

SECTION 4:

PURPOSES FOR READING AND PROCESSES OF READING



This section looks at Year 5 students' achievement in the purposes for reading and in the four comprehension processes.

Introduction

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 experience and reading to acquire and use information. In addition, it describes four major processes of reading comprehension. *Searching for Food*, an example of a PIRLS reading to acquire and use information text, is presented in Appendix C, along with the questions and the specific processes of comprehension that were being assessed.

Purposes for reading

The two main purposes for reading at the middle primary level are described in Box 4.1. PIRLS-05/06 used two numerical scales to look at student achievement in the two purposes for reading: *reading for literary purposes* and *reading for informational purposes*. 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 for the PIRLS international scale mean.

Box 4.1: 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.

Source: Mullis, et al., 2006.

The main finding pertaining to New Zealand follows.

- In 2005/2006 Year 5 students on average achieved slightly (but significantly) higher scores in *reading for informational purposes* (534) than in *reading for literary purposes* (527). The opposite was observed in 2001.

Purposes for reading, gender, and ethnicity

Figure 4.1 presents the mean scores for the two *reading purposes* for New Zealand Year 5 girls and boys and for Year 5 students in each ethnic grouping in 2005/2006. Although not shown in the figure, Pākehā/European girls and Asian girls recorded the highest average achievement on both the *literary reading* scale (560 and 549 respectively) and the *informational reading* scale (562 and 571 respectively) compared with their other Year 5 counterparts.

Figure 4.1: Relative differences in achievement between the two purposes for reading in 2005/2006, by gender and ethnic grouping

Year 5 student group	Reading for literary purposes mean score	Reading for informational purposes mean score	Relative difference: absolute value	Relative difference	
				Reading for literary purposes mean higher	Reading for informational purposes mean higher
Gender					
Girls	539 (2.3)	545 (2.2)	6 (1.5)		■
Boys	516 (2.9)	522 (3.0)	6 (1.2)		■
Ethnic grouping					
Asian	539 (5.5)	560 (5.0)	21 (3.6)		■
Pasifika	472 (6.4)	487 (6.5)	15 (4.4)		■
Other ethnic groups	531 (8.8)	541 (10.4)	10 (8.8)		■
Māori	479 (3.5)	486 (3.7)	7 (1.4)		■
Pākehā/European	549 (2.4)	552 (2.6)	3 (0.9)		■
All New Zealand	527 (2.1)	534 (2.2)	6 (0.7)		■

40 20 0 20 40

■ Difference statistically significant
■ Difference not statistically significant

Notes

Standard errors appear in parentheses.

The relative difference is the absolute difference between the means of the *reading for literary purposes* and *reading for informational purposes*.

At 537 and 529, Pākehā/European boys and Asian boys recorded relatively high average scores on the *literary reading* scale; they also typically scored high scores on the *informational reading* scale (541 and 550 respectively).

Māori girls generally scored a little under the international mean for *literary reading* (494 c.f. 500) and just above (502) the international scale mean (500) for *informational reading*. In both *literary* and *informational reading* purposes, the average performance of Pasifika boys (466 and 478) and Māori boys (465 and 471) fell well below the corresponding international scale means. At 478, Pasifika girls also had relatively weak average achievement in *literary reading*; by way of contrast the mean in *informational reading* for this group was 497, just under the PIRLS international scale mean.

Relative performance in the reading purposes

Figure 4.1 also shows the (absolute) difference between the two achievement scales for each group of students in 2005/2006. As noted previously, and contrary to the pattern in 2001, New Zealand students in 2005/2006 tended to have stronger performance on *reading for informational purposes* than *reading for literary purposes*, with the average difference between the two of statistical significance. This pattern was observed for both Year 5 girls and Year 5 boys; it was more marked for both Pasifika and Asian students than it was for Māori and Pākehā/European students.²⁸

Gender differences²⁹

Consistent with the overall domain of reading, girls from each grouping typically achieved higher scores when *reading for literary purposes* than their respective male counterparts. Internationally, the mean difference was 17 scale score points.

