

READING LITERACY IN NEW ZEALAND

An overview of New Zealand's
results from the Progress in
International Reading Literacy Study
(PIRLS) 2005/2006

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MINISTRY OF EDUCATION

Te Tāhuhu o te Mātauranga





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Summary

In 2005/2006, New Zealand and 39 other countries took part in the IEA's¹ second cycle of the Progress in International Reading Literacy Study (PIRLS) 2005/2006, or PIRLS-05/06.² Five Canadian provinces also took part as benchmarking participants. The study was administered in New Zealand and two other Southern Hemisphere countries in late 2005 and in the Northern Hemisphere countries and the provinces during early 2006.

New Zealand, along with 26 other participating countries, had also taken part in the first study in 2001, hereafter referred to as PIRLS-01.

PIRLS involves New Zealand's Year 5 students. This report presents an overview of the findings for New Zealand students in an international context for 2005/2006, with a focus on any changes since 2001.

Key achievement results for New Zealand Year 5 students in an international context

- The mean reading score for New Zealand students (532) was significantly higher than the international PIRLS scale mean (500).³
- There was no significant change in New Zealand students' mean achievement in reading from 2001 to 2005/2006.
- While New Zealand girls and boys achieved relatively well internationally, there was no significant change in either girls' or boys' mean reading achievement.
- As was the case in 2001, New Zealand had one of the largest gender differences favouring girls to be observed internationally.
- Among New Zealand Year 5 students, there was a relatively large group who demonstrated that they were good readers. This was highlighted in two ways:
 - the *value* of the 75th percentile (592) this being the point where 25 percent of Year 5 students achieved a higher score; and
 - Year 5 students who achieved a score at or above the PIRLS higher international benchmarks.
- Relative to other higher-performing countries there was a notable-sized group of New Zealand Year 5 students who showed that they were somewhat weaker readers. This was highlighted in two ways
 - the *value* of the 25th percentile (478) this being the point where 25 percent of Year 5 students achieved a lower score; and
 - Year 5 students who did not reach the PIRLS mid-range and low international benchmarks.
- There were no significant changes in the mean performance in the two reading purposes. However, in 2005/2006, New Zealand Year 5 students were found to have a slight but significant advantage when *reading for informational purposes* than when *reading for literary purposes*. The opposite was observed in 2001.
- New Zealand Year 5 students' performance was relatively better when *interpreting, integrating and evaluating* reading texts than when *retrieving information and doing straightforward inferencing*. There was no change from 2001 to 2005/2006.

¹ International Association for the Evaluation of Educational Achievement (IEA).

² Internationally, this cycle is referred to as *PIRLS 2006*. In this report it is referred to as PIRLS-05/06 to acknowledge the timing the study was administered in Southern Hemisphere countries.

³ Statistically significant at the 5% level. For details, see the Technical Notes at the end of this report.

SECTION I:

BACKGROUND



This first section presents a brief overview of the background to the second cycle of the Progress in International Reading Literacy Study (PIRLS). It includes details of the countries that took part, the education level of the students involved, and information on the types of reading texts included in the students' reading literacy assessment.

PIRLS-05/06 was the second of a cycle of international assessments designed to measure trends in reading literacy achievement at the middle primary level.

PIRLS-05/06 was administered in 40 countries during 2005 and 2006.

Overview of PIRLS

PIRLS-05/06 was the second in an international 5-yearly cycle⁴ of assessments designed to measure trends in reading literacy achievement at the middle primary level (Year 5 students in New Zealand). In addition to providing information on student achievement, it also examines the home, class, and school contexts for reading.

In PIRLS, reading literacy is defined as:

The ability to understand and use those written language forms required by society and/or valued by the individual. Young readers can construct meaning from a variety of texts. They read to learn, to participate in communities of readers in school and everyday life, and for enjoyment. (Mullis, Kennedy, Martin, & Sainsbury, 2006, p.3)

As was the case in PIRLS-01, the framework for PIRLS-05/06 describes three aspects of reading literacy: processes of comprehension, purposes of reading, and reading behaviours and attitudes.

The first two aspects were used to shape the reading assessment in PIRLS-05/06. The aspect relating to reading behaviour and attitudes was addressed in a student questionnaire. In addition, information about the home and school context for reading was gathered through questionnaires for the students' parents, teachers, and school principals, as well as within the student questionnaire.

Countries and education systems involved in the studies

Forty countries and education systems participated in PIRLS-05/06; 26 had also taken part in the first cycle in 2001 (see Table 1.1).

Five Canadian provinces, accounting for 88 percent of Canada's population, also took part as benchmark participants; two of these provinces had also taken part in 2001.

Table 1.1: Countries and Canadian provinces participating in PIRLS-05/06

Austria	* Hong Kong SAR [†]	Luxembourg	* Russian Federation
Belgium (Flemish)	* Hungary	* Macedonia, Rep. of	* Scotland
Belgium (French)	* Iceland	* Moldova, Rep. of	* Singapore
* Bulgaria	Indonesia	* Morocco	* Slovak Republic
Chinese Taipei	* Iran, Islamic Rep. of	* Netherlands, the	* Slovenia
Denmark	* Israel	* New Zealand	South Africa
* England	* Italy	* Norway	Spain
* France	Kuwait	Poland	* Sweden
Georgia	* Latvia	Qatar	Trinidad and Tobago
* Germany	* Lithuania	* Romania	* United States
^cCanadian provinces			
Alberta	Nova Scotia	* Quebec	
British Columbia	* Ontario		

Notes

* These countries and provinces participated in PIRLS-01. Kuwait participated in 2001 but its data are not comparable with 2005/2006.

[†] The Hong Kong Special Administrative Region.

^c The Canadian provinces took part in PIRLS-01 and PIRLS-05/06 as benchmarking participants.

⁴ PIRLS was first in 2001. PIRLS then moved from being on a 4 to a 5-year cycle. The majority of countries and all Northern Hemisphere countries administered PIRLS in early 2006, but Southern Hemisphere countries administered PIRLS in late 2005, 4 years after the first cycle. The 3rd cycle, PIRLS-10/11, will be a 5-year cycle for all countries.

New Zealand students and schools involved in the studies

In New Zealand, nearly 6,300 Year 5 students from 243 schools took part in the main survey of PIRLS-05/06 at the end of 2005. A group of about 1,320 Year 6 students from 40 schools had also taken part in the field trial administered early in 2005.⁵ Refer to Appendix A for a summary of the sampling design and participation rates for New Zealand.

In New Zealand, 7,500 students from 280 schools were involved in the key phases of PIRLS-05/06.

PIRLS-05/06 involved New Zealand's Year 5 students.

Age and years of schooling

The target class level for PIRLS-05/06 was set to be the fourth year of schooling, ('Grade 4') counting from the first year of ISCED Level 1.⁶ Grade 4 was chosen as it is regarded as an important transition point in children's reading development; most would have learned to read and now reading to learn. In New Zealand the fourth year equates to Year 4. Countries took the class level which represented the fifth year of schooling, if the *estimated* average age of the students was younger than 9.5 years. This was the case for New Zealand and other countries where students start school at 5 years of age.

To ensure the right New Zealand students were selected, the definition was refined further. Specifically, the definition was *Year 5 students*, or those students who would enter secondary school (Year 9) in 2009.

Language of assessment

Countries assessed their students according to the language or languages of instruction. Ten countries and the five Canadian provinces assessed in more than one language in order to cover their whole (Grade 4) student population. New Zealand assessed in Māori and English. South Africa (11) and Spain (5) and were the only two countries to test in more than two languages. Table A.1 in Appendix A shows these countries (and provinces) with the languages in which their students were assessed.

Assessment format

The reading purposes and comprehension processes were assessed using a total of 10 different passages: five literary passages and five informational passages.

Box 1.1: Literary texts versus informational texts

Literary texts	Informational texts
The five literary texts were complete short stories or episodes, which were accompanied by supportive illustrations. The stories covered a variety of settings, with each story having two main characters and a plot with one or two central events.	The five informational texts covered a variety of content including scientific, biographical, and procedural material. The texts were structured sequentially or by topic. As well as prose, each text included organisational and presentational features such as diagrams, photographs, and text boxes.

The passages averaged 760 words in length, with a range of 495 to 872 words. Four of the 10 passages and accompanying questions had been retained from PIRLS-01 to enable trends in achievement to be measured. In PIRLS-05/06 students were assigned one of 13 booklets, each with two passages: one literary text and one informational text; two literary texts; or two informational texts. Each passage was accompanied by a set of questions (about 12), with about half in multiple-choice format and half in constructed-response format. Each passage (and questions) took 40 minutes to complete. Details of the development and design are described in the *PIRLS 2006 technical report* edited by Martin, Mullis, and Kennedy (2007).

⁵ Because the field trial was undertaken in April/May 2005, this being towards the end of the school year in Northern Hemisphere countries, the trial was conducted with Grade 4 students. Due to it being near the beginning of the school year in Southern Hemisphere countries, these countries conducted the field trial with students in one grade higher. In New Zealand's case this was the Year 6 cohort.

⁶ Level 1 corresponds to primary education or the first stage of basic education.

Other sources of information

To assist with the interpretation of the students' assessment data, information was sought from a number of sources using questionnaires. The PIRLS-05/06 framework was used as the basis for developing the questions for the questionnaires. The questionnaires were then given to:

- students and their parents/caregivers
- teachers who taught reading to the students
- principals of the schools the students attended.

Information was also sought from each country about its reading curriculum. A selection of the information collected from these various sources is presented in this report.

To complement the quantitative nature of the approach and presentation of the information collected in PIRLS-05/06, each country (and benchmarking province) contributed an article outlining the policy context for reading in their country. These articles are published in the *PIRLS 2006 encyclopedia* (Kennedy, Mullis, Martin, & Trong, 2007) available at www.pirls.org.

Technical information

For details on some of the technical aspects pertaining to the reporting of the information in this report, readers are referred to the Technical Notes at the end of this report. A much more detailed account of the procedures on, for example, the sampling design, calculation of countries' sampling weights, assessment item analysis and review, the (IRT) scaling methodology, and the estimation of sampling errors, used in PIRLS-05/06 readers are described in the *PIRLS 2006 technical report* (Martin, et al., 2007).

SECTION 2: STUDENT RESULTS



Section 2 looks at the reading achievement results for New Zealand's Year 5 students in an international context. The overall results are described first, followed by the details of their performance in the two reading purpose domains. To enhance the achievement reporting, PIRLS-05/06 also reports achievement for the processes of reading comprehension, as well as descriptions of the reading skills and strategies demonstrated by middle-primary students.

The mean reading score for New Zealand Year 5 students in 2005/2006 was significantly higher than the PIRLS international reading mean.

Reading literacy achievement in 2005/2006

Figure 2.1 shows the reading mean for New Zealand Year 5 students was 532 scale score points.⁷ This was significantly higher than the PIRLS scale mean of 500.⁸ Of the 40 countries that took part in PIRLS-05/06, the means for 27 countries, including New Zealand, England, Scotland, and the United States, were significantly higher than the PIRLS scale mean. The means for the five Canadian provinces were also significantly above the PIRLS scale mean.⁹

New Zealand students' mean performance was significantly higher than that of students from 19 countries, including Belgium (French), France, Norway, and Spain. It was not significantly different from the means for three countries: Chinese Taipei, Scotland, and the Slovak Republic. Finally, the New Zealand mean was significantly lower than the means for 17 countries, including two Asian countries (Hong Kong SAR and Singapore), and 11 OECD countries,¹⁰ including England,¹¹ Sweden, the Netherlands, and the United States.

The means of four Canadian provinces – Alberta, British Columbia, Ontario, and Nova Scotia – were significantly higher than the mean for New Zealand. The mean for Quebec was not significantly different from the New Zealand mean.¹²

To assist readers with understanding the economic and educational context of participating countries, Figure 2.1 includes the value of each country's Human Development Index provided by the United Nations Development Programme. The index ranges from 0 to 1. Countries with high values on the index have long life expectancy, high levels of participation in education and adult literacy, and a good standard of living as measured by Gross National Product per capita. The majority of countries that scored above the PIRLS scale mean also had index values greater than 0.9 including New Zealand (0.936).

Two of the low-performing countries had the lowest values on the index (approximately 0.64 and 0.653). There were, however, some higher-performing countries with values on the index which ranged from about 0.797 (Russian Federation) to 0.869 (Hungary).

Figure 2.1 also shows the number of years of schooling and the mean age of the students assessed in PIRLS-05/06. Overall, the relationship between the average age of students and countries' mean achievement was variable. In some countries (and provinces), younger students had higher mean achievements than countries with older students, and vice versa. For example, students in some higher-performing countries such as the Russian Federation and Sweden tended to be, on average, older than New Zealand students, while in Hong Kong SAR and Italy it was not the case. Luxembourg students were typically the oldest. Luxembourg made the decision to assess their Grade 5 students (equivalent to New Zealand Year 6) because of concerns about the students' preparedness for taking an assessment in German, one of their two instructional languages (i.e., French and German), given that it is not their home language (Luxembourgish). Students in three of the Canadian provinces were, on average, slightly younger than many of their international counterparts.

Although the mean age of students in New Zealand, England, Scotland, and Trinidad and Tobago was about 10 years, because of the school starting age of 5 years they had also received at least one more year of schooling than many of their international counterparts, who had started school at age 6 or 7. Figure A.1 (Appendix A) shows a plot of the mean age and mean reading achievement scores for each country and province in PIRLS-05/06.

⁷ Item Response Theory (IRT) is used to summarise the reading achievement results on a scale with a mean of 500 and a standard deviation of 100. For further details, please refer to the Technical Notes at the end of this report or the PIRLS 2006 technical report (Martin, et al., 2007).

⁸ The use of 'significant' hereafter is to be understood in terms of statistical significance (5% level).

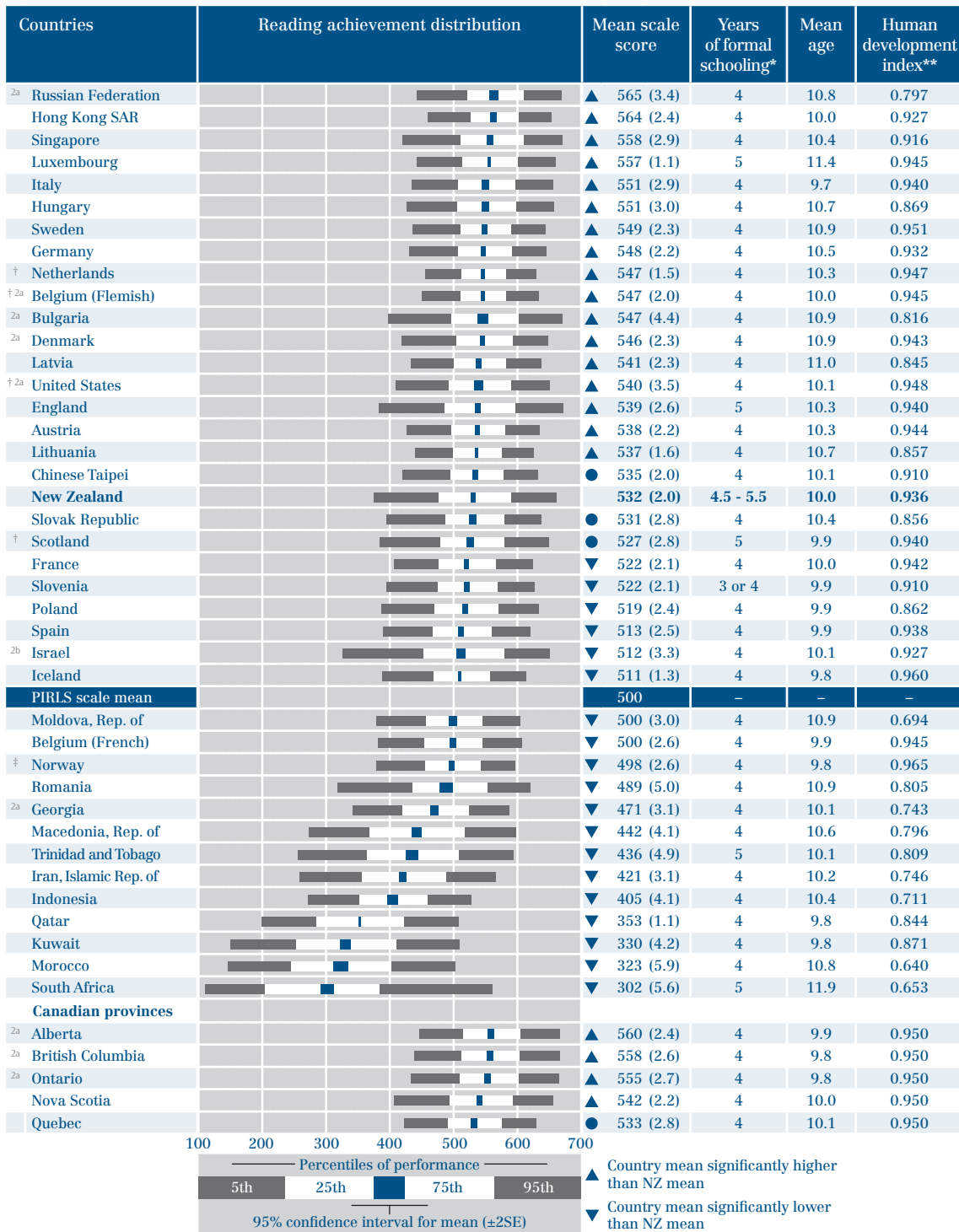
⁹ The mean scores for three countries – Moldova, Belgium (French), and Norway – were not significantly different from the PIRLS scale mean. The means for 10 countries, including Georgia, Trinidad and Tobago, and South Africa, were significantly below the PIRLS scale mean.

¹⁰ Belgium's Flemish community is included in this count of OECD countries. Belgium is a member country of the OECD. The Flemish and French communities have separate membership of the IEA.

¹¹ The United Kingdom, comprising England, Northern Ireland, Scotland, and Wales, is a member country of the OECD. England and Scotland have separate membership of the IEA.

¹² The Canadian provinces took part as benchmarking participants. Unless specified, their data were not used in the calculation of international means. However, reference to the results for the provinces is often referred to because of interest or relevance to readers.

Figure 2.1: Distribution of countries' reading achievement in PIRLS-05/06



Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent. The Canadian provinces took part in PIRLS-05/06 as benchmarking participants.

* Represents years of schooling counting from the first year of ISCED Level 1.

** Taken from United Nations Development Programme's Human Development Report 2006, p. 283-286, except for Chinese Taipei taken from Directorate General of Budget, Accounting and Statistics, Executive Yuan, R.O.C. Statistical Yearbook 2005. Data for the Belgium (Flemish) and Belgium (French) communities are for the entire country of Belgium. Data for England and Scotland are for the United Kingdom.

† Met guidelines for sample participation rates only after replacement schools were included.

‡ Nearly satisfying guidelines for sample participation rates after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

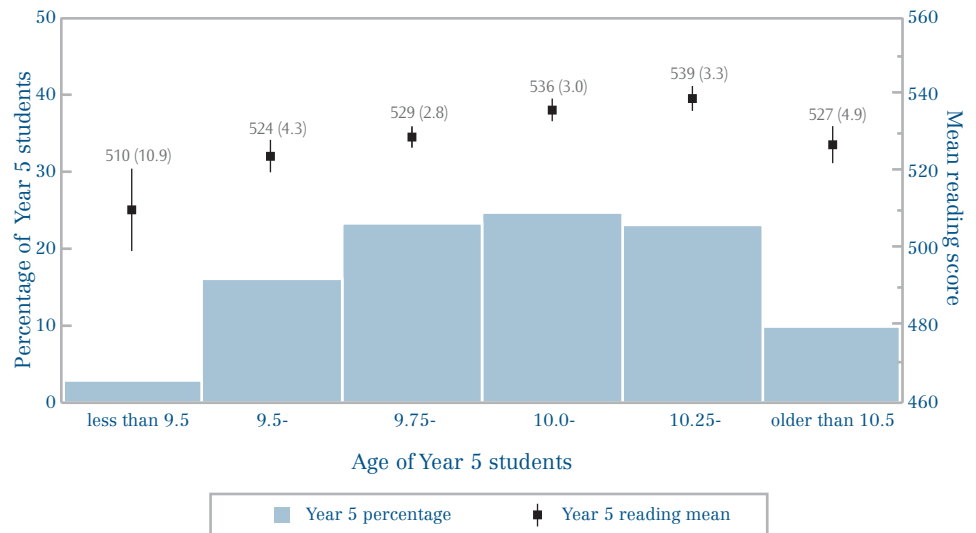
^{2b} National Defined Population covers less than 80% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. Adapted from Exhibits 1.1 and 1.2 in Mullis, Martin, Kennedy, & Foy, 2007.

Age distribution of New Zealand students

Just under three-quarters (71%) of New Zealand Year 5 students' ages were in the range of 9.75 years to 10.5 years.¹³ Figure 2.2 shows the relationship between Year 5 students' reading achievement and their age. The mean achievement of the group of students who were less than 9.5 years was higher than the PIRLS scale mean of 500. The highest mean achievement was observed for about 50 percent of Year 5 students across the 10-10.25 (536 scale score points) and the 10.25-10.5 bands (539).

Figure 2.2: New Zealand Year 5 students' mean reading achievement in 2005/2006, by age



Notes

The data points are the mean reading scores for Year 5 students in an age band. The standard errors appear in parentheses. The vertical lines extending from the data point show the 95% confidence interval around the mean (i.e., ± 2 standard errors).

¹³The student age information was captured from both students and the schools.

Ranges of scores

As well as presenting the mean scores, Figure 2.1 also highlights the large spread of scores among students for many countries. Table 2.1 presents the range of actual scores at various percentiles for a selection of countries and Canadian provinces. Each percentile reported in the table indicates the percentage of students performing below and above that point on the achievement scale. For example, 25 percent of New Zealand Year 5 students achieved below 478 and 75 percent achieved above 478.

