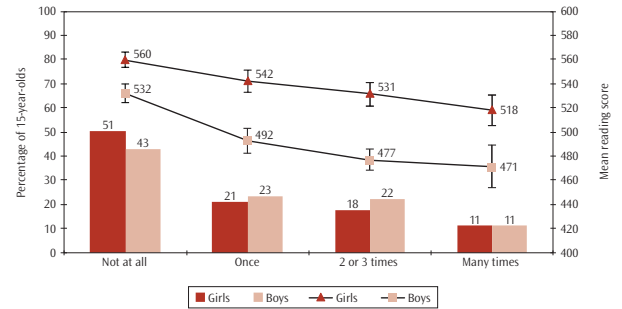
### Use of functional texts, by gender

As noted above, overall boys and girls were equally likely to use functional texts. Although there were significant differences in boys' and girls' mean reading scores on the four tasks, the association with their mean reading performance on the functional texts was negative on three and there was no association on the fourth.

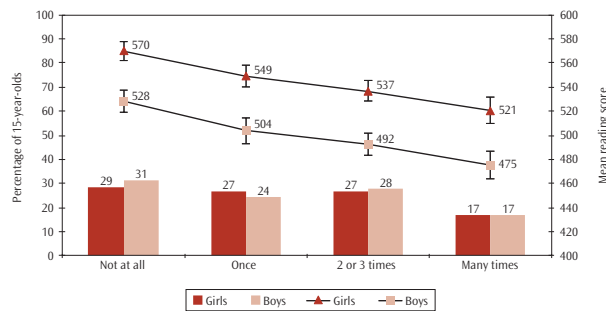
**Figure 22: Read newspaper reports and magazine articles, by gender**



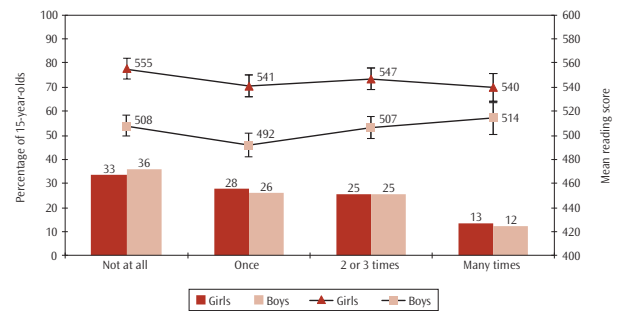
**Figure 23: Read instructions or manuals telling how to make or do something, by gender**



**Figure 24: Read advertising material, by gender**



**Figure 25: Explain the connection between different parts of a text, by gender**



These findings also suggest that teachers are more likely to ask students with weaker reading skills to undertake tasks that involve reading functional texts, which make a lower demand on students' reading literacy knowledge and skills.

**The next section explores student reports on the extent to which their teachers use motivational, scaffolding and structuring practices in their English classes.**



## 2.2 Do teachers use motivational, structuring and scaffolding practices in English classes?

PISA also provided an opportunity for 15-year-olds to give voice to their perception of the extent to which teachers use structuring, scaffolding and motivational practices in their English classes. To do this, the questionnaire asked the students to indicate how often their teachers used the practices listed in Tables 30 and 31 (never or hardly ever, in some classes, in most classes, in all classes).

### ❖ Teachers' use of practices to stimulate students' reading engagement and reading skills<sup>30</sup>

Table 30 shows that at least half of New Zealand students reported that in all or most of their English classes, teachers used five of the seven motivational practices examined in PISA. Only one-third reported that their teacher *recommends a book or author to read* or *helps students relate the stories they read to their lives*.

**Table 30: Teachers' use of motivational practices, 15-year-olds overall**

Motivational practices	Used in all or most English classes		Used sometimes or hardly ever in English classes
	%	Mean score	Score point difference
<b>The teacher:</b>			
asks questions that challenge students to get a better understanding of a text	65	538 (2.4)	<b>-43</b> (3.7)
gives students enough time to think about their answers	65	536 (2.3)	<b>-36</b> (3.2)
asks students to explain the meaning of a text	62	539 (2.6)	<b>-42</b> (3.4)
encourages students to express their opinion about a text	61	535 (2.7)	<b>-30</b> (3.5)
shows students how the information in texts builds on what they already know	50	527 (2.7)	7 (3.2)
recommends a book or author to read	34	513 (3.1)	17 (3.9)
helps students relate the stories they read to their lives	33	514 (3.4)	15 (3.3)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.

The practices *asks questions that challenge students to get a better understanding of a text*, *asks students to explain the meaning of a text*, *gives students enough time to think about their answers* and *encourages students to express their opinion about a text* had a strong positive association with 15-year-olds' mean reading performance.

30 For the purpose of this report, these practices are referred to as motivational practices.



Students in English classes where teachers use motivational practices are on average stronger readers.

Boys and girls are equally likely to report that their teachers use motivational practices

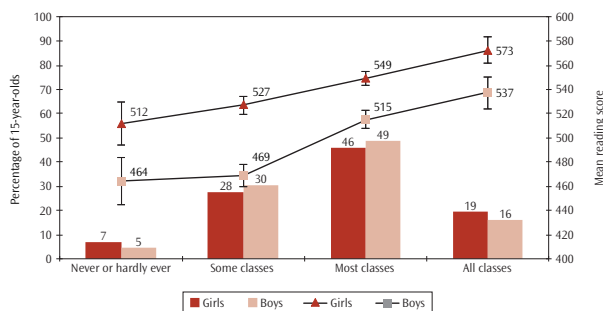
Students with teachers who used these practices in most or all of their classes were typically those with stronger reading skills. Their mean reading score was at least 30 points above their counterparts in classes where teachers used these practices less often.

Students with a weaker reading performance were more likely to report that their teacher *shows them how the information in texts builds on what they already know*. These students were also more likely to report that their teacher *recommends a book or author to read* and *helps students to relate the stories that they read to their lives*. This finding suggests that teachers consider these practices useful for engaging and motivating weaker readers to read.

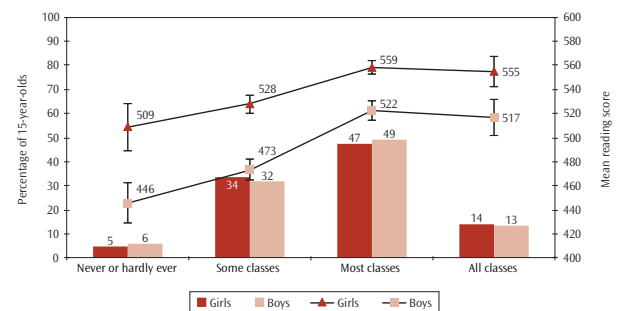
### Teachers' use of motivational practices, by gender

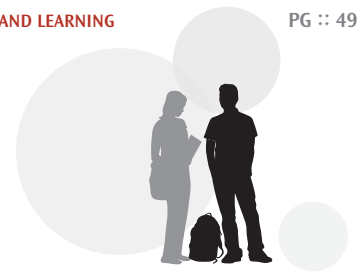
Although boys' mean reading score was lower than girls', Figures 26 to 31 show that the association between motivational practices and boys' and girls' reading performance was similar to that found for students overall, apart from *helps students relate the stories they read to their lives*. While helping students relate the stories they read to their lives was not associated with girls' reading performance, this was not the case for boys: boys with weaker reading skills were more likely to report that their teachers used this practice in their English class. This finding suggests that teachers are using this practice to develop the reading skills of boys who are weak readers.

**Figure 26: The teacher: asks questions that challenge students to get a better understanding of a text, by gender**

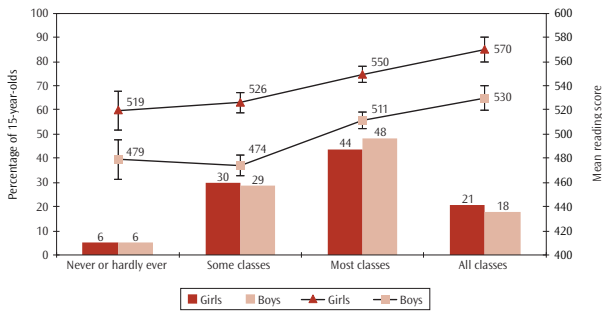


**Figure 27: The teacher: asks students to explain the meaning of a text, by gender**

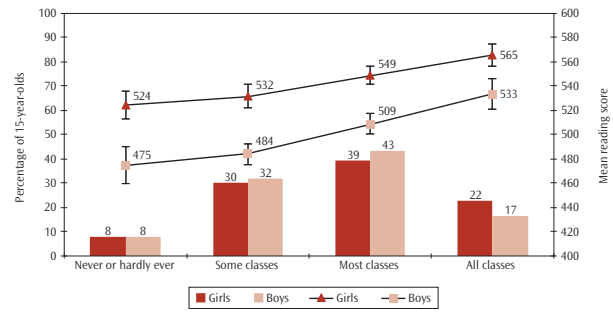




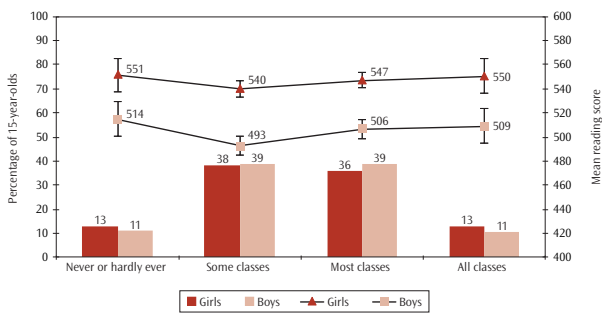
**Figure 28: The teacher: gives students enough time to think about their answers, by gender**



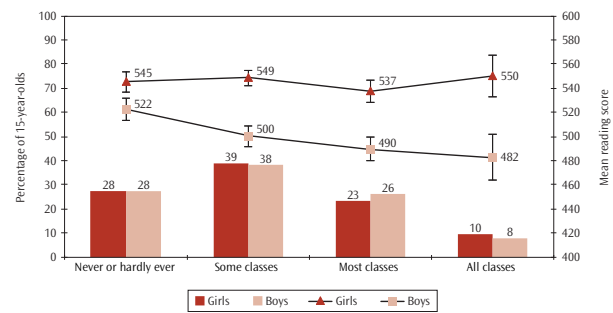
**Figure 29: The teacher: encourages students to express their opinion about a text, by gender**



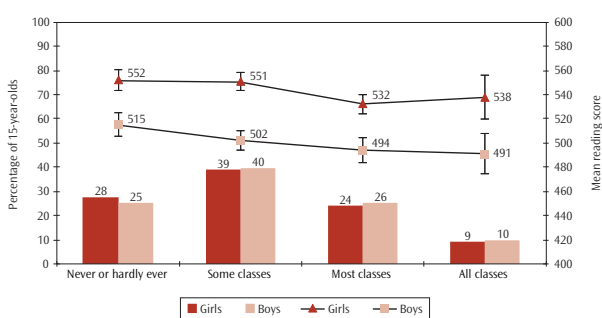
**Figure 30: The teacher: shows students how the information in texts builds on what they already know, by gender**



**Figure 31: The teacher: helps students relate the stories they read to their lives, by gender**



**Figure 32: The teacher: recommends a book or author to read, by gender**





Students in English classes where teachers use structuring and scaffolding practices are on average stronger readers.

Boys were slightly less likely than girls to report their teachers use these practices.

### ❖ Teachers' use of structuring and scaffolding practices

Scaffolding in pedagogical contexts, as Walqui (2006) suggests, requires a supportive and collaborative approach, which involves teachers providing 'just enough' and 'just in time' support for learners to self-direct their learning.

As shown in Table 31, at least half of New Zealand 15-year-olds reported that their teachers used the nine structuring and scaffolding practices examined in PISA in most or all of their English classes. More than three-quarters of them reported that their teacher *gives students the chance to ask questions about the reading assignment* and *marks students' work*.

Strong readers were more likely to report that their teachers used the structuring and scaffolding practices, apart from two: *explains beforehand what is expected of students* and *tells students how well they did on the reading assignment immediately afterwards*. Students with weak or strong reading skills were equally likely to report that their teachers did these practices.

Students in classes where a teacher *gives students the chance to ask questions about the reading assignment*, *tells students in advance how their work is going to be judged* and *marks students' work* on average had an advantage of at least 40 points relative to their counterparts in classes where teachers did this less often.

**Table 31: Use of structuring and scaffolding practices in English classes, 15-year-olds overall**

Structuring and scaffolding practices	Used in all or most English classes		Used sometimes or hardly ever in English classes
	%	Mean score	Score point difference
<b>The teacher:</b>			
gives students the chance to ask questions about the reading assignment	78	536 (2.4)	<b>-55</b> (3.6)
marks students' work	77	533 (2.4)	<b>-42</b> (3.8)
tells students in advance how their work is going to be judged	72	538 (2.3)	<b>-50</b> (3.6)
asks whether every student has understood how to complete the reading assignment	68	533 (2.4)	<b>-29</b> (3.3)
checks that students are concentrating while working on the reading assignment	66	530 (2.5)	<b>-18</b> (3.6)
discusses students' work after they have finished the reading assignment	65	532 (2.6)	<b>-25</b> (3.6)
poses questions that motivate students to participate actively	62	530 (2.6)	<b>-15</b> (3.4)
explains beforehand what is expected of students	62	525 (2.5)	5 (3.2)
tells student how well they did on the reading assignment immediately afterwards	52	525 (2.8)	1 (3.4)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.



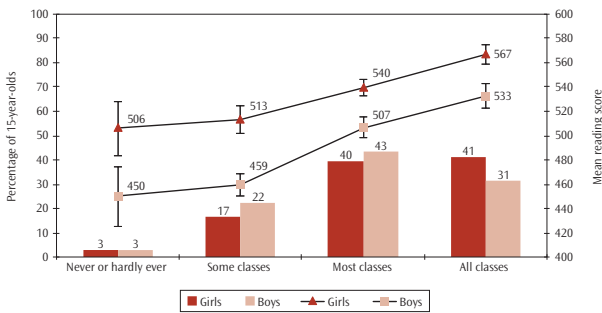
The performance gap between the quarter of students who experienced these practices the most (548) and the quarter who experienced them the least (494) was 54 points, which is equivalent to well over one year of schooling.

### Teachers' use of structuring and scaffolding practices, by gender

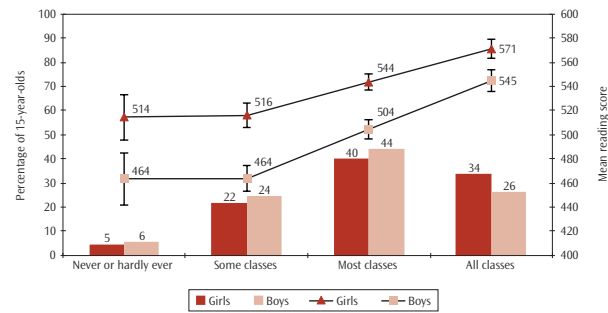
Overall, there was no significant difference in the boys' and girls' reports of the extent to which their teachers used the structuring and scaffolding practices in their English classes.

Figures 33 to 41 show that, boys and girls with stronger reading skills were likely to report that they experience these practices, apart from the strategy *explains beforehand what is expected of students* (Figure 40). Although boys with stronger reading skills tend to report that their teachers did this in most or all of their classes (on average an advantage of 20 score points), girls with weak or strong reading skills were equally likely to be in classes where their teachers used this strategy.

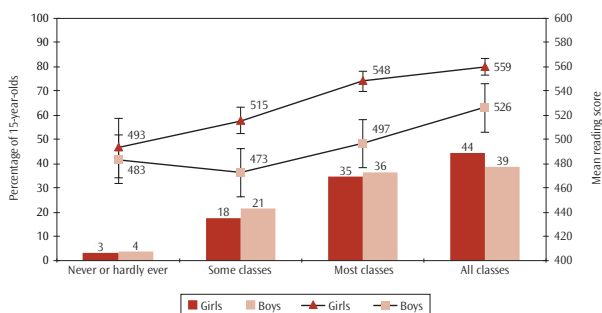
**Figure 33: The teacher: gives students the chance to ask questions about the reading assignment, by gender**



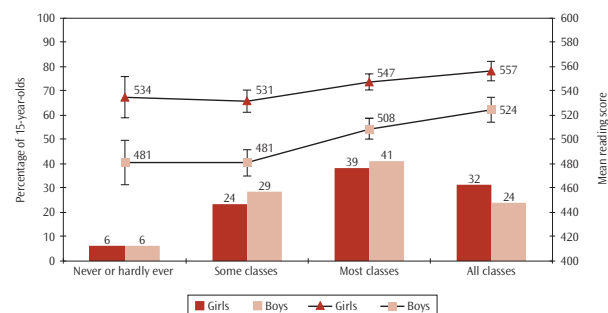
**Figure 34: The teacher: tells student in advance how their work is going to be judged, by gender**



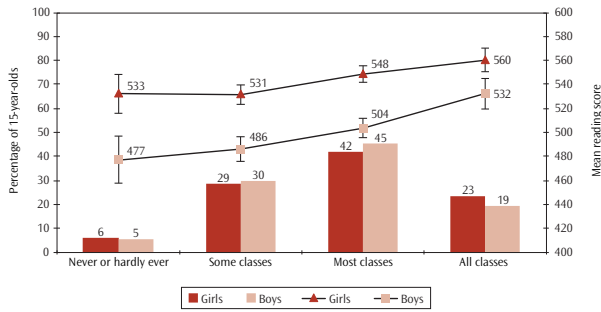
**Figure 35: The teacher: marks students' work, by gender**



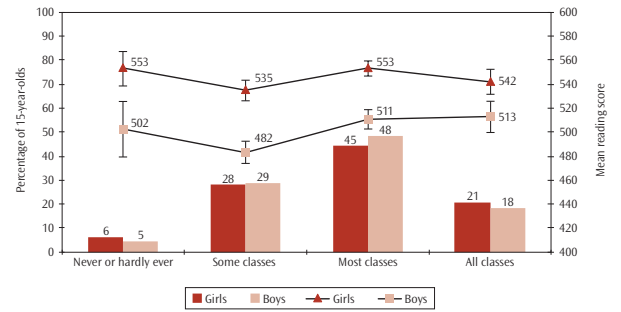
**Figure 36: The teacher: asks whether every student has understood how to complete the reading assignment, by gender**



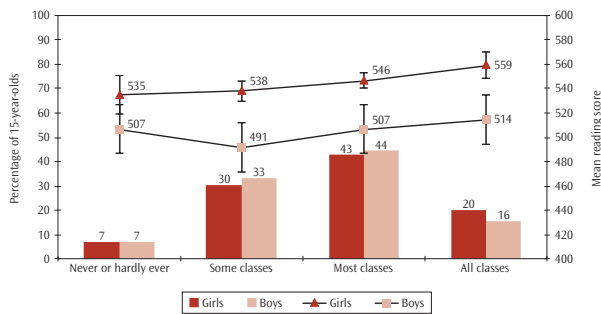
**Figure 37: The teacher: discusses students' work after they have finished the reading assignment, by gender**



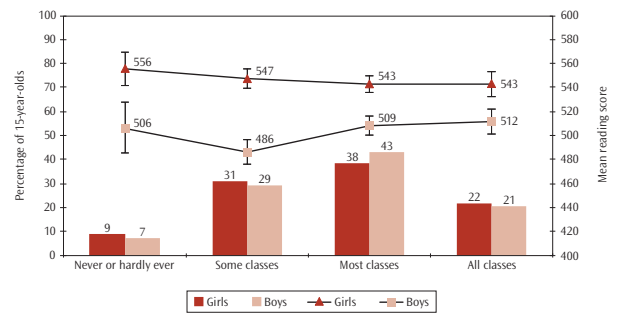
**Figure 38: The teacher: checks that students are concentrating while working on the reading assignment, by gender**



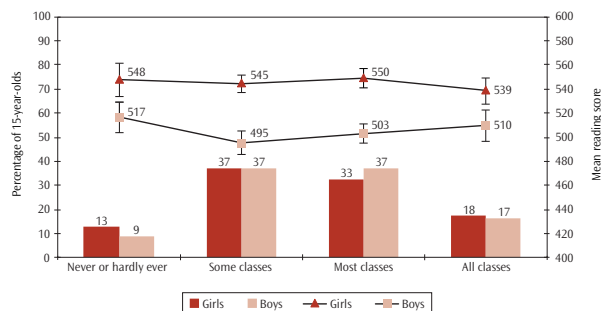
**Figure 39: The teacher: poses questions that motivate students to participate actively, by gender**



**Figure 40: The teacher: explains before-hand what is expected of students, by gender**



**Figure 41: The teacher: tells students how well they did on the reading assignment immediately afterwards, by gender**



The next section investigates students' reports on the disciplinary climate in their English classes and on teacher-student relationships.



Students who are in English classes where there are fewer disciplinary issues are on average stronger readers.

Boys' and girls' reports about the disciplinary climate in their English classes are similar.

## 2.3 Are there disciplinary issues in English classes or teacher–student relationship issues?

To investigate whether 15-year-olds are in an learning environment that is conducive to learning, students were asked for their level of agreement with statements about the disciplinary climate in their English classes. They were also asked about teacher–student relationships.

### ❖ Disciplinary climate in English classes

Typically students with weaker reading skills were likely to report that there is a lack of discipline in their English classes. As Table 32 shows, around one-third of New Zealand's 15-year-olds reported that there were disciplinary issues in relation to *there is noise and disorder*, *teacher has to wait a long time for students to settle down*, and *students do not listen to what teachers say*.

