




# Reading Skills

for Tomorrow's World

RESULTS OF NEW ZEALAND  
15-YEAR-OLDS IN THE 2003 PISA SURVEY



**ISBN 978-0-478-13857-3**

**Web Copy 978-0-478-13858-0**

**RMR-863**

**© Ministry of Education, New Zealand — 2009**

Research reports are available on the Ministry of Education's website Education Counts:  
[www.educationcounts.govt.nz/publications](http://www.educationcounts.govt.nz/publications)

This report has been written under contract to the Ministry of Education. It has been published as provided by the authors with minor typographical editing.

Opinions expressed in this report are those of the authors and do not necessarily coincide with those of the Ministry of Education.

Graphics presented in this report are schematic and are not necessarily to precise scale.

## **Acknowledgements**

We are indebted to the many students, teachers and principals who participated in this study. Their efforts and assistance have provided our country with a valuable resource.

We also wish to acknowledge the assistance from our international colleagues from the Australian Council for Educational Research (ACER) and the Statistics and Indicators Division of the Organisation for Economic Co-operation and Development (OECD) for the work done in preparing the international report on which this summary report is based.

## Table of Contents

<b>Overview</b> .....	<b>1</b>
What is PISA? .....	1
What does PISA tell us about reading? .....	1
How good are New Zealand students at reading?.....	1
What are the differences in reading performance between different groups in New Zealand? .....	1
Are 15-year-old New Zealanders' reading abilities getting better or worse?.....	2
<b>Background: the PISA survey</b> .....	<b>3</b>
Assessing reading literacy in PISA 2003 .....	3
Reading scores and reading proficiency in PISA 2003.....	5
<b>A profile of student reading performance in New Zealand</b> .....	<b>7</b>
New Zealand students' performance against the international benchmarks.....	7
Mean reading literacy .....	7
Box A: Two examples of reading tasks representing average reading ability in New Zealand.....	8
Distribution of reading literacy.....	10
Distribution of reading proficiency.....	10
Box B: Examples of higher and lower proficiency reading tasks.....	12
Overall variation within New Zealand.....	14
<b>Who are the stronger and weaker readers within New Zealand?</b> .....	<b>15</b>
Gender differences in reading performance .....	15
Box C: Two examples of Level 1 reading tasks rated at about 400 score points .....	17
Differences in reading performance by ethnic group.....	18
Box D: Examples of reading tasks at Levels 2, 3, and 4.....	20
Differences in reading performance by socio-economic status.....	22
Difference in reading performance by school attended.....	22
<b>First estimates of change over time</b> .....	<b>25</b>
<b>Conclusion</b> .....	<b>26</b>
<b>Appendix A: What students can do at five levels of literacy – further detail</b> .....	<b>27</b>
<b>Administration of PISA 2003</b> .....	<b>29</b>
<b>Sources for this summary</b> .....	<b>29</b>
<b>For further information in New Zealand</b> .....	<b>29</b>

## Overview

### *What is PISA?*

The Programme for International Assessment (PISA) is a three-yearly international survey of 15-year-olds that assesses their knowledge and skills for modern life. In 2003, the survey was run in the 30 Organisation for Economic Co-operation and Development (OECD) member countries, plus 11 other countries, and it tested over a quarter of a million students, including 4500 from New Zealand.

### *What does PISA tell us about reading?*

PISA tells us how well students can use written texts in everyday life and work situations. Specifically, it shows how well they can retrieve information and interpret and reflect on what they read. It uses various written materials that range from prose to graphical presentations.

### *How good are New Zealand students in reading?*

On average, New Zealand students do significantly<sup>1</sup> better in reading than students across the OECD countries, with a stronger overall performance than students in 21 countries and a performance that is approximately equal to students in 6 other countries. Only students in Finland performed significantly better than New Zealand in reading.

New Zealand has an exceptionally high number of very strong readers, but it also has a sizeable proportion of weak readers, resulting in a relatively wide spread of achievement across the reading scale. The top 5% of New Zealand students achieved an average score of at least 682 score points, which was higher than any other OECD country. However, the lowest 5% of New Zealand students scored less than 338 points, which was higher than the OECD average (318) but significantly below Finland, Korea, Canada and Netherlands, countries with similar overall reading performance. In fact, the gap between high and low achievement in reading is bigger in New Zealand than in all but three other OECD countries.

### *What are the differences in reading between different groups in New Zealand?*

- Girls are more likely than boys to be strong readers and less likely to be weak readers. However, many boys read well and the overall gender gap is smaller than in most OECD countries. New Zealand has more boys who are excellent readers (at the top proficiency level) than anywhere else.
- Pākehā/European students do better on average in reading compared with students from other ethnic groups. Overall, Pākehā/European students perform above the New Zealand average, Asian students just below average, and Māori and Pasifika students are relatively weak readers with average scores well below the New Zealand average.
- Students from families with high socio-economic status and those from 'high-decile' schools do better. Students in low-decile schools are four times as likely to be weak readers as students in high-decile schools. For individual students, the difference in predicted performance based on a given difference in socio-economic status is about average for the OECD countries.