Table 2.1: Distribution of reading achievement scores, New Zealand and selected countries, 2005/2006

Selected countries	Mean age	Standard deviation	Percentiles					Estimate of the range (95th and 5th)
			5th	25th	50th	75th	95th	
^{2a} Bulgaria	10.9	83 (2.4)	397 (10.0)	498 (6.5)	553 (4.6)	604 (3.4)	673 (6.0)	276
Chinese Taipei	10.1	64 (1.0)	420 (3.9)	497 (3.0)	540 (1.7)	579 (2.0)	633 (4.7)	213
^{2a} Denmark	10.9	70 (1.2)	418 (4.5)	505 (3.6)	553 (2.7)	594 (1.8)	649 (2.9)	231
England	10.3	87 (1.6)	383 (8.0)	486 (4.6)	546 (2.9)	598 (2.3)	673 (5.1)	290
France	10.0	67 (1.0)	406 (2.5)	478 (2.4)	525 (2.1)	568 (2.1)	626 (4.7)	220
Germany	10.5	67 (1.2)	430 (4.9)	508 (3.0)	553 (3.1)	593 (2.3)	647 (2.4)	217
Italy	9.7	68 (1.4)	435 (5.3)	507 (3.0)	554 (3.3)	599 (4.3)	658 (3.3)	223
[†] Netherlands	10.3	53 (0.9)	457 (3.3)	513 (1.8)	549 (1.9)	584 (1.8)	631 (2.1)	174
New Zealand	10.0	87 (1.3)	374 (3.0)	478 (2.5)	539 (2.2)	592 (2.1)	664 (4.0)	290
[†] Scotland	9.9	80 (1.6)	385 (5.5)	480 (4.9)	532 (4.1)	581 (3.8)	651 (8.4)	266
Singapore	10.4	77 (1.6)	420 (5.8)	512 (4.9)	565 (4.0)	612 (2.8)	672 (3.2)	252
Sweden	10.9	64 (1.3)	437 (3.6)	512 (3.4)	554 (2.2)	592 (2.3)	647 (5.5)	210
^{†2a} United States	10.1	74 (1.3)	409 (7.6)	494 (3.5)	545 (4.2)	592 (3.8)	653 (7.3)	244
Canadian provinces								
Nova Scotia	10.0	76 (1.5)	407 (8.1)	495 (3.7)	547 (2.4)	594 (2.8)	658 (3.8)	251
^{2a} Ontario	9.8	71 (1.3)	433 (4.7)	510 (4.0)	557 (3.5)	603 (4.3)	666 (4.7)	233

Notes

Standard errors appear in parentheses. The Canadian provinces took part in PIRLS-05/06 as benchmarking participants.

[†] Met guidelines for sample participation rates only after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibits C.1 and C.2 in Mullis, et al., 2007.

As Table 2.1 shows, the range between New Zealand's lowest-achieving students and the highest-achieving students (i.e., the difference between the 5th and 95th percentiles) was 290 scale score points. This is relatively large in comparison with other higher-performing countries. England (290), and to a lesser extent Bulgaria (276), also had a large range. The range for most countries was about 250.

In New Zealand, the range between the two points representing the performance of the "middle" group of students – the 25th and 75th percentiles – was 114 scale score points. This, too, was comparatively wide. In most countries achieving as well or better than New Zealand, the range for this middle group was around 80 to 100 scale score points. For England it was 112, and for Bulgaria it was 106. By way of contrast, the range for both the Netherlands and Belgium (Flemish) was relatively narrow at around 70 scale score points.

Both PIRLS studies have highlighted the large range in the *reading* performance of New Zealand's Year 5 students. Understanding why there is such a wide range, particularly in light of the relatively poor performance of some New Zealand students, is worth further scrutiny. Whetton and Twist (2003), for example, offer insight as to why the 'English-speaking' countries in PIRLS-01 exhibited large ranges of achievement. As well as looking at factors such as curriculum and pedagogical practice, and the availability of specialist support, Whetton and Twist also looked at the complexity of the English language, and considered this in relation to students who have lower reading ability.

Compared with other higher-performing countries, New Zealand had one of the largest spreads of reading scores. This was due to a relatively large group of students who demonstrated that they were very good readers as well as there being a relatively large group of weaker readers.

New Zealand Year 5 students achieved at the same level in 2005/2006 as their 2001 counterparts.

Was there a change between 2001 and 2005/2006?

Table 2.2 presents a summary for 26 countries and the two Canadian provinces that were involved in both cycles of PIRLS. There was no significant change in New Zealand's mean reading achievement from 2001 to 2005/2006. Eight countries recorded significant increases in their students' mean reading achievement, and the average performance of students in three of these countries – the Russian Federation, Hong Kong SAR, and Singapore – had been about the same as New Zealand in 2001. These three countries recorded the largest increases between the two cycles. Slovenia also recorded a relatively large increase in mean achievement.

Table 2.2: Changes in countries' mean reading achievement, 2001-2005/2006

Countries	Difference between 2001 and 2005/2006	Significance of difference
^{2a} Russian Federation	37 (5.6)	▲
Hong Kong SAR	36 (3.9)	▲
Singapore	30 (5.9)	▲
Slovenia	20 (2.9)	▲
Slovak Republic	13 (4.0)	▲
Italy	11 (3.8)	▲
Germany	9 (2.9)	▲
Hungary	8 (3.7)	▲
Moldova, Rep. of	8 (5.0)	●
Iran, Islamic Rep. of	7 (5.2)	●
^{2b} Israel	4 (4.4)	●
New Zealand	3 (4.1)	●
Macedonia, Rep. of	1 (6.2)	●
[†] Scotland	-1 (4.6)	●
[‡] Norway	-1 (3.9)	●
Iceland	-2 (1.8)	●
^{†2a} United States	-2 (5.2)	●
^{2a} Bulgaria	-3 (5.8)	●
France	-4 (3.1)	●
Latvia	-4 (3.3)	●
Lithuania	-6 (3.1)	▼
[†] Netherlands	-7 (2.9)	▼
Sweden	-12 (3.2)	▼
England	-13 (4.3)	▼
Romania	-22 (6.8)	▼
Morocco	-27 (11.3)	▼
Canadian provinces		
^{2a} Ontario	6 (4.4)	●
Quebec	-4 (4.1)	●

Key

- ▲ Difference statistically significantly higher
- Not statistically different
- ▼ Difference statistically lower

Notes

Standard errors appear in parentheses. Because of rounding some figures may appear inconsistent. The Canadian provinces took part in PIRLS-05/06 as benchmarking participants.

[†] Met guidelines for sample participation rates only after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

^{2b} National Defined Population covers less than 80% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. Adapted from Exhibit 1.3 in Mullis, et al., 2007.

There were six countries that recorded a significant decrease in their students' mean reading achievement. The decrease observed in the Netherlands, for example, was largely due to a decrease in girls' mean achievement. The decrease observed in Morocco was to some extent expected because during the intervening years, all children of primary school age were enrolled in school.

Because of the sizeable increases in achievement in the four countries mentioned over, it is worth examining the context (structural and curricular) in which the changes occurred. The detail for this is described in both the *PIRLS 2001* and *PIRLS 2006 encyclopedias*. However, the information in Box 2.1 encapsulates some of the details of the changes for these systems.

Box 2.1: Context for change in achievement in 4 countries in PIRLS-05/06

Russian Federation	Hong Kong SAR	Singapore	Slovenia
<p><i>Structural:</i> Primary education increased from 3 years to 4 years, with children to start at 6 years (rather than at age 7). In practice, children are still starting at 7. In 2001 about half of the Russian PIRLS cohort was still in the 3-year school system; by 2006 it had been completed. Average age increased over the cycle from 10.3 to 10.8 years.</p> <p><i>Curriculum:</i> Since 1998 there has been a major shift to 'literary reading' as part of philology (reading and writing in Russian). Compulsory content for the course includes techniques of reading; exposure to the world of books, including classic, modern, and foreign children's books, etc; and different genres of reading. This has been accompanied by increased usage of informational-type texts in other curriculum areas such as history and mathematics.</p>	<p><i>Curriculum:</i> Reforms in 2000 established clear reading goals for schools, including extensive work to promote children's reading comprehension skills in both Chinese and English. Schools were given the authority to adjust their curriculum and schedule to meet the literary needs of students. Teachers were encouraged to extend the range of teaching materials used in lessons. Another initiative was 'Reading Mothers', who were trained to work in schools to help students when reading stories. PIRLS-01 results raised further concerns about whether or not Hong Kong was meeting the literacy needs of its students. Special workshops were held for primary and pre-school teachers and parents about reading.</p>	<p><i>Curriculum:</i> A new syllabus was being implemented in 2001, when PIRLS was first administered, with implementation completed up to Grade 3. A wider range of instructional materials was used than previously. Learning outcomes were specified at 2-year intervals for English-language learning (including reading). This has given teachers more explicit information about the teaching of language at different schooling levels. The syllabus is under review again, with a focus on teaching approaches for diverse students and assessment practices.</p>	<p><i>Structural:</i> Primary education increased from 8 years to 9 years, with children now starting at 6 years (rather than at age 7). This change has been implemented gradually since 1999. In 2001 children in their 3rd year of schooling were tested in PIRLS. By 2006 about half had had 4 years of schooling, so the average age is still about the same. The main purpose for changing the number of years in school was to improve literacy.</p>

Russian Federation students were assessed in Russian; Hong Kong SAR students in Modern Standard Chinese; Singaporean students in English; and Slovenian students in Slovenian.

Source: PIRLS 2001 encyclopedia (Mullis, Martin, Kennedy, & Flaherty, 2002) and PIRLS 2006 encyclopedia (Kennedy, et al., 2007).

As in 2001, both New Zealand girls and boys typically achieved above their respective international means. The average difference between New Zealand girls and boys was one of the largest internationally.

Reading literacy achievement and gender

The means for New Zealand girls (544 scale score points) and boys (520) were significantly higher than the corresponding international means (509 and 492 respectively). Girls in all but two countries tended to achieve significantly higher reading scores than boys, with the average difference greatest in Kuwait (67 scale score points) and the smallest (and non-significant) in Luxembourg (3) and Spain (4). The international mean difference was about 17 scale score points.

The difference between New Zealand girls' and boys' mean scores was 24 scale score points, which was the fifth largest to be observed internationally.¹⁴ Countries with a similarly large difference and were higher-performing countries included Latvia (23) and Scotland (22 scale score points), which were marginally higher than the difference observed in England (19). A relatively high gender difference was also observed in Nova Scotia Province (21). By way of contrast, many countries recorded relatively smaller (although significant) differences; for example, Hungary (5), Italy (7), the Netherlands (7), and the United States (10). The mean differences in favour of girls observed for the provinces of Alberta and British Columbia were relatively small too (8 and 9 scale scores points, respectively).

Where were the gender differences?

An initial examination of the data has found that the gender difference was greater among New Zealand's lower achievers than its higher achievers. For example, although both differences were significant, the average difference between girls and boys who scored below the PIRLS scale mean (500) was 18 scale score points, compared with an average difference of just 6 for those who scored 500 or more.

Any change?

Table 2.3 shows the mean scores for Year 5 New Zealand boys and girls for the two assessment cycles. There were no significant changes in the mean reading achievement of either girls or boys. Year 5 boys in 2005/2006 scored an average of 4 scale score points higher than their 2001 counterparts; girls' scored an average of just 2 scale points higher.

Table 2.3: New Zealand Year 5 students' mean reading achievement scores in 2001 and 2005/2006, by gender

Year 5 group	Mean reading achievement scores for each PIRLS assessment		Difference 2001-2005/2006
	2001	2005/2006	
Girls	542 (4.7)	544 (2.2)	2 (5.2)
Boys	516 (4.2)	520 (2.9)	4 (5.1)
NZ overall	529 (3.6)	532 (2.0)	3 (4.1)

Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent. The differences between 2001 and 2005/2006 were not statistically significant.

¹⁴The average difference between New Zealand girls and boys in 2001 was also one of the largest internationally.

Purposes for reading

The PIRLS assessment framework focused on two overarching purposes that account for most of the reading undertaken by students, both in and out of school: *reading for literary purposes* and reading to acquire and use information.¹⁵

Box 2.2: The PIRLS-05/06 purposes for reading

Reading for literary experience	Reading to acquire and use information
The reader becomes involved in imagined events, settings, actions, consequences, characters, atmosphere, feelings, and ideas; he or she brings an appreciation of language and knowledge of literary forms to the text. This is often accomplished through reading fiction.	The reader engages with types of texts where she or he can understand how the world is and has been, and why things work as they do. Texts take many forms, but one major distinction is between those organised chronologically and those organised non-chronologically. This area is often associated with information articles and instructional texts.

As was the case in 2001, PIRLS-05/06 used two numerical scales to look at student achievement in the two purposes for reading. Countries with higher mean achievement in reading also demonstrated higher achievement in the two purposes. In *reading for literary purposes*, New Zealand's mean score was 527; the highest average scores were observed for the Russian Federation (561), Hong Kong SAR, and Hungary (both 557). Students in the provinces of Alberta and British Columbia typically achieved very high scores (561 and 559, respectively).

In *reading for informational purposes*, New Zealand's mean scale score was 534; by way of comparison, students in Hong Kong SAR (568), the Russian Federation (564), and Singapore (563) typically achieved the highest scores. Students in the provinces of Alberta (556) and British Columbia (554) also generally achieved very high scores.

To enable countries to compare their students' relative performance in each of the purposes for reading, the international mean for each purpose was scaled to 500, the same as the PIRLS international scale mean.

For many countries, there were differences in their students' performance in reading for one purpose compared with the other. New Zealand Year 5 students generally achieved slightly (and significantly) higher scores in *reading for informational purposes* than in *reading for literary purposes*. In nine countries, including England, the Netherlands, and Scotland, there were no significant differences between the two reading purpose mean scores; in other countries, for example, Hungary and Iceland, the mean score in *reading for literary purposes* was the higher of the two.

Any change?

Table 2.4 shows the mean reading scores for New Zealand students in the two reading purposes for each PIRLS assessment. Although there were some changes between 2001 and 2005/2006, these were not significant. However there was a change in the relative performance in the two areas. In 2001, Year 5 students' performance was in general better when *reading for literary purposes* than when *reading for informational purposes*. Four years later, students' performance in the former remained virtually unchanged, but their performance in *reading for informational purposes* increased by an average of 9 scale score points. This shift accounted for Year 5 students' performance being found to be relatively better when *reading for informational purposes* in 2005/2006 than when *reading for literary purposes*.

New Zealand Year 5 students' performance in 2005/2006 was relatively better when *reading for informational purposes* than when *reading for literary purposes*. The opposite was observed in 2001.

Table 2.4: New Zealand Year 5 students' mean achievement scores for the PIRLS reading purposes, 2001 and 2005/2006

Reading purpose	Mean achievement scores for each PIRLS assessment		Difference 2001-2005/2006
	2001	2005/2006	
Literary purposes	531 (3.9)	527 (2.1)	- 4 (4.4)
Informational purposes	525 (3.8)	534 (2.2)	9 (4.4)
Relative (absolute) difference between purposes	7 (2.2)*	6 (0.7)*	-

Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent.

The differences between 2001 and 2005/2006 were not statistically significant.

† Year 5 students' performance was relatively better on literary reading than on informational reading.

‡ Year 5 students' performance was relatively better on informational reading than on literary reading.

Source: Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibits 1.7 and 1.8 in Mullis, et al., 2007.

When examining the change over the 4 years in *reading for literary purposes* by gender, girls were found to have scored an average of 7 scale score points lower than girls in 2001; the decrease was not found to be statistically significant. There was no change for boys. See Table 2.5 for details.

On informational passages, both boys and girls in 2005/2006 achieved scores higher—an average of 10 and 8 scale score points higher—than their respective counterparts in 2001. However, neither increase was found to be statistically significant at the 5% level.

Table 2.5: New Zealand Year 5 students' mean achievement scores for the PIRLS reading purposes in 2001 and 2005/2006, by gender

Reading purpose	Year 5 group	Mean achievement scores for each PIRLS assessment		Difference 2001-2005/2006
		2001	2005/2006	
Literary purposes	Girls	546 (4.7)	539 (2.3)	-7 (5.2)
	Boys	517 (4.6)	516 (2.9)	1 (5.4)
Informational purposes	Girls	536 (4.5)	545 (2.2)	10 (5.0)
	Boys	514 (4.4)	522 (3.0)	8 (5.3)

Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent.

The differences between 2001 and 2005/2006 were not statistically significant.

¹⁵ For further details refer to Mullis, et al., 2006.

Processes of reading comprehension

The PIRLS-05/06 assessment questions were also designed to measure four major processes of reading comprehension. These processes are briefly described in Box 2.3.¹⁶

Box 2.3: The PIRLS-05/06 processes of reading comprehension

Focus on and retrieve explicitly stated information	⇒	Readers are required to recognise information or ideas presented in the text, and how that information is related to the information being sought. Specific information to be retrieved is typically located in a single sentence or phrase.
Make straightforward inferences	⇒	Readers move beyond the surface of texts to fill in the 'gaps' in meaning. Proficient readers often make these kinds of inferences automatically, even though it is not stated in the text. The focus may be on the meaning of part of the text, or more global meaning representing the whole text.
Interpreting and integrating ideas and information	⇒	Readers need to process the text beyond the phrase or sentence level. The reader is processing text beyond the phrase or sentence level. Readers attempt to construct a more specific or complete understanding of the text by integrating personal knowledge and experience with meaning that resides in the text. Because of this, meaning that is constructed is likely to vary among readers.
Examine and evaluate content, language, and textual elements	⇒	Readers draw on their interpretations and weigh their understanding of texts against their world view – rejecting, accepting, or remaining neutral to the text's representation. Readers need to draw on their knowledge of text genre and structure, as well as their understanding of language conventions. Readers may also reflect on the author's devices for conveying meaning and judge their adequacy or identify weaknesses in how the text was written.

For reporting purposes the four processes were combined into two achievement scales. The first is the *retrieving and inferencing processes* achievement scale, which combines retrieval and straightforward inferencing processes. The second scale is the *interpreting, integrating, and evaluating processes* scale, which combines the process of interpreting and integrating with the examining and evaluating process.

Figure 2.3, on page 19, shows the mean achievement for the two reading processes scales and the (absolute) difference between the two scales for each country. Countries and provinces with higher mean achievement in reading and in two purposes of reading also demonstrated higher achievement in the two sets of comprehension skills. Students from Luxembourg and the Russian Federation recorded the highest mean achievement in *retrieving and inferencing processes*; Hong Kong SAR and the Russian Federation recorded the highest mean achievement in *interpreting, integrating, and evaluating processes*.

Across the PIRLS-05/06 countries, students demonstrated relatively better performance in one type of process over the other. For 17 countries, students performed relatively better using reasoning processes (*interpreting, integrating, and evaluating processes*); New Zealand, along with Moldova, Bulgaria, and the United States, was clearly one of these countries. The mean performance of students in 16 countries was relatively better on the text-based processes (*retrieving and inferencing processes*). Two countries whose students were notably better on the text-based processes included Luxembourg and Germany. For five countries, neither skill was a strength (or weakness).

Comprehension processes and gender

With the exception of Iran (a difference of 13 scale score points) and Hungary (6), girls in all countries achieved, on average, significantly higher scores in the *interpreting, integrating, and evaluating processes* domain.¹⁷ In New Zealand's case the difference was 24 scale score points, which was higher than the international mean difference of 17 scale score points.

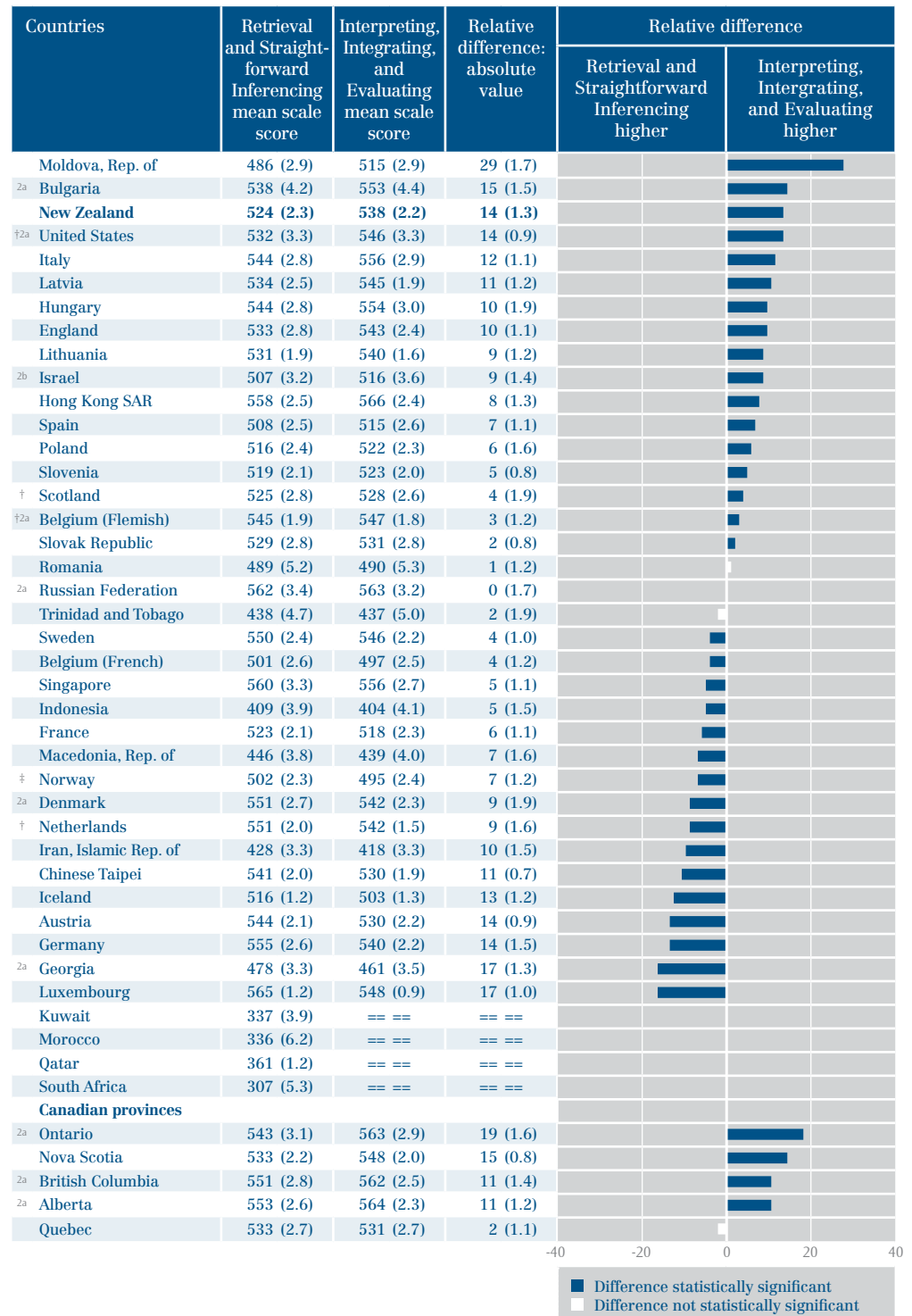
Interestingly, in six countries – Hungary, Iran, Italy, Luxembourg, the Netherlands, and Spain – no significant gender differences were observed on the *retrieving and inferencing processes* scale. New Zealand girls achieved an average of 22 scale score points higher than New Zealand boys; the international average difference was 15 scale score points.