**Table 32: Disciplinary climate in English classes, by gender**

Disciplinary climate in English classes	Boys			Girls		
	%	Mean score	Score point difference	%	Mean score	Score point difference
There is noise and disorder	39	490 (4.5)	<b>19</b> (5.6)	38	530 (3.5)	<b>24</b> (4.0)
Students don't listen to what the teachers say	34	485 (5.3)	<b>25</b> (6.2)	31	526 (4.4)	<b>27</b> (4.9)
The teacher has to wait a long time for students to settle down	32	480 (4.7)	<b>32</b> (5.4)	32	526 (4.4)	<b>28</b> (5.2)
Student don't start working for a long time after the lesson begins	26	471 (5.5)	<b>42</b> (6.0)	25	522 (5.2)	<b>31</b> (5.2)
Students cannot work well	19	466 (5.7)	<b>44</b> (6.0)	17	521 (5.3)	<b>30</b> (5.1)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.



Students who report that teacher–student relationships are positive are on average stronger readers

Boys' and girls' reports about teacher-student relationships are similar

It is clear from the table that boys and girls were equally likely to report that there were disciplinary issues in their classrooms. Boys and girls with weaker reading skills were more likely to report that there was a lack of discipline in their classrooms.

### ❖ Teacher–student relationships

The majority of 15-year-olds, regardless of whether they were boys or girls, were positive about the way in which teachers relate to them and support their learning, as shown in Table 33. Nevertheless, between 13 and 29% of the boys and between 10 and 26% of the girls were not positive, and typically their mean reading score was between 33 and 49 points lower than that of their peers who were positive.

**Table 33: Teacher–student relationship, 15-year-old girls and boys**

Teacher–student relationship	Boys			Girls		
	Strongly agreed or agreed	Strongly disagreed or disagreed	Strongly agreed or agreed	Strongly disagreed or disagreed	Strongly agreed or agreed	Strongly disagreed or disagreed
	%	Mean score	Score point difference	%	Mean score	Score point difference
I get along well with most of my teachers	87	507 (3.7)	<b>–42</b> (6.4)	90	549 (2.7)	<b>–43</b> (7.0)
If I need extra help I will receive it from my teachers	87	508 (3.6)	<b>–48</b> (6.4)	88	550 (2.8)	<b>–36</b> (5.2)
Most of my teachers treat me fairly	84	508 (3.6)	<b>–41</b> (6.0)	88	551 (2.7)	<b>–49</b> (6.4)
Most of my teachers are interested in my well-being	75	510 (3.8)	<b>–35</b> (5.0)	79	554 (2.8)	<b>–39</b> (4.3)
Most of my teachers really listen to what I say	71	511 (3.8)	<b>–35</b> (4.7)	74	554 (2.8)	<b>–33</b> (5.7)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.

The next section explores the types of learning approaches that students use when they study.

Students who use control strategies when they study are on average stronger readers.

Boys are less likely than girls to use control strategies.



## 2.4 What types of learning approaches do our students use?

The PISA results show that 15-year-olds who are aware of or use the most effective learning approaches are typically very strong readers. This evidence was gained from students' reports on how often they use control, elaboration and memorisation strategies when they study (almost never, sometimes, often, or almost always). Students were also asked about the usefulness of a series of metacognition strategies, and those strategies are explored in the following section.

Learning approaches for the mathematical literacy and scientific literacy results, analysed by gender and reported on graphs, are available on New Zealand's PISA website: [www.educationcounts.govt.nz/goto/pisa/learningstrategies](http://www.educationcounts.govt.nz/goto/pisa/learningstrategies).

### ❖ Control strategies

Control strategies are types of self-management or self-regulating strategies whereby students self-direct their learning. Pintrich and Zusho (2002, p. 277) point out that the

development of self-regulated learning capabilities is an important development task for all students.

Students who can regulate their own cognition, motivation effect, behavior, and their environment, are more likely to be successful in academic settings.

The PISA findings support this claim: the mean reading, scientific and mathematical literacy scores of students who used control learning strategies the most were significantly better than those who used them less often.

**Table 34: Use of control strategies, 15-year-olds overall**

Control strategies	Strategy almost always or often used		Strategy sometimes or never used
	%	Mean score	Score point difference
<b>When I study:</b>			
I make sure that I remember the most important points in the text	80	538 (2.1)	<b>-73</b> (3.9)
I start by figuring out what exactly I need to learn	72	533 (2.1)	<b>-35</b> (3.3)
I check if I understand what I have read	71	537 (2.3)	<b>-48</b> (3.3)
I try to figure out which concepts I still haven't really understood	63	542 (2.2)	<b>-51</b> (2.3)
and I don't understand something, I look for additional information to clarify this	59	545 (2.4)	<b>-54</b> (3.1)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.

All five strategies were positively associated with students' mean reading performance, although *I make sure I remember the most important points in the text* had the strongest association. The 80% of students who regularly used this strategy had, on average, an advantage of 73 points relative to those who used the strategy less often.

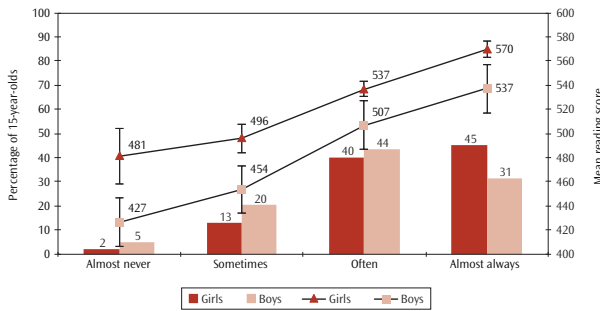
Students who regularly used the three other strategies listed in Table 34 typically had an advantage of around 50 score points. On the strategy *I start by figuring out what exactly I need to learn*, the association was less marked.

Overall, there was a substantial gap of 92 score points in reading performance between the quarter of students who used control strategies the most and the quarter who used them the least, which is equivalent to more than three years of schooling (for more detail, see Appendix 1, p. 82).

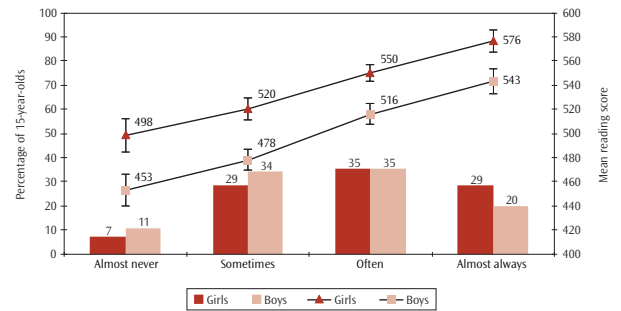
### Control strategies, by gender

As illustrated in Figures 42 to 46, New Zealand 15-year-old boys typically used the five control strategies less often than did their female counterparts. Nevertheless, boys and girls who reported that they regularly used them, as with students overall, were on average those with a stronger reading performance.

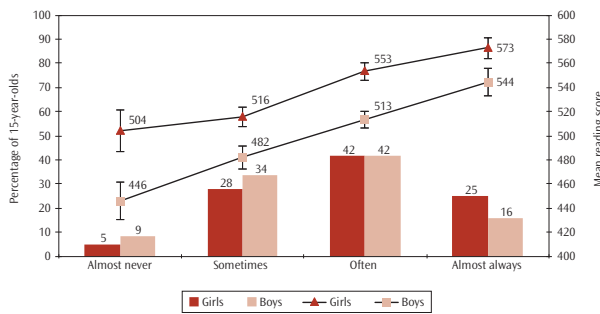
**Figure 42: I make sure that I remember the most important points in the text, by gender**



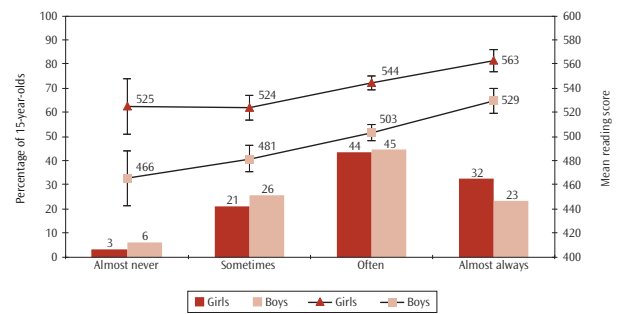
**Figure 43: If I don't understand something, I look for additional information to clarify this, by gender**



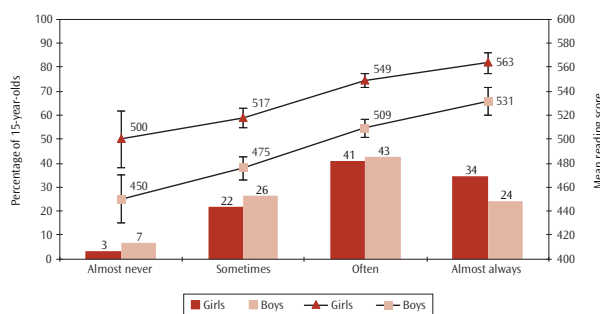
**Figure 44: I try to figure out which concepts I still haven't really understood, by gender**



**Figure 45: I start by figuring out what exactly I need to learn, by gender**



**Figure 46: I check if I understand what I have read, by gender**



Students who use elaboration strategies are equally likely to be weak or strong readers.

Boys and girls are equally likely to use elaboration strategies.

## ❖ Elaboration strategies

Elaboration strategies involve assigning “meaning to new information by building connections between new information to be learned and prior knowledge stored in long-term memory” (Güven 2008, p. 31). Making connections to prior learning and experience is identified in *The New Zealand Curriculum* (Ministry of Education 2007, p. 34) as a key effective teaching action for promoting student learning.<sup>31</sup> It was surprising to find that only one-third of the 15-year-olds regularly used two of the four elaboration strategies when they studied, and only one-quarter used another.

While elaboration strategies overall did not show an association with reading performance, the 51% of students who reported *I try to relate new information to prior knowledge acquired in other subjects* when they study scored on average 30 points above those who did not (see Table 35). Weaker readers were more likely than stronger readers to use the strategy *I figure out how the information might be useful outside school*.

On the two other elaboration strategies, students with strong or weak reading skills were equally likely to use them. These findings suggest that our weaker readers are developing an awareness of some of the effective learning strategies that build on their prior knowledge and experiences.

**Table 35: Use of elaboration strategies, 15-year-olds overall**

Elaboration strategies	Strategy almost always or often used		Strategy sometimes or never used
	%	Mean score	Score point difference
<b>When I study:</b>			
I try to relate new information to prior knowledge acquired in other subjects	51	538 (2.8)	<b>−30</b> (3.3)
I try to understand the material better by relating it to my own experiences	36	520 (3.1)	5 (3.4)
I figure out how the text information fits in with what happens in real life	34	520 (3.9)	5 (4.4)
I figure out how the information might be useful outside school	26	507 (3.6)	<b>22</b> (3.8)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

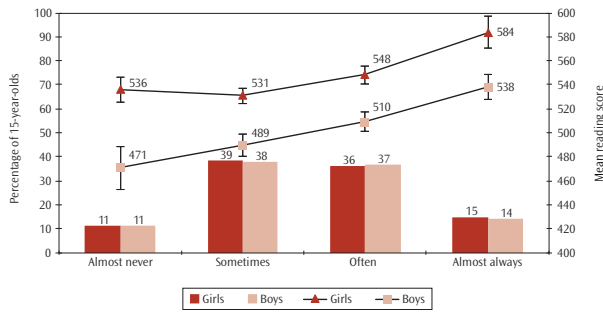
Standard errors appear in parenthesis.

## Elaboration strategies, by gender

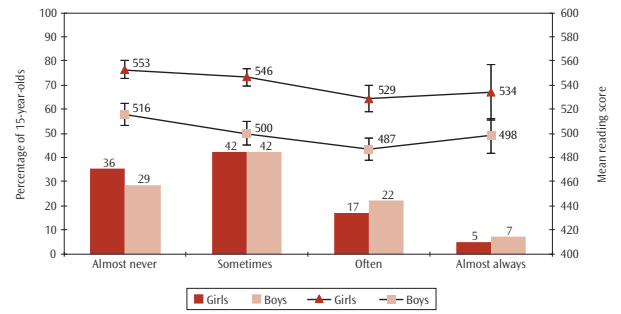
On three of the four elaboration strategies, boys and girls show similar patterns in their mean reading performance in relation to their use of the strategies. The elaboration strategy *I try to understand the material better by relating it to my own experiences* was the exception. Figure 49 shows that boys who regularly used this strategy when they studied were typically weaker readers than those who did not, but girls with either weak or strong reading skills were equally likely to use the strategy.

<sup>31</sup> The Ministry of Education (2010) notes the importance of primary school students bringing together and considering how they link other ideas, features or structures to their own prior knowledge and experience.

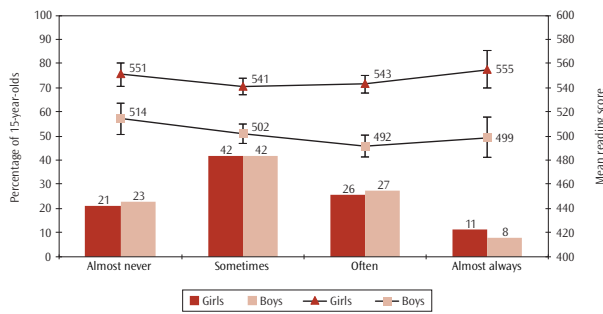
**Figure 47: I try to relate new information to prior knowledge acquired in other subjects, by gender**



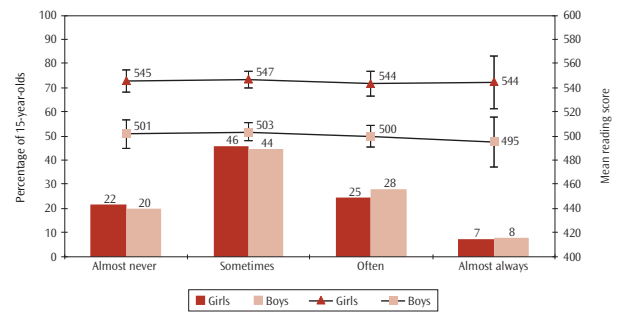
**Figure 48: I figure out how the information might be useful outside school, by gender**



**Figure 49: I try to understand the material better by relating it to my own experiences, by gender**



**Figure 50: I figure out how the text information fits in with what happens in real life, by gender**





Students who use memorisation strategies are equally likely to be weak or strong readers.

Boys are less likely than girls to use memorisation strategies.

### ❖ Memorisation strategies

The use of memorisation strategies commonly leads to verbatim repetition of information, because the information is stored in memory with little processing. As Derry (1990, pp. 354–355) puts it, although “the rote memory structure may contain many ideas, most of these are neither internally connected to one another nor externally connected to prior knowledge structures.” Four memorisation strategies were examined in the PISA assessment.

Table 36 shows that nearly three-quarters of New Zealand 15-year-olds regularly used *I try to memorise as many details as possible* when they study, and around half agreed that they regularly used the strategies *I read the text over and over again* and *I try to memorise everything that is covered in the text*.

**Table 36: Use of memorisation strategies, 15-year-olds overall**

Memorisation strategies	Strategy almost always or often used		Strategy sometimes or never used
	%	Mean score	Score point difference
<b>When I study:</b>			
I try to memorise as many details as possible	71	530 (2.3)	<b>–24</b> (4.2)
I read the text over and over again	50	527 (2.6)	<b>–8</b> (3.3)
I try to memorise everything that is covered in the text	46	520 (2.7)	<b>5</b> (3.1)
I read the text so many times that I can recite it	25	501 (3.8)	<b>29</b> (4.2)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.

It was surprising to find that one-quarter of the students reported that they regularly use the learning strategy *I read the text so many times that I can recite it*. Students who used this strategy were typically those with weak reading skills.

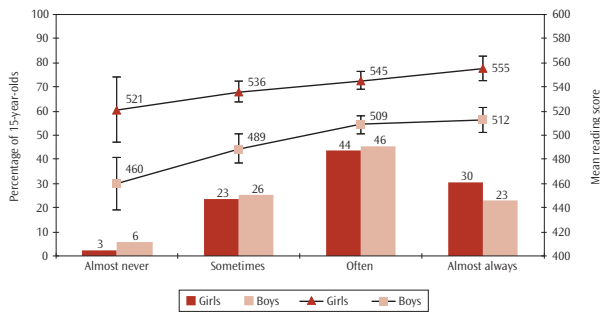
Overall, on the four memorisation learning strategies students with weak or strong reading skills were equally likely to use these strategies (as noted above). However, as shown in Table 36, students who regularly *try to memorise as many details as possible* when they study had, on average, an advantage of 24 points relative to those who reported that they used this learning strategy less often.

### Memorisation strategies, by gender

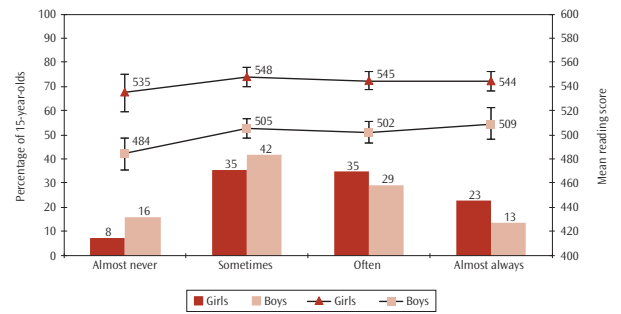
Boys and girls who regularly used the strategy *I try to memorise as many details as possible* when they studied were on average stronger readers than their counterparts who did not; boys had on average an advantage of 26 score points and girls an advantage of 15 score points (see Figure 51).

As Figures 52 and 53 illustrate, boys and girls with weak or strong reading skills were equally likely to use *I read the text over and over again* and *I try to memorise everything that is covered in the text* learning strategies. However, the 21% of boys who often or almost always *read the text so many times they could recite it* were poor readers (Figure 54). They scored on average 468 points, which is 43 points lower than boys who used this strategy less often. For girls, the association was less marked, with a mean score difference of 26 points.

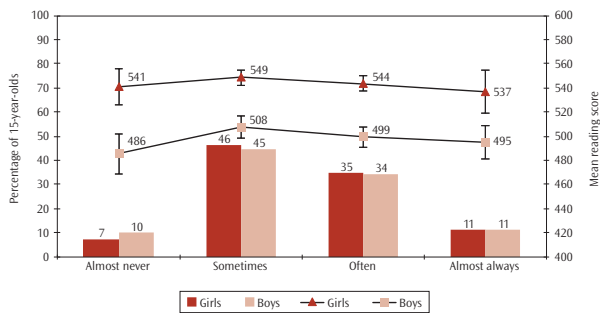
**Figure 51: I try to memorise as many details as possible, by gender**



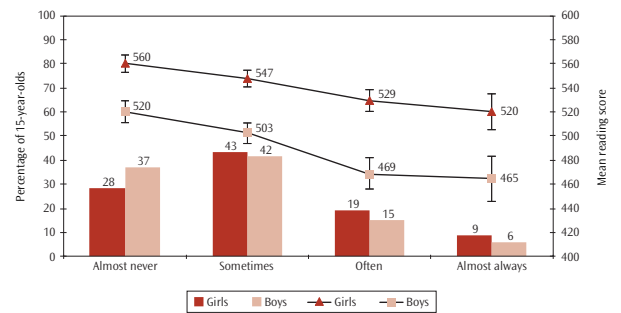
**Figure 52: I read the text over and over again, by gender**



**Figure 53: I try to memorise everything that is covered in the text, by gender**



**Figure 54: I read the text so many times that I can recite it, by gender**



The next section explores whether students have knowledge of the most effective studying strategies.



## 2.5 How knowledgeable are our 15-year-olds about the most effective metacognitive learning strategies?

Learning in a meaningful way and having an awareness of the most effective ways to approach learning is commonly referred to as metacognition (Flavell 1976). As Paris and Winograd (1990, p. 15) point out, “students can enhance their learning by becoming aware of their own thinking as they read, write and solve problems in school.”

Metacognition is often used to describe the **processes that learners use to think and talk about their learning and about how they can adapt what they have learned to new contexts**. Articulating what they know and can do as readers and writers enables literacy learners to set themselves new goals and meet new challenges (see <http://literacyonline.tki.org.nz/Literacy-Online/Teacher-needs/Reviewed-resources/Reading/Comprehension/ELP-years-5-8/The-development-of-knowledge-strategies-and-awareness>).

In this administration of PISA, 15-year-olds’ knowledge of the most effective strategies to summarise complex information and understand and remember information was explored. Students were asked to rate the strategies on a six-point scale, ranging from not useful at all to very useful. International reading experts established an agreed rating on the effectiveness of the strategies. Participating countries were invited to participate in this process.

### ❖ Summarising strategies

International experts rated the following strategies as the most effective for summarising complex information:

- I carefully check whether the most important facts in the text are represented in the summary
- I read through the text, underlining the most important sentences. Then I write them in my own words as a summary.

As part of the questionnaire, students were presented with a reading task that told them they had just read a long and rather difficult two-page text about fluctuations in the water level of a lake in Africa, and that they had to write a summary. They were then asked to rate the usefulness of five summarising strategies to do such a task.

Table 37 shows that more than half of the students rated the two most effective summarising strategies highly (ie, 5 or 6). It also shows that students who rated these strategies highly typically had very strong reading skills. Their mean reading score was 554 score points or higher, at least 60 points above their peers who rated them lower.