---

<sup>1</sup> Throughout this report, the term significantly refers to statistical significance at the 0.05 level.

***Are 15-year-old New Zealanders' reading abilities getting better or worse?***

This is just the second PISA survey, and comparisons with the results from the first one in 2000 show no change in the average reading performance of New Zealand students. However, the gender gap in reading has narrowed, owing to a fall in girls' reading scores.

## Background: the PISA survey

PISA surveys the knowledge and skills of 15-year-olds in the principal industrialised countries. The product of collaboration between participating governments through the OECD, it draws on leading international expertise to develop valid comparisons across countries and cultures.

PISA 2003 is the second assessment in the series. In this survey:

- Well over a quarter of a million students in 41 countries took part. All 30 OECD member countries participated, as well as 'partner countries' in Asia, Africa, Eastern Europe, and Latin America.
- Each student took a two-hour written test in their school.
- Students were assessed in mathematics, reading, science, and problem solving. Mathematics was the main focus in 2003, while reading was the main focus in the 2000 survey. The next PISA assessment in 2006 will focus on student performance in science.

The key features of the PISA approach are:

- Its policy orientation, with design and reporting methods determined by the need of governments to draw policy lessons.
- The innovative 'literacy' concept, which is concerned with the capacity of students to apply knowledge and skills in key subject areas and to analyse, reason, and communicate effectively as they pose, solve, and interpret problems in a variety of situations.
- Its inclusion of assessment that is not restricted to particular areas of the school curriculum. The assessment of 'problem-solving' in 2003 was the first such 'cross-curricular' assessment.
- Its regularity, which will enable countries to monitor their progress in meeting the key learning objectives over time.
- Its consideration of student performance alongside the characteristics of students' homes and schools in order to explore some of the main features associated with educational success. Each participating student and school completed a questionnaire that allowed a wide range of background information to be considered alongside student performance.
- Its breadth of geographical coverage, as the countries that have participated so far represent one-third of the world's population and almost nine-tenths of the world's gross domestic product (GDP).

The comparisons made below set New Zealand students' performance alongside that of students in the participating OECD countries, which are the countries in the survey most comparable to New Zealand: it excludes countries such as Tunisia, Peru and Russia from the analysis. A total of 29 OECD countries reported results in 2003. (One country, the United Kingdom, participated but did not meet the sampling requirements.)

### ***Assessing reading literacy in PISA 2003***

When looking at 15-year-olds' reading abilities, PISA adopts the broad concept of 'reading literacy'. Reading is no longer considered to be simply the ability to read and write, which is acquired in childhood as a single well-defined skill. Today, it is viewed as an advancing set of knowledge, skills, and strategies that individuals develop and build on throughout life, through experience, not just formal education.

According to the agreed PISA definition, reading literacy is:

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

PISA 2003 Learning for Tomorrow's World, OECD: p. 27

This definition goes beyond the traditional notion of decoding information and literal interpretation of what is written towards more applied tasks.

The concept of reading literacy in PISA is defined by three dimensions:

- The format of the reading material;
- The type of reading task or reading aspects; and
- The situation or the use for which the text was constructed.

The first dimension, the *text format*, refers to the type of written material:

- *Continuous prose* – such as a book or an article;
- *Non-continuous* – texts, such as graphs, tables, lists, or diagrams.

The reading tasks set in PISA were based on a number of units, each with several questions following from a text that the students were required to read. The texts were drawn from a variety of forms.

The second dimension, *types of reading tasks*, represents the things that students need to do as readers:

- *Retrieve information* – that is, to locate single or multiple pieces of information in a text.
- *Interpret texts* – that is, to construct meaning and draw inferences from written information.
- *Reflect on and evaluate texts* – that is, to relate written information to their prior knowledge, ideas, and experiences.

In PISA 2000, student performances in these three types of tasks were reported on a separate scale. In 2003, however, less assessment time was allocated to reading and the results are reported only on a single reading literacy scale that combines the three types of tasks.

The third dimension, the *situation or context*, reflects the categorisation of texts based on the author's intended use, the relationship with other persons implicitly or explicitly associated with the text, and the general content. A number of situations were represented in PISA, and they were selected to maximise the diversity of content included in the reading literacy assessment.

- *Reading for private use (personal);*
- *Reading for public use;*
- *Reading for work (occupational); and*
- *Reading for education.*

The questions set in PISA varied in format: some were multiple choice; others required written answers. Of the latter, some required one correct answer whereas others were more 'open' and could be answered correctly in a

variety of ways. In some cases, partial credit could be given for responses that showed some, but not all, of the required degree of understanding.

### ***Reading scores and reading proficiency in PISA 2003***

Reading questions represented a wide range of difficulty, from extremely simple identification of information to highly complex interpretations drawing on multiple pieces of non-explicit information. Each task was given a score according to its difficulty and the students were assigned individual scores according to the highest difficulty of task that they were likely to be able to perform. The types of task set at varying levels of difficulty are shown in shaded boxes throughout this report.