New Zealand Year 5 students' performance in 2005/2006 was relatively stronger on questions which required them to use *interpreting, integrating, and evaluating* skills than on questions requiring them to use *retrieval and straightforward inferencing* skills.

¹⁶ For a comprehensive description of the processes of comprehension used in the PIRLS assessment, see Mullis, et al., 2006.

¹⁷ Mean achievement scores could not be estimated on the *interpreting, integrating, and evaluating processes* scale for Kuwait, Morocco, Qatar, and South Africa.

Figure 2.3: Relative differences in achievement between the reading comprehension processes, 2005/2006



Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent. The Canadian provinces took part in PIRLS-05/06 as benchmarking participants.

[†] Met guidelines for sample participation rates only after replacement schools were included.

[‡] Nearly satisfying guidelines for sample participation rates after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

^{2b} National Defined Population covers less than 80% of National Desired Population.

= Mean achievement could not be accurately estimated on the interpreting, integrating, and evaluating scale.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. Adapted from Exhibit 1.10 in Mullis, et al., 2007.

Any change?

Many of the countries that had significant increases in their overall reading achievement results and in the two reading purposes domains also had corresponding increases in each of the comprehension processes domains. Countries where decreases in mean achievement had occurred also had decreases in both processes. Table 2.6 shows the mean scores for New Zealand Year 5 students in the reading processes of comprehension – overall and by gender – in 2001 and 2005/2006. There were no significant changes for New Zealand students in either process scales, overall or by gender.

Table 2.6: New Zealand Year 5 students' mean achievement scores for the reading processes, 2001 and 2005/2006

Reading purpose	Year 5 group	Mean achievement scores for each PIRLS assessment		Difference 2001-2005/2006
		2001	2005/2006	
Retrieving and straightforward inferencing	Girls	534 (5.0)	535 (2.4)	1 (5.6)
	Boys	510 (4.4)	513 (3.1)	3 (5.3)
	All NZ	522 (3.7)	524 (2.3)	2 (4.3)
Interpreting, integrating, and evaluating	Girls	550 (4.6)	550 (2.3)	0 (5.1)
	Boys	521 (4.4)	526 (2.9)	5 (5.3)
	All NZ	535 (3.8)	538 (2.2)	3 (4.4)

Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent.

The differences between 2001 and 2005/2006 were not statistically significant.

PIRLS international benchmarks of reading

The PIRLS-05/06 reading achievement scale summarises student performance on test questions designed to measure a wide range of student comprehension skills and strategies. In order to provide a more complete picture of student achievement, four points on the reading achievement scale have been identified for use as international benchmarks.¹⁸ These are: the *Advanced International Benchmark*, the *High International Benchmark*, the *Intermediate International Benchmark*, and the *Low International Benchmark*. A benchmark describes the types of comprehension skills and strategies Grade 4 students demonstrated when they encountered particular questions in the PIRLS texts. The benchmarks are also cumulative, in that students who demonstrated the skills and strategies at a given benchmark also demonstrated the skills associated with the lower benchmarks.

It is important to note that these benchmarks are not comparable to the four benchmarks reported for PIRLS-01. For example, the *Advanced International Benchmark* used in 2005/2006 is not equivalent to the *Top 10% Benchmark* used in 2001. In 2001, percentiles (specifically, 25th, 50th, 75th, and 90th) were used to identify the four benchmark points on the scale. Because there was a strong likelihood that the percentiles would change due to more countries participating, and there being a greater variation in performances as new countries join, four new points were identified. These four points were fixed for this and future cycles, which means countries can determine with more certainty any changes over time. The four new points have also been used retrospectively to see if there has been any change since 2001.

¹⁸As in 2001, the scale anchoring method was used by the international researchers and a team of reading experts to develop the descriptions of student performance at the four different points. As well as a quantitative component used to identify the questions that discriminated between successive points on the scale, the process used qualitative methods to develop the descriptions of performance. The methodology is described in the *PIRLS 2006 technical report* (Martin, et al., 2007).

The descriptions for each international benchmark are summarised in Box 2.4.¹⁹ Essentially, they reflect the types of PIRLS texts students were asked to read. The intention was for the benchmarks to be used to explain differences in achievement on the PIRLS assessment by describing the types of questions students were able to answer successfully, and, for multiple-mark constructed response questions, the quality of their responses. It is also worth remembering that the descriptions do not profess to encompass all reading situations 10-year-olds encounter.

Box 2.4: The PIRLS-05/06 international reading benchmarks for Grade 4 (Year 5 equivalent)

625	<p>Advanced International Benchmark</p> <ul style="list-style-type: none"> • When reading literary texts, students could integrate ideas across a text to provide interpretations of a character and provide full text-based support; interpret figurative language; and begin to examine and evaluate story structure. • When reading informational texts, students could distinguish and interpret complex information from different parts of the text, and provide full text-based support; understand the function of organisational features; and integrate information across a text to sequence activities and fully justify preferences.
550	<p>High International Benchmark</p> <ul style="list-style-type: none"> • When reading literary texts, students could locate relevant episodes embedded across the text; make inferences to explain relationships between intentions, actions, events, and feelings, and give text-based support; recognise the use of some textual features; and begin to interpret and integrate events and character actions across the text. • When reading informational texts, students were able to recognise and use a variety of organisational features to navigate through the texts; make inferences based on abstract or embedded information; integrate information across a text; compare and evaluate parts of a text to give a preference and a reason; and had begun to understand textual elements such as simple metaphors and an author's point of view.
475	<p>Intermediate International Benchmark</p> <ul style="list-style-type: none"> • When reading literary texts, students could identify central events, plot sequences, and relevant story details; make straightforward inferences about the attributes, feelings, and motivations of the main characters; and they had begun to make connections across parts of the text. • When reading informational texts, students could locate and extract one or two pieces of information; make straightforward inferences from a single part of the text; and use subheadings, text boxes, and illustrations to locate parts of the text.
400	<p>Low International Benchmark</p> <ul style="list-style-type: none"> • When reading literary texts, students demonstrated they could recognise explicitly stated detail; and locate a specified part of the story and make an inference clearly suggested by the text. • When reading informational texts, students demonstrated they could locate and reproduce explicitly stated information, particularly when it was located at the beginning of the text or in a clearly defined section. Students could make a straightforward inference clearly suggested by the text.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. Adapted from Exhibits 2.4, 2.9, 2.14, and 2.19 in Mullis, et al., 2007.

¹⁹Students' achievement results from all the participating countries (and provinces) were pooled so that the benchmark descriptions in Box 2.4 refer to all students achieving at that level.

How did New Zealand Year 5 students perform against the international benchmarks?

The percentages of New Zealand Year 5 students reaching the international benchmarks for reading in PIRLS-05/06 are shown in Table 2.7. As a comparison, countries with higher (or the same) percentages of students reaching the *Advanced International Benchmark* are also shown. As noted, students reaching a higher benchmark also reach the lower benchmarks, so the percentages shown in the table are cumulative. That is, 92 percent of New Zealand's Year 5 students achieved at or above the *Low International Benchmark* (or scored at least 400), 76 percent achieved at or above the *Intermediate International Benchmark* (or scored at least 475), and so on. The international median for each benchmark is also reported in the table. By definition, half of the countries have a percentage above the median and half have a percentage below.

Table 2.7: The 10 countries with the highest percentage of students at the *Advanced International Benchmark*

Countries	Percentages of students reaching international benchmarks			
	Advanced (625)	High (550)	Intermediate (475)	Low (400)
Singapore	19 (1.4)	58 (1.7)	86 (1.0)	97 (0.4)
^{2a} Russian Fed.	19 (1.5)	61 (2.0)	90 (1.1)	98 (0.5)
^{2a} Bulgaria	16 (1.4)	52 (2.3)	82 (1.8)	95 (1.0)
England	15 (0.9)	48 (1.3)	78 (1.1)	93 (0.7)
Luxembourg	15 (0.6)	56 (0.8)	89 (0.5)	99 (0.2)
Hong Kong SAR	15 (1.0)	62 (1.6)	92 (0.8)	99 (0.2)
Hungary	14 (0.9)	53 (1.8)	86 (1.4)	97 (0.5)
Italy	14 (1.4)	52 (1.8)	87 (1.3)	98 (0.4)
New Zealand	13 (0.7)	45 (1.0)	76 (1.0)	92 (0.6)
^{† 2a} United States	12 (1.2)	47 (2.0)	82 (1.4)	96 (0.6)
International median	7	41	76	94
Canadian provinces				
^{2a} British Columbia	16 (1.3)	56 (1.6)	88 (1.0)	98 (0.3)
^{2a} Ontario	16 (1.1)	54 (1.9)	87 (1.1)	98 (0.5)

Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent. Data from the Canadian provinces were not used when calculating the international medians.

[†] Met guidelines for sample participation rates only after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 2.1 in Mullis, et al., 2007.

New Zealand recorded a relatively large proportion (13%) of students reaching the *Advanced International Benchmark*, almost double the international median of 7 percent. Singapore and the Russian Federation recorded the largest proportions at 19 percent. With the exception of Quebec, the Canadian provinces also had sizeable proportions. By way of comparison, countries with smaller proportions at this benchmark included Sweden (11%), Scotland (10%), the Netherlands (6%), and Norway (2%).

New Zealand Year 5 students were well-represented among the best readers internationally with a relatively large proportion of students reaching the higher benchmarks. Compared with other higher-performing countries they were, however, slightly under-represented among the group of mid-range readers and a little over-represented among weaker readers.

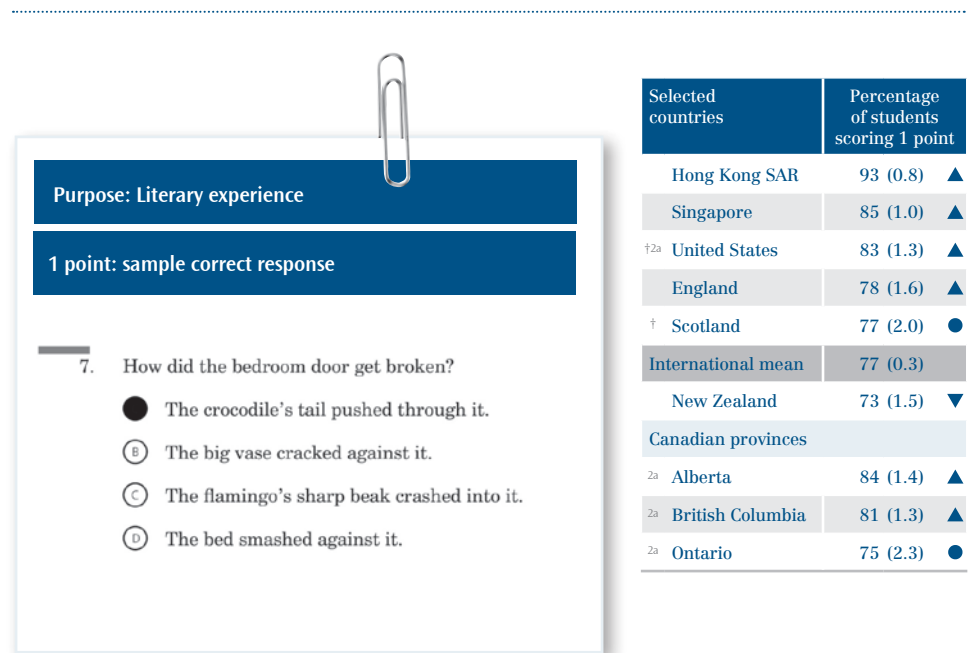
More than two-fifths of New Zealand’s Year 5 students (45%) achieved at or above the *High International Benchmark*, a little higher than the international median 41 percent, and approximately three-quarters of New Zealand Year 5 students (76%) reached the *Intermediate International Benchmark*, the same as the international median. Internationally, the median proportion reaching the *Low International Benchmark* was 94 percent. Nineteen countries (and the five provinces) had more than 94 percent of their students scoring at least 400 scale score points; the proportion recorded for New Zealand was slightly lower at 92 percent.

As Figure 2.1 had illustrated, there were some marked differences in the mean reading achievement among countries. This variation is illustrated by the proportions of students reaching the higher benchmarks such as the *Advanced International Benchmark*. For example, no students from Kuwait, Indonesia, Morocco, or Qatar reached this benchmark.

Figure 2.4 presents a series of examples of questions that were usually answered correctly by students reaching the particular benchmarks, for one of the literary passages “An Unbelievable Night”. This particular passage was one of two, the other being “Searching for Food”, presented to students in a coloured magazine format. An example of an informational passage – “Antarctica: Land of Ice” – along with sample questions is presented in Appendix B at the end of this report.

Figure 2.4: Examples of questions and sample responses from “An Unbelievable Night”: percentage of students from selected countries answering question correctly²⁰

A. Low International Benchmark example



Key

- ▲ significantly higher than the international mean
- not significantly different from the international mean
- ▼ significantly lower than the international mean

²⁰ International version of the question stem presented. (Copyright © by the IEA, Amsterdam.) Refer to previous tables or figures for details about the symbols alongside Scotland, the United States, and the Canadian provinces. See Exhibits 2.5, 2.11, 2.16, and Appendix E in Mullis, et al., 2007.

B. *Intermediate International Benchmark* example

Purpose: Literary experience

1 point: sample correct response

5. Put the following sentences in the order in which they happened in the story.

The first one has been done for you.

2 Anina saw the crocodile.

4 The crocodile ate two flamingos.

5 Anina tried to explain the broken door to her parents.

1 Anina started to walk to the bathroom.

3 Anina ran to the bedroom and slammed the door.

Selected countries	Percentage of students scoring 1 point
Hong Kong SAR	81 (1.7) ▲
^{†2a} United States	79 (1.5) ▲
England	73 (1.6) ▲
Singapore	73 (1.7) ▲
[†] Scotland	72 (2.0) ▲
New Zealand	70 (1.4) ▲
International mean	67 (0.3)
Canadian provinces	
^{2a} Alberta	81 (1.4) ▲
^{2a} British Columbia	82 (1.7) ▲
^{2a} Ontario	80 (2.2) ▲

C. *High International Benchmark* example

Purpose: Literary experience

2 points: sample of full-credit response

8. How did the magazine help Anina? Write **two** ways.

① 1. The magazine help Anina to tell where the crocodile came from.

② 2. It help Anina to know what the crocodile would do when it was going to attack.

Selected countries	Percentage of students scoring 2 points
Hong Kong SAR	66 (2.1) ▲
^{†2a} United States	54 (2.1) ▲
England	50 (1.8) ▲
Singapore	47 (1.7) ▲
New Zealand	43 (1.5) ●
[†] Scotland	42 (2.1) ●
International mean	41 (0.3)
Canadian provinces	
^{2a} Alberta	63 (1.9) ▲
^{2a} British Columbia	63 (2.0) ▲
^{2a} Ontario	66 (2.2) ▲

D. Advanced International Benchmark example²¹

📎

Purpose: Literary experience

3 points: sample of partial and full-credit responses

11. You learn what Anina was like from the things she did. Describe what she was like and give **two** examples of what she did that show this.

① I think she is a brave person because not many
 much people would have dared to go so near
 push a magazine under a crocodile's nose.

11. You learn what Anina was like from the things she did. Describe what she was like and give **two** examples of what she did that show this.

① Anina was a girl who noticed things. In the story, she noticed the crocodile's tail swinging and she noticed that he was gone from the magazine.

Selected countries	Percentage of students scoring 3 points
Hong Kong SAR	48 (2.0) ▲
Singapore	26 (1.7) ▲
^{†2a} United States	22 (1.5) ▲
England	21 (1.5) ▲
[†] Scotland	16 (1.5) ●
International mean	16 (0.2)
New Zealand	16 (1.2) ●
Canadian provinces	
^{2a} Alberta	29 (1.8) ▲
^{2a} British Columbia	32 (2.1) ▲
^{2a} Ontario	34 (2.7) ▲

²¹ This question was a very difficult item. Students awarded at *least 2 points* demonstrated the skills and competencies associated with the *Advanced International Benchmark*.

Any change?

Table 2.8 summarises the benchmark information from the two PIRLS assessments for New Zealand and internationally. There were no changes at any of the benchmarks for New Zealand. Consistent with the change in their overall performance were Hong Kong SAR, Singapore, and Slovenia, with significant increases at all four benchmarks. Other examples of changes included Germany, the Russian Federation, and the Slovak Republic, where significant increases at three of the four benchmarks (the exception being the *Low International Benchmark*) were observed. Norway and the United States recorded small significant increases in the proportions of students reaching the *Low International Benchmark*. Interestingly, England, Sweden, Lithuania, the Netherlands, and Norway had significant decreases at the two highest benchmarks.

Table 2.8: Percentage of students reaching the PIRLS international reading benchmarks, 2001 and 2005/2006

International reading benchmarks	Percentage of New Zealand Year 5 students		Mean percentage for trend [†] countries	
	2001	2005/2006	2001	2005/2006
Advanced	14 (1.2)	13 (0.7)	8 (0.2)	9 (0.2) ▲
High	45 (1.6)	45 (1.0)	38 (0.3)	40 (0.3) ▲
Intermediate	74 (1.4)	76 (1.0)	72 (0.3)	74 (0.3) ▲
Low	90 (1.0)	92 (0.6)	89 (0.2)	90 (0.2) ▲

Notes

Standard errors appear in parentheses. Because of rounding some figures may appear inconsistent.

[†] International means were calculated for 26 trend countries.

▲ The proportion for 2005/2006 was significantly higher than the proportion for 2001.

Source: Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 2.2 in Mullis, et al., 2007.

SECTION 3: STUDENTS' ATTITUDES AND BACKGROUND



This section gives a brief overview of some of the contextual information PIRLS-05/06 sought from students and their parents/caregivers. Information on students' attitudes towards reading, their views of themselves as readers, and the language(s) they spoke at home are examples of the information gathered from the students taking part in the study. Parents/caregivers also provided information about their children's experiences learning to read, their own reading, and literacy resources in the home.

Although New Zealand Year 5 students had relatively positive attitudes towards reading, they tended to be more reticent with their views in 2005/2006 than in 2001.

How is the information presented?

To summarise the information concisely, students' and parents'/caregivers' responses to sets of questions were often combined to form indices²². These indices are more comprehensive (describing a general concept or activity) and more informative than the individual results for component questions. To help interpret each index, students are placed, according to their or their parents'/caregivers' responses, into one of three categories: high, medium, or low. The high level of each index corresponds to positive conditions or good educational practice and high reading achievement.

Students' attitudes towards reading

In order to gauge how positive students are in their attitudes towards reading, students were asked about their views on reading for enjoyment and their appreciation of books. Students were asked to indicate on a 4-point scale (agree a lot through to disagree a lot) the extent to which they agreed with the following statements related to reading:

- I read only if I have to.
- I like talking about books with other people.
- I would be happy if someone gave me a book as a present.
- I think reading is boring.
- I enjoy reading.

The Students' Attitudes Towards Reading (SATR) Index was then used to summarise students' responses to the five statements by averaging their combined responses.²³ Students were assigned to three levels on the SATR Index. Students who had positive attitudes towards reading (i.e., responded positively) were placed at the high level of the index. Students who had negative attitudes towards reading (i.e., students who responded negatively) were placed at the low level of the index. The remainder were assigned to the medium level of the index.

New Zealand students were relatively positive towards reading, with 48 percent in the high level (about the same as the international mean of 49%), and just 7 percent of students in the low level (also similar to the international mean of 8%). Students in England and the United States tended to be less positive than New Zealand students, with about 40 percent of students from both countries at the high level. By way of contrast, German and Hong Kong SAR students, for example, tended to be more positive, with 58 percent and 55 percent at the high level, respectively.

In every country including New Zealand, students at the high level of the SATR Index had, on average, higher reading achievement than those at the medium or low levels.

Any change?

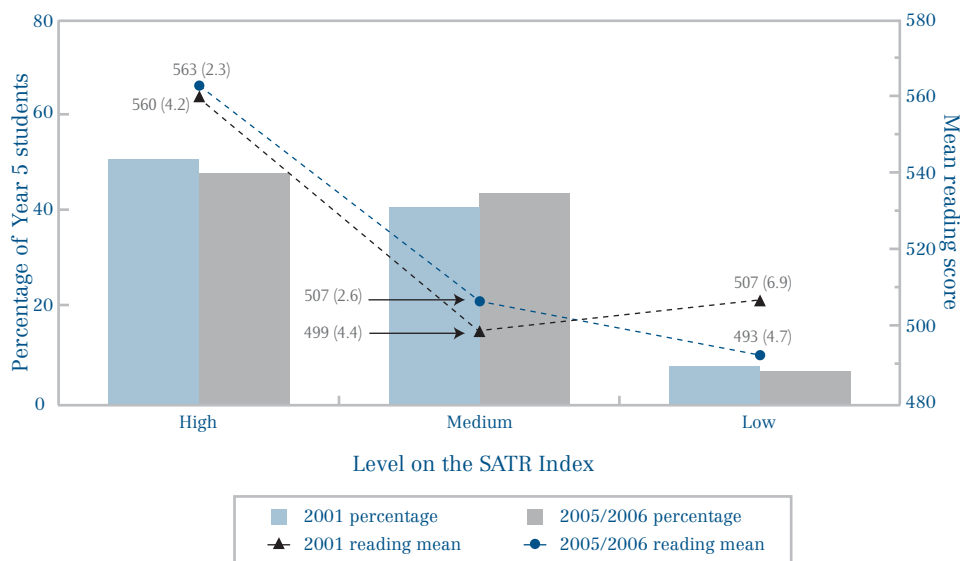
New Zealand students tended to be more moderate with their views in 2005/2006 than in 2001, as illustrated in Figure 3.1. Decreases at both the high (3 percentage points) and low (1 percentage point) levels of the SATR Index were found, along with a significant increase (4 percentage points) at the medium level of the index. The change at the medium level was largely due to shifts in Year 5 boys' views, with a significant 5 percentage point increase in the proportion of boys at this level (46% to 51%) and corresponding decreases at the high and low levels of the index.