Students who know about the effective strategies for summarising complex information are on average very strong readers.

Boys are less likely than girls to know about effective summarising strategies.

**Table 37: Knowledge of the two effective summarising strategies, 15-year-olds overall**

Effective summarising strategies	Usefulness of the strategy rated highly (5–6)		Usefulness of the strategy not rated highly (1–4)
	%	Mean score	Score point difference
I carefully check whether the most important facts in the text are represented in the summary	57	559 (2.7)	<b>–80</b> (3.4)
I read through the text, underlining the most important sentences. Then I write them in my own words as a summary	54	554 (2.4)	<b>–64</b> (3.5)

Note: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.

Students who knew that *I carefully check whether the most important facts in the text are represented in the summary* was an effective strategy had the largest advantage, scoring on average 80 points above those who rated it lower. This advantage, according to PISA, is equivalent to approximately two years of schooling.

**Table 38: Other summarising strategies examined in PISA, 15-year-olds overall<sup>32</sup>**

Other summarising strategies	Usefulness of the strategy rated highly (5–6)		Usefulness of the strategy not rated highly (1–4)
	%	Mean score	Score point difference
Before writing the summary, I read the text as many times as possible	32	537 (3.1)	<b>–18</b> (3.1)
I write a summary. Then I check that each paragraph is covered in the summary, because the content of each paragraph should be included	30	550 (3.5)	<b>–36</b> (3.6)
I try to copy out accurately as many sentences as possible	13	487 (4.3)	<b>44</b> (4.8)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.

It is a concern that approximately one in ten of the 15-year-olds rated highly the strategy *I try to copy out accurately as many sentences as possible*. Not surprisingly, as shown in Table 38, those students were on average weak readers (487 points).

Overall, there was a substantial gap of 123 score points in the reading performance between the quarter of students who were the most aware of the effective summarising strategies and the quarter who were the least aware, which is equivalent to more than three years of schooling (for more detail, see Appendix 1, p. 85).

<sup>32</sup> The agreed rating for the strategies *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* was higher than the strategy of trying to copy out accurately as many sentences as possible.

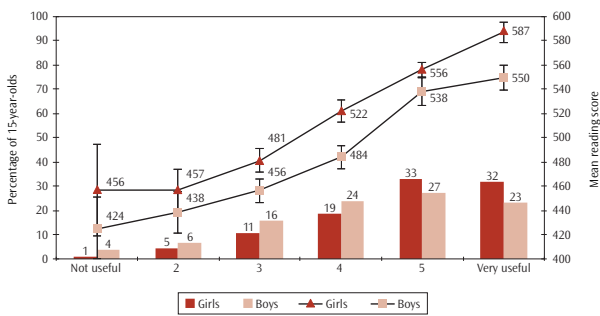


### Summarising strategies, by gender

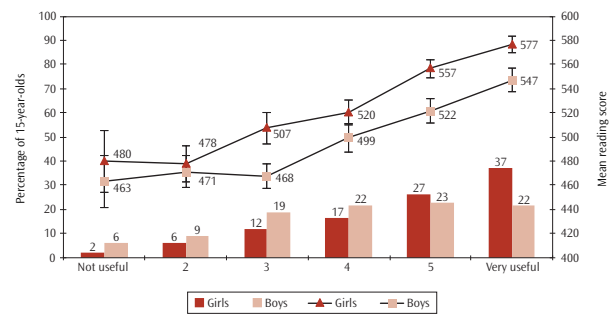
Figures 55 and 56 show that New Zealand boys were much less aware than their female counterparts of the two most effective strategies for summarising complex information. However, boys and girls who did know they were effective were on average very strong readers. Just over 20% of the boys knew about these strategies and their mean score was approximately 550 score points: 50 points higher than the mean score for boys on the overall reading scale (499).

The three other strategies showed a broadly similar achievement pattern for both boys and girls, somewhat similar to that found for students overall.

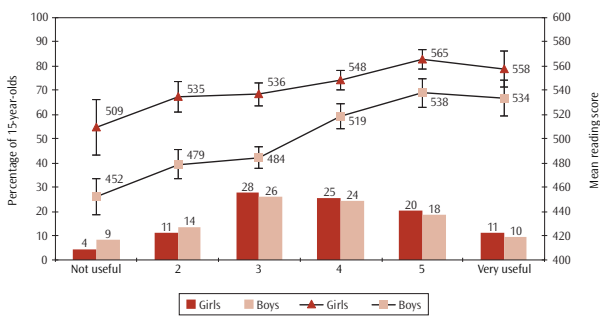
**Figure 55: I carefully check whether the most important facts in the text are represented in the summary, by gender**



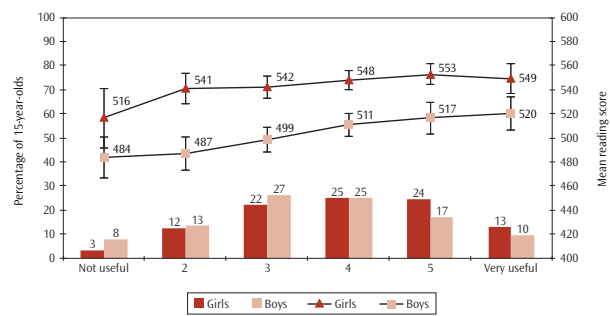
**Figure 56: I read through the text, underlining the most important sentences. Then I write them down in my own words as a summary, by gender**



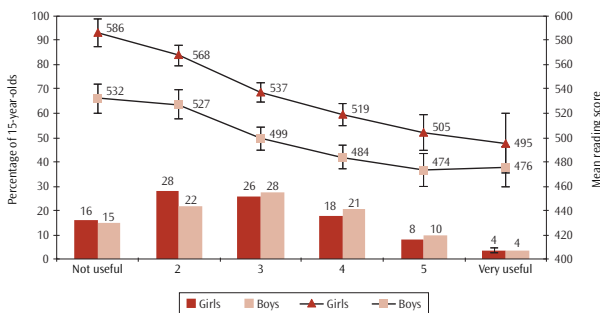
**Figure 57: I write a summary. Then I check that each paragraph is covered in the summary, because the content of each paragraph should be included, by gender**



**Figure 58: Before writing the summary, I read the text as many times as possible, by gender**



**Figure 59: I try to copy out accurately as many sentences as possible, by gender**





Students who know about effective strategies for understanding and remembering information on average are strong readers.

Boys are less likely than girls to know about effective understanding and remembering strategies.

### ❖ Understanding and remembering strategies

As mentioned earlier, students' knowledge of effective strategies to understand and remember texts when they study was also assessed by asking 15-year-olds to rate the usefulness of the strategies on a six-point scale.

International experts rated the following strategies as the most effective for understanding and remembering information:

- I underline important parts of the text
- I summarise the text in my own words
- after reading the text, I discuss its content with other people.

**Table 39: Knowledge of effective understanding and remembering strategies, 15-year-olds overall**

Understanding and remembering strategies	Usefulness of the strategy rated highly (5–6)		Usefulness of the strategy not rated highly (1–4)
	%	Mean score	Score point difference
I underline important parts of the text	49	547 (2.5)	<b>–43</b> (2.9)
I summarise the text in my own words	46	549 (2.6)	<b>–45</b> (3.7)
After reading the text, I discuss its content with other people	35	552 (3.4)	<b>–42</b> (3.7)

*Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.*

*Standard errors appear in parenthesis.*

Well over one-third of New Zealand 15-year-olds were aware of the three effective strategies. Students who rated them highly (ie, 5 or 6) were on average very strong readers, scoring around 30 points or more above the mean score for New Zealand students overall (521).

As shown in Table 40, between 16 and 22% of the 15-year-olds rated the three other strategies highly. Those who rated the strategy *I read the text aloud to another person* highly were likely to be stronger readers than those who did not, but the advantage was less marked than for the three strategies the experts judged the most effective (listed in Table 39).



**Table 40: Other understanding and remembering strategies examined in PISA, 15-year-olds overall**

Other understanding and remembering strategies	Usefulness of the strategy rated highly (5–6)		Usefulness of the strategy not rated highly (1–4)
	%	Mean score	Score point difference
I concentrate on the parts of the text that are easy to understand	22	516 (4.3)	<b>10</b> (4.6)
I read the text aloud to another person	18	538 (5.3)	<b>–17</b> (5.2)
I quickly read through the text twice	16	507 (4.3)	<b>20</b> (4.6)

Notes: Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

Standard errors appear in parenthesis.

Typically, students who rated *I concentrate on the parts of the text that are easy to understand* or *I quickly read through the text twice* as highly useful strategies to understand and remember complex information were weaker readers than those who did not rate them highly.

Overall, the performance gap in the reading performance between students who were the most aware of the effective understanding and remembering strategies and the quarter who were the least aware was 97 score points, which is equivalent to more than two years of schooling (for more detail, see Appendix 1, p. 86).

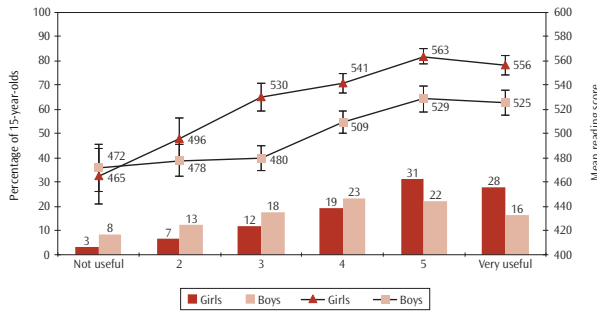
### Understanding and remembering strategies, by gender

Overall, boys were much less aware than girls that *I underline the important parts of the text* is an effective strategy to understand and remember information: 20% fewer boys than girls rated this strategy highly (Figure 60). Boys were also less aware of the two other effective understanding and remembering strategies, *I summarise the text in my own words* and *after reading the text, I discuss its content with other people*: approximately 10% fewer boys than girls rated these strategies 5 or 6 (Figures 61 and 62).

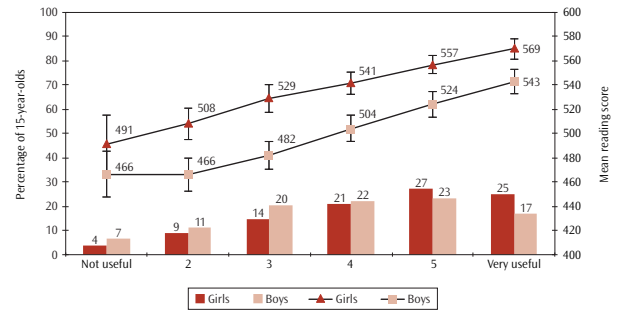
The figures also show that both boys' and girls' reading performance was very strongly associated with the three effective understanding and remembering strategies. Although boys' reading performance was not associated with *I read the text aloud to another person*, this was not the case for girls (Figure 63). The 22% of girls who rated this strategy 5 or 6 scored on average 22 points above their female counterparts who did not.

The two strategies *I concentrate on the parts of the text that are easy to understand* and *I quickly read through the text twice*, as shown in Figures 64 and 65, were not associated with boys' reading performance overall. Boys with strong or weak reading skills were equally likely to rate them highly. There was a different pattern for girls. Girls who rated the two ineffective strategies highly were on average those with weaker reading skills.

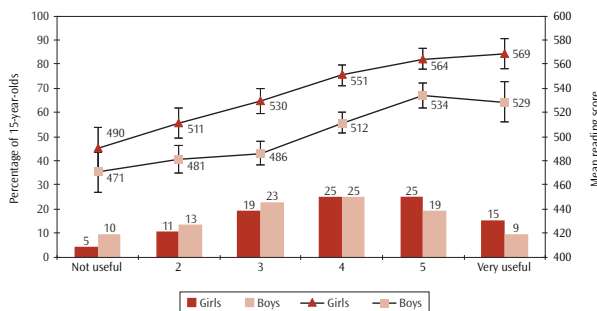
**Figure 60: I underline important parts of the text, by gender**



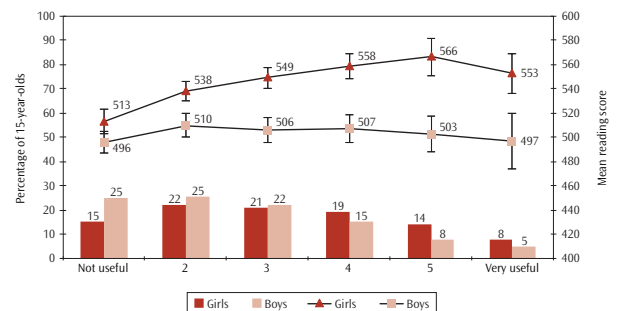
**Figure 61: I summarise the text in my own words, by gender**



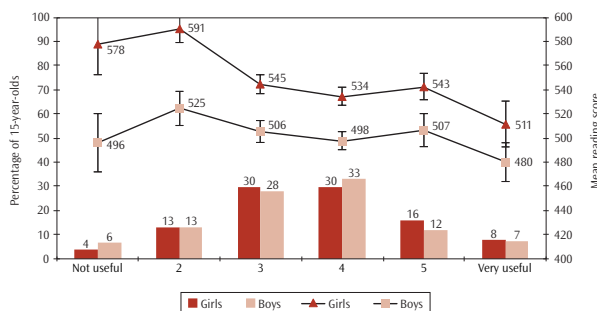
**Figure 62: After reading the text, I discuss its content with other people, by gender**



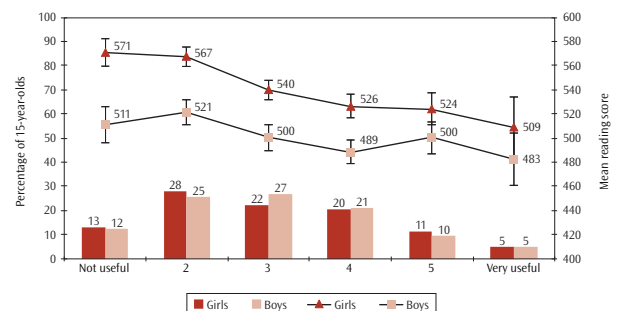
**Figure 63: I read the text aloud to another person, by gender**



**Figure 64: I concentrate on the parts of the text that are easy to understand, by gender**



**Figure 65: I quickly read through the text twice, by gender**



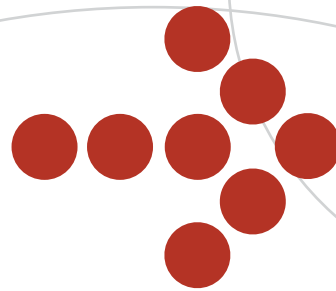
For comparisons with high performing countries and the OECD average on the teaching and learning factors examined in this section see Appendix 1, pp. 75-85).

The next section presents a summary of the overall results and a profile of students' reading and learning habits based on the 15-year-olds' awareness of the most effective summarising strategies and their reports on the range of reading materials they read.



## Part 3

# Summary and student reading profiles



## 3.1 Summary

**At the age of 15 New Zealand students are at a crucial point in their lives. After 10 years of schooling they are making educational choices about what courses they will take, choices that will influence their future careers. How well they achieve educationally will influence the kinds of job they get, along with their future earnings and their ability to function fully as citizens in the 21st century. Knowing the factors that determine the likely outcomes of these 15-year-old boys and girls is therefore hugely important for teachers, school leaders and education policy makers.**

In PISA 2009 the focus was on reading literacy (as opposed to mathematics or science), but many of the questions it addressed are fundamental to learning generally, because so much of our education depends on engaging with and understanding texts. Does early childhood education have an influence on reading ability? What influence do parents and whānau have? What sorts of things do students read for enjoyment and for how long? What practices do teachers use to motivate and help their students in English classes? What learning strategies do students use? Answering such questions, as well as understanding how the answers relate to boys compared to girls, can provide the basis for developing practices to help all our students achieve to their potential.

This report has covered the responses to questions asked of 15-year-olds (and their parents/whānau) across a wide array of topics in reading literacy. These findings are relevant for both primary and secondary school learners, because PISA is designed to measure the cumulative learning at age 15-years – often referred to as ‘the cumulative yield of education’. Following is a brief summary of the findings for New Zealand students.

### ❖ Do early educational experiences influence reading literacy at age 15?

The PISA evidence indicates that participating in early childhood education (ECE) and home literacy-related activities when children are young has a positive association with reading literacy at age 15. Ninety-one percent of our 15-year-olds had participated in ECE, and more than two-thirds had participated for longer than one year.

Almost all parents/whānau (or someone else in the home) reported that they had frequently read books to their child during their first year of schooling. The majority were often also involved in other early home literacy-related activities, such as reading signs and labels aloud and telling stories.

The difference in mean reading scores between 15-year-old students whose parents and whānau read books to them regularly when they began school and those who did not was equivalent to more than one-and-a-half years of schooling.

### ❖ Can parents/whānau influence their 15-year-old’s reading skills?

Parent/whānau reading habits and being involved in their 15-year-old’s academic and non-academic activities are positively associated with reading literacy. Our students are more likely to be strong readers if their parents/whānau role-model their reading enjoyment by reading books on a regular basis.

New Zealand 15-year-olds whose parents/whānau frequently discussed books, films and television programmes, or political or social issues with them, or simply spent time just talking with them, were generally much better readers than those whose parents and whānau were not involved in these types of activities as often.



### ❖❖❖ Do our 15-year-olds enjoy reading?

Spending time reading for enjoyment on a daily basis and enjoying reading are positively associated with reading literacy. Two-thirds of our 15-year-olds reported that they read for enjoyment every day. Typically, the more time they spent reading for enjoyment, the better their reading score.

Overall, the gap in reading performance between our 15-year-olds who enjoyed reading the most and those who enjoyed reading the least was equivalent to three years of schooling. The gap was larger for boys than for girls, and girls were twice as likely as boys to hold positive views about reading.

### ❖❖❖ What do our 15-year-olds read for enjoyment?

Reading a range of reading materials, including fiction, is positively associated with reading literacy. Students who read a wide range of reading materials were generally stronger readers than those who did not. Regularly reading fiction books had a strong association with reading performance: one-third of our boys and over half of our girls read fiction regularly.

Our 15-year-old students read magazines and newspapers more often than fiction books, non-fiction books or comics. More than half of them regularly read magazines and newspapers (ie, at least several times a month), well over a third read fiction books, a quarter read non-fiction books, and just over 10% read comics regularly.

Boys read newspapers and magazines more often than they read the other types of reading materials, whereas girls read magazines, fiction and newspapers the most. Boys were more likely than girls to read comics.

### ❖❖❖ What reading literacy tasks did our 15-year-olds do?

Students with strong reading skills were more likely to undertake tasks that were more challenging and complex (interpreting literary texts and using non-continuous texts). Our weaker readers were more likely to undertake reading tasks that involved functional texts and literature course activities (those examined in PISA), literacy tasks that have a lower demand on students' reading literacy knowledge and skills.

### ❖❖❖ Do teachers use motivational, structuring and scaffolding practices?

Exposure to motivational practices and structuring and scaffolding practices in English classes was positively associated with reading literacy. Students with strong reading skills were more likely to have been exposed to a range of motivational practices and structuring and scaffolding practices examined in PISA. Overall, these practices are found to contribute to making a significant difference to our students' reading literacy skills and knowledge.

### ❖❖❖ How aware are our students of effective learning approaches?

Knowing the strategies that are effective for summarising information and using control strategies are learning approaches that are positively associated with reading literacy. Students who knew about the strategies that international reading experts rated as the most effective for summarising complex information and for understanding and remembering information in a text were on average very strong readers. This was also the case for the students who used control learning strategies.

The performance gap between students who used or knew about these effective learning approaches and those who did not was substantial. Boys were less aware of effective summarising strategies and understanding and remembering strategies than girls. They were also less likely to self-direct their learning by using control learning strategies and to use memorisation strategies.

## 3.2 Student reading profiles

According to the OECD analysis, “*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” (OECD 2010b, p. 55). This finding is based on six reading profiles the OECD developed.<sup>33</sup> Figure 66 illustrates the reading profiles and the following two factors used to construct the profiles:

- the level of students’ awareness of effective learning strategies, corresponding to two groups of readers: **deep** and **surface** readers
- the range of reading materials students read on a regular basis, corresponding to three groups of readers: **wide**, **narrow** and **highly restricted** readers.

### ❖ Reading Profiles

Students with a high level of knowledge about the most effective learning strategies (ie, how they read) were defined as ‘deep’ readers (Groups 1–3). Those with a low level were defined as ‘surface’ readers’ (Groups 4–6).

As shown in Figure 66, reading deeply (ie, being knowledgeable about effective learning strategies), and reading a diverse range of reading materials are factors that are strongly associated with reading achievement.

**Figure 66: The six reading profile groups, by the proportion of New Zealand students in each profile group and mean score**

	Reads all material regularly		Reads magazines and newspapers regularly		Does not read any material regularly	
High levels of effective learning strategies	<b>Group 1 Deep and wide readers</b>		<b>Group 2 Deep and narrow readers</b>		<b>Group 3 Deep and highly restricted readers</b>	
	%	Mean score	%	Mean score	%	Mean score
	24	569 (3.4)	8	520 (4.2)	30	548 (3.5)
Low levels of effective learning strategies	<b>Group 4 Surface and wide readers</b>		<b>Group 5 Surface and narrow readers</b>		<b>Group 6 Surface and highly restricted readers</b>	
	%	Mean score	%	Mean score	%	Mean score
	9	489 (5.5)	8	447 (5.1)	16	462 (4.1)

Teachers have a crucial role in ensuring that students are knowledgeable about effective learning strategies and encouraging students to read a wide range of reading materials. Having a high level of knowledge of effective learning strategies (in particular metacognitive strategies whereby students process information) and reading widely enable students to read critically, and equip them with the reading skills necessary for effective, productive and full participation in the 21st century.