The average achievement differences were somewhat higher for three of the four main ethnic groupings. Māori girls typically scored 29 scale score points higher than Māori boys on the literary texts. The difference between Pākehā/European girls and boys averaged 23 scale points, while for Asian students the difference was 20 scale score points. At 11 scale score points the difference between Pasifika girls and boys was *not* significantly different.

A similar pattern was observed on the *informational reading* scale, although the differences were significant for *all* groupings. The international average difference was 16 scale score points. The average difference was most marked for Māori (30); the average differences were of the same order for the other three groupings: Pākehā/European (22), Asian (20), and Pasifika (19).

Any change between 2001 and 2005/2006?

In order to make comparisons across the two PIRLS cycles, the mean scores for the two reading purposes for 2001 are shown in Tables B.8 and B.9 in Appendix B. There was just a small non-significant decrease (4 scale points) in Year 5 students' mean achievement in *literary reading* between 2001 and 2005/2006 (Table B.8). With two exceptions, decreases were observed for all sub-groups. Year 5 boys' mean performance in *literary reading* was virtually the same in the two cycles, while Asian students in 2005/2006 on average achieved scores 5 scale score points higher than their 2001 counterparts.

By way of contrast, there was a non-significant increase (9 scale score points) in New Zealand's Year 5 students' mean achievement in *informational reading* over the 4-year period (Table B.8). Increases were observed for all sub-groups. Of note were the increases for Year 5 girls (10), and Asian (16) and Māori (9) students.

²⁸In 2001, Year 5 girls, Pākehā/European students, and Māori students all on average had significantly stronger performance in *reading for literary purposes* than in *reading for informational purposes*. For boys and Pasifika students there were no differences between the two purposes. Asian students on average had significantly stronger performance in *reading for informational purposes* than in *reading for literary purposes*.

²⁹See Table B.7 in Appendix B for details of average differences, along with their standard errors.

Processes of reading comprehension

The processes of reading comprehension are described in Box 4.2. For reporting purposes the four processes were combined into two achievement scales. The first is the *retrieving and inferencing processes* achievement scale, which combines the 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.

(Note: because of the features of the different reading texts, the questions assessing the text-based processes were not necessarily 'easier' than the questions assessing the reasoning processes.)

To enable countries to compare their students' relative performance in each of the processes for reading, the international mean for each was scaled to 500.

Box 4.2: 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 the 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. 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.

Source: Mullis, et al., 2006.

The main finding pertaining to New Zealand follows.

- As was the case in 2001, Year 5 students' performance in 2005/2006 was much stronger when answering questions that required them to use *interpreting, integrating, and evaluating* skills (538) rather than questions requiring them to use *retrieval and straightforward inferencing* skills (524).

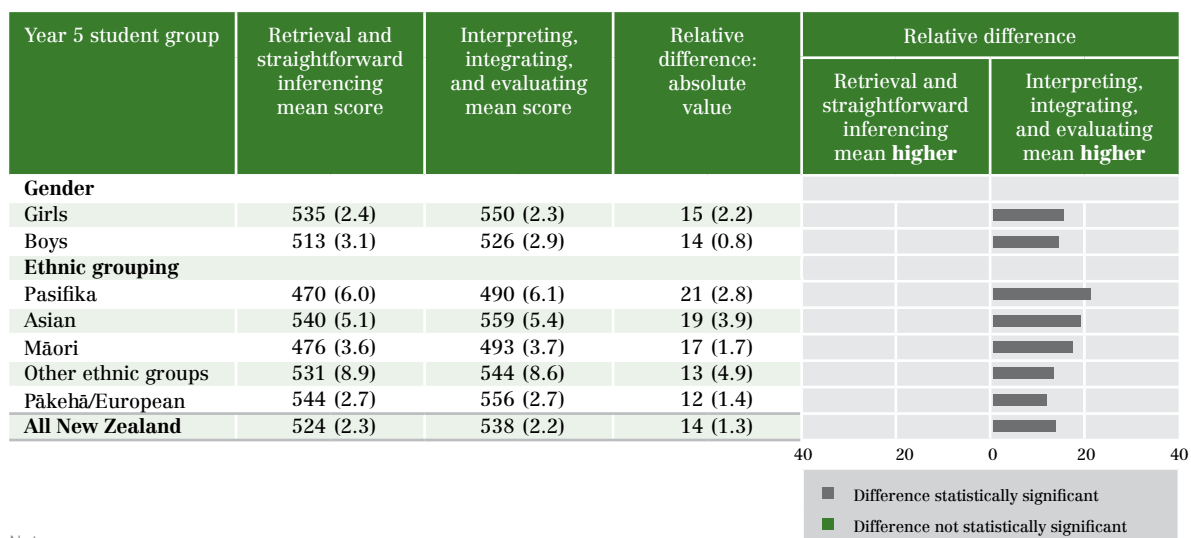
Processes of reading comprehension, gender, and ethnicity