Among some other countries that participated in 2001, England, the Netherlands, Scotland, and Sweden all recorded significant decreases in the proportions of students with very positive attitudes towards reading (i.e., at the high level of the SATR Index). Germany, Hong Kong SAR, Iran, and Italy recorded significant increases.

²²The response rate (50-69%) from New Zealand parents/caregivers in PIRLS-05/06 was less than in PIRLS-01 (70-84%). In the international report, comparisons have been made for New Zealand with information reported for 2001. In most cases there were no changes in the proportions at each level of the various parent-related indices over the 4-year period.

²³The response rate (50-69%) from New Zealand parents/caregivers in PIRLS-05/06 was less than in PIRLS-01 (70-84%). In the international report, comparisons have been made for New Zealand with information reported for 2001. In most cases there were no changes in the proportions at each level of the various parent-related indices over the 4-year period.

Figure 3.1: New Zealand Year 5 students at each level of the Students' Attitudes Towards Reading (SATR) Index, 2001 and 2005/2006



Notes

The bars represent the percentage of Year 5 students at each level of the SATR Index. The high level of the SATR Index denotes positive attitudes towards reading whereas the low level of the index denotes negative attitudes towards reading. The data points are the mean reading scores for the students at each level of the SATR Index. Standard errors appear in parentheses.

A significantly higher percentage of students were at the medium level of the SATR Index in 2005/2006 than in 2001. The percentages at the high and low levels of the index in 2005/2006 were not significantly different from the proportions in 2001.

See Exhibit 4.1 in Mullis, et al., 2007 for details of the international data for 2005/2006.

Students' reading self-concept

The Students' Reading Self-Concept (SRSC) Index was developed to investigate students' perceptions of their ability in reading, using their responses to four statements on how well they thought they read. Students were asked to indicate on a 4-point scale (agree a lot through to disagree a lot) their level of agreement to the following statements:

- Reading is very easy for me.
- I do not read as well as other students in my class.
- When I am reading by myself I understand almost everything I read.
- I read more slowly than other students in my class.

Students' responses to the four statements were combined and averaged to construct the SRSC Index.²⁴ Students with a high self-concept in reading (i.e., they responded positively) were placed at the high level of the SRSC Index; those students with low self-concept in reading (i.e., responded negatively) were placed at the low level of the index. The remainder were assigned to the medium level of the index.

On average internationally, about one-half of students (49%) were at the high level of the SRSC Index (i.e., confident with their reading), with a similar proportion (48%) at the medium level. Just 3 percent were at the low level. Among New Zealand students, just over one-third (36%) had a high self-concept of their reading ability (i.e., at the high level), with the remaining either at the medium level (60%) or at the low level (4%) of the index.

New Zealand Year 5 students tended to be less confident about their reading ability compared with many of their international counterparts. Moreover, Year 5 students' views were more moderate in 2005/2006 than in 2001.

²⁴ Disagree a lot = 1, disagree a little = 2, agree a little = 3, and agree a lot = 4. Responses for negative statements were reverse-coded. Responses for each student were combined and averaged. High level on the index is where the average was greater than 3 through to 4. Medium level indicates an average of 2 through to 3. Low level indicates an average of 1 to less than 2.

The proportion of New Zealand students who viewed themselves as good readers (i.e., at the high level) was somewhat below the international mean, and the fourth-lowest (equal) internationally. Only Indonesia (34%), Moldova (32%), and South Africa (31%) had smaller proportions than New Zealand, while the same proportion was reported for France. Students from Israel (63%), Austria, and Sweden (both at 62%), were the most confident about their abilities.

On average internationally, and in New Zealand, the average reading achievement of students at the higher level was notably higher than students at the medium level, with the average achievement higher than students at the low level.

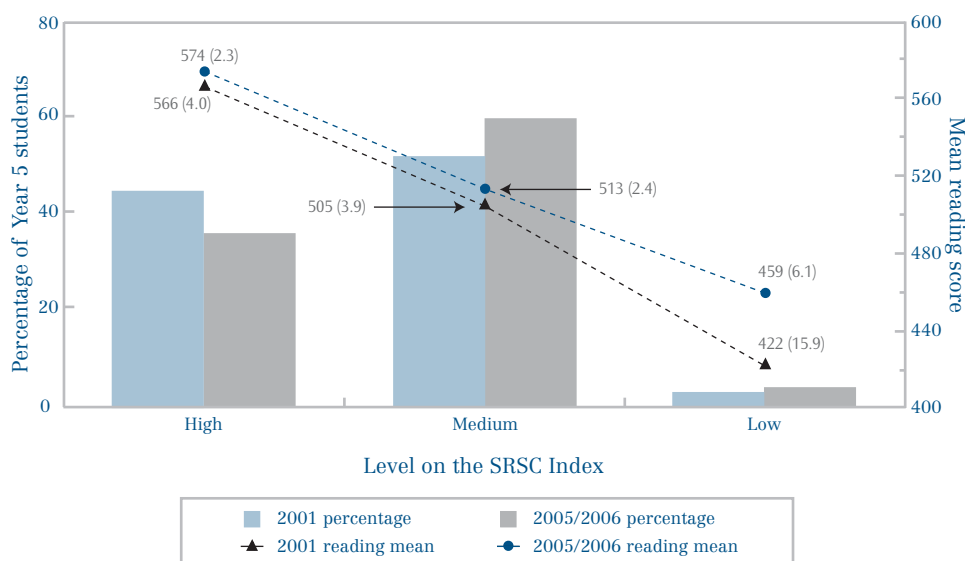
Self-concept and gender

Proportionally more New Zealand girls than New Zealand boys were at the high level of the SRSC Index (40% compared with 33%), with boys (63%) more likely than girls (58%) to be at the medium level. Boys (4%) and girls were (3%) were equally likely to report a low self-concept in reading.

Any change?

Figure 3.2 shows the proportion of New Zealand’s Year 5 students at each level of the SRSC Index for the students at each level for the two PIRLS cycles, with their mean achievement scores.²⁵ New Zealand, as well as five other countries, another being the United States, recorded a significant decrease in the proportion of students with high self-concept in reading. Accompanying the decreases were significant increases at the medium level of the index. A significant decrease was observed for both New Zealand girls and boys, and was about the same size for both groups as the overall decrease (9 percentage points). Ten countries, including the Russian Federation, Hong Kong SAR, and Germany, showed increases in students’ high self-concept.

Figure 3.2: New Zealand Year 5 students at each level of the Students’ Reading Self-Concept (SRSC) Index, 2001 and 2005/2006



Notes

The bars represent the percentage of Year 5 students at each level of the SRSC Index. The high level of the SRSC Index denotes high self-concept of reading ability whereas the low level of the index denotes a low self-concept of reading ability. The data points are the mean reading scores for the students at each level of the SRSC Index. Standard errors appear in parentheses. A significantly *smaller* percentage of students were at the high level of the SRSC Index in 2005/2006 than in 2001. A significantly *higher* percentage of students were at the medium level of the index in 2005/06 than in 2001. There was no change at the low level of the index. See Exhibit 4.2 in Mullis, et al., 2007 for details of the international data for 2005/2006.

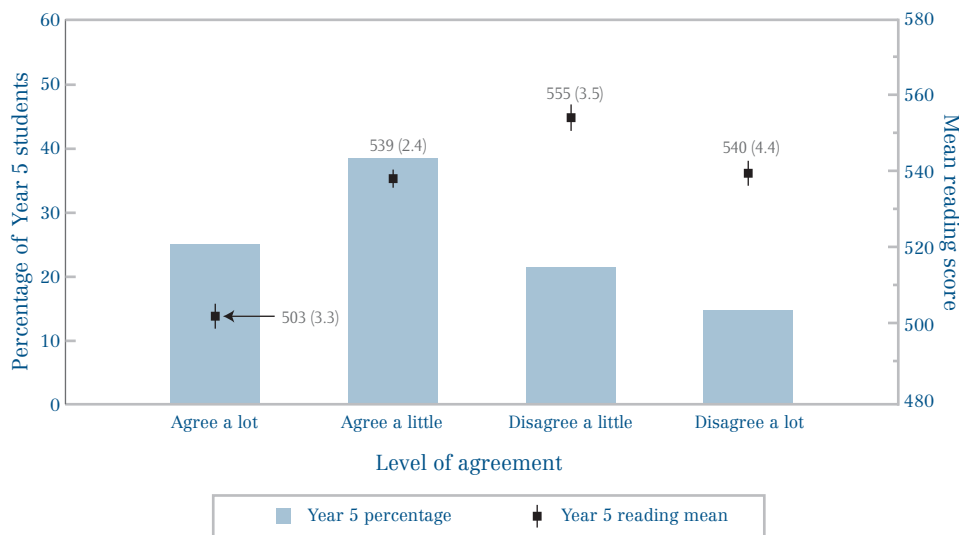
²⁵The SRSC Index described by Mullis, Martin, Gonzalez, and Kennedy (2003), and reported by the Ministry of Education (2003) and by Caygill and Chamberlain (2004), is not comparable to the SRSC Index used in 2005/2006. To allow comparisons to be made with 2001, the index for 2001 has been recalculated. However, note that “I read more slowly than other students in my class” is a new statement for PIRLS-05/06 and is not part of the 2001 index calculations reported here.

Students' perceptions of their teachers' feedback

Providing students with regular feedback about their learning is an important strategy used by teachers. The rationale for giving feedback is that it allows students to reflect on what they currently can (and/or cannot) do, as well as guiding future learning. It should be specific enough for students to be able to respond, and in a form that motivates students to learn and highlights their role in the teaching and learning process.

In 2005/2006 a New Zealand-specific statement was presented to students, which sought their views on receiving feedback from teachers. Specifically, Year 5 students were asked their level of agreement to the statement, "My teacher often tells me how well I read". As it was worded the statement was not ascertaining the type of feedback – negative or positive – rather, it was the perception of the regularity of the feedback. Just over three-fifths of Year 5 students agreed with the statement (64%). The remainder (36%) did not share this view. Interestingly, as illustrated in Figure 3.3, Year 5 students who disagreed with the statement generally had higher reading achievement than those students who agreed with the statement that they received regular feedback.

Figure 3.3: New Zealand Year 5 students' level of agreement on teachers' feedback, 2005/2006



Notes

The data points are the mean reading scores for students at each level of agreement. Standard errors appear in parentheses. The vertical lines extending from the data point show the 95% confidence interval around the mean (i.e., ± 2 standard errors).

It is also interesting to look at students' perception of receiving feedback in relation to their self-concept: do students who have high self-concept also perceive that they receive regular feedback? An initial examination of the data suggests that a similar proportion of students who either agreed (64%) or disagreed (36%) with the feedback statement were at each level of the SRSC Index. For example, about 60 percent of students at the high level of the Index agreed with the statement about teacher feedback. Of note, however, at each level of the Index, students who *disagreed* with the statement tended to have higher reading achievement than those who *agreed* with the statement.

Students' perception of receiving feedback and gender

Year 5 girls' and boys' perceptions of receiving regular feedback was, with one exception, similar. That is, the students' level of agreement by gender was similar (3-5% difference). The one exception was the breakdown of the 15 percent of students who 'disagreed a lot' to the statement: 57 percent were boys and 43 percent were girls.

Compared with parents in many other countries, New Zealand parents were more likely to report that they engaged frequently in a variety of literacy-related activities prior to their child entering primary school. The positive relationship with achievement was generally much greater for New Zealand than for most other countries.

Literacy-related activities in the home

To provide information about students' early literacy activities, parents (or caregivers) were asked to indicate how frequently (on a 3-point scale – 'often', 'sometimes', 'never or almost never') they or someone else in the home engaged in six literacy-related activities with their child before the child began primary school:

- read books
- tell stories
- sing songs
- play with the alphabet
- play with word games
- read aloud signs and labels.

The Early Home Literacy Activities (EHLA) Index summarises parents' responses. Students were assigned to the high level of the index if their parents reported engaging in the six activities 'often', whereas students at the low level had parents who for the most reported they 'never or almost never' did so.²⁶

According to their parents' responses, New Zealand Year 5 students in 2005/2006 had had one of the highest levels of engagement in early literacy activities, with nearly three-quarters in the high level of the EHLA Index, just over one-fifth at the medium level, and just under one-twentieth at the low level. Only Scotland (with 85% in the high category and 2% in the low category) and the Russian Federation (75% and 4% respectively), and the province Nova Scotia (77% and 3% respectively) had higher proportions at the high level.

Internationally, there was a positive relationship between engaging in early literacy activities and students' reading achievement, as shown in Table 3.1. That is, students who had frequently been exposed to literacy activities as a pre-schooler tended to have higher reading scores than those who had only modest or no exposure.

Table 3.1: Reading achievement of students at each level of the Early Home Literacy Activities (EHLA) Index, New Zealand and internationally, 2005/2006

Comparison group	Level on the Early Home Literacy Activities (EHLA) Index					
	High		Medium		Low	
	% of students	Mean reading score	% of students	Mean reading score	% of students	Mean reading score
New Zealand [#]	74 (1.0)	560 (2.0)	22 (0.9)	519 (3.8)	4 (0.4)	501 (8.0)
International mean	54 (0.2)	515 (0.6)	33 (0.2)	494 (0.6)	13 (0.1)	475 (1.1)

Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent. International means do not include the results for the Canadian provinces.

[#] Data available for 50-69% of students.

Source: Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 3.1 in Mullis, et al., 2007.

New Zealand was one of four countries (the others being Romania, Trinidad and Tobago, and South Africa) where the difference in achievement between the high and medium levels of the index was more than 30 scale score points. The difference for New Zealand was 41 scale score points, or about twice the international average difference (21).

²⁶The average for each parent was computed across the 6 items: 1 = never or almost never, 2 = sometimes, and 3 = often. A high level indicates an average of greater than 2.33 through 3, a medium level indicates an average score of 1.67 through 2.33, and a low level indicates an average of 1 to less than 1.67.

Pre-primary education

The importance of pre-primary education in preparing children for primary school is well documented. In most PIRLS countries pre-primary education is voluntary, although participation rates are high. In some PIRLS countries pre-primary education is compulsory and is usually one or two years in duration, typically from about 4 years of age. These countries were Hungary, Israel, Latvia, Luxembourg, Poland, and Romania. Two Canadian provinces – British Columbia and Nova Scotia – also reported compulsory pre-primary education.

Based on the reports from parents/caregivers, about 10 percent of New Zealand's Year 5 students had attended a pre-primary education facility (e.g., early childhood education centre, kindergarten) for one year or less, including those who had not attended, half that recorded internationally (about 20%). Internationally there was a strong relationship with achievement – the mean reading achievement of students who had 2 or more years of pre-primary education was about 50 scale score points higher than that of students who had not attended a facility. While the mean scores for New Zealand children who had little (1 year or less) or no pre-primary education are still relatively high (522 and 532, respectively), they tended to achieve at a significantly lower level than the 90 percent of children who had more than one year (e.g., the mean for 31% of children who had 2 to 3 years was 552).

Language spoken in the home

In PIRLS-05/06 students and parents were asked about the frequency of speaking the language in which the assessment was administered (i.e., the language of instruction).²⁷ Note that the question format was different from the format used in PIRLS-01, and therefore it was not possible to make any direct comparisons with the information reported for the latter.

New Zealand students were tested in either English or Māori.²⁸ In 2005/2006, just under three-quarters of New Zealand Year 5 students (73%) reported they 'always' spoke the test language (English or Māori) in the home,²⁹ with just over one-quarter (26%) reporting they 'sometimes spoke the test language and sometimes spoke another language'. Just 1 percent of Year 5 students reported 'never' speaking the test language at home. New Zealand parents' reports were fairly consistent with students' reports, with both parents/caregivers of more than three-quarters of students (78%) reporting they mostly communicated with their child in the test language.

Countries where at least 80 percent of students reported always speaking the language of the test at home were Georgia (85%), Poland (85%), Macedonia (83%), Denmark (81%), the Russian Federation (82%), Romania (81%), Norway (80%), and Scotland (80%).

Countries where 40 percent or less of students spoke the language of the test at home included Indonesia (38%), Chinese Taipei (36%), Kuwait (26%), Singapore (21%), and Luxembourg (3%). The Canadian province with the highest proportion of students (72%) speaking the test language at home was Nova Scotia; the province with the lowest proportion was Ontario (61%).

The average difference between the mean reading achievement of New Zealand Year 5 students who frequently spoke the test language in the home and those who sometimes or never did was a little higher than in some comparable countries, such as England and the United States.

²⁷ According to international criteria for excluding students from the PIRLS assessment, students with limited proficiency in the test language could be excluded from the assessment. Typically these were students who had received only one or two years' instruction in the language of the test. New Zealand's exclusion rate in 2005/2006 was higher than in 2001 largely due to the exclusions based on the language criterion. See Table A.3.

²⁸ Testing in te reo Māori was conducted in schools and classes where students received 81 to 100% of their instruction in te reo (i.e., Level 1 immersion).

²⁹ This compared with Scotland (80%), England (76%), the United States (72%), and Singapore (21%), and the international mean of 66%.

New Zealand Year 5 students were generally from homes considered to be educationally well resourced (a high number of books, educational aids including a computer, and at least one parent with a university-level education).

Speaking the test language at home and achievement

As already noted, the question used in PIRLS-05/06 differed from that used in PIRLS-01. However, the relationship with the test language and speaking it at home is fairly consistent across the two studies, with both showing that students who frequently spoke the test language at home typically achieve at a much higher level than those students who rarely did. In 2005/2006 New Zealand's Year 5 students' reporting they always spoke the test language on average achieved a significant 23 scale score points higher than those who only sometimes spoke the test language (542 compared with 519).³⁰ Examples of countries with a difference higher than the one observed in New Zealand included Belgium (Flemish) (29), and Germany (28); countries with a lower difference included the Netherlands (20), England (14), and the United States (13).

However, for about one-third of countries in PIRLS-05/06 the mean achievement of students who reported *sometimes* speaking the test language and *sometimes* speaking another language was higher than for those who reported *always* speaking the test language. There were also some countries in which students who only sometimes spoke the language of the test at home performed as well or better. Examples of such countries included Hong Kong SAR, Poland, and the Russian Federation.

Students' parents born in the country

Students were asked whether or not their parents had been born in the country in which they were currently resident. New Zealand had one of the highest proportions (20%) of students whose parents had been born in another country. Countries with similar or higher proportions included Luxembourg (40%), Hong Kong SAR, (29%), Qatar (28%), Latvia (21%), and Israel (20%). The provinces of Ontario (37%), British Columbia (33%), and Alberta (21%) also had relatively high immigrant populations. In New Zealand there was no relationship between students' reading achievement and their parent's or parents' country of birth.

Any change?

There was no significant change over the four years 2001 to 2005/2006 in the proportion of parents reportedly born outside New Zealand.

Home educational resources

The Home Educational Resources Index (HER) was based on parents' and students' responses to questions about resources in their homes. These included the number of books (including children's books), the presence of four educational aids (computer, study desk for student's use, books for use by the student, and access to a daily newspaper) and parents' education.

Just under one-fifth (18%) of New Zealand students were in the high category on the HER Index. This meant that they were in homes with more than 100 books, more than 25 children's books, three or four educational aids (including a computer) in the home, and at least one parent who had completed a university education.³¹ This proportion was one of the highest internationally; countries with higher proportions were Norway (26%), Denmark (24%), Iceland (24%), Sweden (22%), Scotland (21%), and the Netherlands (20%). Four out of the five Canadian provinces (the exception was Quebec) recorded the same or higher proportions as New Zealand.

³⁰Note that there were proportionally too few students in New Zealand who reported never speaking the test language to report their achievement; this was also the case in many other systems

³¹Education levels were determined using UNESCO's Institute for Statistics 1997 International Standard Classification of Education. 'University-level education' encompassed those whose parent(s) had completed at least ISCED 5B.

Only 1 percent of New Zealand Year 5 students were at the low level of the HER Index. That is, they were in homes with 25 or fewer books, 25 or fewer children’s books, and at most two educational aids in the home; and neither parent had completed secondary education. The vast majority of Year 5 students (81%) were at the medium level of the index, which covered all other combinations of responses. Table 3.2 shows the relationship between students’ place on the HER Index and their reading achievement.

Table 3.2: Reading achievement of students at each level of the Home Education Resource (HER) Index, New Zealand and internationally, 2005/2006

Comparison group	Level on the Home Education Resource (HER) Index					
	High		Medium		Low	
	% of students	Mean reading score	% of students	Mean reading score	% of students	Mean reading score
New Zealand #	18 (1.0)	591 (3.6)	81 (1.0)	541 (2.0)	1 (0.1)	~ ~
International mean	11 (0.1)	563 (1.0)	80 (0.2)	503 (0.5)	9 (0.1)	426 (1.9)

Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent. International means do not include the results for the Canadian provinces.

Data available for 50-69% of students.

(~) A tilde means there was insufficient data to report achievement.

Source: Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 3.2 in Mullis, et al., 2007.

There were substantial differences in the mean reading achievements of students at the three levels (i.e., high, medium, and low) of the HER Index in every country, although for New Zealand there were too few students at the low level to report their achievement. The difference between the mean reading scores for New Zealand students in the high and medium categories was 50 scale score points, compared to a 60 scale score point difference between the international mean scores for students in these two categories.

Parents’ attitudes towards reading

The Parents’ Attitudes Towards Reading (PATR) Index summarised parents (or caregivers) responses to a number of questions about their own attitudes to reading. The parents of the students participating in PIRLS-05/06 were asked about the extent to which they agreed with the following 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.
- Reading is an important activity in my home.

Students were assigned to the high level of the index if their *parents’* responses to the five statements reflected they mostly agreed a lot to the five statements, while students were assigned to the low level if the average reflected they disagreed a lot. Students in the medium category had parents whose responses typically fell between these two extremes.³²

New Zealand parents in 2005/2006 were relatively positive about their own reading. Internationally, they were also among the most regular readers, and often read for pleasure.

³²The mean was computed across the 5 items based on a 4-point scale: Disagree a lot = 1, disagree a little = 2, agree a little = 3, agree a lot = 4. Responses for negative statements were reverse-coded. The high level indicates an average of greater than 3 through to 4, the medium level indicates an average of 2 through 3, and the low level indicates an average of 1 to less than 2.)