<sup>33</sup> Latent profile analysis was performed to identify six profiles. For information on the methods used to do this, see OECD 2010b, p.131.



### 3.3 Finally

A workbook, *Acting on the Evidence: What Might the PISA 2009 Reading Findings Mean for Our Teachers and School Leaders?*, is a companion to this report. It includes an overview of the findings and some suggestions and resources for teachers and school leaders about parental/whānau involvement in their child's learning, students' reading habits, and teaching and learning. The workbook has been designed to stimulate discussion among primary and secondary school teachers, leaders and other educators, and to promote the sharing of knowledge about how to develop and extend students' reading literacy skills and their knowledge of effective learning approaches: skills that are essential for all learning areas.



# Appendix 1

## International comparisons

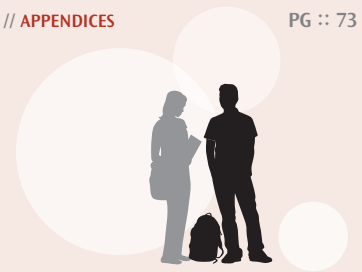
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PISA also allows for international comparisons on the background factors that are examined in the PISA questionnaires. To do this, responses to a series of questions that relate to the particular factor are summarised and reported on an overall index. Index values for the OECD average are set at zero. Countries with a negative value are those with students who on average responded more negatively than the OECD on average. Conversely, countries with a positive value are those with students who responded more positively than the OECD on average.<sup>34</sup>

The tables and figures in this appendix summarise New Zealand results on the various factors examined in this report, and they are compared with the eight high-performing countries, the OECD average and the two other large English-speaking countries, the United Kingdom and the United States.

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<sup>34</sup> For more information see *PISA 2009 Technical Report* (OECD 2012).



## Reading habits

### Index of enjoyment of reading activities<sup>35</sup>

New Zealand 15-year-olds (0.13) were more likely than the OECD average (0.00), including their peers in Finland (0.05) and Australia (0.00), to report they enjoy reading.

The quarter of students who enjoyed reading the most were very strong readers, scoring on average 593 score points. There was a very large gap of 127 score points in reading performance between their reading scores and the quarter of students who enjoyed reading the least (466), which is equivalent to more than three years of schooling.

**Table A1.1: Index of reading enjoyment, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

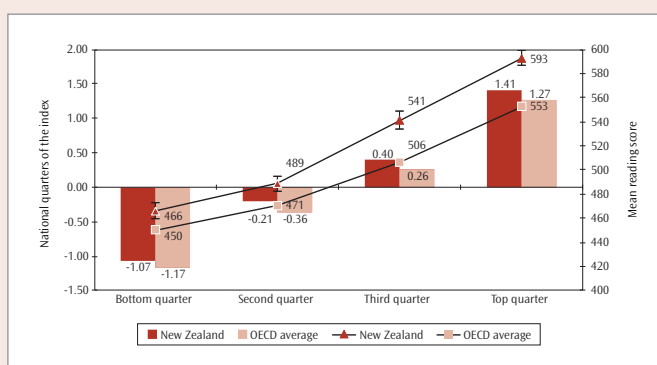
	Mean index score	Performance on reading scale, by national quarters of the index of enjoyment of reading			
		All students	Bottom quarter	Second quarter	Third quarter
Shanghai-China*	0.57 (0.01)	<b>515</b> (3.3)	550 (3.3)	570 (2.9)	<b>590</b> (3.2)
Hong Kong-China*	0.32 (0.01)	<b>491</b> (2.9)	522 (3.6)	552 (2.7)	<b>574</b> (3.1)
Singapore*	0.29 (0.01)	<b>473</b> (2.4)	505 (2.7)	546 (2.7)	<b>583</b> (2.2)
Japan	0.20 (0.02)	<b>471</b> (4.3)	505 (4.2)	540 (3.4)	<b>573</b> (3.6)
<b>New Zealand</b>	<b>0.13</b> (0.02)	<b>466</b> (3.3)	489 (3.2)	541 (3.8)	<b>593</b> (3.2)
Canada	0.13 (0.01)	<b>473</b> (2.0)	506 (2.1)	542 (2.2)	<b>582</b> (1.9)
Korea	0.13 (0.02)	<b>495</b> (4.5)	526 (3.6)	555 (3.5)	<b>584</b> (3.4)
Finland	0.05 (0.02)	<b>475</b> (2.7)	518 (2.9)	557 (3.0)	<b>596</b> (2.7)
<b>OECD average</b>	<b>0.00</b> (0.00)	<b>450</b> (0.6)	471 (0.6)	506 (0.6)	<b>553</b> (0.6)
Australia	0.00 (0.02)	<b>454</b> (2.4)	489 (2.7)	536 (2.7)	<b>588</b> (2.7)
United States	-0.04 (0.03)	<b>454</b> (2.8)	474 (4.3)	511 (4.2)	<b>563</b> (5.0)
United Kingdom	-0.12 (0.02)	<b>446</b> (3.2)	466 (2.6)	508 (3.2)	<b>562</b> (2.7)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.1: Index of reading enjoyment**



35 The index of enjoyment of reading activities was derived from students' level of agreement with the following statements: i) I read only if I have to; ii) reading is one of my favourite hobbies; iii) I like talking about books with other people; iv) I find it hard to finish books; v) I feel happy if I receive a book as a present; vi) for me, reading is a waste of time; vii) I enjoy going to a bookstore or a library; viii) I read only to get information that I need; ix) I cannot sit still and read for more than a few minutes; x) I like to express my opinions about books I have read; and xi) I like to exchange books with my friends. Higher values on this index indicate higher levels of reading enjoyment.

### Index of diverse reading materials<sup>36</sup>

New Zealand students were more likely to read a wide range of reading materials than the OECD average, including their peers in the four large English-speaking countries.<sup>37</sup>

Stronger readers were more likely to read a range of reading materials. The performance gap between the quarter of New Zealand 15-year-olds who read the most widely and the quarter who read the least widely was 38 points, which is equivalent to approximately one year of schooling.

**Table A1.2: Index of diverse reading materials, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

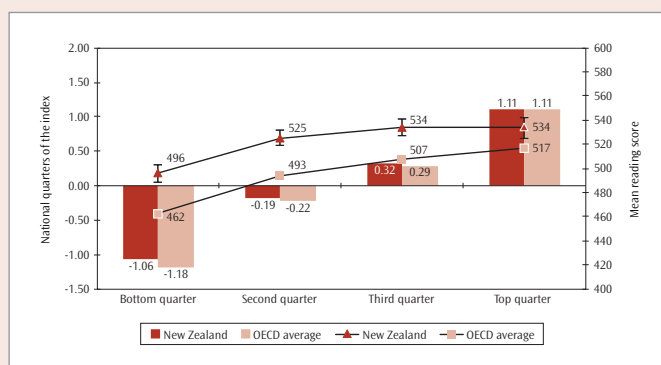
	Mean index score	Performance on reading scale, by national quarters of the index of diverse reading materials			
	All students	Bottom quarter	Second quarter	Third quarter	Top quarter
Singapore*	0.53 (0.02)	<b>501</b> (2.6)	526 (2.8)	536 (3.1)	<b>541</b> (2.7)
Hong Kong-China*	0.46 (0.02)	<b>513</b> (3.2)	537 (2.8)	543 (3.0)	<b>541</b> (3.3)
Finland	0.45 (0.02)	<b>494</b> (3.1)	527 (3.1)	549 (3.2)	<b>575</b> (3.1)
Shanghai-China*	0.43 (0.02)	<b>539</b> (3.2)	559 (3.4)	564 (3.3)	<b>561</b> (3.5)
Japan	0.38 (0.02)	<b>489</b> (4.6)	519 (4.7)	530 (3.8)	<b>544</b> (3.7)
<b>New Zealand</b>	<b>0.05 (0.01)</b>	<b>496</b> (3.8)	<b>525</b> (3.4)	<b>534</b> (3.6)	<b>534</b> (4.5)
Korea	0.01 (0.02)	<b>511</b> (4.8)	539 (4.3)	549 (3.8)	<b>559</b> (3.6)
OECD average	0.00 (0.00)	<b>462</b> (0.7)	493 (0.6)	507 (0.6)	<b>517</b> (0.6)
Canada	-0.11 (0.01)	<b>473</b> (2.0)	506 (2.1)	542 (2.2)	<b>582</b> (1.9)
United Kingdom	-0.11 (0.02)	<b>466</b> (3.0)	493 (3.6)	512 (2.7)	<b>511</b> (3.3)
Australia	-0.12 (0.01)	<b>454</b> (2.4)	489 (2.7)	536 (2.7)	<b>588</b> (2.7)
United States	-0.32 (0.02)	<b>473</b> (4.0)	508 (4.2)	513 (4.6)	<b>508</b> (5.4)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.2: Index of diverse reading materials**



<sup>36</sup> The index of diversity of reading materials was derived from the frequency with which students read the following materials because they want to: magazines, comic books, fiction, non-fiction books and newspapers. Higher values on this index indicate higher diversity in reading.

<sup>37</sup> Although Singapore's students receive their schooling in English, unlike the majority of students in Australia, Canada, New Zealand, the United States and the United Kingdom a language other than English is usually spoken in the home. Therefore, Singapore is not referred to here as a large English-speaking country.



## Teaching and Learning

### Types of reading literacy activities students do for school

#### Index of interpretation of literary texts<sup>38</sup>

New Zealand 15-year-olds were as likely to use the more complex and challenging interpretation of literary text tasks in their English classes as the average for OECD countries. Overall, they used them less often than their respective counterparts in the four large English-speaking countries.

Students with strong reading skills were more likely to have carried out these types of tasks. The performance gap between the quarter of New Zealand students who used these texts the most and the quarter who used them least was 38 points, which is equivalent to approximately one year of schooling.

**Table A1.3: Index of the interpretation of literary texts, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

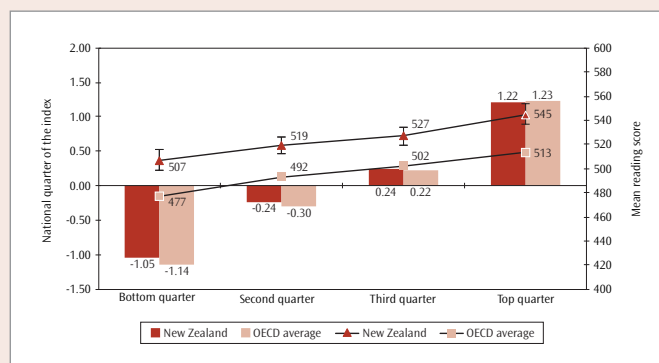
	Mean index score	Performance on reading scale, by national quarters of the index of the interpretation of literary texts			
		All students	Bottom quarter	Second quarter	Third quarter
United States	0.42 (0.02)	<b>474</b> (4.1)	500 (4.3)	508 (4.3)	<b>521</b> (5.0)
Shanghai-China*	0.35 (0.02)	<b>522</b> (3.3)	550 (3.8)	571 (2.8)	<b>584</b> (2.9)
Hong Kong-China*	0.23 (0.02)	<b>504</b> (3.4)	529 (3.0)	544 (3.1)	<b>563</b> (3.1)
Singapore*	0.20 (0.01)	<b>490</b> (2.7)	517 (3.1)	541 (3.0)	<b>561</b> (3.1)
United Kingdom	0.20 (0.02)	<b>483</b> (3.0)	493 (3.7)	504 (3.4)	<b>510</b> (3.3)
Canada	0.15 (0.01)	<b>514</b> (2.3)	519 (2.1)	529 (2.1)	<b>545</b> (2.2)
Australia	0.15 (0.02)	<b>490</b> (2.8)	513 (2.7)	529 (2.7)	<b>546</b> (3.1)
<b>New Zealand</b>	<b>0.04</b> (0.02)	<b>507</b> (4.3)	<b>519</b> (3.7)	<b>527</b> (3.9)	<b>545</b> (4.2)
OECD average	0.00 (0.00)	477 (0.7)	492 (0.7)	502 (0.6)	513 (0.6)
Japan	-0.21 (0.02)	<b>497</b> (4.9)	511 (4.1)	531 (3.2)	<b>548</b> (3.9)
Finland	-0.44 (0.02)	<b>529</b> (3.4)	538 (3.6)	536 (3.4)	<b>544</b> (3.2)
Korea	-0.51 (0.03)	<b>509</b> (3.9)	530 (4.7)	547 (3.7)	<b>578</b> (3.4)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.3: Index of the interpretation of literary texts**



38 The index of interpretation of literary texts was derived from the frequency with which students reported that in the past month (prior to the assessment) they did the following: i) read fiction; ii) explain the cause of events in a text; iii) explain the way characters behave in a text; iv) explain the purpose of a text. For each item students were asked to report whether they had undertaken the tasks associated with interpreting literary texts for school (either in the classroom or as homework) "many times", "two or three times", "once", or "not at all". All items are inverted for scaling, so that higher values on this index indicate higher levels of use of these types of texts.

### Index of texts containing non-continuous materials<sup>39</sup>

Although New Zealand 15-year-olds were more likely than the OECD average to use tasks associated with non-continuous materials that are relatively complex, their counterparts in the four large English-speaking countries were more likely to use them.

A similar achievement pattern was found on the non-continuous material tasks to that found for interpreting literary tasks. Students with strong reading skills were more likely to undertake tasks associated with non-continuous materials. The performance gap between the quarter of students who used these text tasks the most and the quarter who used them the least was 48 points.

**Table A1.4: Index of non-continuous materials, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

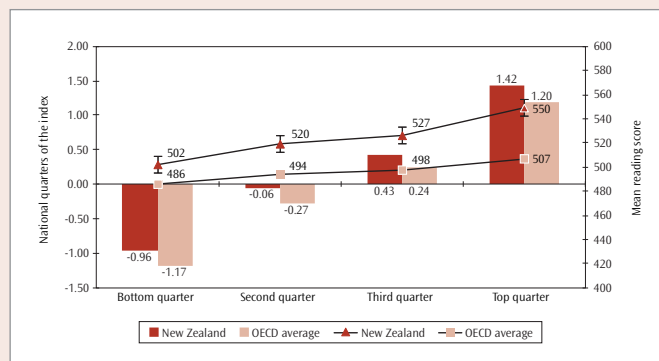
	Mean index score	Performance on reading scale, by national quarters of the index of non-continuous materials			
		All students	Bottom quarter	Second quarter	Third quarter
Singapore*	0.57 (0.02)	<b>489</b> (2.7)	514 (3.0)	536 (2.9)	<b>569</b> (2.3)
United States	0.57 (0.02)	<b>488</b> (4.5)	498 (5.0)	503 (4.3)	<b>514</b> (4.1)
Canada	0.41 (0.01)	<b>510</b> (2.3)	524 (2.0)	530 (2.2)	<b>543</b> (2.4)
Australia	0.33 (0.02)	<b>499</b> (2.9)	512 (2.5)	526 (2.6)	<b>541</b> (3.6)
United Kingdom	0.27 (0.02)	<b>476</b> (2.6)	493 (3.7)	504 (3.8)	<b>516</b> (3.6)
<b>New Zealand</b>	<b>0.21</b> (0.02)	<b>502</b> (3.7)	<b>520</b> (3.7)	<b>527</b> (3.7)	<b>550</b> (3.4)
OECD average	0.00 (0.00)	<b>486</b> (0.7)	494 (0.6)	498 (0.7)	<b>507</b> (0.7)
Finland	0.00 (0.02)	<b>514</b> (3.1)	530 (3.1)	544 (3.1)	<b>559</b> (3.3)
Hong Kong-China*	-0.15 (0.02)	<b>523</b> (3.1)	530 (3.3)	538 (3.1)	<b>548</b> (3.8)
Korea	-0.30 (0.03)	<b>509</b> (4.0)	531 (4.0)	546 (4.1)	<b>577</b> (3.5)
Shanghai-China*	-0.34 (0.02)	<b>545</b> (3.3)	554 (2.8)	560 (3.1)	<b>569</b> (3.4)
Japan	-0.40 (0.02)	<b>516</b> (4.2)	522 (4.2)	521 (3.5)	<b>530</b> (4.4)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.4: Index of non-continuous materials**



39 The index of use of texts containing non-continuous materials was derived from the frequency with which students reported that in the past month they did the following: i) use texts that include diagrams or maps; ii) use texts that include tables or graphs; iii) find information from a graph, diagram or table; and iv) describe the way the information in a table or graph is organised. For each item students were asked to report whether they had undertaken the tasks for school (either in the classroom or as homework) "many times", "two or three times", "once", or "not at all". All items are inverted for scaling, so that higher values on this index indicate higher levels of use of these types of texts.

### Index of reading activities for literature courses<sup>40</sup>

New Zealand 15-year-olds were less likely than the average for OECD countries to be involved in the tasks examined in PISA that are associated with literature course activities. Their counterparts in the four large English-speaking countries and other high-performing countries on average were more likely to be involved in these tasks.

Typically, students with weaker skills were involved in these types of tasks more often than stronger readers, and this was the case on average across the OECD countries and in the majority of other high-performing countries.

**Table A1.5: Index of reading activities for literature courses, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

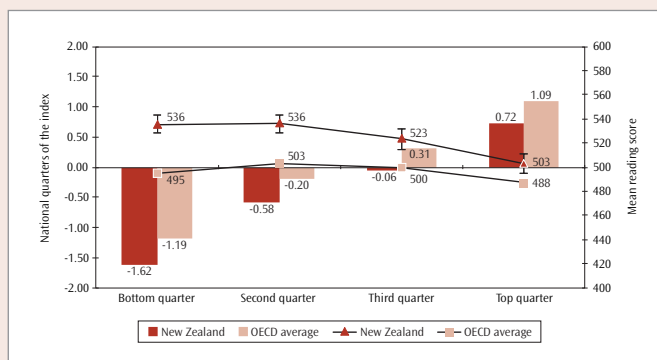
	Mean index score	Performance on reading scale, by national quarters of the index of literature course activities			
		All students	Bottom quarter	Second quarter	Third quarter
Shanghai-China*	0.70 (0.02)	<b>520</b> (2.8)	524 (3.0)	521 (2.8)	<b>513</b> (3.4)
Hong Kong-China*	0.39 (0.03)	<b>536</b> (2.1)	530 (2.4)	528 (2.3)	<b>513</b> (2.2)
United States	0.27 (0.02)	503 (4.2)	505 (4.3)	503 (4.2)	493 (6.9)
United Kingdom	0.18 (0.02)	<b>500</b> (3.7)	510 (3.1)	498 (3.8)	<b>481</b> (3.2)
OECD average	0.00 (0.00)	<b>495</b> (0.7)	503 (0.6)	500 (0.7)	<b>488</b> (0.7)
Korea	-0.02 (0.03)	<b>511</b> (4.1)	541 (4.6)	551 (3.7)	<b>561</b> (4.0)
Finland	-0.32 (0.03)	536 (3.8)	539 (3.4)	538 (3.3)	534 (3.8)
Canada	-0.16 (0.01)	<b>536</b> (2.1)	530 (2.4)	528 (2.3)	<b>513</b> (2.2)
Japan	-0.15 (0.02)	514 (5.1)	531 (3.6)	529 (3.9)	514 (4.9)
Australia	-0.14 (0.02)	<b>520</b> (2.8)	524 (3.0)	521 (2.8)	<b>513</b> (3.4)
Singapore*	-0.29 (0.01)	<b>540</b> (2.5)	534 (2.7)	526 (3.0)	<b>509</b> (2.8)
New Zealand	-0.39 (0.02)	<b>536</b> (3.6)	536 (3.8)	523 (4.4)	<b>503</b> (4.2)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.5: Index of reading activities for literature courses**



40 The index of reading activities for literature courses was derived from the frequency with which students reported that in the past month they did the following: i) read information texts about writers or books; ii) read poetry; iii) memorise a text by heart; iv) learn about the place of a text in the history of literature; v) learn about the life of the writer. For each item students were asked to report whether they had been involved in activities for school (either in the classroom or as homework) "many times", "two or three times", "once", or "not at all". All items are inverted for scaling, so that higher values on this index indicate higher levels of involvement in these types of activities.

### Index of use of functional texts<sup>41</sup>

Overall, New Zealand 15-year-olds were as likely as the OECD average to use texts that are associated with functional tasks. Their counterparts in three large English-speaking countries on average used them more often.

Students with weaker skills were also more likely than those with strong reading skills to report that they used these types of texts. This was the case in all high-performing countries, apart from Korea.