Figure 4.2 presents the mean scores for the two reading processes for Year 5 girls and boys and for Year 5 students in each ethnic grouping. Although not shown, both Pākehā/European girls and Asian girls recorded, on average, high scores when required to demonstrate *retrieving and inferencing* skills (555 and 549 respectively). Pākehā/European boys and Asian boys also recorded on average relatively high average scores (533 and 531).

Māori girls (489) typically achieved scores below the international scale mean for this process (500); the average performance of Pasifika girls (477), Pasifika boys (463), and Māori boys (463) fell well below this level.

On the *interpreting, integrating, and evaluating* scale, Asian girls (569) and Pākehā/European girls (568) recorded the highest average achievement compared with other groups in the Year 5 population on the reading achievement scale. Asian boys and Pākehā/European boys also recorded relatively high scores on average (550 and 545 respectively). While not quite as high, Māori girls (509) tended to score above the international scale mean for this process (500); the average performance of Pasifika girls was just under the international scale mean at 498. The average achievement of both Pasifika boys (483) and Māori boys (477) fell well below the international scale mean on this process.

Figure 4.2: Relative differences in achievement between the two reading comprehension processes in 2005/2006, by gender and ethnic grouping



Notes

Standard errors appear in parentheses.

The relative difference is the absolute difference between the means for the *retrieval and straightforward inferencing* and *interpreting, integrating, and evaluating processes*.

Relative performance in the reading processes

To illustrate the students' relative strength in a process, Figure 4.2 also shows the absolute difference between the two scales. As already noted, New Zealand Year 5 students clearly demonstrated a relatively stronger performance when using reasoning processes (*interpreting, integrating, and evaluating processes*) than when they used text-based processes (*retrieval and interpreting processes*). This pattern was observed for girls and boys and in all four main ethnic groupings, particularly among Pasifika, Asian, and Māori students. These findings are similar to the findings from an exploratory study undertaken and reported by Mullis, Martin, and Foy (2005) on student performance in the mathematics cognitive skills and competencies, as defined by TIMSS. These data also showed New Zealand Year 5 and Year 9 students, and their sub-groups, to have relatively strong performance when they were required to demonstrate their reasoning competencies and skills (Caygill, Sturrock, & Chamberlain, 2007; Chamberlain, 2007a).

Gender differences³⁰

Consistent with the overall reading literacy achievement, Year 5 girls from each ethnic grouping typically achieved higher scores than boys when they were required to use *retrieval and inferencing* comprehension skills. Internationally, the average difference was 17 scale score points.

Among New Zealand Year 5 students, the most marked difference – 27 scale score points – was observed between Māori girls and boys. The differences between Pākehā/European girls and boys and Asian girls and boys averaged 22 and 18 scale points respectively. The average difference between Pasifika girls and boys (14) was *not* statistically significant.

When using *interpreting, integrating, and evaluating* processes, gender differences in achievement were observed for *all* groupings, with girls typically achieving higher scores. The international average difference was 15 scale score points. As with the text-based processes, the average difference between Māori girls and boys was the greatest at 31 scale score points. The differences were somewhat less for Pākehā/European (23) and Asian (19) students, while the difference between Pasifika girls and boys (16) was around the international average.

Any change between 2001 and 2005/2006?

For comparative purposes, the mean scores for these two processes for 2001 are shown in Tables B.10 and B.11 in Appendix B. Of note, although not of statistical significance, Asian students were the only group of students to show a positive shift in mean achievement in both comprehension processes.

³⁰ Refer to Table B.7 for details of the differences between girls' and boys' mean scores and standard errors.