Table 3.3 summarises the information for New Zealand. New Zealand parents were generally very positive in their attitudes towards reading, so that 66 percent of students were in the high level, compared with 52 percent internationally. Countries with higher proportions of students in the high level included Sweden (71%), Norway (71%), Scotland (70%), Denmark (70%), Hungary (68%), and the Netherlands (68%). Parents from Alberta and Nova Scotia also held positive views about reading (both 67% at the high level of the index).

Across all countries, the relationship between parents' attitudes and student achievement was linear – that is, student achievement was on average higher if parents' attitudes were at the high end of the index, and lower if they were at the low end.

Table 3.3: Reading achievement of students at each level of the Parents' Attitudes Towards Reading (PATR) Index, New Zealand and internationally, 2005/2006

Comparison group	Level on the Parents' Attitudes Towards Reading (PATR) Index					
	High		Medium		Low	
	% of students	Mean reading score	% of students	Mean reading score	% of students	Mean reading score
New Zealand #	66 (1.1)	562 (2.5)	28 (1.0)	526 (3.3)	6 (0.5)	510 (8.3)
International mean	52 (0.2)	518 (0.6)	41 (0.2)	488 (0.6)	7 (0.1)	475 (1.5)

Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent. International means do not include the results for the Canadian provinces.

Data available for 50-69% of students.

Source: Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 3.10 in Mullis, et al., 2007.

Parents' reading at home

Internationally, New Zealand parents tended to spend more time reading than many of their counterparts, with a significant proportion (49% of students compared with 37% on average internationally) reporting they spend more than 5 hours a week reading. A parent of a New Zealand Year 5 student was also more likely to read daily for enjoyment than parents in most other countries (60% of Year 5 students compared with 47% internationally).

SECTION 4:

CURRICULUM CONTEXT



This section looks briefly at the curriculum context for reading, and at the levels of emphasis given to the purposes for reading and to the processes of comprehension. School principals' reports on the emphasis placed on reading within their schools, and the emphasis given to specific reading skills and strategies are also discussed.

During the period 2001 to 2005/2006 the reading curriculum in many countries was either new or had been revised.

Background

By the middle primary level, students' reading skills and attitudes towards reading have largely been shaped by their learning experiences at home and at school. These experiences have in turn largely been influenced by countries' expectations for reading, which are often articulated in countries' curricula. In order to gain an understanding of how the dimensions of the PIRLS assessment framework – purposes for reading and comprehension processes – align with countries' intended curricula, descriptive information was collected from both curriculum specialists and school principals about different areas of emphasis.³³

Country curriculum context

Nearly all countries have a national curriculum that covers reading at the middle primary level. The exceptions are Canada, Germany, and the United States, where curricula are the responsibility of the province, *länder*, and state, respectively. In Belgium, the French and Flemish communities have their own governments, which are responsible for education, and both have their documents pertaining to minimum standards in reading.

Reading is part of the language arts curriculum for most countries. Those systems with a separate reading curriculum are the Netherlands, the Russian Federation, and Sweden. The Canadian province Ontario also has a separate reading curriculum.

Over the period 2001 to 2005/2006 many of the participating countries were either revising or had just introduced a new curriculum. As noted in Section 2, Hong Kong SAR, Singapore, and the Russian Federation were examples of where major changes in reading instruction had started to be implemented from the late 1990s onwards.

Countries' emphasis on the purposes for reading³⁴

Countries were asked the level of emphasis on five purposes for reading. Thirty countries reported their curricula gave a major emphasis to the purpose of improving reading. Just over half of the countries' curricula (21) gave major emphases to reading for both literary experience and to acquire information, while in nine countries their curricula gave a major emphasis to one purpose and some or no emphasis to the other purpose. For example, Belgium (French) and Poland gave a major emphasis to reading for the purpose of acquiring information and no emphasis to reading for literary experience, while the Russian Federation's and Slovak Republic's curricula gave a major emphasis to reading for literary experience and some emphasis to reading to acquire information. About the same number of countries (22) gave a major emphasis to the purpose of reading for enjoyment; 10 countries reported a major emphasis for social awareness and civic duty.

Table 4.1 presents an overview of the level of emphasis the *intended* curriculum places on the purposes for reading for New Zealand and a small selection of countries, including Hong Kong SAR and Sweden, along with three of the Canadian provinces.

³³The PIRLS 2006 encyclopedia (Kennedy, et al., 2007) contains a very detailed overview of national intentions in reading.

³⁴Information on *intended* curricula was provided by countries' reading curriculum specialists.

Table 4.1: Emphasis the *intended* curriculum gives to purposes for reading, New Zealand and selected countries, 2005/2006

Selected countries	Emphasis on purposes for reading				
	To improve reading	For literary experience	To acquire information	For social awareness/civic duty	For enjoyment
England	●	●	●	○	●
Hong Kong SAR	●	●	●	+	●
New Zealand	+	+	+	○	+
Scotland	●	●	●	○	●
Singapore	●	●	●	●	●
Sweden	○	●	●	●	●
United States	●	●	●	○	●
Canadian provinces					
British Columbia	●	●	●	+	●
Ontario	+	+	+	+	+

Key

- Major emphasis
- ⊕ Some emphasis
- Little or no emphasis

Note

The Canadian provinces took part in PIRLS-05/06 as benchmarking participants.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 5.7 in Mullis, et al., 2007.

Countries' emphasis on the processes of reading comprehension

Twenty-four of the 38 countries³⁵ (and four of the Canadian provinces) reported their curricula gave a major emphasis to two or more processes relating to *focusing on and retrieving information*, including identifying specific ideas, searching for definitions of words or phrases, and finding the topic sentence or main idea in a text. 'Summarising the main point' was most widely reported as a major emphasis for straightforward inferencing processes. The process most often noted as being a major emphasis in the *interpreting and integrating ideas and information* category was identifying the overall message or theme. The *examining and evaluating content language and textual element* category tended to feature less as an area of major emphasis for most countries. Table 4.2 summarises for a selection of countries, including New Zealand (and three Canadian provinces), the level of emphasis the *intended* curriculum places on particular processes of reading comprehension assessed in PIRLS-05/06.

³⁵ Comparable data were not available for Morocco and the United States.

Table 4.2: Emphasis the *intended* curriculum gives to particular comprehension processes, New Zealand and selected countries, 2005/2006

Selected countries*	Emphasis on processes of comprehension						
	Focus on and retrieve explicitly stated information			Make straightforward inferences			
	Identifying specific ideas	Searching for definitions of words or phrases	Finding topic sentence or main idea	Evaluating cause/effect	Determining referent of a pronoun	Identifying generalisations	Summarising main point
England	●	+	●	●	○	●	●
Hong Kong SAR	●	●	+	●	+	+	+
New Zealand	●	+	+	+	+	+	+
Scotland	●	●	●	+	●	+	●
Singapore	●	○	+	○	○	●	●
Sweden	+	○	+	●	○	+	●
Canadian provinces							
British Columbia	●	+	●	●	+	●	●
Ontario	●	●	●	+	+	●	●

Selected countries*	Emphasis on processes of comprehension							
	Interpret and integrate ideas and information					Examine and evaluate content, language, and textual elements		
	Discerning overall message and theme	Describing relationship between two characters	Comparing and contrasting text information	Inferring story's mood or tone	Interpreting a real-world application of text information	Evaluating likelihood that events described could really happen	Judging completeness or clarity of information in text	Determining an author's perspective
England	●	●	●	●	●	○	●	○
Hong Kong SAR	●	●	+	+	●	+	●	●
New Zealand	+	+	+	+	+	+	+	+
Scotland	●	●	●	●	+	●	●	●
Singapore	+	○	+	○	●	+	○	○
Sweden	●	+	+	+	●	●	●	+
Canadian provinces								
British Columbia	●	+	●	+	+	+	●	●
Ontario	●	●	●	●	●	+	●	●

- Key
- Major emphasis
 - ⊕ Some emphasis
 - Little or no emphasis

Notes

The Canadian provinces took part in PIRLS-05/06 as benchmarking participants.

* Comparable data for the United States not available.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 5.8 in Mullis, et al., 2007.

School-level emphasis on reading

School principals were asked about the emphasis schools placed on the reading curriculum. In many countries, students were in schools where more emphasis was given to literacy skills – reading, writing, and oral language – than to other curriculum areas. Education systems with more than 90 percent of students in such schools included Iceland, Latvia, New Zealand, Norway, and the United States, and the five Canadian provinces.

Principals were also asked at which schooling level particular skills and strategies first received a major emphasis. Table 4.3 presents a summary of some of the information sought focusing on the skills or strategies associated with *interpreting, integrating, and evaluating processes*.

Table 4.3: Principals’ reports on the schooling level at which various reading comprehensions skills and strategies are emphasised, New Zealand and selected countries, 2005/2006

Selected countries*	Grade by which skill or strategy is emphasised for at least 50% of students					
	Explaining or supporting text understanding	Comparing text with personal experience	Making predictions about what happens next in text	Comparing different texts	Making generalisations & inferences based on text	Describing text style & structure
England	1	1	1	2	2	2
New Zealand	1	1	1	2	2	3
Scotland	2	2	2	2	3	3
Singapore	2	2	1	3	3	4
Sweden	2	2	2	3	3	4
United States	2	2	1	2	2	3
International mean	2	2	3	3	3	4
Canadian provinces						
British Columbia	2	2	1	3	2	4
Ontario	2	1	1	2	2	3

Key

Grade New Zealand year level equivalent

- 1 Year 2 or earlier
- 2 Year 3
- 3 Year 4
- 4 Year 5
- N Year 6 or higher

Notes

International means do not include results for the Canadian provinces.

* Comparable data for Hong Kong not available.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 5.9 in Mullis, et al., 2007.

SECTION 5:

CLASSROOM CONTEXT



PIRLS-05/06 also sought information from middle-primary teachers responsible for teaching reading to the classes or groups of students that took part in the study. This section touches on a selection of information provided by teachers about the classroom environment for teaching reading, activities undertaken during reading lessons, and resource materials likely to be used in lessons. Where it is possible, the association of a particular practice or approach and reading achievement is described.

Background

The classroom environment has a significant influence on student learning. Classes vary in size, which can often affect the structure of lessons, from teacher-centred to more child-centred learning environments. Teachers have a key role in that they respond to and implement both school and national curricular intentions. Their preparation to teach and their experiences teaching reading, for example, are significant for students' development of reading literacy. It is however important to remember that by the 4th or 5th year of schooling students' reading experiences have generally been influenced by more than one teacher; the information collected from teachers in PIRLS-05/06 is just a snapshot of just one year – in New Zealand's case in late 2005. Teaching practices in the year PIRLS was administered may, however, reflect practices and approaches used in schools generally.

Demographic characteristics of teachers³⁶

The most common age band for New Zealand teachers was 30-39 years. Internationally, teachers were equally likely to be in the 30-39 or 40-49 age band.

In 2005/2006, the distribution of New Zealand teachers across four age bands, spanning the 20s through to 50 years and older, tended to be fairly even, although most teachers were in the 30-39 years band (28% compared with 30% internationally).³⁷ Internationally, concerns were noted by Mullis, et al. (2007) about the distribution of ages being uneven, as proportionally few teachers in many countries were in the younger age bands. In New Zealand, just over one in five Year 5 students (22%) were being taught by teachers under 30 years of age, compared with an average of 15 percent internationally (as examples, Germany was 5%, Sweden 9%, United States 21%, England 30%, and Singapore 37%).

In most countries most students at the middle primary level are taught by women (83% on average). The proportion of New Zealand Year 5 students being taught reading by women was 77 percent. Four countries with an almost all-female teaching force were Georgia (100%), Latvia (99%), Lithuania (99%), and the Russian Federation (98%). Three countries had relatively large proportions of middle primary students taught by men: Iran (50%), Luxembourg (45%), Indonesia (44%), and Morocco (44%).

On average internationally, teachers had been teaching for 17 years, whereas in New Zealand teachers had taught for an average of 12 years. There were 10 countries where teachers averaged more than 20 years' experience, including Austria, Hungary, and Italy. In just two countries – Kuwait and Singapore – teachers typically had less than 10 years' teaching experience.

³⁶ Responses were from the teachers of a representative sample of students only, and are therefore not necessarily representative of all teachers at this level. In New Zealand approximately 500 teachers responded to the PIRLS *Teacher Questionnaire*.

³⁷ The other age bands were: '29 years and under' (22%), '40-49 years' (25%), and '50 years or older' (25%).

Instructional time

The *intended* number of hours dedicated to instruction per week in many countries is mandated at the national level, usually by the country's agency responsible for education. In some instances the specified times are minimum requirements. On average internationally, the total hours of instruction specified was 22 hours per week. New Zealand is one of four other countries (Belgium (French), the Netherlands, Sweden, and the United States) that do not specify the number of instructional hours in their *intended* curriculum. Two Canadian provinces – British Columbia and Ontario – do not specify the instructional hours. According to the reports from school principals on the actual *implemented* instructional time, New Zealand schools typically spent about 24 hours per week on instruction, one hour more than the international mean (23 hours).

Based on reports of both teachers and school principals, on average internationally, at the middle primary level 30 percent of the weekly instructional time was spent on language instruction and/or related activities and 20 percent on reading. The mean proportions estimated for New Zealand are 37 percent and 23 percent, respectively.

More than one-half of New Zealand Year 5 students (56%) in 2005 were receiving 'more than 3 through to 6 hours' of reading (formal and integrated across the curriculum). Less than one-third (29%) received 'more than 6 hours' per week, while the remaining 15 percent received '3 hours or less'.

During the school week, New Zealand schools typically spent a higher *percentage* of the total instructional time on language and reading than internationally. The international data show no clear pattern between the time spent on reading and reading achievement.

Formal time for reading

Teachers were asked for the number of hours dedicated specifically to reading. As shown in Table 5.1, in New Zealand nearly all Year 5 students (96%) spent an average of 3.2 hours per week on formal reading. On average internationally, these data compare with 77 percent of students receiving an average of 2.5 hours per week. In the United States, teachers reported spending an average of 4.8 hours on reading (94% of students in such classes), one of the highest internationally.

New Zealand students who were in classes where there was formal time set aside for teaching reading achieved about 22 scale score points higher on average than the 4 percent of students in classes where there was no formal time (535 compared with 513). The difference was not statistically significant at the 5% level.

Table 5.1: Instructional time allocated to reading, New Zealand and selected countries, 2005/2006

Selected countries	Mean hours of instructional time per week (actual)	Percentage of instructional time		Time explicitly for formal reading instruction				Mean hours per week spent on formal reading instruction
		Language*	Reading**	Yes		No		
				% of students	Mean reading achievement	% of students	Mean reading achievement	
England	25 (0.3)	28 (0.8)	13 (0.9)	80 (3.6)	542 (3.7)	20 (3.6)	540 (11.2)	1.8 (0.08)
Germany	22 (0.2)	32 (1.1)	13 (0.7)	43 (3.5)	548 (3.8)	57 (3.5)	549 (2.3)	1.4 (0.07)
Hong Kong SAR	26 (0.3)	22 (0.6)	11 (0.7)	73 (4.0)	567 (2.7)	27 (4.0)	555 (5.1)	1.7 (0.14)
New Zealand	24 (0.1)	37 (0.8)	23 (0.7)	96 (0.8)	535 (2.0)	4 (0.8)	513 (11.4)	3.2 (0.09)
† Scotland	25 (0.1)	27 (0.9)	16 (1.0)	87 (3.2)	527 (3.1)	13 (3.2)	525 (8.9)	2.5 (0.17)
Sweden	24 (0.4)	27 (1.0)	17 (1.1)	79 (3.5)	548 (2.8)	21 (3.5)	548 (3.9)	1.6 (0.09)
† ^{2a} United States	30 (0.3)	31 (1.1)	29 (1.1)	94 (2.0)	539 (3.9)	6 (2.0)	551 (8.5)	4.8 (0.19)
International mean	23 (0.0)	30 (0.1)	20 (0.2)	77 (0.5)	500 (0.7)	23 (0.5)	496 (1.5)	2.5 (0.02)
Canadian provinces								
^{2a} British Columbia	25 (0.2)	x x	24 (1.5)	83 (3.0)	557 (3.3)	17 (3.0)	562 (7.7)	3.1 (0.19)
^{2a} Ontario	25 (0.3)	34 (1.3)	23 (1.4)	82 (4.1)	555 (3.0)	18 (4.1)	557 (7.0)	3.1 (0.27)

Notes

Standard errors appear in parentheses. The international means do not include the results for the Canadian provinces.

An "x" indicates data was available for less than 50% of students.

* All language related activities including reading, writing, speaking, literature, and other language skills.

** All reading activities - formal and informal - across the curriculum.

† Met guidelines for sample participation rates only after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibits 5.10 and 5.12 in Mullis, et al., 2007.

Internationally, teachers reported using a variety of organisational approaches to teach reading. The most popular, single approach was to teach reading as a whole class activity. New Zealand teachers rarely used this approach. Creating same-ability groups was relatively rare internationally, but was a very popular approach used by New Zealand teachers.

Implementation and organisation of reading classes

Teachers in PIRLS-05/06 were likely to report that they *often* used a variety of organisational approaches (i.e., a minimum of two approaches) to teach reading and/or reading activities rather than using one single approach.³⁸ More than three-quarters of students in 22 countries fell into this category. In New Zealand's case the proportion was lower, at 62 percent.

Internationally, 'teaching reading as a whole class activity' was the most preferred *single* organisational approach used by teachers *always or almost always*, with 35 percent of students, on average, in such classes. New Zealand teachers favoured whole-class teaching the least of any country, with just 2 percent of students in such classes. Dutch (8%), Belgian-Flemish (7%), English (6%), Scottish (6%), and Hungarian (5%) teachers were also unlikely to favour this approach.

By way of contrast, teachers from, for example, Bulgaria (75% of students) and Romania (72%) generally preferred this as their single approach to teaching reading. The single most reported approach used by New Zealand and Scottish teachers was 'creating same-ability groups' for instruction – 61 percent and 54 percent of students, respectively, were in such classes. Almost all other countries and provinces used this approach very infrequently. For example, teachers of less than 7 percent of students in the Canadian provinces used this single approach for teaching reading. The mean proportion internationally for 'creating same-ability groups' was just 8 percent of students.

Table 5.2 presents information for these approaches as well as four other approaches for which teachers' responses were sought – creating same-ability groups, individualised instruction, working independently on a teacher-assigned goal, and working independently on a student-chosen goal – for New Zealand and a selection of countries.

Table 5.2: Organisational approaches for teaching reading used by teachers, New Zealand and selected countries, 2005/2006

Selected countries	Percentage of students whose teachers reported using organisation approach always or almost always						
	Teaching reading as a whole class activity	Creating same-ability groups	Creating mixed-ability groups	Using individualised instruction for reading	Having students work independently on assigned plan or goal	Having students work independently on a goal they choose themselves	Using a variety of organisation approaches
England	6 (2.0)	27 (4.5)	0 (0.4)	4 (1.7)	3 (0.7)	0 (0.0)	66 (4.1)
Germany	22 (3.0)	2 (0.7)	1 (0.7)	2 (0.8)	10 (2.3)	5 (1.5)	68 (3.5)
Hong Kong SAR	34 (3.8)	0 (0.0)	6 (2.0)	2 (1.1)	5 (1.9)	3 (1.6)	55 (4.3)
New Zealand	2 (0.6)	61 (2.7)	1 (0.6)	8 (1.5)	6 (1.4)	1 (0.3)	62 (2.9)
† Scotland	6 (2.7)	54 (4.5)	1 (0.6)	5 (2.3)	9 (3.1)	0 (0.0)	70 (4.6)
Sweden	22 (3.2)	3 (1.2)	0 (0.3)	3 (1.1)	14 (2.7)	6 (1.6)	59 (3.8)
† ^{2a} United States	25 (3.3)	13 (2.4)	7 (1.9)	7 (2.2)	8 (2.1)	2 (1.0)	73 (3.1)
International mean	35 (0.5)	8 (0.3)	7 (0.3)	12 (0.4)	12 (0.4)	5 (0.2)	78 (0.5)
Canadian provinces							
^{2a} British Columbia	24 (3.8)	6 (1.9)	4 (1.7)	1 (0.7)	5 (2.1)	1 (0.9)	65 (4.1)
^{2a} Ontario	18 (3.6)	5 (1.4)	5 (1.1)	5 (2.2)	5 (2.0)	0 (0.0)	72 (3.9)

Notes

Standard errors appear in parentheses. The international means do not include the results for the Canadian provinces.

† Met guidelines for sample participation rates only after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 5.15 in Mullis, et al., 2007.

³⁸The 4-point scale was 'always or almost always', 'often', 'sometimes', and 'never'.

The relationship between reading achievement and the frequency of using a particular organisational approach varied across and within countries. For example, the mean achievement of New Zealand students always taught reading as a whole-class activity was significantly lower than for students where it was rarely used. The opposite was observed in England, while in Sweden there was no association between frequency and reading achievement. The relationship between teachers' frequency of creating same-ability groups and achievement also varied. In New Zealand, for example, there was no association between reading achievement and frequency, whereas in Sweden students tended to have lower reading achievement when this approach was used frequently by their teacher than their counterparts with whom it was used sometimes or rarely.

Any change?

There was very little change in New Zealand teachers' reports in 2005/2006 of how classes were organised for reading from the patterns observed in 2001.

What evidence do New Zealand teachers use to group their students?

New Zealand teachers were asked how often they used particular evidential forms to make decisions on how to group their students into same- or mixed-ability groups. Specifically the categories were 'Assessment Tools for Teaching and Learning (asTTle)', 'other diagnostic tools', 'classroom observations', 'professional judgement', and 'other evidence'. The evidence teachers reported using 'always or almost always' when deciding how to group students was 'other diagnostic tools' (36% of students in such classes), along with evidence from 'other sources' – most often a combination of Running Records, Supplementary Test of Achievement in Reading, and Burt Word Reading Test (34%). Teachers' observations in the class (53%) and their own professional judgement (45%) were 'often' used as a basis for grouping students.