**Table A1.6: Index of use of functional texts, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

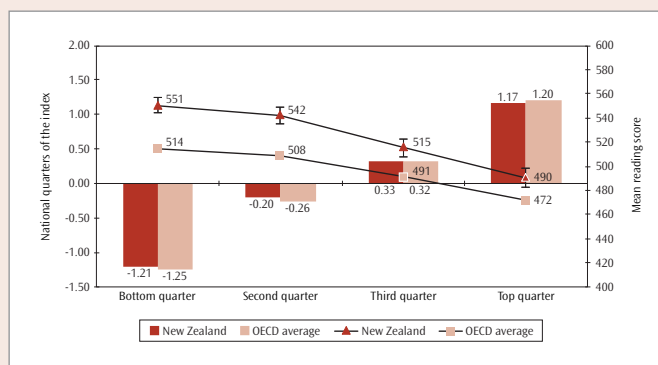
	Mean index score	Performance on reading scale, by national quarters of the index of functional texts			
	All students	Bottom quarter	Second quarter	Third quarter	Top quarter
Singapore*	0.47 (0.01)	<b>543</b> (2.8)	533 (3.0)	521 (3.1)	<b>512</b> (2.5)
Canada	0.19 (0.01)	<b>539</b> (1.9)	534 (2.3)	526 (2.2)	<b>507</b> (2.5)
Shanghai-China*	0.16 (0.01)	<b>575</b> (3.1)	557 (3.4)	546 (3.5)	<b>549</b> (3.3)
Australia	0.14 (0.01)	<b>532</b> (3.9)	527 (2.6)	514 (2.9)	<b>505</b> (2.7)
Hong Kong-China*	0.12 (0.02)	<b>541</b> (3.1)	547 (2.9)	535 (2.9)	<b>516</b> (4.0)
United States	0.11 (0.02)	<b>541</b> (3.1)	547 (2.9)	535 (2.9)	<b>516</b> (4.0)
<b>New Zealand</b>	<b>0.02</b> (0.02)	<b>551</b> (3.4)	<b>542</b> (3.6)	<b>515</b> (3.8)	<b>490</b> (3.9)
OECD average	0.00 (0.00)	<b>514</b> (0.6)	508 (0.7)	491 (0.7)	<b>472</b> (0.6)
United Kingdom	-0.02 (0.02)	<b>510</b> (3.2)	511 (2.9)	494 (3.3)	<b>475</b> (3.6)
Finland	-0.21 (0.02)	<b>552</b> (3.2)	551 (3.7)	533 (3.5)	<b>511</b> (3.5)
Korea	-0.22 (0.02)	537 (3.9)	549 (4.2)	538 (4.5)	540 (4.0)
Japan	-0.35 (0.02)	<b>533</b> (4.5)	537 (4.0)	523 (4.1)	<b>496</b> (4.2)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.6: Index of use of functional texts**



<sup>41</sup> The index of use of functional texts was derived from the frequency with which students reported that in the past month they did the following: i) read newspaper reports and magazine articles; ii) read instructions or manuals telling how to make or do something (e.g. how a machine works); and iii) read advertising material (e.g. advertisements in magazines, posters). For each item students were asked to report whether they had undertaken the tasks for school (either in the classroom or as homework) "many times", "two or three times", "once", or "not at all". All items are inverted for scaling, so that higher values on this index indicate higher levels of use of these types of texts.



### Index of teachers' stimulation of students' reading engagement<sup>42</sup>

Overall, New Zealand 15-year-olds were more likely than the OECD average to be in English classes where teachers used practices that stimulate students' reading engagement (motivational practices). Among high-performing countries, only students in Canada were more likely to report that their teachers used these practices. Students with stronger reading skills were more likely to be in classes where teachers used these strategies.

**Table A1.7: Index of teachers' stimulation of students' reading engagement, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

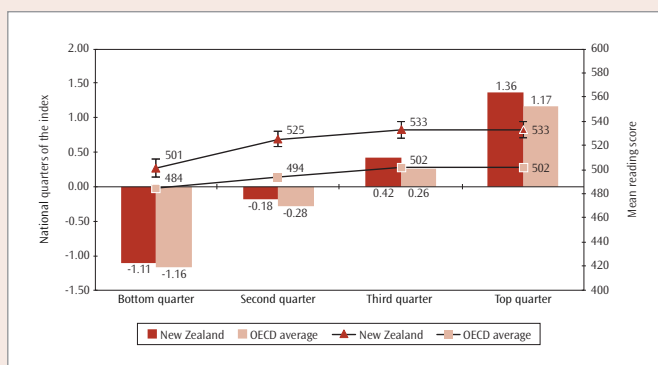
	Mean index score	Performance on reading scale, by national quarters of the index of teachers' stimulation of students' reading engagement and reading skills			
	All students	Bottom quarter	Second quarter	Third quarter	Top quarter
United States	0.51 (0.03)	<b>476</b> (5.0)	500 (4.3)	510 (5.1)	<b>520</b> (5.1)
Canada	0.23 (0.01)	<b>507</b> (2.0)	525 (2.1)	532 (2.0)	<b>540</b> (2.8)
Shanghai-China*	0.14 (0.02)	<b>540</b> (3.2)	553 (3.6)	565 (3.6)	<b>566</b> (3.4)
Australia	0.13 (0.01)	<b>490</b> (2.6)	518 (3.0)	528 (2.6)	<b>534</b> (3.4)
<b>New Zealand</b>	<b>0.12</b> (0.02)	<b>501</b> (3.9)	<b>525</b> (3.2)	<b>533</b> (3.7)	<b>533</b> (3.4)
United Kingdom	0.12 (0.02)	<b>469</b> (3.3)	501 (3.6)	510 (3.1)	<b>504</b> (3.6)
OECD average	0.00 (0.00)	<b>484</b> (0.7)	494 (0.6)	502 (0.6)	<b>502</b> (0.7)
Hong Kong-China*	-0.03 (0.02)	<b>514</b> (3.3)	533 (3.6)	550 (3.1)	<b>537</b> (3.7)
Singapore*	-0.04 (0.01)	<b>517</b> (2.9)	528 (3.0)	533 (2.8)	<b>528</b> (2.7)
Japan	-0.13 (0.02)	<b>503</b> (4.9)	518 (5.0)	533 (3.4)	<b>529</b> (3.7)
Finland	-0.33 (0.02)	536 (3.1)	528 (3.2)	539 (3.2)	542 (3.4)
Korea	-0.43 (0.02)	<b>531</b> (5.0)	536 (4.2)	549 (3.9)	<b>542</b> (4.5)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.7: Index of teachers' stimulation of students' reading engagement**



42 The index of teachers' stimulation of students' reading engagement was derived from students' reports on how often the following occurred in their English classes: i) the teacher asks students to explain the meaning of a text; ii) the teacher asks questions that challenge students to get a better understanding of a text; iii) the teacher gives students enough time to think about their answers; iv) the teacher recommends a book or author to read; v) the teacher encourages students to express their opinion about a text; vi) the teacher helps students relate the stories they read to their lives; and vii) the teacher shows students how the information in texts builds on what they already know. Higher values on this index indicate higher teachers' stimulation of students' reading engagement.

### Index of disciplinary climate in English classes<sup>43</sup>

Overall, New Zealand 15-year-olds were more likely than the OECD average to report that there were disciplinary issues in their English classes. Interestingly, among high-performing countries, Finland's students were the most likely to agree that there were disciplinary issues in their English classes.

Students with weaker reading skills were more likely to report that there were disciplinary issues. The quarter of students in classes with the most disciplinary issues scored on average 56 score points lower than the quarter of students in classes with the least issues.

**Table A1.8: Index of disciplinary climate in English classes, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

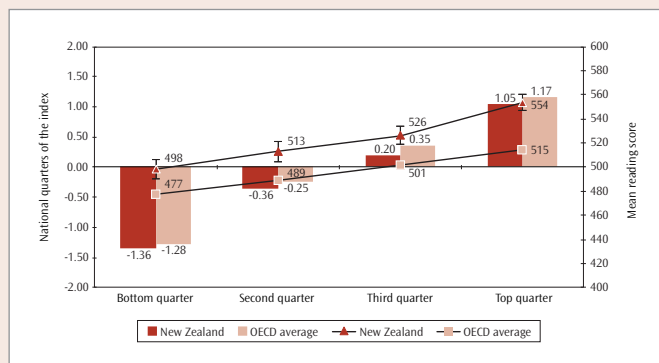
	Mean index score	Performance on reading scale, by national quarters of the index of disciplinary climate in English classes			
		All students	Bottom quarter	Second quarter	Third quarter
Japan	0.75 (0.02)	<b>470</b> (6.5)	518 (4.1)	543 (3.6)	<b>551</b> (3.7)
Shanghai-China*	0.45 (0.02)	<b>530</b> (4.1)	548 (3.5)	570 (2.9)	<b>576</b> (3.7)
Korea	0.38 (0.03)	<b>530</b> (3.8)	531 (4.5)	544 (4.4)	<b>554</b> (4.4)
Hong Kong-China*	0.37 (0.02)	<b>515</b> (4.1)	520 (3.2)	547 (3.2)	<b>551</b> (3.0)
United States	0.16 (0.02)	<b>465</b> (4.1)	491 (4.4)	517 (5.6)	<b>532</b> (3.5)
Singapore*	0.12 (0.01)	<b>498</b> (3.0)	509 (2.7)	537 (2.6)	<b>562</b> (2.5)
United Kingdom	0.11 (0.03)	<b>464</b> (3.4)	489 (3.4)	511 (3.1)	<b>519</b> (3.0)
OECD average	0.00 (0.00)	<b>477</b> (0.7)	489 (0.7)	501 (0.7)	<b>515</b> (0.7)
Australia	-0.07 (0.02)	<b>486</b> (2.5)	509 (2.7)	525 (3.1)	<b>548</b> (3.7)
Canada	-0.08 (0.01)	<b>509</b> (2.4)	524 (2.6)	529 (2.5)	<b>541</b> (2.4)
<b>New Zealand</b>	<b>-0.12</b> (0.02)	<b>498</b> (4.1)	<b>513</b> (4.3)	<b>526</b> (3.9)	<b>554</b> (3.5)
Finland	-0.29 (0.02)	<b>532</b> (3.0)	535 (3.3)	532 (3.7)	<b>546</b> (3.6)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.8: Index of disciplinary climate in the English classroom**



<sup>43</sup> The index of disciplinary climate was derived from students' reports on how often the followings happened in their lessons of the language of instruction: i) students don't listen to what the teacher says; ii) there is noise and disorder; iii) the teacher has to wait a long time for the students to quieten down; iv) students cannot work well; and v) students don't start working for a long time after the lesson begins. As all items are inverted for scaling, higher values on this index indicate high levels of disciplinary climate.



### Index of teacher–student relationships<sup>44</sup>

Overall, New Zealand 15-year-olds were more positive than the OECD average about teacher–student relationships.

Students with strong reading skills were more likely to be positive about teacher–student relationships. A performance gap of 57 score points was found between students who were the most positive and those who were the least positive about teacher–student relationships.

**Table A1.9: Index of teacher–student relationships, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

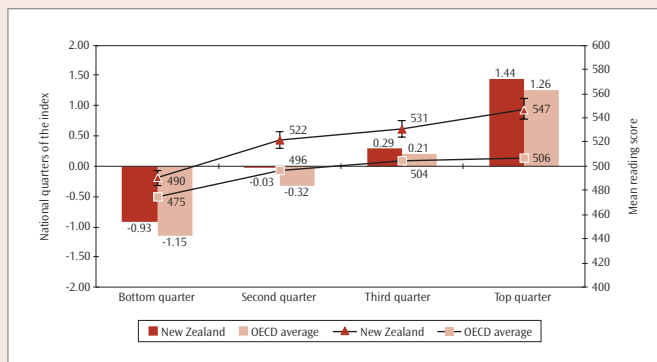
	Mean index score	Performance on reading scale, by national quarters of the index of teacher–student relationships			
		All students	Bottom quarter	Second quarter	Third quarter
Canada	0.32 (0.01)	<b>503</b> (2.1)	524 (2.1)	532 (2.2)	<b>544</b> (2.4)
United States	0.32 (0.02)	<b>472</b> (4.1)	505 (4.5)	511 (4.8)	<b>516</b> (4.9)
Singapore*	0.24 (0.01)	<b>504</b> (2.8)	531 (4.2)	537 (3.9)	<b>533</b> (2.8)
Shanghai-China*	0.21 (0.02)	<b>536</b> (3.6)	557 (3.1)	559 (3.4)	<b>572</b> (3.4)
<b>New Zealand</b>	<b>0.19</b> (0.02)	<b>490</b> (3.3)	<b>522</b> (3.7)	<b>531</b> (3.6)	<b>547</b> (4.3)
United Kingdom	0.12 (0.02)	<b>466</b> (3.3)	496 (3.1)	506 (2.9)	<b>515</b> (3.7)
Australia	0.11 (0.01)	<b>477</b> (2.6)	513 (2.8)	529 (3.0)	<b>550</b> (2.8)
OECD average	0.00 (0.00)	<b>475</b> (0.7)	496 (0.7)	504 (0.7)	<b>506</b> (0.7)
Hong Kong-China*	–0.03 (0.02)	<b>515</b> (3.6)	536 (2.8)	538 (3.1)	<b>544</b> (3.1)
Finland	–0.16 (0.02)	<b>512</b> (3.4)	531 (4.0)	546 (3.3)	<b>556</b> (3.2)
Korea	–0.27 (0.02)	<b>526</b> (4.0)	544 (4.2)	543 (4.2)	<b>545</b> (4.9)
Japan	–0.42 (0.02)	<b>483</b> (6.1)	520 (3.9)	537 (3.6)	<b>542</b> (3.9)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.9: Index of teacher–student relationships**



44 The index of teacher–student–relationship was derived from students' level of agreement with the following statements in ST34: i) I get along well with most of my teachers; ii) most of my teachers are interested in my well-being; iii) most of my teachers really listen to what I have to say; iv) if I need extra help, I will receive it from my teachers; and v) most of my teachers treat me fairly. Higher values on this index indicate positive teacher–student–relationship.

## Learning approaches

### Index of control learning strategies<sup>45</sup>

Apart from Singapore, New Zealand 15-year-olds were more likely to use the effective learning approach of self-regulating their learning by using control strategies than their respective peers in any other high-performing country.

The performance gap between the quarter of students who used control learning strategies the most and the quarter who used them the least was 92 points, which is equivalent to more than two years of schooling.

**Table A1.10: Index of control learning strategies, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

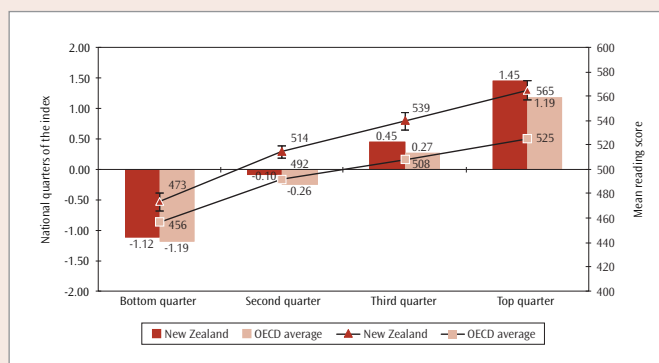
	Mean index score	Performance on reading scale, by national quarters of the index of control learning strategies			
		All students	Bottom quarter	Second quarter	Third quarter
Singapore*	0.30 (0.01)	<b>488</b> (3.1)	526 (2.6)	538 (2.6)	<b>553</b> (2.7)
<b>New Zealand</b>	<b>0.17</b> (0.02)	<b>473</b> (3.8)	<b>514</b> (2.7)	<b>539</b> (3.6)	<b>565</b> (3.9)
Canada	0.10 (0.01)	<b>483</b> (2.2)	520 (1.7)	539 (2.1)	<b>562</b> (2.4)
United Kingdom	0.08 (0.02)	<b>455</b> (3.1)	494 (3.0)	513 (3.2)	<b>522</b> (3.1)
Australia	0.06 (0.02)	<b>462</b> (2.6)	510 (2.3)	535 (2.9)	<b>560</b> (3.0)
OECD average	0.00 (0.00)	<b>456</b> (0.7)	492 (0.6)	508 (0.6)	<b>525</b> (0.6)
United States	-0.04 (0.02)	<b>461</b> (3.6)	499 (4.9)	510 (5.0)	<b>533</b> (4.8)
Hong Kong-China*	-0.14 (0.02)	<b>490</b> (3.2)	532 (3.1)	546 (2.5)	<b>565</b> (3.0)
Korea	-0.27 (0.02)	<b>488</b> (5.6)	540 (3.5)	555 (3.2)	<b>575</b> (3.5)
Shanghai-China*	-0.28 (0.01)	<b>527</b> (3.1)	548 (3.2)	565 (3.5)	<b>584</b> (3.1)
Finland	-0.34 (0.02)	<b>503</b> (3.4)	531 (3.1)	545 (3.0)	<b>565</b> (3.6)
Japan	-0.55 (0.02)	<b>474</b> (5.4)	511 (5.0)	540 (3.5)	<b>556</b> (3.6)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.10: Index of control learning strategies**



<sup>45</sup> The index of control strategies was derived from students' reports on how often they did the following statements: i) when I study, I start by figuring out what exactly I need to learn; ii) when I study, I check if I understand what I have read; iii) when I study, I try to figure out which concepts I still haven't really understood; iv) when I study, I make sure that I remember the most important points in the text; and v) when I study and I don't understand something, I look for additional information to clarify this. Higher values on the index indicate higher importance attached to the strategy.

### Index of elaboration learning strategies<sup>46</sup>

New Zealand 15-year-olds were less likely to use elaboration strategies as a learning approach than the OECD average. This was also the case in three large English-speaking countries.

Strong and weak readers were equally likely to use this learning approach.

**Table A1.11: Index of elaboration learning strategies, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

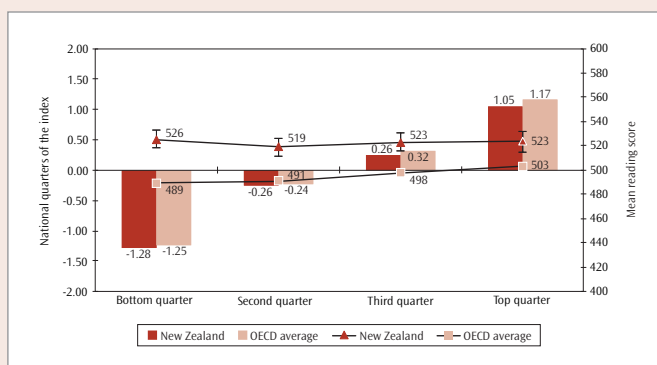
	Mean index score	Performance on reading scale, by national quarters of the index of elaboration learning strategies			
	All students	Bottom quarter	Second quarter	Third quarter	Top quarter
Singapore*	0.24 (0.02)	526 (2.9)	526 (3.0)	525 (2.6)	528 (2.7)
Shanghai-China*	0.16 (0.01)	<b>544</b> (2.9)	549 (3.6)	562 (3.1)	<b>570</b> (3.5)
Korea	0.09 (0.02)	<b>512</b> (5.0)	528 (4.2)	552 (3.5)	<b>566</b> (3.7)
Hong Kong-China*	0.00 (0.02)	<b>527</b> (3.2)	523 (3.3)	544 (3.0)	<b>540</b> (3.1)
OECD average	0.00 (0.00)	<b>489</b> (0.7)	491 (0.7)	498 (0.6)	<b>503</b> (0.7)
United Kingdom	-0.03 (0.02)	494 (3.4)	491 (3.6)	501 (3.5)	498 (3.5)
<b>New Zealand</b>	<b>-0.06</b> (0.01)	<b>526</b> (3.6)	<b>519</b> (3.9)	<b>523</b> (3.8)	<b>523</b> (4.4)
United States	-0.11 (0.02)	504 (5.3)	498 (4.2)	502 (4.9)	499 (5.0)
Australia	-0.14 (0.01)	<b>508</b> (2.6)	510 (3.0)	523 (2.7)	<b>527</b> (3.1)
Finland	-0.15 (0.01)	<b>523</b> (3.0)	529 (3.1)	541 (3.5)	<b>551</b> (3.6)
Canada	-0.21 (0.01)	526 (2.0)	522 (2.2)	527 (2.5)	527 (2.2)
Japan	-0.74 (0.02)	<b>494</b> (4.2)	525 (3.6)	520 (5.0)	<b>543</b> (4.2)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.11: Index of elaboration learning strategies**



<sup>46</sup> The index of elaboration strategies was derived from the frequency with which students did the following when they were studying: i) try to relate new information to prior knowledge acquired in other subjects; ii) figure out how the information might be useful outside school; iii) try to understand the material better by relating it to my own experiences; and iv) figure out how the text information fits in with what happens in real life. Higher values on the index indicate higher importance attached to the strategy.

### Index of memorisation learning strategies<sup>47</sup>

New Zealand 15-year-olds overall used memorisation strategies as a learning approach more often than the OECD average. Their counterparts in three large English-speaking countries on average were less likely to use them.

In New Zealand, students with strong or weak reading skills were equally likely to use learning approaches that involved memorisation strategies.