Class size

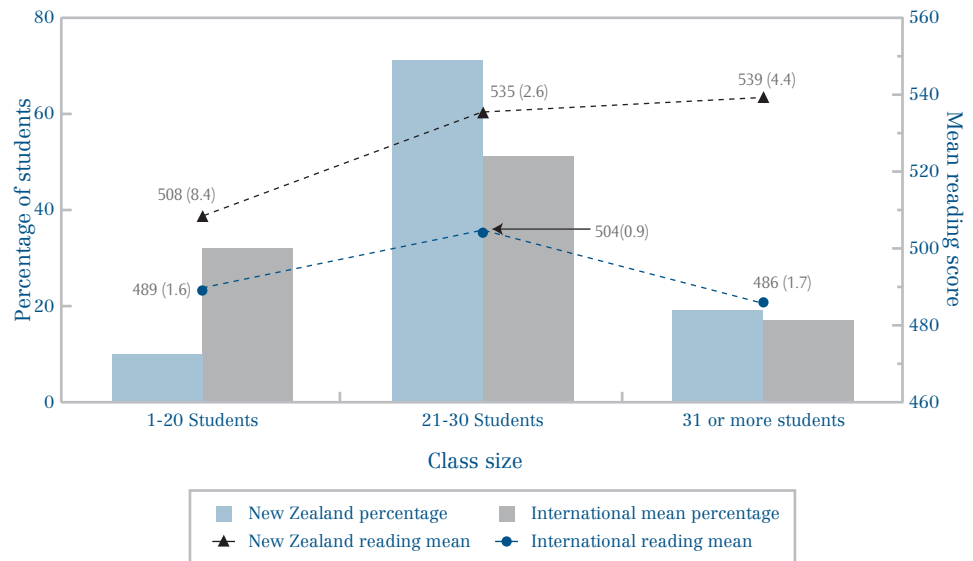
Across all PIRLS-05/06 countries, the average class size for reading and language instruction was 24 students,³⁹ with higher-performing Luxembourg (17 students per class) and lower-performing Romania (19) recording the *smallest* average class sizes. The largest average class sizes were in two higher-performing countries, Hong Kong SAR (35) and Singapore (38), and in low-performing South Africa (42). New Zealand's mean class size was 27 students, and was comparable to the mean for England (27) and Scotland (26), and two provinces British Columbia (26) and Ontario (26).

Figure 5.1 shows the percentages of New Zealand Year 5 students in three ranges of class size. The international means are also shown. In addition, the mean reading scores are shown for students in each class range. Internationally, the relationship between achievement and class size tended to be curvilinear, with the mean achievement for smaller classes (1-20) and the large classes (31 or more) lower than the moderate-sized classes (21-30). This suggests that many countries probably have smaller classes for their lower ability students. In New Zealand's case the relationship tended to be linear, with the mean achievement of students in the larger classes (21-30 and 31 or more) higher than in smaller classes (1-20).

New Zealand teachers were typically teaching classes with about 27 students, an average of one student fewer than in 2001. The international data show no clear pattern between class size and reading achievement.

³⁹These are results for entire classes, which included composite classes. Across countries, the average number of Grade 4 students in a class was also 24.

Figure 5.1: Class size for reading and language instruction, 2005/2006



Notes

The bars represent the percentage of students in each class size range. The data points are the mean reading scores for students in each class size range. Standard errors appear in parentheses.

The international means do not include the results for the Canadian provinces.

Source: Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 5.16 in Mullis, et al., 2007.

England and Scotland showed a similar pattern as New Zealand. However, in England’s case the relationship with achievement was parabola-shaped, with the mean achievement of students in small and large classes higher than for students in moderate-sized classes. It is interesting to note that, with two exceptions, proportionally very few students (< 3%) in Western European and Scandinavian countries were in classes with 31 or more students. The exceptions were the Netherlands (11% of students) and Sweden (6%).

Any change?

There were significant reductions in the mean class size for 15 countries, including New Zealand (a decrease by an average of one student per class). The decrease in New Zealand was largely due to a 3 percentage point decrease in the proportion of students in larger classes (31 or more students) from 2001 to 2005/2006.

Instructional activities used when teaching reading

As was the case in 2001, New Zealand Year 5 students were more likely to do silent reading and be taught strategies for decoding sounds and words than many of their international counterparts.

Teachers were asked about the use of particular instructional activities when working with their students during their reading. Table 5.3 summarises the information sought about four of these practices as reported by New Zealand teachers. The findings from a selection of other countries are also presented. New Zealand teachers, along with teachers from 17 other countries (and four provinces), were more likely to read aloud to their classes daily than teachers in other countries (more than 66% of students were in classes where this happened). A teacher asking their students to read aloud to the whole class was somewhat more common in other countries than in New Zealand, with teachers of at least 40 percent of students in 28 countries doing this daily. This activity was seldom used as a daily activity in New Zealand (9% of students in such classes) and Sweden (4%), with teachers from Denmark (18%), Iceland (19%), Scotland (21%), and Norway (24%) also unlikely to use the practice on a daily basis. While few New Zealand Year 5 students were rarely required to read aloud in class on a daily basis, there was a notable sized-group in classes where their teachers used this activity weekly (44%). A relatively large proportion, however, (47%) were in classes where reading aloud was rarely or never used; this compared with the international mean proportion of 12 percent.

Table 5.3: An overview of instructional activities undertaken daily, New Zealand and selected countries, 2005/2006

Selected countries	Percentage of students whose teachers reported doing various reading activities daily			
	Teacher reads aloud to class	Student reads aloud to the whole class	Students read aloud in small groups/pairs	Students read silently on their own
England	70 (3.9)	49 (4.5)	24 (3.7)	64 (4.2)
Germany	14 (2.1)	49 (3.9)	8 (1.9)	61 (3.3)
Hong Kong SAR	44 (4.4)	49 (4.7)	10 (2.8)	44 (4.6)
New Zealand	77 (2.4)	9 (1.5)	21 (2.1)	89 (1.8)
† Scotland	49 (4.8)	21 (4.1)	26 (4.0)	65 (3.6)
Sweden	55 (3.5)	4 (1.6)	3 (1.3)	83 (2.6)
† ^{2a} United States	76 (2.9)	38 (4.1)	22 (2.5)	79 (3.3)
International mean	58 (0.5)	56 (0.5)	14 (0.4)	59 (0.5)
Canadian provinces				
^{2a} British Columbia	72 (3.9)	32 (3.5)	21 (3.2)	87 (2.5)
^{2a} Ontario	78 (3.9)	41 (4.5)	14 (3.5)	76 (4.5)

Notes

Standard errors appear in parentheses. The international means do not include data from the Canadian provinces.

† Met guidelines for sample participation rates only after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 6.12 in Mullis, et al., 2007.

On average, internationally nearly 6 out of every 10 students are asked by their teachers daily to do some silent reading. However, the *majority* of students in four countries – New Zealand (89%), the Russian Federation (84%), Moldova (83%), and Sweden (83%) – were likely to do silent reading as a daily activity than was the case in other countries. Teachers from the provinces of Alberta, British Columbia, and Nova Scotia were also very likely to ask their students to do silent reading as a daily activity. (See page 52 for students’ reports on these activities.)

As with the class organisational approaches, the relationship between reading achievement and the frequency of using a particular instructional approach varied across and within countries. For example, the reading achievement of New Zealand students who were rarely required to read aloud in small groups was generally much higher than those students who frequently read aloud. In Sweden there was no association between the frequency of using this particular instructional approach and reading achievement.

Teaching decoding strategies

In addition to the practices noted above, teachers were asked how often they taught students strategies for decoding sounds and words. Just over four-fifths of New Zealand Year 5 students (82%) were being taught, *at least weekly*, strategies for how to decode sounds and words, with one-third of students (33%) being taught these strategies *daily*. The latter proportion was the same as the daily reports for the United States (33%) but over double the proportion for English students (15%). Table 5.4 summarises this information for New Zealand and a selection of countries where one of the test languages was English.

Table 5.4: Teaching decoding strategies, New Zealand and selected countries, 2005/2006

Selected countries	Percentage of students whose teachers reported teaching strategies for decoding		
	Daily	Weekly	Less than weekly
England	15 (3.0)	59 (4.0)	27 (4.1)
New Zealand	33 (2.8)	49 (2.8)	18 (2.3)
† Scotland	21 (4.0)	54 (4.6)	25 (3.9)
Singapore	16 (2.1)	40 (3.1)	43 (2.9)
Trinidad & Tobago	52 (4.2)	42 (4.0)	6 (1.9)
† 2a United States	33 (4.1)	46 (4.5)	21 (2.8)
International mean	25 (0.5)	32 (0.6)	43 (0.5)
Canadian provinces			
2a Alberta	23 (3.1)	45 (3.8)	32 (3.9)
2a British Columbia	19 (3.5)	48 (4.1)	33 (4.4)
2a Ontario	21 (4.1)	48 (5.3)	31 (4.6)

Notes

Standard errors appear in parentheses. Because results are rounded, some figures may appear inconsistent. The international means do not include data from the Canadian provinces.

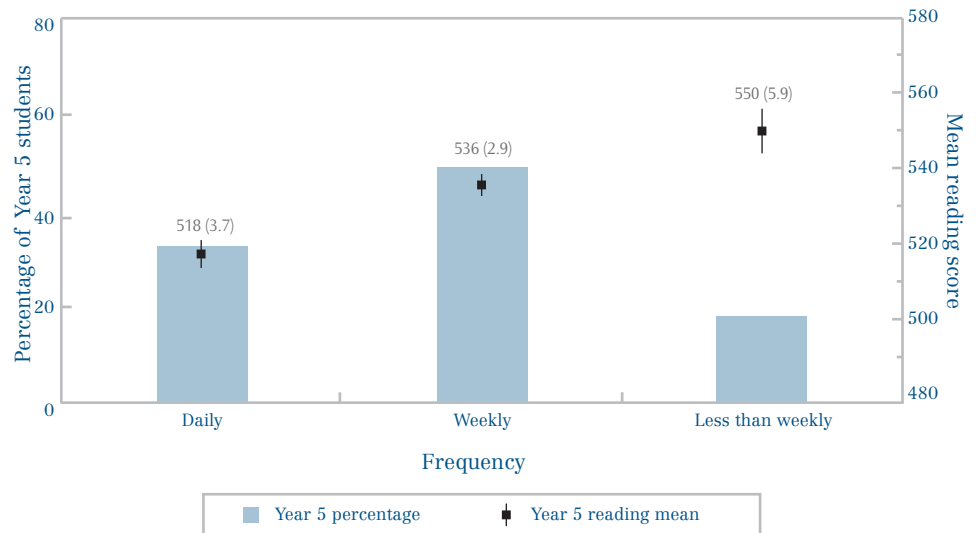
† Met guidelines for sample participation rates only after replacement schools were included.

2a National Defined Population covers less than 95% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 6.10 in Mullis, et al., 2007.

Figure 5.2 illustrates the relationship between students' reading achievement and the frequency with which they are being taught decoding strategies. Students who were taught strategies on a daily basis achieved on average about 30 scale score points lower than students who rarely were.

Figure 5.2: New Zealand Year 5 students' reading achievement and their teachers' reports of teaching decoding strategies, 2005/2006



Notes

The bars represent the percentage of Year 5 students whose teachers reported how often they taught strategies for decoding.

The data points are the mean reading scores for students whose teachers reported the frequency of teaching decoding strategies. Standard errors appear in parentheses. The vertical lines extending from the data point show the 95% confidence interval around the mean (i.e., ± 2 standard errors.)

Teaching new vocabulary

Helping students to understand new vocabulary was more likely to be happening at the middle primary level internationally than decoding. On average internationally, 69 percent of students were being helped this way on a daily basis. The proportion of New Zealand Year 5 students was 60 percent; the proportions for Scotland (55%) and England (53%) were slightly lower; the proportion reported for the United States was at the international mean (69%).

Students' reports about reading independently

By the fourth or fifth year of schooling students are likely to be progressing to be independent readers. Students were asked about their independent reading – their silent reading and how often they read books they chose themselves. In New Zealand the proportion of Year 5 students reading independently daily was 83 percent, with 14 percent reporting they read once or twice a week and 3 percent rarely or never. On average internationally, 65 percent of students were reading independently daily, and another 27 percent reported it as a weekly activity; the remainder (8%) rarely or never read independently.

It was not surprising to see that Year 5 students who read independently on a daily basis were achieving, on average, at a higher level than students who reported reading independently less frequently (541 compared with 502). However, it is interesting to note that in both the Netherlands and Sweden there were no achievement differences among the categories of readers.

Students' reports about reading aloud

Students' responses to the frequency of reading aloud to the *class* and to a *small group* of students in their class were combined. Given the stage at which students are in school, it is no surprise to see that students across countries were generally less likely to read aloud daily than read independently. On average internationally, more than one-half (54%) reported reading aloud at least weekly; the proportion of New Zealand students was 27 percent. In general the frequency of reading aloud was inversely related to achievement – students who read aloud daily tended to achieve at a lower level than those students who read aloud less frequently. New Zealand was no exception, with a difference in the mean reading achievement of just over 80 scale score points between the 5 percent of Year 5 students who reported reading aloud every day (460) and the 51 percent of students who never or almost never (543) read out loud.

Materials used for instruction

Based on the reports from school principals, on average internationally, primary schools were using textbooks (77% of students in such schools) or reading series (42%) as a *basis* for their reading programmes from *school entry through to Grade 4*. The resources least likely to be used as a basis for reading programmes were children's books, children's newspapers/magazines, materials from different curricula areas, and computer programs (14% or less of students attending such schools). Schools in many countries, however, did not just use one type but a variety of reading materials to *supplement* their teaching of reading.

There were variations to these patterns noted above, and New Zealand is one such example. New Zealand schools were more likely to use reading series as the basis for reading programmes than schools in other countries (93% of students); textbooks were rarely used (9%).

Teachers' reports of resources used in their classes

Teachers' reports of the resources they used in their classes are summarised in Table 5.5. Internationally, teachers' reports of the materials used in their particular programmes with their middle primary school students were very similar to information provided by principals in relation to the pattern for the school as a whole. In New Zealand, teachers of the majority of Year 5 students (94%) reported they used a reading series at least weekly; the next most frequently used source was children's books (78%). There were differences of note for England and the Canadian provinces. At 49 percent, English teachers were less likely to use a reading series and more likely to use children's books (93% of students in such classes). The proportions reported for England were similar to the Canadian provinces, with the exception of Quebec.

New Zealand schools were more likely to use a reading series as the basis for their reading programmes with their junior to middle primary level classes than most other countries. Specifically, at Year 5, a reading series and, to a lesser extent, children's books were most likely to be used.

Table 5.5: Materials teachers reported used in their reading programmes at least weekly, New Zealand and selected countries, 2005/2006

Selected countries	Percentage of students whose teachers used resource at least weekly in their reading programme						
	Reading series	Textbooks	Workbook or work-sheets	Variety of children's books	Children's newspapers and/or magazines	Materials from other subjects	Computer software
England	49 (4.1)	66 (4.2)	65 (4.0)	93 (1.7)	9 (2.6)	75 (4.1)	32 (4.0)
Germany	20 (3.6)	83 (2.7)	92 (1.4)	42 (3.7)	8 (2.0)	68 (3.5)	15 (2.2)
Hong Kong SAR	36 (3.8)	97 (1.5)	71 (3.7)	25 (3.6)	10 (2.6)	12 (2.7)	36 (4.2)
New Zealand	94 (1.4)	20 (2.3)	65 (2.8)	78 (2.5)	18 (2.2)	61 (2.8)	18 (1.9)
† Scotland	95 (1.8)	81 (4.0)	82 (3.6)	80 (4.2)	5 (2.2)	60 (4.4)	20 (3.6)
Sweden	52 (3.7)	82 (2.7)	71 (3.6)	89 (2.6)	16 (2.8)	77 (3.5)	10 (2.3)
† ^{2a} United States	69 (4.1)	82 (1.8)	85 (3.0)	78 (3.2)	36 (4.1)	74 (3.2)	32 (3.8)
International mean	60 (0.5)	90 (0.3)	82 (0.4)	55 (0.5)	22 (0.5)	53 (0.6)	11 (0.4)
Canadian provinces							
^{2a} British Columbia	47 (4.8)	66 (3.6)	65 (4.4)	91 (2.7)	13 (3.0)	79 (3.9)	15 (3.2)
^{2a} Ontario	55 (4.9)	68 (4.5)	77 (4.4)	91 (2.8)	20 (4.5)	83 (4.1)	17 (3.6)

Notes

Standard errors appear in parentheses. The international means do not include the results for the Canadian provinces

† Met guidelines for sample participation rates only after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 6.6 in Mullis, et al., 2007.

The association between the frequency of use of published resources and reading achievement varied across countries. In New Zealand, students who were in classes where the resources (with the exception of children's books) were used more frequently (daily or once or twice a week) tended to have lower reading achievement than students where the resources were used less often (once or twice a month or never). The exception was children's books where there did not appear to be any relationship between the frequency of their use and students' reading achievement. Although the proportion in the category was very small, students in classes where children's books were never or almost never used tended to achieve at a lower level than when they were used at least sometimes.

Assessment

New Zealand teachers were more likely to place a major emphasis on classroom tests to monitor their students' reading progress in 2005/2006 than in 2001.

Across countries, teachers were asked for the level of emphasis on a variety of sources to monitor students' progress in reading. The information for New Zealand is summarised in Table 5.6 alongside the international means.

As was the case on average internationally, New Zealand teachers tended to place a major emphasis on their own professional judgement to monitor students' progress in reading. Diagnostic tests were also a preferred tool used by New Zealand teachers; the proportion of students in such classes was much higher than in Scotland (12%), England (15%), and four Canadian provinces (percentages ranged from 17% to 31%), but only slightly higher than in Nova Scotia (43%).

Table 5.6: Emphasis on sources for monitoring student progress, New Zealand and internationally, 2005/2006

Comparison group	Percentage of students whose teachers reported a major emphasis			
	Teacher's own judgement	Classroom tests (e.g., teacher-developed tests)	National or regional achievement tests	Diagnostics tests*
New Zealand	62 (3.1)	35 (2.8) ▲	N.A.	47 (2.8)
International mean	68 (0.5)	53 (0.5)	27 (0.5)	46 (0.5)

Notes

Standard errors appear in parentheses. The international means do not include the results for the Canadian provinces.

N.A. The source was not included in the New Zealand questionnaire.

* Examples added in the category *Diagnostic tests* for New Zealand teachers included PATs and asTTle.⁴⁰

▲ Significantly higher than in 2001.

Source: Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 6.24 in Mullis, et al., 2007.

The degree to which teachers placed a major emphasis on their national and regional assessments varied considerably across countries. For example, nearly two-thirds of Dutch students (64%) were in classes where their teachers emphasised this source, while teachers of about one-tenth or less of students in Austria and the Canadian provinces emphasised this as a source.

As with the previous areas discussed in this section, the association between reading achievement and the emphasis given to an assessment source varied. For example, the achievement of students whose teachers reported giving a major emphasis to diagnostic tests and using their own professional judgement tended to be higher than that of students where teachers gave little or no emphasis to these as sources. There was no association between students' achievement and the emphasis given to classroom tests.

Approaches to assessing reading performance

Teachers reported on the frequency (at least once a week, once or twice a month, once or twice a year, and never or almost never) with which they used a number of approaches to assess students' performance in reading. Table 5.7 summarise the information for New Zealand and internationally.

Table 5.7: Teachers' reports of approaches to assessing students in reading, New Zealand and internationally, 2005/2006

Comparison group	Percentage of students whose teachers reported using approach			
	Listening to students read aloud	Oral questioning or students give oral summary/report *	Multiple-choice questions	Constructed response questions**
New Zealand	56 (2.7)	81 (2.6) ▲	6 (1.1)	41 (3.1)
International mean	78 (0.4)	85 (0.4)	42 (0.5)	63 (0.5)

Notes

Standard errors appear in parentheses. The international means do not include the results for the Canadian provinces.

* The approaches oral questioning of students and students give an oral summary or report of what they have read were combined for reporting purposes.

** Constructed response questions combines the use of short answer written questions on material read and paragraph-length written responses about what students have read.

▲ Significantly higher than in 2001.

Source: Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 6.25 in Mullis, et al., 2007.

⁴⁰Progressive Achievement Tests and Assessment Tools for Teaching and Learning. The information gained from using asTTle allows teachers to identify *individual* and *group* strengths and weaknesses, monitor students' progress, and compare these results with national standards.

Any change?

New Zealand teachers were more likely to give a major emphasis to classroom tests in 2005/2006 than in 2001, with a significantly higher proportion of students (16 percentage points) being taught by teachers who used this source. There were corresponding (non-significant) decreases in emphasis of the other sources – teachers' own judgements and diagnostics tests.

Oral assessment techniques were also more likely to be employed by New Zealand teachers; a significantly higher proportion of students (13 percentage points) were taught reading by teachers who used this technique for assessing reading in 2005/2006 than in 2001.

SECTION 6:

SCHOOLS AND SCHOOLS CLIMATE



While the home and classroom both have very important roles for developing children's reading literacy, there are factors about the school environment which are also essential in terms of their learning. This section presents an overview of some of the information collected in PIRLS-05/06 on schools and school climate from a range of perspectives – school principals, parents/caregivers, and students.

Background

Many countries have national policies about what is expected for their children in terms of their reading acquisition, but schools are often responsible for interpreting these and sometimes establishing their own policies for reading. Differences in school characteristics such as location and size, as well as the socio-economic background and home language of students attending the school, may require schools to make variations in how a school is organised and how the curriculum is delivered. As well as the school 'demographics', creating a positive learning environment is important for children's learning; school climate can be enhanced by how all the actors feel – principals, teachers, parents, and students.

School location

Based on the responses from New Zealand school principals, 41 percent of Year 5 students attended schools in urban location, 39 percent attended suburban schools, and 21 percent attended schools in rural settings. There were no significant differences in Year 5 students' mean reading achievement among the three locations.⁴¹ On average internationally, it was found that children attending urban or suburban schools generally achieved at a moderately higher level than those who attended schools located in rural areas.

Any change?

In 2001, it was also found that there were no significant differences among the mean reading scores for New Zealand's Year 5 students attending schools in the three localities (Caygill & Chamberlain, 2004). It is interesting to note that this observation was contrary to what was found in the 1990-1991 IEA Reading Literacy Study; New Zealand rural Year 5 students generally achieved at a significantly higher level than their urban counterparts (Elley, 1992).

Students from economically disadvantaged homes

School principals' estimates of the percentage of their student body coming from economically disadvantaged homes are summarised in Table 6.1. The mean reading scores for Year 5 students attending the schools are also shown. Of note is the difference in achievement – about 82 scale score points – between New Zealand Year 5 students attending schools with proportionally few economically disadvantaged students and those attending schools with proportionally many.

Table 6.1: Principals' estimates of their student body coming from economically disadvantaged homes, New Zealand and internationally, 2005/2006

Comparison group	0-10% economically disadvantaged		11-25% economically disadvantaged		26-50% economically disadvantaged		More than 50% economically disadvantaged	
	% of students	Mean reading score	% of students	Mean reading score	% of students	Mean reading score	% of students	Mean reading score
New Zealand	51 (2.9)	557 (3.0)	19 (2.6)	526 (5.6)	14 (2.4)	516 (5.1)	16 (2.0)	475 (7.0)
International mean	39 (0.6)	521 (1.2)	26 (0.6)	504 (1.6)	17 (0.5)	488 (1.4)	18 (0.5)	465 (1.6)

Note

Standard errors appear in parentheses. The international means do not include the results for the Canadian provinces.

Source: Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 7.2 in Mullis, et al., 2007.

As was the case in 2001, the urban or rural locality of New Zealand schools did not appear to impact on Year 5 students' reading achievement.

New Zealand Year 5 students who were in schools where few schoolmates came from economically disadvantaged homes tended to achieve higher scores than students in schools with schoolmates who were predominantly from economically disadvantaged homes.

⁴¹The mean for Year 5 students at schools in 'urban' locations = 536 (3.3), 'suburban' = 527 (3.6), and 'rural' = 535 (5.3).

The difference for New Zealand (82) is higher than the difference between the two international averages (56) for students in these two categories. One other country that recorded a relatively large difference and had a similar proportion of students in the category with a high level of disadvantage (18%) was England (72). By way of comparison, the province of Ontario had similar proportions in each disadvantage category but the difference in achievement was just 26 scale score points.

Any change?

The range of the achievement difference observed in 2005/2006 was about the same as the difference observed in 2001.

Role of school principal

School principals were asked to estimate the *percentage* of their time they spent on: developing curriculum and pedagogy; managing staff; administrative duties; parent and community relations; teaching; interacting with individual students; and other activities. New Zealand principals' use of time was similar to that of their counterparts in England and Scotland, as shown in Table 6.2. These countries in turn differed from some of the European systems. For example, unlike principals in France and Germany, who spent a high percentage of their time teaching (an average of 47% and 38% of their time, respectively), principals in the former group did not (England, 8%; New Zealand, 8%; and Scotland, 10%), although they spent relatively more time on administration.

Countries with principals that spent the most time on administration duties (more than 30% of principals' time) were Belgium (French) (41%), Norway (34%), and Belgium (Flemish) and New Zealand (both 32%). Internationally, the mean was 22 percent of principals' time. The next highest amount of time spent by New Zealand principals was 17 percent on staff management and staff development (compared with 18% on average internationally).

As well as asking how their time was utilised, school principals were asked for an estimate of the number of hours per week they usually spent on the activities noted above. On average internationally, principals spent 39 hours per week doing these tasks. New Zealand principals were found to spend, on average, the highest number of hours – 57 hours. Only two other countries, England (54 hours) and the United States (51), spent more than an average of 50 hours per week on the activities. (The mean hours reported for four Canadian provinces, the exception being Quebec, were also higher than 50.)

This finding is consistent with information reported from a number of research studies. For example, although the question on the number of hours was framed slightly different, the finding from PIRLS-05/06 is consistent with the reports from New Zealand primary school principals participating in TIMSS in the 1994/1995 (Martin, Mullis, Gonzalez, Smith, & Kelly, 1999).

New Zealand principals reported a similar *use* of their time in 2005/2006 as their counterparts in England and Scotland, but typically spent more hours doing these activities than their international counterparts.

Table 6.2: Principals' estimates of their time spent on various school-related activities, New Zealand and selected countries, 2005/2006

Selected countries	Mean hours per week spent on these activities	Percentage of time						
		Developing curriculum and pedagogy for the school	Managing staff/staff development	Administrative duties (e.g. hiring, budgeting)	Parent and community relations	Teaching	Interacting with individual students	Other
England	54 (1.1)	16 (0.8)	16 (0.9)	27 (1.4)	13 (0.7)	8 (0.8)	11 (0.6)	9 (1.0)
Germany	47 (0.7)	9 (0.4)	10 (0.4)	20 (0.8)	11 (0.4)	38 (1.4)	7 (0.3)	5 (0.5)
Hong Kong SAR	29 (2.2)	21 (0.8)	20 (0.6)	25 (1.0)	13 (0.5)	5 (0.5)	9 (0.5)	7 (0.5)
New Zealand	57 (0.7)	15 (0.7)	17 (0.6)	32 (1.2)	12 (0.4)	8 (0.8)	11 (0.4)	5 (0.5)
† Scotland	49 (0.8)	16 (0.9)	14 (0.7)	28 (1.4)	13 (0.8)	10 (1.1)	12 (0.9)	7 (0.9)
Sweden	43 (0.6)	15 (0.7)	22 (0.9)	28 (1.2)	12 (0.6)	2 (0.5)	11 (0.5)	9 (1.0)
† ^{2a} United States	51 (1.3)	14 (0.9)	19 (0.9)	21 (1.0)	15 (0.7)	5 (0.6)	18 (1.0)	6 (0.8)
International mean	39 (0.2)	16 (0.1)	18 (0.1)	22 (0.2)	13 (0.1)	13 (0.2)	10 (0.1)	7 (0.1)
Canadian provinces								
^{2a} British Columbia	54 (1.1)	8 (0.5)	15 (0.7)	27 (1.3)	15 (0.7)	13 (1.1)	18 (0.8)	5 (0.7)
^{2a} Ontario	54 (1.1)	12 (0.8)	18 (0.7)	28 (1.7)	15 (0.8)	2 (0.4)	21 (1.2)	5 (0.7)

Notes

Standard errors appear in parentheses. The international means do not include the results for the Canadian provinces.

† Met guidelines for sample participation rates only after replacement schools were included.

^{2a} National Defined Population covers less than 95% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006. See Exhibit 7.4 in Mullis, et al., 2007.

Any change?

New Zealand principals' reports on *how* they used their time in 2005/2006 are similar to the reports made by their counterparts in 2001. The data are also consistent with findings from other international studies such as TIMSS.⁴²

Availability of school resources

To measure the extent to which shortages or inadequacies of school resources affected schools' capacity to provide instruction, the Availability of Resources (ASR) Index was developed. The school resources covered by this index were: qualified teaching staff; teachers with a specialisation in reading; second-language teachers;⁴³ instructional materials; supplies (such as paper and pencils); school buildings and grounds; heating/cooling and lighting systems; instructional space (such as classrooms); special equipment for physically disabled students; computers for instructional purposes; computer software for instructional purposes; computer support staff; library books; and audio-visual resources.

Students attending schools where principals reported that shortage or inadequacy of these resources had mostly no effect on instructional capacity were placed in the high level of the index. Students in schools where principals reported that shortages affected instruction to some extent were placed in the medium category. Students in schools where principals reported that shortages impinged on schools' capacity to provide instruction a lot were placed in the low level.⁴⁴

In 2005/2006, most New Zealand Year 5 students attended schools where principals reported that resource shortages or inadequacy of resources had little or no effect on schools' capacity to provide reading instruction. Since 2001 there has been a small significant shift in principals' views that shortages/inadequacies were impacting on schools.

⁴² IEA TIMSS 2003 International Database School Data Almanacs. (See footnote 45.)

⁴³ This was a new category for 2005/2006. The category 'teachers with a specialisation in reading' was worded as 'teachers qualified to teach reading' in 2001.

⁴⁴ A 4-point scale was used for each category: 1 = not at all, 2 = a little, 3 = some, and 4 = a lot. Responses for the activities were averaged for each principal. Students were assigned to the high level when the average was (1-<2); to the medium level when the average was (2-<3); and to the low level when the average was (3-4).

On average internationally, just over half of students (52%) were in schools where principals reported that resource shortages or inadequacies had mostly no impact on the capacity to provide reading instruction. More than four-fifths of New Zealand Year 5 students (86%) were in schools where this was the case. In keeping with other studies such as TIMSS⁴⁵ and PIRLS-01, the New Zealand proportion was one of the highest internationally, and was surpassed only by the Netherlands (93%) and Scotland (88%), and was the same as Denmark and Belgium (Flemish) (both at 86%). The remaining New Zealand students were either at the medium level of the index (13%) or at the low level (2%). The corresponding international averages were 32 percent and 15 percent.

Any change?

There was a small significant increase (of 2 percentage points) in the proportion of Year 5 students at the *low* level of the ASR Index from 2001 to 2005/2006. In 2001, it was estimated that there were no students at the low level of the index; in 2005/2006, about 2 percent of Year 5 students were reportedly in schools where shortages or inadequacies in resources did affect schools' capacity to provide reading instruction. Accompanying this change was a small non-significant decrease (3 percentage points) in the proportion at the medium level of the ASR Index for the same period. There was no change at the high level.

Principals' perceptions of school climate

The Principals' Perceptions of School Climate (PPSC) Index summarises principals' views on the extent to which schools offer a positive climate for learning. Specifically, using a 5-point scale they were asked to characterise: teachers' job satisfaction; teachers' expectations for student achievement; parental support for student achievement; students' regard for school property; students' regard for others' welfare, and students' desire to do well. An average was calculated for each principal. Students were assigned to the high level of the PPSC Index if their principal typically responded 'high' or 'very high' and to the low level if their principal typically responded 'low' or 'very low'. The remainder were assigned to the medium level.⁴⁶

Internationally, New Zealand principals were among the most positive, with 71 percent of Year 5 students at the high level of the index; only Iceland (81%) and Scotland (74%) had higher proportions. Just 29 percent of Year 5 students were at the medium level of the index, and no New Zealand principal characterised their school climate negatively.

New Zealand Year 5 students in schools where their principals held very positive views about their school climate tended to achieve about 30 scale score points higher than those in schools where their principals held less favourable views (541 compared with 512).

Any change?

Although not found to be of statistical significance, New Zealand principals were more positive in their views of school climate in 2005/2006 than in 2001, with 8 percentage points more students at the high level of the PPSC Index. There was a corresponding 8 percentage point decrease at the medium level of the index and no change at the low level.

New Zealand primary school principals in 2005/2006 had relatively positive views of the climate for learning in their schools.

⁴⁵Trends in International Mathematics and Science Study. First known as the Third International Mathematics and Science Study.

⁴⁶The 5-point scale is: 1 = very low; 2 = low; 3 = medium; 4 = high; and 5 = very high. Responses to the activities were averaged for each principal. Students were assigned to the high level when the average was greater than 3.67 through 5; the medium level when the average was 2.33 through to 3.67; and the low level when the average was 1 to less than 2.33.

Relatively few New Zealand Year 5 students attended schools where absenteeism was viewed by their principals as a moderate or serious problem.

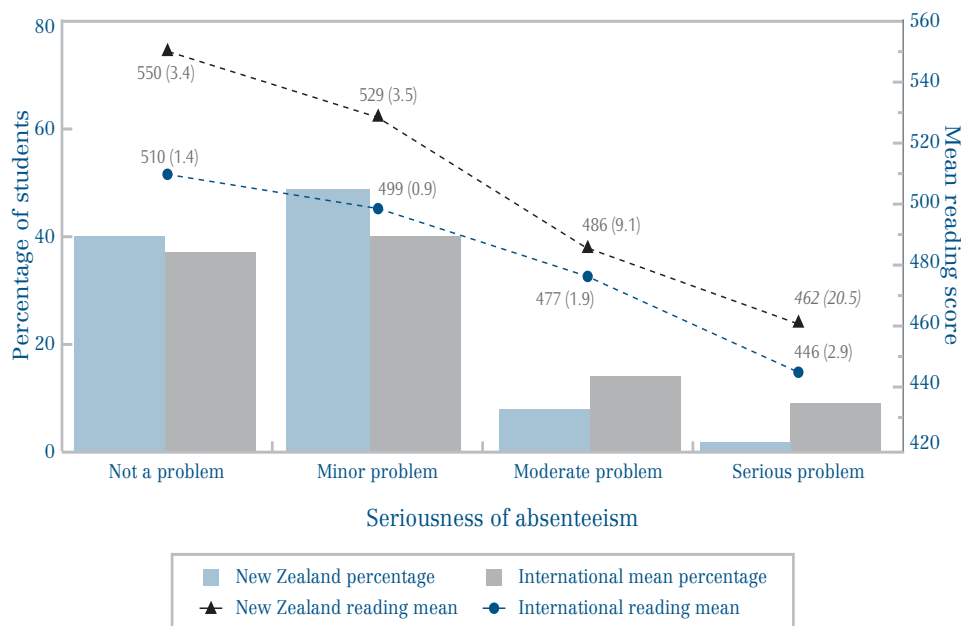
Absenteeism

Principals were asked to rate on a scale the degree to which (unjustified) absenteeism was viewed as a problem – ‘not a problem’, ‘a minor problem’, ‘a moderate problem’, and ‘a serious problem’ – in their school.

Absenteeism was considered *not* to be a problem by principals of 40 percent of New Zealand Year 5 students, and almost half (49%) were in schools where it was rated as a minor problem. The remainder of Year 5 students were in schools where it was either a moderate problem (8%) or a serious problem (2%). By way of comparison, the principals in Hong Kong SAR (82% of students in schools) and Chinese Taipei (73%) were much less likely than principals in other countries to view absenteeism as a problem. Countries where absenteeism was viewed as a serious problem included Kuwait (38%), Indonesia (42%), and Morocco (66%).

Figure 6.1 shows the relationship between the degree to which absenteeism was viewed as a problem and reading achievement for New Zealand, along with the international means. Students in schools where absenteeism was very problematic generally had lower mean reading achievement than students in schools without this problem. In New Zealand’s case the proportion of students in schools where it was viewed as a serious problem was very small and should be treated with caution. The difference in mean achievement for Year 5 students in schools where it was rated as a moderate problem and where it was not a problem was 64 scale score points, compared with 33 scale score points internationally.

Figure 6.1: Seriousness of absenteeism in primary schools, New Zealand and internationally, 2005/2006



Notes

The bars represent the percentage of students whose principals rated the seriousness of absenteeism. The data points are the mean reading scores for students in each category. Standard errors appear in parentheses.

The mean score for New Zealand under ‘serious problem’ is reported for a small proportion of students (2%) and relatively few schools (<10), therefore should be viewed with caution.

Source: Progress in International Reading Literacy Study (PIRLS) 2006, Exhibit 7.11 in Mullis, et al., 2007 for details of the international data.

Any change?

There were no significant changes in the principals’ views on absenteeism from 2001 to 2005/06 observed for New Zealand.

Parents' views of the school environment

The Parents' Perceptions of School Environment (PPSE) Index summarises parents' level of agreement⁴⁷ to four statements about their child's school:

- my child's school includes me in my child's education
- my child's school should make a greater effort to include me in my child's education
- my child's school cares about my child's progress at school
- my child's school does a good job in helping my child become better in reading.

Students were assigned to the high level of the PPSE Index if parents mostly agreed a lot, and to the low level if their parents tended to disagree a lot; the remainder were assigned to the medium level of the index.⁴⁸

On average internationally, parents' reports about their child's school were favourable, with New Zealand parents/caregivers no exception. Approximately two-thirds of New Zealand Year 5 students (67%) were at the high level of the PPSE Index, 30 percent were at the medium level, and just 2 percent of Year 5 students were at the low level of the index (i.e., parents/caregivers were not satisfied with their school). Parents from Romania, Macedonia, Trinidad and Tobago, Denmark, Georgia, and Scotland were the most satisfied, with at least 70 percent of their students at the high level of the index. Parents/caregivers from Luxembourg and Hong Kong SAR were the least satisfied, with each having just 39 percent of their students at the high level of the index. Internationally, the average proportions for the three levels were: high 60 percent, medium 38 percent, and low 2 percent.

The relationship between achievement and parents' views of the schools their children attended was relatively weak internationally. This was the case in New Zealand – there was just a 7 scale score point difference between the two levels for which information could be reported (551 compared to 544).

Parents' views on receiving feedback from their children's school

A New Zealand specific statement was presented to parents/caregivers on their perceptions of the feedback given to them about their child's progress. Specifically parents were asked "My child's school is good at informing me about my child's progress in reading". The majority of parents/caregivers held positives with 84 percent of respondents agreeing a lot or a little with the statement. A further 12 percent disagreed a little and just 4 percent disagreed a lot. The students whose parents disagreed a lot achieved, on average, about 30 scale score points lower (519) than students whose parents held either opposing (\approx 550) or less negative views (548).

Students' views of school life

New Zealand Year 5 students were very positive with their views about their school life, including their teachers and their fellow students.

Students were asked for their views on school. Specifically, they were asked the extent to which they agreed with the following:

- I like being at school.
- I think that teachers in my school care about me.
- Students in my school show respect to each other.
- Students in my school care about each other.

When summarised into an index there was no relationship with achievement. However, students' responses on their own do provide some important indication of what they feel about aspects of their school life. Responses from New Zealand Year 5 students and a selection of other countries are summarised in Table 6.3.

New Zealand parents were relatively satisfied with their children's schools, their level of involvement, and schools' efforts to keep them informed about their children's progress.

New Zealand Year 5 students had very positive views on school life, including their teachers and fellow students.

⁴⁷ A 4-point scale: 1 = disagree a lot, 2 = disagree a little, 3 = agree a little, and 4 = agree a lot.

⁴⁸ Responses to the statements were averaged for each parent. Students were assigned to the high level when the parents' average was (3<-4); the medium level when the average was (2<-3); and the low level when the average was (1<-2).

Table 6.3: Percentage of students reporting their agreement to statements about aspects of school life, New Zealand and selected countries, 2005/2006

Selected countries	Percentage of students agreeing a lot or a little			
	I like being at school	I think that teachers in my school care about me	Students in my school show respect to each other	Students in my school care about each other
England	70	85	71	74
Germany	79	84	61	69
Hong Kong SAR	86	81	73	75
New Zealand	83	89	80	81
† Scotland	65	87	74	77
Singapore	88	85	63	65
Sweden	82	94	83	86
† 2a United States	76	93	68	69
International mean	84	89	70	70
Canadian provinces				
2a British Columbia	81	92	78	78
2a Ontario	78	91	76	76

Notes

Standard errors have not been reported for these proportions. The international means do not include the results for the Canadian provinces.

† Met guidelines for sample participation rates only after replacement schools were included.

2a National Defined Population covers less than 95% of National Desired Population.

Source: IEA Progress in International Reading Literacy Study (PIRLS) 2006 student data almanacs (unpublished).

Internationally, students were very positive about their teachers, with 89 percent of students on average agreeing a lot or agreeing a little that their teachers cared about them. New Zealand students' level of agreement (89%) was no exception. Also internationally, students liked being at school. There were some notable exceptions. While not shown in Table 6.3, Luxembourgish (63%) and Scottish (65%) students were least likely to endorse the statement 'I like being at school'. Students' level of agreement to the statement 'students in my school care about each other' varied across countries. New Zealand students again were very positive about the care demonstrated by other students. By way of contrast, students in Belgium (Flemish), France, Latvia, Luxembourg, Slovak Republic, Spain, and Trinidad and Tobago were much less likely to endorse this statement, with up to 40 percent of students disagreeing a little or disagreeing a lot with this statement.

In New Zealand the relationship between Year 5 students' views on aspects of school and achievement is worth noting. Generally the relationship was curvilinear. Year 5 students who were very positive (agreed a lot) tended to achieve about 15-20 scale score points *lower* than students who were more reticent with their views (agree a little or disagree a little). The group of Year 5 students who expressed very negative views (disagreed a lot), albeit proportionally few (3-5%, and 8% for I like being at school), generally had typically much lower achievement (an average of 50 scale score points lower) than students in the other categories.

Principals' perceptions of school safety

Information on principals' responses to the severity of seven student behaviours was summarised in the Principals' Perceptions of School Safety (PPSS) Index. These behaviours included classroom disturbances, cheating, profanity, vandalism, theft, intimidation or verbal abuse among students, and physical conflict among students. Although cross-national comparisons are difficult because of differing perceptions of what constitutes a serious problem, the seriousness of the student behaviours in most countries was generally low, with on average only 7 percent of students at the low level of the index (i.e., serious problem). In New Zealand the percentage was just 1 percent. More than three-quarters of Year 5 students (77%) were in schools where their principals generally viewed the behaviours as not a problem (i.e., at the high level) compared with 60 percent internationally; the remainder of Year 5 students (23%) were at the medium level (compared with 32% internationally).

The relationship between achievement and principals' views of the severity of negative behaviours was relatively strong internationally, particularly between the high and low levels of the PPSS Index (61). In New Zealand's case there were too few students (1%) at the low level to estimate their achievement. However, the average achievement difference of about 34 scale points between Year 5 students at the high and medium levels was higher than the international average difference of 8 scale score points between these two levels (i.e., 503 compared with 495).

Any change?

New Zealand principals in 2005/2006 were more positive in their views about school safety compared with their 2001 counterparts. The proportion of Year 5 students at the high level of the PPSS Index increased by a significant 12 percentage points, up from 65 percent in 2001; there was a corresponding decrease of 11 percentage points to 23 percent at the medium level. There was no change at the low level of the index.

Students' views on school safety

Students were asked the degree to which they agreed with the statement, 'I feel safe when I'm at school'. Overall, 88 percent of New Zealand Year 5 students agreed a lot or a little with the statement, as did 86 percent of students, on average internationally. Students were also asked whether or not they had experienced incidents of stealing, bullying, and injury either to themselves or to their classmates during the month prior to the PIRLS assessment.

New Zealand's Year 5 students who reported 'yes' to having something stolen scored on average 37 scale score points *lower* than those students who reported 'no'. The situation was similar for students who reported incidents of bullying (23 scale score points), and being injured (26 scale score points).

Any change?