**Table A1.12: Index of memorisation learning strategies, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

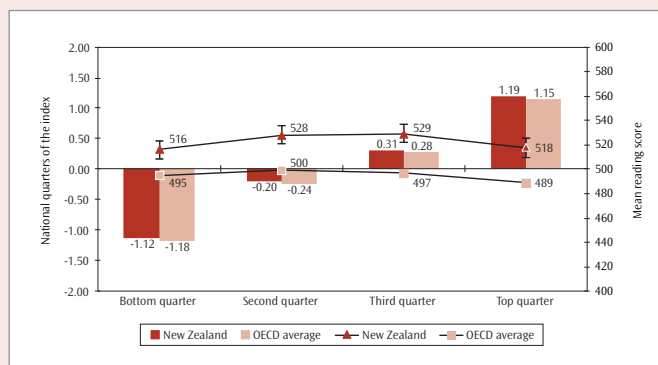
	Mean index score	Performance on reading scale, by national quarters of the index of memorisation learning strategies			
		All students	Bottom quarter	Second quarter	Third quarter
Hong Kong-China*	0.13 (0.01)	<b>518</b> (3.3)	537 (3.0)	540 (3.5)	<b>539</b> (3.3)
Korea	0.08 (0.02)	<b>503</b> (5.7)	545 (3.8)	553 (3.4)	<b>557</b> (3.2)
Singapore*	0.06 (0.01)	<b>541</b> (2.8)	532 (3.5)	524 (3.1)	<b>508</b> (2.5)
<b>New Zealand</b>	<b>0.05 (0.02)</b>	<b>516</b> (3.9)	<b>528</b> (3.7)	<b>529</b> (3.8)	<b>518</b> (4.1)
United Kingdom	0.04 (0.01)	489 (3.4)	504 (3.4)	504 (3.4)	486 (2.8)
<b>OECD average</b>	<b>0.00 (0.00)</b>	<b>495</b> (0.8)	<b>500</b> (0.7)	<b>497</b> (0.6)	<b>489</b> (0.6)
Canada	-0.02 (0.01)	523 (2.1)	527 (2.3)	527 (2.3)	526 (2.2)
United States	-0.04 (0.02)	<b>507</b> (4.4)	505 (4.8)	500 (5.1)	<b>490</b> (4.1)
Australia	-0.06 (0.01)	<b>503</b> (3.3)	520 (2.9)	525 (2.8)	<b>520</b> (2.7)
Shanghai-China*	-0.07 (0.01)	<b>550</b> (3.6)	555 (3.6)	559 (3.0)	<b>560</b> (3.3)
Finland	-0.25 (0.01)	534 (3.3)	538 (3.6)	537 (3.3)	536 (3.2)
Japan	-0.70 (0.02)	<b>508</b> (5.6)	527 (4.7)	523 (4.8)	<b>523</b> (3.7)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.12: Index of memorisation learning strategies**



<sup>47</sup> The index of memorisation learning strategies was derived from the frequency with which students did the following when they were studying: i) try to memorise everything that is covered in the text; ii) try to memorise as many details as possible; iii) read the text so many times that they can recite it; and iv) read the text over and over again. Higher values on the index indicate higher importance attached to the strategy.



### Index of summarising strategies<sup>48</sup>

Apart from Hong Kong-China, New Zealand 15-year-olds were less likely than their peers in the other high-performing countries to know about the summarising strategies examined in PISA (metacognition strategies that require students to process information).

Typically, New Zealand students with very strong reading skills knew about the effective strategies for summarising complex information. There was a large reading performance gap of 123 score points between the quarter of students who were the most knowledgeable about these strategies and those who were the least knowledgeable, which is equivalent to at least three years of schooling.

**Table A1.13: Index of summarising strategies, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

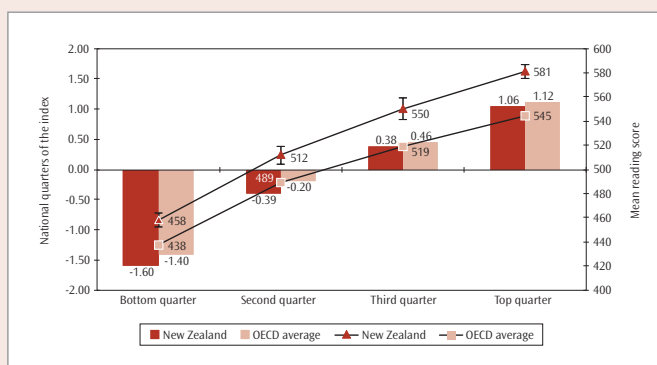
	Mean index score	Performance on reading scale, by national quarters of the index of summarising strategies			
		All students	Bottom quarter	Second quarter	Third quarter
Singapore*	0.17 (0.01)	<b>460</b> (3.0)	517 (2.8)	553 (3.1)	<b>577</b> (2.2)
Finland	0.08 (0.02)	<b>473</b> (2.7)	537 (2.9)	559 (2.9)	<b>581</b> (2.7)
Shanghai-China*	0.06 (0.01)	<b>511</b> (3.3)	557 (3.0)	574 (3.0)	<b>584</b> (2.7)
Korea	0.04 (0.03)	<b>477</b> (4.6)	542 (3.3)	563 (3.2)	<b>579</b> (2.9)
Canada	0.02 (0.01)	<b>476</b> (1.9)	520 (2.1)	544 (2.2)	<b>568</b> (1.9)
OECD average	0.01 (0.00)	<b>438</b> (0.6)	489 (0.6)	519 (0.6)	<b>545</b> (0.6)
Japan	-0.01 (0.02)	<b>444</b> (5.6)	521 (3.5)	551 (3.0)	<b>571</b> (3.2)
United Kingdom	-0.06 (0.02)	<b>445</b> (3.2)	487 (3.6)	513 (3.1)	<b>547</b> (3.0)
Australia	-0.09 (0.02)	<b>454</b> (2.1)	509 (2.5)	544 (2.5)	<b>571</b> (2.8)
<b>New Zealand</b>	<b>-0.14</b> (0.02)	<b>458</b> (2.9)	<b>512</b> (3.8)	<b>550</b> (4.5)	<b>581</b> (3.0)
United States	-0.18 (0.02)	<b>455</b> (3.2)	484 (4.3)	520 (4.4)	<b>553</b> (4.5)
Hong Kong-China*	-0.53 (0.02)	<b>493</b> (3.4)	520 (3.0)	552 (3.3)	<b>570</b> (3.4)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.13: Index of summarising strategies**



48 The index of summarising strategies was derived from students' reports on the usefulness of the following strategies for writing a summary of a long and rather difficult two-page text about fluctuations in the water levels of a lake in Africa: A) I write a summary. Then I check that each paragraph is covered in the summary, because the content of each paragraph should be included; B) I try to copy out accurately as many sentences as possible; C) before writing the summary, I read the text as many times as possible; D) I carefully check whether the most important facts in the text are represented in the summary; and E) I read through the text, underlining the most important sentences, then I write them in my own words as a summary. This index was scored using a rater-scoring system: DE>AC>B. Higher values on this index indicate greater students' perception of usefulness of this strategy.

### Index of understanding and remembering strategies<sup>49</sup>

New Zealand 15-year-olds were also less likely than their peers in high-performing countries to know about the understanding and remembering metacognition strategies examined in PISA, apart from Hong Kong-China and Canada.

A large gap in reading performance was found between the quarter of students who were the most knowledgeable about these effective learning strategies and those who were the least knowledgeable (97 score points).

**Table A1.14: Index of understanding and remembering strategies, mean reading scores by national quarters of the index in high-performing PISA countries, the United Kingdom, the United States and the OECD average**

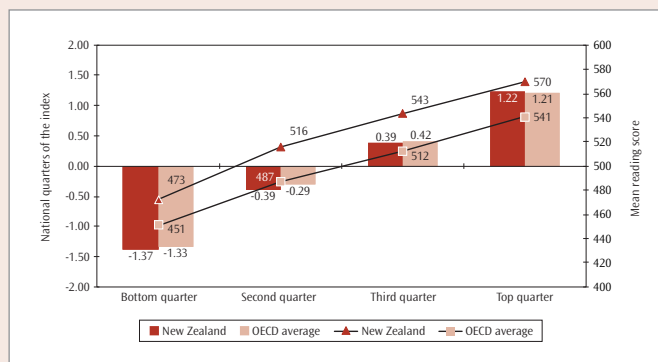
	Mean index score	Performance on reading scale, by national quarters of the index of understanding and remembering strategies			
		All students	Bottom quarter	Second quarter	Third quarter
Shanghai-China*	0.14 (0.02)	<b>519</b> (3.4)	556 (2.7)	564 (3.4)	<b>586</b> (2.7)
Japan	0.12 (0.02)	<b>468</b> (5.7)	523 (4.5)	537 (3.6)	<b>558</b> (3.0)
United Kingdom	0.09 (0.02)	<b>457</b> (2.8)	486 (3.1)	514 (3.5)	<b>538</b> (3.5)
Singapore*	0.05 (0.01)	<b>487</b> (2.4)	513 (2.7)	543 (3.1)	<b>563</b> (2.5)
Finland	0.03 (0.02)	<b>490</b> (3.4)	523 (3.6)	555 (3.3)	<b>581</b> (2.5)
Korea	0.03 (0.03)	<b>494</b> (5.5)	533 (3.8)	555 (3.0)	<b>578</b> (3.0)
Australia	0.02 (0.01)	<b>466</b> (2.8)	508 (2.6)	535 (2.5)	<b>566</b> (2.8)
OECD average	0.00 (0.00)	<b>451</b> (0.7)	487 (0.6)	512 (0.6)	<b>541</b> (0.6)
Canada	-0.03 (0.01)	<b>490</b> (2.4)	519 (2.4)	540 (2.3)	<b>559</b> (2.1)
<b>New Zealand</b>	<b>-0.04</b> (0.02)	<b>473</b> (3.4)	<b>516</b> (3.6)	<b>543</b> (3.4)	<b>570</b> (3.1)
Hong Kong-China*	-0.20 (0.02)	<b>491</b> (3.6)	532 (3.3)	549 (2.8)	<b>564</b> (2.6)
United States	-0.21 (0.02)	<b>463</b> (3.9)	485 (4.4)	518 (4.7)	<b>544</b> (3.8)

Notes: Standard errors appear in parenthesis.

\* Non-OECD country.

Values that are bolded indicate that the score point difference in mean reading scores is significantly different.

**Figure A1.14: Index of understanding and remembering strategies**



<sup>49</sup> The index of understanding and remembering strategies was derived from students' reports on the usefulness of the following strategies for understanding and memorising the text: A) I concentrate on the parts of the text that are easy to understand; B) I quickly read through the text twice; C) After reading the text, I discuss its content with other people; D) I underline important parts of the text; E) I summarise the text in my own words; and F) I read the text aloud to another person. This index was scored using a rater-scoring system: CDE > ABF. Higher values on this index indicate greater students' perception of usefulness of this strategy.



## Appendix 2

### The PISA 2009 sample

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**In the majority of the 65 countries that participated in PISA 2009, the assessment was administered in schools between 1 March and 31 August 2009.<sup>50</sup> PISA was administered in New Zealand between 21 July and 31 August to 4,643 students from 163 schools.**

A two-stage stratified sampling design was used. First, schools were sampled systematically from a list of every school with the potential to have a 15-year-old enrolled, with probabilities proportional to the number of 15-year-olds in each school.

To ensure a representative sample of New Zealand students, schools were selected based on the following characteristics: size, location (urban or rural), decile and authority (private, state or state-integrated). Eighty-four percent of the schools sampled agreed to participate in PISA; schools with the same characteristics as those that declined were approached, and the proportion then rose to 91%.

Students participating in PISA were selected with equal probability from a list of all eligible students: those aged from 15 years 3 months to 16 years 2 months at the time of the test (born between 1 May 1993 and 30 April 1994). Sixty students were selected from large schools, and up to 30 students from small and medium-sized schools. If a school had fewer than 30 eligible students, all of the students took part.

Special education schools, Māori immersion schools and the Correspondence School were excluded from the school sample.<sup>51</sup> Within the sampled schools, students with an intellectual or physical disability (that would preclude them from performing in a test situation), insufficient English-language experience (less than one year) or who had received most of their instruction in Māori were also eligible for exclusion. If a student was excluded, schools were required to document the exclusion criteria.

To ensure good coverage of the 15-year-old school population within all countries, an overall maximum student exclusion rate of less than 5% was required. New Zealand was below the maximum exclusion rate (4.19%). Of the students eligible to participate, 85% completed the PISA tests (others were absent from school on the relevant date).

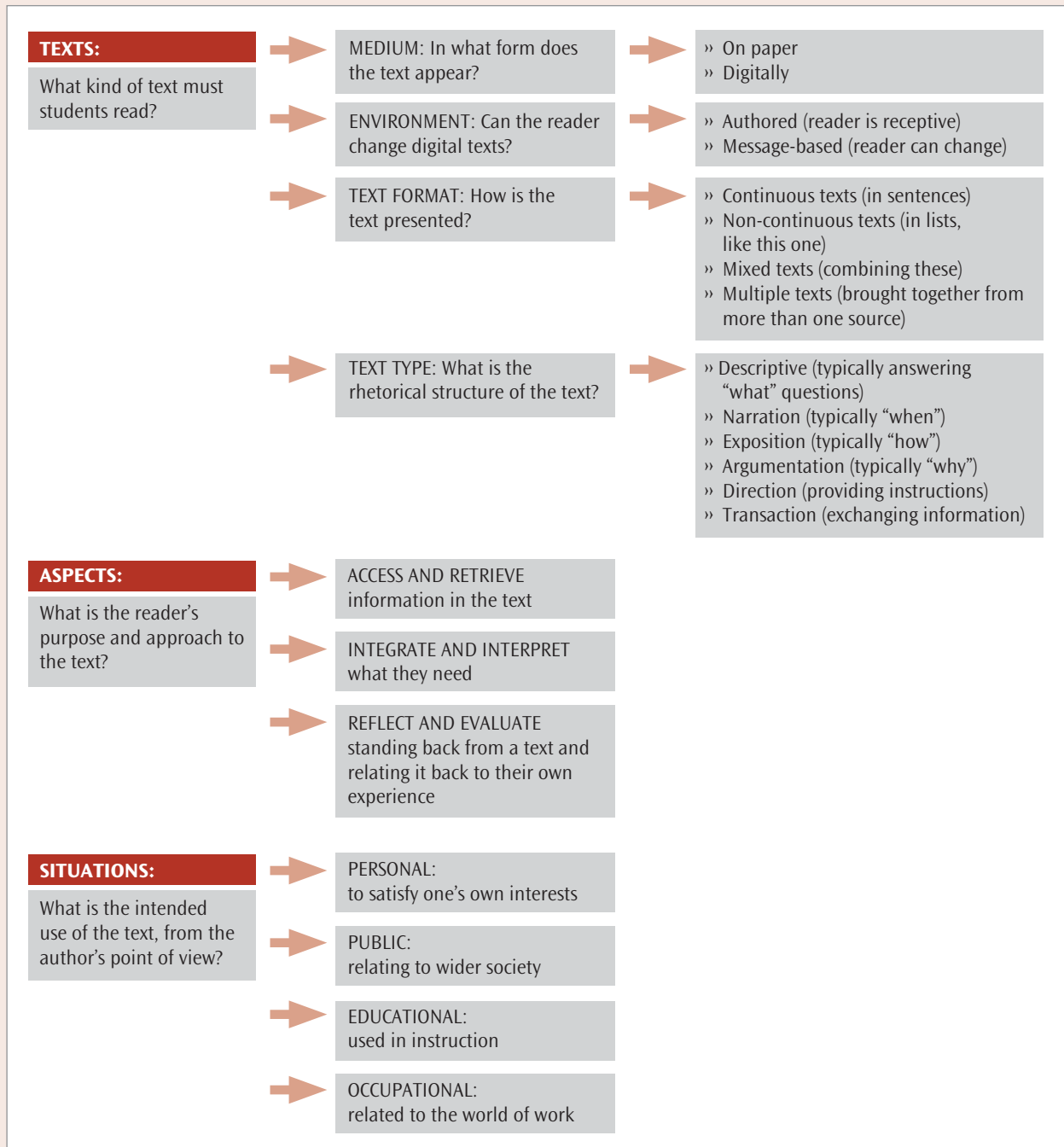
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<sup>50</sup> For detailed information on PISA sampling, see OECD 2012.

<sup>51</sup> All students schooled in the home were eligible for exclusion, including 15-year-olds enrolled in the Correspondence School. Māori immersion schools were eligible for exclusion because PISA was not administered in te reo Māori.

# Appendix 3

## Main features of the PISA reading literacy framework



Source: OECD 2010a, Figure 1.2.7, p. 38.



# Appendix 4

## What proficiency levels measure

Level	Lower score limit	Percentage of students able to perform tasks at this level or above	Characteristics of tasks
6	708	1% of students across the OECD can perform tasks at least at Level 6 on the reading scale  3% of New Zealand students	Tasks at this level typically require the reader to make multiple inferences, comparisons and contrasts that are both detailed and precise. They require demonstration of a full and detailed understanding of one or more texts and may involve integrating information from more than one text. Tasks may require the reader to deal with unfamiliar ideas, in the presence of prominent competing information, and to generate abstract categories for interpretations. Reflect and evaluate tasks may require the reader to hypothesise about or critically evaluate a complex text on an unfamiliar topic, taking into account multiple criteria or perspectives, and applying sophisticated understandings from beyond the text. A salient condition for access and retrieve tasks at this level is precision of analysis and fine attention to detail that is inconspicuous in the texts.
5	626	8% of students across the OECD can perform tasks at least at Level 5 on the reading scale  16% of New Zealand students	Tasks at this level that involve retrieving information require the reader to locate and organise several pieces of deeply embedded information, inferring which information in the text is relevant. Reflective tasks require critical evaluation or hypothesis, drawing on specialised knowledge. Both interpretative and reflective tasks require a full and detailed understanding of a text whose content or form is unfamiliar. For all aspects of reading, tasks at this level typically involve dealing with concepts that are contrary to expectations.
4	553	28% of students across the OECD can perform tasks at least at Level 4 on the reading scale  41% of New Zealand students	Tasks at this level that involve retrieving information require the reader to locate and organise several pieces of embedded information. Some tasks at this level require interpreting the meaning of nuances of language in a section of text by taking into account the text as a whole. Other interpretative tasks require understanding and applying categories in an unfamiliar context. Reflective tasks at this level require readers to use formal or public knowledge to hypothesise about or critically evaluate a text. Readers must demonstrate an accurate understanding of long or complex texts whose content or form may be unfamiliar.
3	480	57% of students across the OECD can perform tasks at least at Level 3 on the reading scale  66% of New Zealand students	Tasks at this level require the reader to locate, and in some cases recognise the relationship between, several pieces of information that must meet multiple conditions. Interpretative tasks at this level require the reader to integrate several parts of a text in order to identify a main idea, understand a relationship or construe the meaning of a word or phrase. They need to take into account many features in comparing, contrasting or categorising. Often the required information is not prominent or there is much competing information; or there are other text obstacles, such as ideas that are contrary to expectation or negatively worded. Reflective tasks at this level may require connections, comparisons, and explanations, or they may require the reader to evaluate a feature of the text. Some reflective tasks require readers to demonstrate a fine understanding of the text in relation to familiar, everyday knowledge. Other tasks do not require detailed text comprehension but require the reader to draw on less common knowledge.
2	407	81% of students across the OECD can perform tasks at least at Level 2 on the reading scale  86% of New Zealand students	Some tasks at this level require the reader to locate one or more pieces of information, which may need to be inferred and may need to meet several conditions. Others require recognising the main idea in a text, understanding relationships, or construing meaning within a limited part of the text when the information is not prominent and the reader must make low level inferences. Tasks at this level may involve comparisons or contrasts based on a single feature in the text. Typical reflective tasks at this level require readers to make a comparison or several connections between the text and outside knowledge, by drawing on personal experience and attitudes.
1a	335	94% of students across the OECD can perform tasks at least at Level 1a on the reading scale  96% of New Zealand students	Tasks at this level require the reader to locate one or more independent pieces of explicitly stated information; to recognise the main theme or author's purpose in a text about a familiar topic, or to make a simple connection between information in the text and common, everyday knowledge. Typically the required information in the text is prominent and there is little, if any, competing information. The reader is explicitly directed to consider relevant factors in the task and in the text.
1b	262	99% of students across the OECD can perform tasks at least at Level 1b on the reading scale  99% of New Zealand students	Tasks at this level require the reader to locate a single piece of explicitly stated information in a prominent position in a short, syntactically simple text with a familiar context and text type, such as a narrative or a simple list. The text typically provides support to the reader, such as repetition of information, pictures or familiar symbols. There is minimal competing information. In tasks requiring interpretation the reader may need to make simple connections between adjacent pieces of information.