Proportionally fewer New Zealand Year 5 students in 2005/2006 reported something being stolen and being bullied compared with in 2001 (about 3 percentage points). Although the shifts were not statistically significant, it is worth looking at the decreases in the proportions of students reporting they experienced these behaviours along with the information recently reported for TIMSS.⁴⁹

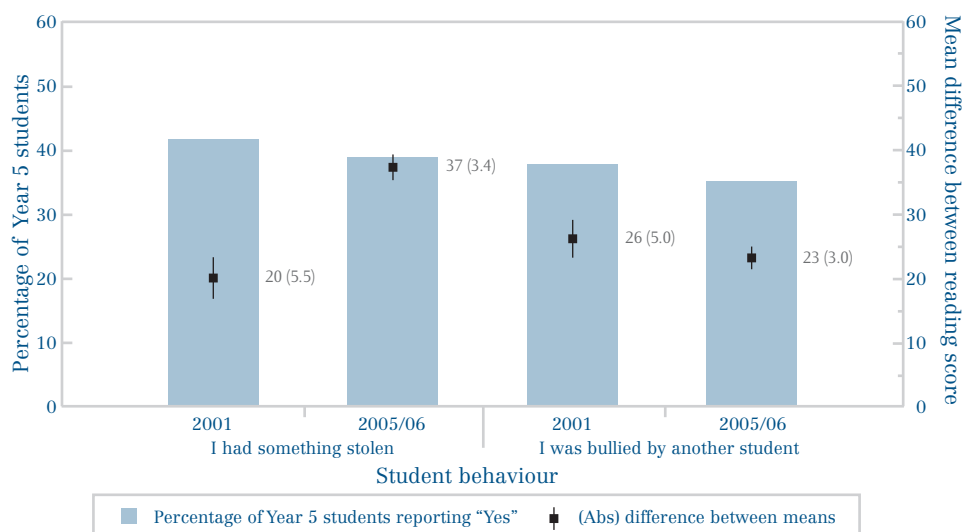
Figure 6.2 shows the percentage Year 5 students who said 'yes' to experiencing a negative behaviour in the month prior to the PIRLS assessment. It also shows the average difference (absolute) between their achievement and that of students who reported 'no' to the behaviour; that is, students who said 'yes' generally scored at least 20 scale score points *lower* than students who said 'no'.

New Zealand school principals were relatively positive about aspects of school safety in 2005/2006, more so than their counterparts in 2001.

The majority of New Zealand Year 5 students reported they felt safe at school in 2005/2006, although a notable proportion said they had experienced a negative behaviour in the month prior to the PIRLS assessment.

⁴⁹ Caygill, Sturrock, & Chamberlain, 2007; Chamberlain, 2007.

Figure 6.2: New Zealand Year 5 students' reports of experiencing a negative behaviour, 2001 and 2005/2006



Notes

The data points are the differences between the mean scores for students who reported 'no' and who reported 'yes'. Standard errors appear in parentheses.

The mean achievement of students who reported 'no' was higher than students who reported 'yes'. The vertical lines extending from the data point show the 95% confidence interval around the mean (i.e., ± 2 standard errors).

Student Safety in School (SSS) Index

Students' responses to the statement 'I feel safe at school' and to the statements on whether or not they had something stolen, been bullied or injured by another student during the month prior to the PIRLS assessment were combined into the Student Safety in School (SSS) Index. On average internationally, 47 percent of students felt very safe and reported no incidents happening to them (i.e., at the high level of the SSS Index); 3 percent reported not feeling safe and had two or more incidents happen to them (and their classmates) (i.e., at the low level of the index). The remaining 50 percent typically gave a combination of responses (i.e., the medium level). The percentages of New Zealand Year 5 students at the three levels of the SSS Index (high to low) were 37 percent, 58 percent, and 4 percent. The percentages for New Zealand were similar to those reported for England and Singapore, and the province Ontario.

There was a positive relationship between the level on the *school safety* index and mean reading achievement; New Zealand's Year 5 students at the high level (i.e., who reported feeling safe and had not experienced any incidents) achieved an average of about 28 scale score points higher than their counterparts at the medium level (551 compared with 523), and about 35 scale points higher than those students at the low level (516). This pattern of achievement was also apparent in the majority of other countries.

Concluding remarks

This report has merely touched on a vast array of descriptive information, particularly contextual data, generated by the study. It is recommended that the findings presented here not be viewed in isolation, and that readers refer to the international publications for more detail. The reports can be viewed on the *international* PIRLS web site, www.pirls.org.

There are a number of areas of interest which have not been addressed in this overview. For example, which New Zealand students are reaching the higher international reading benchmarks, which students are not, and why? What has been the effect of including the new statement "I read more slowly than other students in my class" in the Students' Reading Self-Concept Index? Have New Zealand Year 5 students' reading habits changed since 2001? What were New Zealand students' views about the materials they read in the PIRLS-05/06 assessment?

These questions and others will be the subject of a number of thematic reports which will be become available on the Ministry of Education's web site during 2008, with copies distributed to schools.

APPENDIX A



Language of assessment

Many participating countries tested in more than one language in order to cover their whole (Grade 4) student population (see Table A.1).

Table A.1: Countries assessing in more than one language

Country	Number of languages used in PIRLS	Languages
Israel	2	Hebrew, Arabic
Latvia	2	Latvian, Russian
Macedonia, Rep. of	2	Macedonian, Albanian
Moldova, Rep. of	2	Romanian, Russian
New Zealand	2	English, Māori
Norway	2	Bokmaal, Nynorsk
Romania	2	Romanian, Hungarian
Slovak Republic	2	Slovak, Hungarian
Spain	5	Castilian, Catalanian, Galician, Basque, Valencian
South Africa	11	Afrikaans, English, isiZulu isiXhosa, Sepedi, Sesotho, Seswana, isiNdebele, Siswati, Tshivenda, Xitsonga
Canadian provinces	2	English, French

Note

See Appendix A.3 in Mullis et al., 2007 for details of the other countries' test languages.

Sample sizes

Table A.2 reports details of the (achieved) New Zealand sample size in PIRLS-05/06. For details of other countries' sample designs and achieved samples, refer to Martin, et al., (2007).

Table A.2: A summary of New Zealand's achieved samples at Year 5 in PIRLS-05/06

Stratum	New Zealand Year 5		
	Number of schools in original sample (N)	Total number of schools in achieved sample (N)	Total number of students in achieved sample (N)
Māori-medium schools (immersion 80-100%)	25	19	174
Schools with Māori-medium units/classes	25	25	565
All other schools	200	199	5517
Total	250	243	6256

Exclusions

Countries were able to exclude students from the assessment according to very strict internationally defined criteria. Most importantly, exclusions had to be kept to a minimum (i.e., preferably less than 5%). Exclusions could take place at the school level (i.e., a whole school is excluded) or within schools.

As is the practice in all international assessments in which New Zealand has been involved (e.g., TIMSS and PISA), schools/students were excluded according to the following international criteria.

School-level exclusions:

1. schools being in a small, remote geographical region
2. removal of a language group, possibly due to political, organisational, or operational reasons
3. special education schools.

Within-school exclusions:

1. functionally disabled students
2. educable mentally disabled students [note: students were not to be excluded solely because of poor academic performance or normal discipline problems]
3. students with limited proficiency in the test language - typically, a student who had received less than 1 or 2 years of instruction in the language of the test could be excluded
4. other – in New Zealand this category was for foreign-fee paying students.

New Zealand's final exclusion rates in PIRLS-05/06 are shown in Table A.3, along with the rates for PIRLS-01.

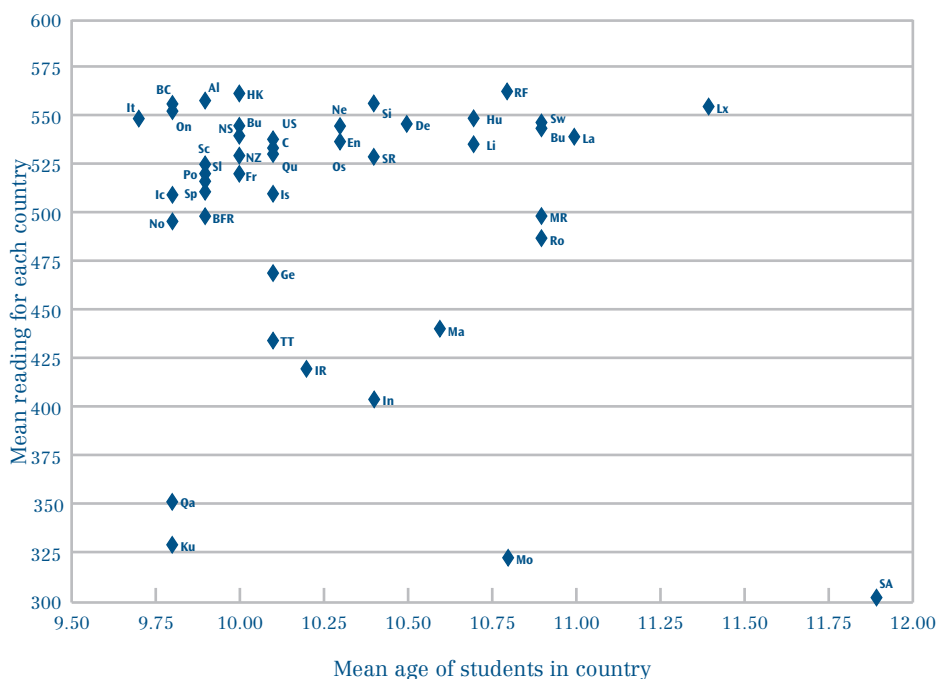
Table A.3: A summary of New Zealand's exclusions in PIRLS-01 and PIRLS-05/06

Reason for exclusion	Percentage of students in each PIRLS assessment cycle	
	2001	2005/2006
Students excluded at the school level	1.6	1.4
Students excluded within schools	1.7	3.9
Overall exclusion rate	3.2	5.3

Mean student age and mean reading achievement

In Section 2 reference was made to the relationship between the average age of students in a country and the country's mean reading achievement. In PIRLS-05/06, there were 13 countries where students' average age was older than 10.5 years; five of these were lower-performing countries (i.e., mean performance below the PIRLS scale mean 500) and the remainder (8) were higher-performing countries. Figure A.1 illustrates a relatively weak relationship between *mean* performance and age. However, a more accurate approach would be to examine this information for each country at the student level.

Figure A.1: Scatter plot of the mean age and mean reading scores for PIRLS-05/06 countries and Canadian provinces





APPENDIX B



The passage “Antarctica: Land of Ice” is an example of an informational text used in PIRLS-01 and PIRLS-05/06. The questions are presented along with sample student responses (© IEA, Amsterdam). Alongside each question are details of the proportion of New Zealand Year 5 students who answered correctly in each assessment. The comprehension process assessed and the benchmark at which the question anchored are also shown.

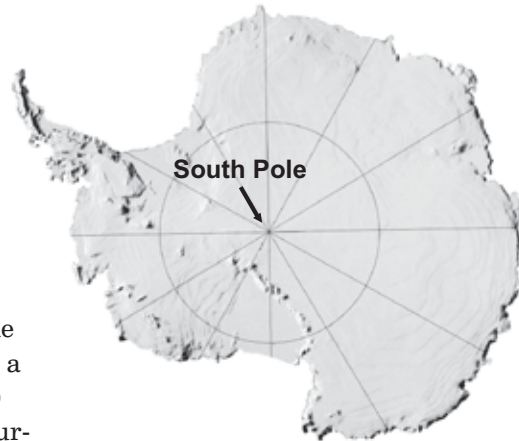
Introducing Antarctica

What is Antarctica?

Antarctica is a continent that is right at the south of the planet. (If you try to find it on a globe, you will see that it is at the bottom.)

It takes up one-tenth of the Earth's surface and is covered with a blanket of ice that can be as thick as 1,500 metres or more. The South Pole is right in the middle of Antarctica.

Antarctica is the coldest continent, as well as the driest, the highest and the windiest. Very few people live there all year round. Scientists stay there for short periods, living in specially built research stations.



A Map of Antarctica

Summer in Antarctica is between October and March. During this time there is non-stop daylight. In winter, April to September, the opposite happens and Antarctica is plunged into six months of constant darkness.

The Weather in Antarctica

In Antarctica, it is colder than you can possibly imagine, even in the summer! The South Pole is the coldest part of Antarctica. The average temperature for January, the middle of the summer, is minus 28 degrees Celsius (written as -28°C). Minus means colder than the freezing point, which is 0°C .

In the winter, April to September, the average temperature at the South Pole can be as cold as -89°C . When it is that cold, a mug of boiling water thrown in the air would freeze before it hit the ice. Sometimes the scientists have to use fridges to keep their samples warm!



Penguins in Antarctica

There are more penguins in the Antarctic than any other bird.

They cannot fly but use their short wings as swimming flippers. They are superb swimmers. On land, they waddle upright or move in short hops.

Penguins have many feathers that overlap each other. These, together with woolly down feathers and a thick layer of fat, keep out the cold air, wind and water. For extra warmth, penguins huddle together in groups.

A Letter from Antarctica

Sara Wheeler is one of the scientists working in Antarctica. By reading her letter to her nephew Daniel, you can learn more about her Antarctic experience.



Antarctica

Friday, 9 December

Dear Daniel,

Here is the letter I promised to write to you from Antarctica, and a photograph. Imagine how excited I am to be here at last, following in the footsteps of so many famous explorers. It is very different from the world I am used to.

There is nothing fresh down here—and no supermarkets—so we have to eat a lot of dried, tinned or frozen food (it doesn't have to be put in the freezer—you can just leave it outside). We cook on small gas stoves, which take much longer than cookers at home. Yesterday I made noodles with tomato paste and vegetables out of a tin, followed by dried strawberries that tasted like cardboard.

I miss fresh apples and oranges—I wish you could send me some!

Love from Sara

Antarctica: Land of Ice

1. Where can you find Antarctica on a globe?

① the bottom

Focus and retrieve explicitly stated information and ideas

Percentage of Year 5 answering correctly

2001	2005
90	91

Low International Benchmark

2. Antarctica is the coldest place on Earth. What other records does it hold?

- A driest and cloudiest
- B wettest and windiest
- C windiest and driest
- D cloudiest and highest

Focus and retrieve explicitly stated information and ideas

Percentage of Year 5 answering correctly

2001	2005
51	57

High International Benchmark

3. What is the coldest part of Antarctica?

① The south pole

Focus and retrieve explicitly stated information and ideas

Percentage of Year 5 answering correctly

2001	2005
84	82

Intermediate International Benchmark

4. Think about what the article says about Antarctica. Give **two** reasons why most people who visit Antarctica choose **not** to go there between April and September.

- ① 1. Because it is sneezing in that but not during October and March.
- ② 2. It is light all day between October and March it isn't during April and September.

Interpret and integrate ideas

Number of correct reasons	Percentage of Year 5 answering correctly	
	2001	2005
One	87	88
Two	28	29

1 Point – *Low* International Benchmark

2 Points – *Advanced* International Benchmark

5. Why does the article tell you that 'a mug of boiling water thrown in the air would freeze before it hit the ice'?

- (A) to tell you how hot the water is in Antarctica
- (B) to show you what they drink in Antarctica
- (C) to tell you about scientists' jobs in Antarctica
- (D) to show you how cold it is in Antarctica

Make straight forward inferences

Percentage of Year 5 answering correctly

2001	2005
------	------

89	90
----	----

Intermediate International Benchmark

6. According to the article, what do penguins use their wings for?

- (A) flying
- (B) swimming
- (C) keeping chicks warm
- (D) walking upright

Focus and retrieve explicitly stated information and ideas

Percentage of Year 5 answering correctly

2001	2005
------	------

88	92
----	----

Low International Benchmark

7. Give **three** ways penguins are able to keep warm in Antarctica.

- ① 1. They have feather after feather
- ① 2. They have a lot of fat on them.
- ① 3. They huddle together in groups.

Make straightforward inferences

Number of correct ways	Percentage of Year 5 answering correctly	
	2001	2005

	2001	2005
--	------	------

One	86	87
-----	----	----

Two	69	73
-----	----	----

Three	49	51
-------	----	----

2 Points – Intermediate International Benchmark

3 Points – High International Benchmark

8. What are **two** things you learn about food in Antarctica from Sara's letter?

- ① 1. Most of the food is frozen + dried.
- ① 2. all the food is cooked on gas stoves (that needs to be cooked.)

Focus and retrieve explicitly stated information and ideas

Number of correct things identified	Percentage of Year 5 answering correctly	
	2001	2005

	2001	2005
--	------	------

One	89	90
-----	----	----

Two	56	53
-----	----	----

1 Point – Low International Benchmark

2 Points – Intermediate International Benchmark

9. Think about whether you would like to visit Antarctica. Use what you have read in both *Introducing Antarctica* and *A Letter from Antarctica* to explain why you would or would not like to visit.

② I think I'd enjoy living in Antarctica because I'd probably like studying the penguins that live down there. But I wouldn't like the food there.

Interpret and integrate ideas		
Level of correctness	Percentage of Year 5 students awarded 2 points	
	2001	2005
Partial - 1 point	80	80
Full - 2 points	36	41
1 Point – <i>Intermediate</i> International Benchmark		
2 Points – <i>Advanced</i> International Benchmark		

10. Which section of the article tells you how thick the ice is in Antarctica?

- Ⓐ What is Antarctica?
 Ⓑ The Weather in Antarctica
 Ⓒ Penguins in Antarctica
 Ⓓ A Letter from Antarctica

Examine and evaluate	
Percentage of Year 5 answering correctly	
2001	2005
60	65
<i>High</i> International Benchmark	

11. In this article, there are two different ways of finding out about Antarctica:

- *Introducing Antarctica*
- *A Letter from Antarctica*

Which of these kinds of information do you find more interesting, and why?

② I think that both of them are interesting because *Introducing Antarctica* tells you more fact and *A Letter from Antarctica* says what's happening lately.

Examine and evaluate	
Percentage of Year 5 answering correctly	
2001	2005
60	56
<i>High</i> International Benchmark	

The letter from Sara Wheeler is adapted from *Letters from Antarctica*, by Sara Wheeler, 1997. Reproduced by permission of Hodder and Stoughton Ltd. Photographs © Guillaume Dargaud

Stop

End of this part of the booklet. Please stop working.

Technical Notes

These technical notes provide a very *brief* outline of some of the key methodology used in PIRLS-05/06. For more detailed information readers are advised to see go to the *PIRLS 2006 technical report* edited by Martin, Mullis, and Kennedy (2007) and available on the PIRLS web site (www.pirls.org).

Weighting

The sampling design required schools to be sampled with a probability proportion to size (PPS), and for *classrooms* to be sampled with equal probabilities. In addition, many countries, including New Zealand, used stratification to improve the precision of their sampling. Weighting was applied to all countries' data to ensure proper survey estimates and to adjust for the fact that the sampling design resulted in differential probabilities of selection for each student within the population. The weighting took into account school, class, and student level information so that the overall sampling weight was a product of the school, class, and student weights.

Scaling

PIRLS makes use of a multiple-matrix sampling whereby students answer subsets of items from a larger pool of test items. Psychometric scaling techniques based on Item Response Theory enable population estimates to be generated even though students do not respond to all of the same achievement items.

Three Item Response Theory models are used corresponding to the three types of assessment questions. For multiple-choice questions a 3-parameter logistic model is used, which characterises the item in terms of difficulty, discrimination and the possibility of guessing. For dichotomous open-response questions a 2-parameter logistic model is used (the possibility of guessing is discounted). For polytomous questions (extended response items with 0, 1, 2 and 3 as possible scores), a generalised partial-credit model is used, which factors in the different scores available to respondents.

The Item Response Theory scaling applied in PIRLS-05/06 uses the plausible value methodology to produce estimates of student proficiency reading.

Summary statistics

The IRT scaling procedures generates five imputed scores or plausible values for each student. The differences between the five values, which tend to be very small, reflect the degree of uncertainty in the imputation process. To obtain the best estimate of a statistic the computation is carried out on each of the five plausible values, and in turn, the results are then averaged. The national means for each country, for example, were calculated as the mean of the weighted mean for each of the plausible values. The international achievement means reported in, for example, a background index, were calculated by first computing the national mean for each plausible value for each country and then calculating the mean across the countries. The five estimates resulting from this were then averaged to derive the international means presented in this report and in the international PIRLS.

Standard errors

Standard errors are a measure of *variability* due to sampling when estimating a statistic. That is, it provides a measure for determining the discrepancy between, for example, a sample mean and the true population mean. Ninety-five percent of sample means will lie within approximately plus or minus two (or more accurately 1.96) standard errors of the population mean. The standard error is used to for determining confidence intervals.

For example, in 2005/2006 the Year 5 student mean for reading was 532 and the standard error of this statistic was 2.0. Therefore, we can say with 95% *confidence* that the true mean was between 528 and 536 (i.e., $532 \pm 2 \times 2.0$).

Because of the complexity of the design of PIRLS (a complex survey design for the school sampling and a multiple-matrix design for questionnaire allocation), the calculation of standard errors is not as straight forward as it is for a study which uses *simple* random sampling and one assessment tool. The standard errors included in this report, which usually appear in brackets after the statistic, incorporate both the *sampling* variance – the uncertainty due to generalising from the sample to the population, and the *imputation* variance – the uncertainty due to inferring each student's proficiency from their performance on a subset of the items.

The Jackknife Repeated Replication (JRR) technique is used to estimate the sampling variance. This technique constructs a number of pseudo-replicates of the sample and compares each of the pseudo-replicated samples with that of the original sample. As noted each student's proficiency is estimated by calculating five plausible values. The variability among these plausible values is used as a measure of the imputation variance. Custom-written SAS programs were used to compute the standard error, incorporating each of the variance components for each statistic.

Significance tests-comparisons of means

For comparing the means of two groups of students that have *not* been sampled independently of each other, for example the means for Year 5 boys and girls, the formula for the test statistics computed in this report were:

$$(1) \quad t = \frac{\bar{X}_1 - \bar{X}_2}{se_{diff}}$$

where se_{diff} is computed by combining the JRR and imputation variances. It involves computing the average difference between the two *correlated* samples (e.g., girls and boys in the same classes/schools) once for each of 75 replicate samples (error due to sampling) and five more times for each of the plausible values (imputation error). Custom-written SAS programs were used to compute the standard error of the mean difference between the two groups.

The resulting value t is compared to the critical value of 1.96, this being the critical value for a two-tailed test at the alpha 0.05 level of significance (95% confidence).

If the means for two groups that were sampled *independently* are being compared, for example, boys' achievement across two assessments, then the standard error of the difference is calculated as the square root of the sum of the squared standard errors of each mean:

$$(2) \quad se_{diff} = \sqrt{se_1^2 + se_2^2}$$

Note that in all calculations unrounded figures are used in these tests, which may account for some results appearing to be inconsistent.

Minimum group size for reporting achievement data

PIRLS do not report mean achievement scores for groups which represent less than *2.5 percent (rounded)* of the population. However, in this report if the proportion of New Zealand students at a level on an index was estimated to be 2 percent, as long as there were more than 50 students in the 'cell' to estimate the proportion, achievement results are reported.

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