# Appendix 5

## Reading proficiency levels, New Zealand girls and boys

Figure A5.1: Proficiency levels, New Zealand 15-year-old boys

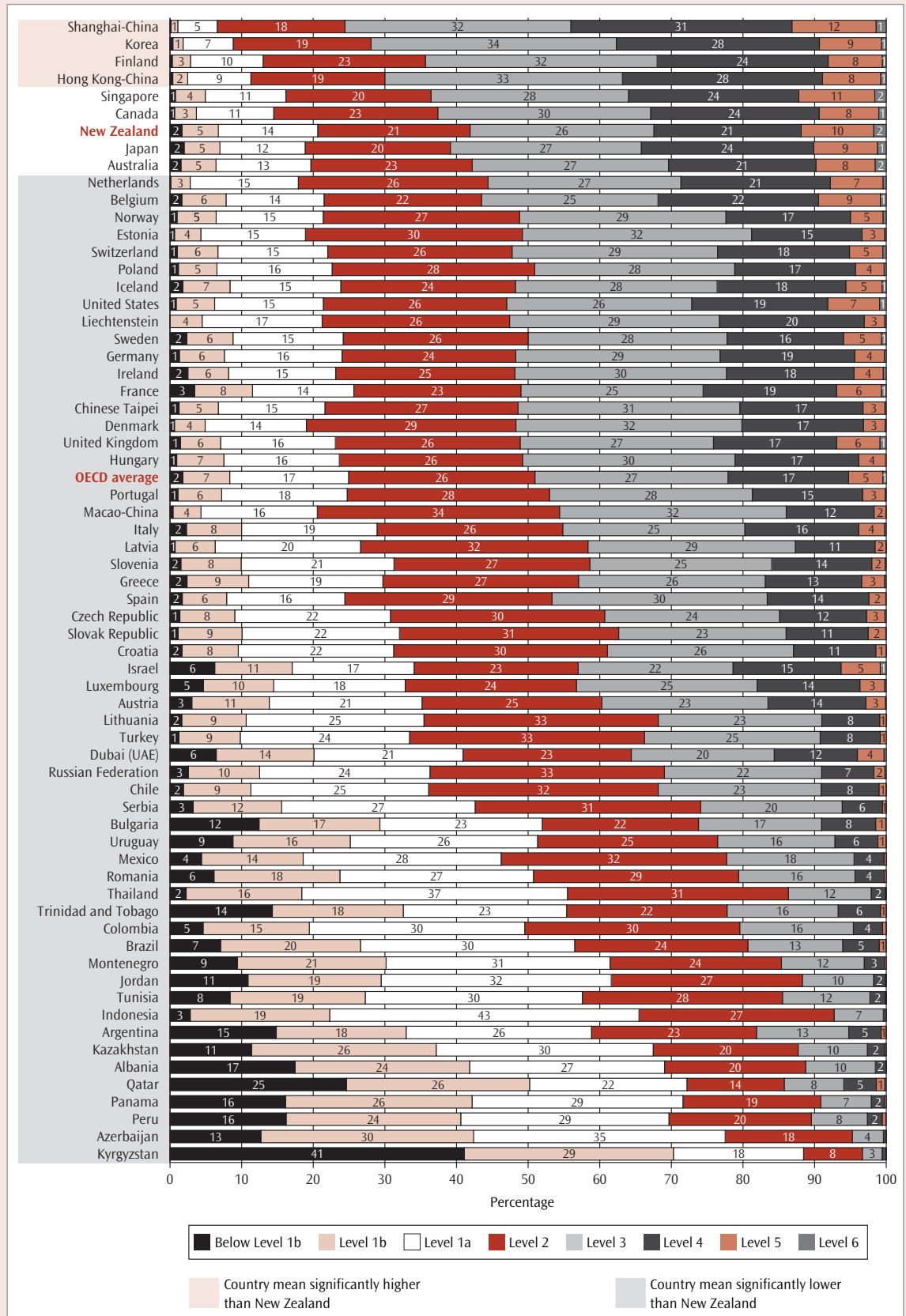
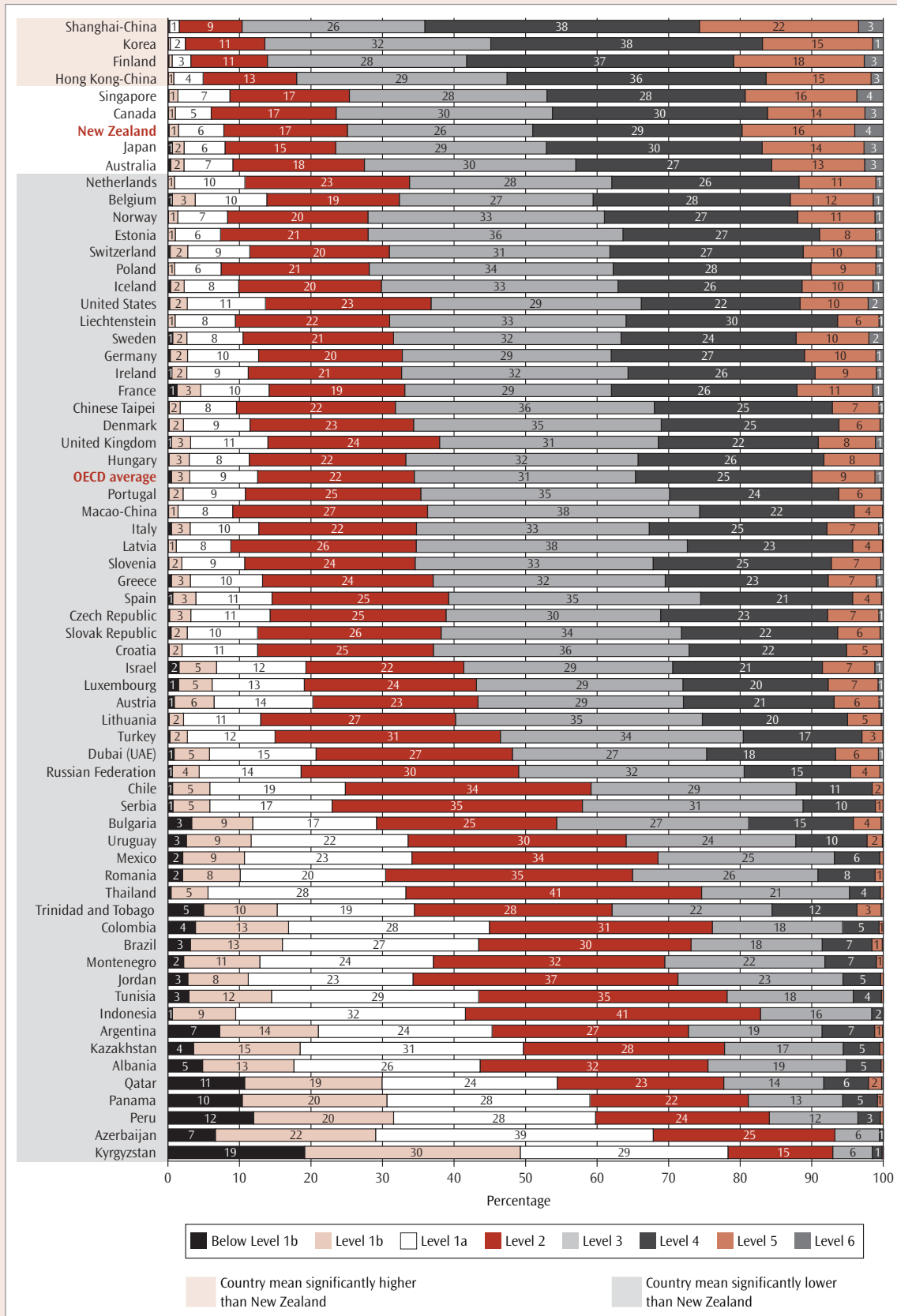




Figure A5.2: Proficiency levels, New Zealand 15-year-old girls



# Appendix 6

## Test booklet design

Students each completed one of the 13 two-hour test booklets. To complete the entire PISA 2009 assessment (all of the questions designed) would require six and a half hours of testing time: 210 minutes for reading (main focus), 90 minutes for science and 90 minutes for mathematics. Only two hours was allowed for the testing sessions, so each test booklet contained four clusters of questions that were rotated in combinations.

This approach has a number of advantages. More questions were used than would have been possible if every student had completed the same booklet, and a representative sample of students responded to each cluster of questions. Also, each cluster appeared in four possible positions in the booklet, which meant it was possible to measure test fatigue (student disengagement with questions placed towards the end of the test).

The assessment included five types of questions: multiple choice, complex multiple choice, and closed-constructed, open-constructed and short-response questions. The questions covered the dimensions of the reading, mathematical and scientific literacy frameworks. Table A6.1 shows the distribution of the PISA reading questions by question type, and the elements of reading covered by the literacy framework.

**Table A6.1: Distribution of questions by the PISA reading literacy framework**

Context	Number of questions	Number of multiple-choice questions	Number of complex multiple-choice questions	Number of closed-constructed response questions	Number of open-constructed response questions	Number of short-response questions
<b>Distribution of reading questions, by format</b>						
Continuous	81	36	6	4	31	4
Non-continuous	38	10	3	7	12	6
Mixed	7	4	1	0	1	0
Multiple	5	0	2	2	1	0
<b>Total</b>	<b>131</b>	<b>50</b>	<b>12</b>	<b>13</b>	<b>45</b>	<b>11</b>
<b>Distribution of reading questions, by reading aspect</b>						
Access and retrieve	31	6	3	9	3	10
Integrate and interpret	67	38	6	4	18	1
Reflect and evaluate	33	8	1	0	24	0
<b>Total</b>	<b>131</b>	<b>52</b>	<b>10</b>	<b>13</b>	<b>45</b>	<b>11</b>
<b>Distribution of science questions, by situation or context</b>						
Personal	37	10	2	5	17	3
Public	35	19	2	2	10	2
Occupational	21	4	3	3	10	1
Educational	38	19	3	3	8	5
<b>Total</b>	<b>131</b>	<b>52</b>	<b>10</b>	<b>13</b>	<b>45</b>	<b>11</b>

Source: OECD 2010a, Table A5.1, pp. 187–188.



When a subject is the main focus of PISA, a large pool of new questions is required. To prepare for this, the PISA Consortium, led by the Australian Council for Educational Research (ACER), established five test development teams in well-known and culturally diverse institutions.<sup>52</sup> In addition, to ensure the test questions were culturally and contextually diverse, participating PISA countries were encouraged to submit questions; 21 countries submitted reading questions for PISA 2009, including New Zealand.<sup>53</sup>

After the questions had undergone further testing and development, countries were invited to review and rate them in terms of their suitability for the PISA assessment.<sup>54</sup> Countries were provided with guidelines and criteria for rating, such as relevance to preparedness for life, the authenticity of the question context and how much interest the question held for 15-year-olds. The reading questions selected to go forward to the main study were evaluated again at the country level and tested by the Consortium using Item Response Theory.

New Zealand also contributed to the review of the test questions. New Zealand's PISA Steering Group members, reading experts, item writers and education sector union representatives attended a workshop in July 2008 to review the PISA reading questions.

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<sup>52</sup> ACER (Australia), CITO (the Netherlands), ILS (University of Oslo, Norway), IPN (University of Kiel, Germany) and NIER (Japan).

<sup>53</sup> New Zealand's contribution was included in the PISA 2009 main study.

<sup>54</sup> For further details on the development and testing phase of the PISA reading questions, see OECD 2010a, p. 187.

# Appendix 7

## PISA sample reading questions, difficulty level, scoring and percentage correct

### THE PLAY'S THE THING

*Takes place in a castle by the beach in Italy.*

#### FIRST ACT

*Ornate guest room in a very nice beachside castle. Doors on the right and left. Sitting room set in the middle of the stage: couch, table, and two armchairs. Large windows at the back. Starry night. It is dark on the stage.*

5 *When the curtain goes up we hear men conversing loudly behind the door on the left.*

10 *The door opens and three tuxedoed gentlemen enter. One turns the light on immediately. They walk to the centre in silence and stand around the table. They sit down together, Gál in the armchair to the left, Turai in the one on the right, Ádám on the couch in the middle.*

15 *Very long, almost awkward silence. Comfortable stretches. Silence. Then:*

#### GÁL

Why are you so deep in thought?

20 **TURAI**

I'm thinking about how difficult it is to begin a play. To introduce all the principal characters in the beginning, when it all starts.

#### ÁDÁM

25 I suppose it must be hard.

#### TURAI

It is – devilishly hard. The play starts. The audience goes quiet. The actors enter the stage and the torment begins. It's an eternity, sometimes as much as a quarter of an hour before the audience finds out who's who and what they are all up to.

30 **GÁL**  
Quite a peculiar brain you've got. Can't you forget your profession for a single minute?

#### TURAI

That cannot be done.

#### GÁL

40 Not half an hour passes without you discussing theatre, actors, plays. There are other things in this world.

#### TURAI

There aren't. I am a dramatist. That is my curse.

45 **GÁL**

You shouldn't become such a slave to your profession.

#### TURAI

If you do not master it, you are its slave. There is no middle ground. Trust me, it's no joke starting a play well. It is one of the toughest problems of stage mechanics. Introducing your characters promptly.

55 Let's look at this scene here, the three of us. Three gentlemen in tuxedos. Say they enter not this room in this lordly castle, but rather a stage, just when a play begins. They would have to chat about a whole lot of uninteresting topics until it came out

60 who we are. Wouldn't it be much easier to start all this by standing up and introducing ourselves? Stands up. Good evening. The three of us are guests in this castle. We have just arrived from the

65 dining room where we had an excellent dinner and drank two bottles of champagne. My name is Sándor TURAI, I'm a playwright, I've been writing plays for thirty years, that's my profession. Full stop.

70 Your turn.

#### GÁL

Stands up. My name is GÁL, I'm also a playwright. I write plays as well, all of them in the company of this gentleman

75 here. We are a famous playwright duo. All playbills of good comedies and operettas read: written by GÁL and TURAI. Naturally, this is my profession as well.

#### GÁL and TURAI

80 *Together.* And this young man ...

#### ÁDÁM

*Stands up.* This young man is, if you allow me, Albert ÁDÁM, twenty-five years old, composer. I wrote the music for these kind

85 gentlemen for their latest operetta. This is my first work for the stage. These two elderly angels have discovered me and now, with their help, I'd like to become famous. They got me invited to this castle. They got my dress-coat and tuxedo made. In other words, I am poor and unknown, for now. Other than that I'm an orphan and my grandmother raised me. My grandmother has passed away. I am all alone in this world. I

95 have no name, I have no money.

#### TURAI

But you are young.

#### GÁL

And gifted.

100 **ÁDÁM**

And I am in love with the soloist.

#### TURAI

You shouldn't have added that. Everyone in the audience would figure that out anyway.

105 *They all sit down.*

#### TURAI

Now wouldn't this be the easiest way to start a play?

#### GÁL

110 If we were allowed to do this, it would be easy to write plays.

#### TURAI

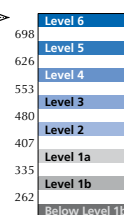
Trust me, it's not that hard. Just think of this whole thing as ...

115 **GÁL**

All right, all right, all right, just don't start talking about the theatre again. I'm fed up with it. We'll talk tomorrow, if you wish.

"The Play's the Thing" is the beginning of a play by the Hungarian dramatist Ferenc Molnár.

Use "The Play's the Thing" on the previous two pages to answer the questions that follow. (Note that line numbers are given in the margin of the script to help you find parts that are referred to in the questions.)

**THE PLAY'S THE THING – QUESTION 3****Situation:** Personal**Text format:** Continuous**Text type:** Narration**Aspect:** Integrate and interpret – Develop an interpretation**Question format:** Short response**Difficulty:** 730 (Level 6)

What were the characters in the play doing **just before** the curtain went up?

.....

**Scoring**

**Full Credit:** Refers to dinner or drinking champagne. May paraphrase or quote the text directly.

- They have just had dinner and champagne.
- “We have just arrived from the dining room where we had an excellent dinner.” [direct quotation]
- “An excellent dinner and drank two bottles of champagne.” [direct quotation]
- Dinner and drinks.
- Dinner.
- Drank champagne.
- Had dinner and drank.
- They were in the dining room.

**Comment**

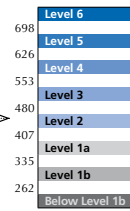
*This task illustrates several features of the most difficult tasks in PISA reading. The text is long by PISA standards, and it may be supposed that the fictional world depicted is remote from the experience of most 15-year-olds. The introduction to the unit tells students that the stimulus of **THE PLAY'S THE THING** is the beginning of a play by the Hungarian dramatist Ferenc Molnár, but there is no other external orientation. The setting (“a castle by the beach in Italy”) is likely to be exotic to many, and the situation is only revealed gradually through the dialogue itself. While individual pieces of vocabulary are not particularly difficult, and the tone is often chatty, the register of the language is a little mannered. Perhaps most importantly a level of unfamiliarity is introduced by the abstract theme of the discussion: a sophisticated conversation between characters about the relationship between life and art, and the challenges of writing for the theatre. The text is classified as narration because this theme is dealt with as part of the play's narrative.*

*While all the tasks in this unit acquire a layer of difficulty associated with the challenges of the text, the cognitive demand of this task in particular is also attributable to the high level of interpretation required to define the meaning of the question's terms, in relation to the text. The reader needs to be alert to the distinction between characters and actors. The question refers to what the characters (not the actors) were doing “just before the curtain went up”. This is potentially confusing since it requires recognition of a shift between the real world of a stage in a theatre, which has a curtain, and the imaginary world of Gal, Turai and Adam, who were in the dining room having dinner just before they entered the guest room (the stage setting). A question that assesses students' capacity to distinguish between real and fictional worlds seems particularly appropriate in relation to a text whose theme is about just that, so that the complexity of the question is aligned with the content of the text.*

*A further level of the task's difficulty is introduced by the fact that the required information is in an unexpected location. The question refers to the action “before the curtain went up”, which would typically lead one to search at the opening of the scene, the beginning of the extract. On the contrary, the information is actually found about half-way through the extract, when Turai reveals that he and his friends “have just arrived from the dining room”. While the scoring for the question shows that several kinds of response are acceptable, to be given full credit readers must demonstrate that they have found this inconspicuous piece of information. The need to assimilate information that is contrary to expectations – where the reader needs to give full attention to the text in defiance of preconceptions – is highly characteristic of the most demanding reading tasks in PISA.*

**Percentage correct: Question 3**

New Zealand	OECD average
Overall 11%	Overall 13%
Boys 11%	Boys 11%
Girls 11%	Girls 16%

**THE PLAY'S THE THING – QUESTION 4****Situation:** Personal**Text format:** Continuous**Text type:** Narration**Aspect:** Integrate and interpret – Develop an interpretation**Question format:** Multiple choice**Difficulty:** 474 (Level 2)

"It's an eternity, sometimes as much as a quarter of an hour ..." (lines 29–30)

According to Turai, why is a quarter of an hour "an eternity"?

- A. It is a long time to expect an audience to sit still in a crowded theatre.
- B. It seems to take forever for the situation to be clarified at the beginning of a play.
- C. It always seems to take a long time for a dramatist to write the beginning of a play.
- D. It seems that time moves slowly when a significant event is happening in a play.

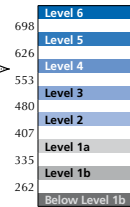
**Scoring**

**Full Credit:** B. It seems to take forever for the situation to be clarified at the beginning of a play.

**Comment**

Near the borderline between Level 2 and Level 3, this question together with the previous one illustrates the fact that questions covering a wide range of difficulties can be based on a single text.

Unlike in the previous task, the stem of this task directs the reader to the relevant section in the play, even quoting the lines, thus relieving the reader of any challenge in figuring out where the necessary information is to be found. Nevertheless, the reader needs to understand the context in which the line is uttered in order to respond successfully. In fact, the implication of "It seems to take forever for the situation to be clarified at the beginning of a play" underpins much of the rest of this extract, which enacts the solution of characters explicitly introducing themselves at the beginning of a play instead of waiting for the action to reveal who they are. Insofar as the utterance that is quoted in the stem prompts most of the rest of this extract, repetition and emphasis support the reader in integrating and interpreting the quotation. In that respect too, this task clearly differs from Question 3, in which the required information is only provided once, and is buried in an unexpected part of the text.

**THE PLAY'S THE THING – QUESTION 7****Situation:** Personal**Text format:** Continuous**Text type:** Narration**Aspect:** Integrate and interpret – Form a broad understanding**Question format:** Multiple choice**Difficulty:** 556 (Level 4)

Overall, what is the dramatist Molnár doing in this extract?

- A. He is showing the way that each character will solve his own problems.
- B. He is making his characters demonstrate what an eternity in a play is like.
- C. He is giving an example of a typical and traditional opening scene for a play.
- D. He is using the characters to act out one of his own creative problems.

**Scoring**

**Full Credit:** D. He is using the characters to act out one of his own creative problems.

**Comment**

In this task the reader is asked to take a global perspective, form a broad understanding by integrating and interpreting the implications of the dialogue across the text. The task involves recognising the conceptual theme of a section of a play, where the theme is literary and abstract. This relatively unfamiliar territory for most 15-year-olds is likely to constitute the difficulty of the task, which is located at Level 4. A little under half of the students in OECD countries gained full credit for this task, with the others divided fairly evenly across the three distractors.

**Percentage correct: Question 4**

<b>New Zealand</b>	<b>OECD average</b>
Overall 68%	Overall 66%
Boys 62%	Boys 60%
Girls 74%	Girls 72%

**Percentage correct: Question 7**

<b>New Zealand</b>	<b>OECD average</b>
Overall 50%	Overall 46%
Boys 46%	Boys 42%
Girls 55%	Girls 51%

### MOBILE PHONE SAFETY

#### Are mobile phones dangerous?

**Key points**

- *Conflicting reports about the health risks of mobile phones appeared in the late 1990s.*
- *Millions of pounds have now been invested in scientific research to investigate the effects of mobile phones.*

Yes	No
1. Radio waves given off by mobile phones can heat up body tissue, having damaging effects.	Radio waves are not powerful enough to cause heat damage to the body.
2. Magnetic fields created by mobile phones can affect the way that your body cells work.	The magnetic fields are incredibly weak, and so unlikely to affect cells in our body.
3. People who make long mobile phone calls sometimes complain of fatigue, headaches, and loss of concentration.	These effects have never been observed under laboratory conditions and may be due to other factors in modern lifestyles.
4. Mobile phone users are 2.5 times more likely to develop cancer in areas of the brain adjacent to their phone ears.	Researchers admit it's unclear this increase is linked to using mobile phones.
5. The International Agency for Research on Cancer found a link between childhood cancer and power lines. Like mobile phones, power lines also emit radiation.	The radiation produced by power lines is a different kind of radiation, with much more energy than that coming from mobile phones.
6. Radio frequency waves similar to those in mobile phones altered the gene expression in nematode worms.	Worms are not humans, so there is no guarantee that our brain cells will react in the same way.

#### If you use a mobile phone ...

**Key points**

- *Given the immense numbers of mobile phone users, even small adverse effects on health could have major public health implications.*
- *In 2000, the Stewart Report (a British report) found no known health problems caused by mobile phones, but advised caution, especially among the young, until more research was carried out. A further report in 2004 backed this up.*

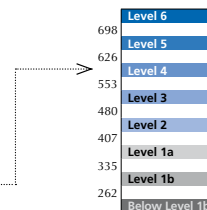
Do	Don't
Keep the calls short.	Don't use your mobile phone when the reception is weak, as the phone needs more power to communicate with the base station, and so the radio-wave emissions are higher.
Carry the mobile phone away from your body when it is on standby.	Don't buy a mobile phone with a high "SAR" value <sup>1</sup> . This means that it emits more radiation.
Buy a mobile phone with a long "talk time". It is more efficient, and has less powerful emissions.	Don't buy protective gadgets unless they have been independently tested.

1. SAR (specific absorption rate) is a measurement of how much electromagnetic radiation is absorbed by body tissue whilst using a mobile phone.

"Mobile Phone Safety" on the previous two pages is from a website.  
Use "Mobile Phone Safety" to answer the questions that follow.

### MOBILE PHONE SAFETY – QUESTION 2

**Situation:** Public  
**Text format:** Non-continuous  
**Text type:** Exposition  
**Aspect:** Integrate and interpret – Form a broad understanding  
**Question format:** Multiple choice  
**Difficulty:** 561 (Level 4)



What is the purpose of the [Key points](#)?

- A. To describe the dangers of using mobile phones.
- B. To suggest that debate about mobile phone safety is ongoing.
- C. To describe the precautions that people who use mobile phones should take.
- D. To suggest that there are no known health problems caused by mobile phones.

**Percentage correct: Question 2**

<b>New Zealand</b>	<b>OECD average</b>
Overall 54%	Overall 46%
Boys 55%	Boys 43%
Girls 52%	Girls 49%

### Scoring

**Full Credit:** To suggest that debate about mobile phone safety is ongoing.

### Comment

Classified as a form a broad understanding task within the integrate and interpret aspect, this task focuses on detecting a theme from the repetition of a particular category of information, in this case the “Key Points”, a series of four boxed snippets ranged down the left hand side of the two-page text. Tasks addressing the broad understanding category are typically fairly easy, as they tend to focus on repeated and often prominent ideas in a text. However, several features of this text and task conspire to make it comparatively difficult, at Level 4. The four short Key Points tell their own story: they are related to but do not summarise the information in the body of the two main tables, so the reader needs to focus on what appears as a peripheral part of the text structure. Moreover, while all of the boxes have the caption “Key Points” the content is diverse in terms of text type, making the task of summary more difficult. The first two Key Points give a brief history of the controversy about mobile phones, the third makes a conditional proposition, and the fourth reports an equivocal finding. The fact that ambiguity, uncertainty and opposing ideas are the content of the Key Points is likely, of itself, to make the task more difficult. Here, identifying the “purpose” (which in this context is equivalent to the main theme) means establishing a hierarchy among ideas presented in the Key Points, and choosing the one that is most general and overarching. Options A and C represent different details of the Key Points, but not a single idea that could be described as overarching. Option D lifts a clause (out of context) from the fourth Key Point. Only option B, selected by 45% of students from across the OECD countries, presents a statement that synthesises the heterogeneous elements of the Key Points.

### MOBILE PHONE SAFETY – QUESTION 11

**Situation:** Public

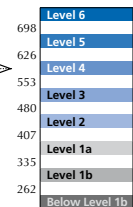
**Text format:** Non-continuous

**Text type:** Exposition

**Aspect:** Reflect and evaluate – Reflect on and evaluate the content of a text

**Question format:** Multiple choice

**Difficulty:** 604 (Level 4)



“It is difficult to prove that one thing has definitely caused another.”

What is the relationship of this piece of information to the Point 4 **Yes** and **No** statements in the table **Are mobile phones dangerous?**

- A. It supports the Yes argument but does not prove it.
- B. It proves the Yes argument.
- C. It supports the No argument but does not prove it.
- D. It shows that the No argument is wrong.

### Scoring

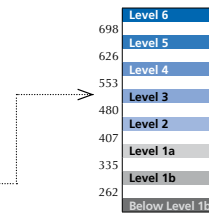
**Full Credit:** C. It supports the No argument but does not prove it.

### Comment

This task requires the reader to recognise the relationship between a generalised statement external to the text and a pair of statements in a table. It is classified as **reflect and evaluate** in terms of aspect because of this external reference point. This is the most difficult task in the **MOBILE PHONE SAFETY** unit, right on the border of Level 4 and Level 5. The degree of difficulty is influenced by a number of factors. First, the stem statement uses abstract terminology (“It is difficult to prove that one thing has definitely caused another”). Secondly – a relatively straightforward part of the task – the reader needs to work out which of the two tables is relevant to this task (the first one) and which point to look at (Point 4). Thirdly, the reader needs to assimilate the structure of the relevant table: namely, that it presents opposing statements in its two columns; as we have already noted, contrary ideas are intrinsically more difficult to deal with than complementary ones. Then, the reader needs to discern precisely how the **NO** statement challenges the **YES** statement in a particular instance. Finally, logical relationship between the **YES** and **NO** statements in Point 4 must be matched, again at an abstracted level, with one of the options presented in the multiple-choice format of the task. With all these challenges intrinsic to the task, it is not surprising therefore that only a little over one-third of students across OECD countries gained credit for it.

#### Percentage correct: Question 11

New Zealand	OECD average
Overall 38%	Overall 36%
Boys 35%	Boys 33%
Girls 41%	Girls 38%

**MOBILE PHONE SAFETY – QUESTION 6****Situation:** Public**Text format:** Non-continuous**Text type:** Exposition**Aspect:** Reflect and evaluate – Reflect on and evaluate the content of a text**Question format:** Open constructed response**Difficulty:** 526 (Level 3)

Look at Point 3 in the No column of the table. In this context, what might one of these “other factors” be? Give a reason for your answer.

.....

**Scoring****Full Credit**

Identifies a factor in modern lifestyles that could be related to fatigue, headaches, or loss of concentration. The explanation may be self-evident, or explicitly stated. For example:

- Not getting enough sleep. If you don't, you will be tired.
- Being too busy. That makes you tired.
- Too much homework, that makes you tired AND gives you headaches.
- Noise – that gives you a headache.
- Stress.
- Working late.
- Exams.
- The world is just too loud.
- People don't take time to relax anymore.
- People don't prioritise the things that matter, so they get grumpy and sick.
- Computers.
- Pollution.
- Watching too much TV.
- Drugs.
- Microwave ovens.
- Too much emailing.

**Comment**

Another task in which the reader needs to reflect on and evaluate the content of a text, this task calls on the ability to relate the text to knowledge external to the text. Readers must give an example from their own experience of a factor in modern life, other than mobile phones, that could explain “fatigue, headaches and loss of concentration”. As in the previous task, one step in completing this task successfully is to locate the relevant information using a number reference (here, “Point 3”). The reader's subsequent steps are less complex than in the previous task, since only the YES part of Point 3 need be taken into account. In addition, the external information that needs to be drawn on is directly related to personal experience, rather than to an abstracted logical statement.

A wide range of responses earn full credit for this task. Full credit is given for producing a factor and providing an explanation as to why this might cause fatigue, headaches and loss of concentration. An example of this kind of response is “Not getting enough sleep. If you don't, you will be fatigued.” Full credit is also given if it is considered that the explanation is implicit in the statement of the factor, in which case no explicit explanation is required. An example of this kind of response is “stress”. On the other hand, a response such as “lifestyle” is judged too vague, without a supporting explanation or elaboration, and so is given no credit.

Towards the top of Level 3, this task was successfully completed by just over half of the students in OECD countries.

**Percentage correct: Question 6**

<b>New Zealand</b>	<b>OECD average</b>
Overall 63%	Overall 55%
Boys 60%	Boys 50%
Girls 66%	Girls 60%

**MOBILE PHONE SAFETY – QUESTION 9****Situation:** Public**Text format:** Non-continuous**Text type:** Exposition**Aspect:** Integrate and interpret – Develop an interpretation**Question format:** Multiple choice**Difficulty:** 488 (Level 3)

698	Level 6
626	Level 5
553	Level 4
480	Level 3
407	Level 2
335	Level 1a
262	Level 1b
	Below Level 1b

Look at the table with the heading **If you use a mobile phone ...**

Which of these ideas is the table based on?

- A. There is no danger involved in using mobile phones.
- B. There is a proven risk involved in using mobile phones.
- C. There may or may not be danger involved in using mobile phones, but it is worth taking precautions.
- D. There may or may not be danger involved in using mobile phones, but they should not be used until we know for sure.
- E. The **Do** instructions are for those who take the threat seriously, and the **Don't** instructions are for everyone else.

**Scoring**

**Full Credit:** C. There may or may not be danger involved in using mobile phones, but it is worth taking precautions.

**Comment**

In this task the reader is explicitly directed to look at the second table, and to recognise its underlying assumption. In fact, the assumption is indicated in the last boxed Key Point: that in the absence of decisive evidence about the danger of mobile phones, it is advisable to take caution. The task asks readers to infer the consequences of this judgment, which can be done by checking that the table's contents are consistent with the Key Point. Alternatively, the reader can consult only the table and draw an independent conclusion from it. Option A is incorrect since it flatly contradicts the substance of the Key Point, and is inconsistent with the import of a set of injunctions that neither embargoes nor gives carte blanche to mobile phone use. Option B is rather more plausible, but the word "proven" makes it wrong in light of the information in the Key Point that no known health problems caused by mobile phones were found in the two studies that were cited. Option C presents itself as the best answer, consistent with both the Key Point and all the detail of the DO and DON'T columns. Option D can be dismissed as nothing more than the heading of a table that reads: "If you use a mobile phone ...", and option E sets up a specious opposition that has no support in the text. Just under two-thirds of students selected the correct response, making it the easiest of the four tasks related to this challenging stimulus.

**Percentage correct: Question 9**

New Zealand	OECD average
Overall 74%	Overall 63%
Boys 69%	Boys 59%
Girls 78%	Girls 68%

## TELECOMMUTING

### The way of the future

Just imagine how wonderful it would be to “telecommute”<sup>1</sup> to work on the electronic highway, with all your work done on a computer or by phone! No longer would you have to jam your body into crowded buses or trains or waste hours and hours travelling to and from work. You could work wherever you want to – just think of all the job opportunities this would open up!

*Molly*

### Disaster in the making

Cutting down on commuting hours and reducing the energy consumption involved is obviously a good idea. But such a goal should be accomplished by improving public transportation or by ensuring that workplaces are located near where people live. The ambitious idea that telecommuting should be part of everyone’s way of life will only lead people to become more and more self-absorbed. Do we really want our sense of being part of a community to deteriorate even further?

*Richard*

1. “Telecommuting” is a term coined by Jack Nilles in the early 1970s to describe a situation in which workers work on a computer away from a central office (for example, at home) and transmit data and documents to the central office via telephone lines.

Use “Telecommuting” above to answer the questions that follow.

### TELECOMMUTING – QUESTION 1

**Situation:** Occupational

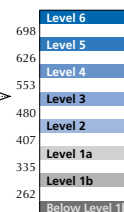
**Text format:** Multiple

**Text type:** Argumentation

**Aspect:** Integrate and interpret – Form a broad understanding

**Question format:** Multiple choice

**Difficulty:** 537 (Level 3)



What is the relationship between “The way of the future” and “Disaster in the making”?

- A. They use different arguments to reach the same general conclusion.
- B. They are written in the same style but they are about completely different topics.
- C. They express the same general point of view, but arrive at different conclusions.
- D. They express opposing points of view on the same topic.

#### Scoring

**Full Credit:** D. They express opposing points of view on the same topic.

#### Comment

The stimulus for the unit TELECOMMUTING is two short texts that offer contrasting opinions on telecommuting, defined in a footnote to the text as “working on a computer away from a central office”. The only addition to the originally submitted text that was made by PISA test developers was this footnote. It was assumed that the term “telecommuting” would be unfamiliar to most 15-year-olds. The footnote was included in order to avoid giving an advantage to students whose language would allow them to unpack the meaning of this compound word. For example, students tested in English may have been able to infer the meaning of the word by combining the meaning of “tele” (distant) and “commute”. By contrast, some countries in which English is not the testing language used the English term or a transliteration, which would not provide the same clues to the meaning.

#### Percentage correct: Question 1

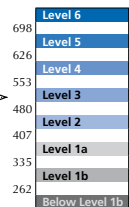
New Zealand	OECD average
Overall 66%	Overall 52%
Boys 63%	Boys 49%
Girls 68%	Girls 55%

The purpose of each of the short texts in the stimulus is to persuade readers to a point of view, so the stimulus is classified as **argumentation**. Given that the purpose of the stimulus material is to discuss an issue related to working life, the text is classified as occupational in terms of situation. The two pieces that make up the stimulus are both continuous, but because they were generated independently and juxtaposed for the purpose of the assessment, the text format classification of this text is **multiple**.

This question requires students to recognise the relationship between the two short texts. To answer correctly, students must first form a global understanding of each of the short texts, and then identify the relationship between them: that is, that they express contrasting points of view on the same topic. A factor contributing to the difficulty of this question is the level of interpretation required to identify the position that is expressed in each text. In the first text the author's position is signalled clearly early in the text ("Just imagine how wonderful it would be to 'telecommute' to work ...") and reinforced throughout. In contrast the second piece contains no direct statement of the author's own position: instead, it is written as a series of responses to arguments that the author opposes, so understanding the position of the second author requires a greater level of interpretation than understanding the position of the first author. Once the work of interpreting the position of each author has been done, recognising that the positions are contrasting is relatively straightforward. The weakest students chose option B. These students fail to recognise that the two texts are about the same topic. Students who chose options A and C recognise that the two texts are about the same topic, but fail to identify that they express contrasting views. At Level 3, just over one-half of the students in OECD countries gained credit for this question.

**TELECOMMUTING – QUESTION 7**

**Situation:** Occupational  
**Text format:** Continuous  
**Text type:** Argumentation  
**Aspect:** Reflect and evaluate – Reflect on and evaluate the content of a text  
**Question format:** Open constructed response  
**Difficulty:** 514 (Level 3)



What is one kind of work for which it would be difficult to telecommute? Give a reason for your answer.

.....

.....

.....

.....

**Scoring**

**QUESTION INTENT:**

- Reflect and evaluate: Reflect on and evaluate the content of a text
- Use prior knowledge to generate an example that fits a category described in a text

**Full Credit:** Identifies a kind of work and gives a plausible explanation as to why a person who does that kind of work could not telecommute. Responses MUST indicate (explicitly or implicitly) that it is necessary to be physically present for the specific work.

- Building. It's hard to work with the wood and bricks from just anywhere.
- Sports person. You need to really be there to play the sport.
- Plumber. You can't fix someone else's sink from your home!
- Digging ditches because you need to be there.
- Nursing – it's hard to check if patients are ok over the Internet.

<b>Percentage correct: Question 7</b>	
<b>New Zealand</b>	<b>OECD average</b>
Overall 63%	Overall 55%
Boys 60%	Boys 54%
Girls 66%	Girls 59%

### **Comment**

*This question requires students to generate an example (a profession) that fits a given category. The textual information required for this question is found in the footnote definition of telecommuting. Therefore, although the stimulus is comprised of multiple texts, this question is classified as **continuous** in terms of text format because it only refers to one text element.*

*To provide an example of a job in which telecommuting would be difficult, students must link their comprehension of the text (the definition of telecommuting) with outside knowledge, since no specific profession is mentioned in the text. This question is therefore classified as **reflect and evaluate**, with the sub-category **reflect on and evaluate the content of a text**.*

*In order to gain credit for this question, students needed to give an example and to justify why their example fitted the given category, and the explanation needed to refer either explicitly or implicitly to the fact that the worker would need to be physically present in order to perform their job. Although the range of responses eligible for full credit was very wide, many students failed to gain credit because they did not provide an explanation at all, or they gave an explanation that did not show that they understood that the job they listed would require the worker's physical presence. An example of the latter is, "Digging ditches because it would be hard work." Compare this with the credited response, "Digging ditches because you need to be there."*

*Nearly 60% of students gained full credit for this question.*

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### **Example of a digital reading task**

One task from the PISA 2009 assessment of reading of digital texts, comprising four items, is reproduced in this section. Screen shots are used to illustrate parts of the stimulus relevant to each question. The digital version of this unit and other released tasks are available at [www.pisa.oecd.org](http://www.pisa.oecd.org).

*Source: The Play's The Thing, OECD 2010b, Figure 1.2.45, pp. 107-109.*

*Mobile Phone Safety, OECD 2010b, Figure 1.2.41, pp. 94-97.*

*Telecommuting, OECD 2010b, Figure 1.2.46, pp. 110-112.*

# Appendix 8

## Quality assurance

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To ensure the PISA data are of high quality and fit for purpose, particularly with respect to international comparability, strict technical standards are implemented along with comprehensive quality assurance procedures. These procedures are established through international standardised operational manuals, such as the *National Project Manager's Manual*, the *School Sampling Preparation Manual*, the *Data Management Manual* and the *Test Administrators' Manual* (including a standardised script for the administration of the testing session in schools).

National centres were required to record specific project information on a series of forms relating to procedures such as sampling, translation, modifications to test questions, administration of the PISA tests and data management. These had to be submitted to the PISA Consortium for approval prior to verification. For example, a series of sampling forms was provided to Westat (the international centre responsible for the sample) to ensure the sample population was covered, sampling procedures were adhered to, and school and student response rates were met.

In each PISA country, a PISA quality monitor (PQM) was employed by the Consortium to observe test administrations in a sample of seven schools. New Zealand's national centre also conducted quality monitoring of the testing sessions in schools.

To ensure the reliability of the marking of student responses to open-ended test questions, 100 of each of the 13 test booklets were blind marked independently by four markers. The data collected were entered into software specially designed for PISA, which facilitated data entry and data cleaning, and also detected common errors during data entry.

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### Further information

New Zealand's PISA 2009 web page is at [www.educationcounts.govt.nz/goto/pisa](http://www.educationcounts.govt.nz/goto/pisa). The OECD's PISA 2009 international reports can be accessed from the OECD PISA website ([www.pisa.oecd.org](http://www.pisa.oecd.org)). An interactive data selection facility, which allows selected analyses of international contextual information and student performance, is also available from this site, along with the international versions of the student, school and parent questionnaires. Some of the reading, mathematics and science questions asked in PISA that are no longer used are also available.

PISA was administered in New Zealand again during July and August 2012. The PISA 2012 results will be published by the OECD in December 2013.

# Definitions and technical notes

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## Mean

Student performances in PISA are reported using means (a type of average) for groupings of students. In general, the mean of a set of scores is the sum of the scores divided by the number of scores and it is often referred to as 'the average'. Note that for PISA, as with other large-scale studies, the means for a country are adjusted slightly (in technical terms 'weighted') to reflect the total population of 15-year-olds rather than just the sample.

## Minimum group size for reporting achievement data

In this report, student achievement data are not reported where the group size is less than 30 students.

## OECD average or mean

The OECD average, sometimes referred to as the OECD mean, includes only the OECD countries: no non-OECD (partner) countries are included in this average. The OECD average is the average of the means for the OECD countries. An OECD average score of 493 points was constructed for *reading literacy* overall, with about two-thirds of students across OECD countries scoring between 400 and 600 points.

## Proficiency levels

PISA developed proficiency levels to describe the range in literacy across 15-year-old students. The proficiency levels describe the competencies of students achieving at that level and are anchored at certain score points on the achievement scale. Note that students were considered to be proficient at a particular level if, on the basis of their overall performance, they could be expected to answer at least half of the items in that level correctly. Typically, students who were proficient at higher levels had also demonstrated their abilities and knowledge at lower levels. Proficiency levels in reading are described in greater detail in Appendix 4.

## Scale score points

The design of PISA allows for a large number of questions to be used in reading, mathematics and science, but each student answers only a proportion of these questions. PISA employs techniques to enable population estimates of achievement to be produced for each country even though a sample of students responded to differing selections of questions. These techniques result in scaled scores which are on a scale with a mean of 500 and a standard deviation of 100. When a literacy area is the main focus of a cycle the OECD mean is set at 500, against which performance has since been measured. For example, the overall *reading literacy scale* was set at 500 in 2000 when reading was the main focus, and when reading was a main domain again in 2009 the OECD mean score was 493. Other reading scales may differ slightly from this value.

## Standard error

Because of the technical nature of PISA, the calculation of statistics such as means and proportions has some uncertainty due to (i) generalising from the sample to the total 15-year-old school population, and (ii) inferring each student's proficiency from their performance on a subset of items. The standard errors (usually given in brackets) provide a measure of this uncertainty. In general, we can be 95% confident that the true population value lies within an interval 1.96 standard errors either side of the given statistic.

## Statistically significant

In order to determine whether a difference between two means is actual, it is usual to undertake tests of significance. These tests take into account the means and the error associated with them. If a result is reported as not being statistically significant, then although the means might be slightly different, we do not have sufficient evidence to infer that they are different. All tests of statistical significance referred to in this report are at the 95% confidence level.

## List of countries and economies participating in PISA 2009

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

\* non-OECD countries and economies

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