The scale is devised with an average score for all the OECD countries of 500 and a standard deviation of 100, meaning that about two-thirds of students score between 400 and 600 points.

To aid interpretation, tasks were ranked at five 'proficiency levels' and each student was assigned to the highest level at which they could perform the required tasks. Specifically, a student must be capable of getting a majority of tasks at a given proficiency level correct in order to be ranked at that level. Some students do not reach even the lowest level, Level 1, but this does not mean that they are unable to perform any PISA reading tasks. However, it does mean that they would get the majority of simple tasks wrong.

Table 1 shows the meaning of reading proficiency at different levels in PISA. For a more detailed description of each level refer to Appendix A at the end of this report.

Table 1: The five levels of reading proficiency

Level and corresponding range of scores	Difficulty of tasks	Example
<b>Level 1</b> 335–407	The simplest reading tasks developed for PISA, such as locating a single piece of information, identifying the main theme of a text, or making a simple connection with everyday knowledge.	Identify the writer's general purpose in a scientific magazine article written for young people (see Box C).
<b>Level 2</b> 408–480	Basic reading tasks, such as locating straightforward information, making low-level inferences of various types, working out what a well-defined part of a text means, and using some outside knowledge to understand it.	Understand the distinction between information categories in a tree diagram (see Box B).
<b>Level 3</b> 481–552	Reading tasks of moderate complexity, such as locating multiple pieces of information, making links between different parts of a text, and relating it to familiar everyday knowledge.	Locate information in a scientific magazine article for young people by making a synonymous match among competing information (see Box A).
<b>Level 4</b> 553–625	Difficult reading tasks, such as locating embedded information, dealing with ambiguities, and critically evaluating a text.	Analyse the writing style of two letters putting opposing arguments to say which is best constructed (see Box D).
<b>Level 5</b> 625 or above	Sophisticated reading tasks, such as managing information that is difficult to find in unfamiliar texts, showing detailed understanding of such texts, and inferring which information in the text is relevant to the task. Being able to evaluate critically and build hypotheses, draw on specialised knowledge, and accommodate concepts that may be contrary to expectations.	Identify which category various individuals belong in on a tree diagram showing labour force status categories where some of the relevant information is in footnotes and is therefore not prominent (see Box B).
*The points assigned to each task according to its difficulty follow a scale that has been calibrated so that the OECD average point score is 500 and the standard deviation for students in the OECD countries is 100.		

## A profile of student reading performance in New Zealand

### *New Zealand students' performance against the international benchmarks*

The average performance of 15-year-old New Zealanders in reading is significantly higher than the OECD average. New Zealand is comfortably in the top third of the 29 OECD countries for which results are available.

### *Mean reading literacy*

The average student scores of each country summarise reading performance in PISA. These results are based on the reading literacy proficiency scale, which was developed for the first PISA study in 2000, and has a mean of 500 and a standard deviation of 100. The OECD average in 2003 was 494 score points, because of the inclusion of new countries since 2000. There was little change in the average performance for countries that participated in both PISA 2000 and 2003.

New Zealand students scored 522 points on average in reading in PISA 2003. Box A on pages 8-9 illustrates the kind of reading tasks that the average student in New Zealand is capable of. This puts New Zealand among the better performing countries in the survey. As shown in Table 2, a number of other countries had average reading scores close to that of New Zealand, so it was not possible to say with confidence, on the basis of a sample survey, which country's student population performed better in reading. However, in Finland it can be said with confidence that student scores were, on average, higher than those in New Zealand. On the other hand, the performance of students in 21 other countries was significantly lower than New Zealand.

**Table 2: Mean reading scores, PISA 2003**

Significantly higher than New Zealand	No significant difference from New Zealand	Significantly lower than New Zealand		
Finland(543)	Korea (534) Canada (528) Australia (525) <b>New Zealand (522)</b> Ireland (515) Sweden (514) Netherlands (513)	Belgium (507) Norway (500) Switzerland(499) Japan (498) Poland (497) France (496) United States (495)	<i>OECD AVERAGE(494)</i> Denmark (492) Iceland (492) Germany (491) Austria (491) Czech Republic (489) Hungary (482)	Spain (481) Luxembourg (479) Portugal (478) Italy (476) Greece (472) Slovak Republic (469) Turkey (441) Mexico (400)

Can anything be said about what kind of reading task New Zealand students are relatively good at? This is not possible from the 2003 survey, which focused primarily on mathematics; there were not enough reading tasks to compile separate scores for different aspects of reading, as noted earlier in this report. In 2000, New Zealand students' performance in the three types of reading tasks - retrieving information, interpreting texts, and reflecting on texts - was significantly above the OECD average, which suggests that their reading abilities cover the full range of reading skills.

**Box A: Two examples of reading tasks representing average reading ability in New Zealand**

Students in New Zealand have an average reading score of 522 points. This means that an average New Zealand 15-year-old reader is likely to be able to complete a task rated at that level of difficulty (more precisely, students have a 62% chance of being able to complete it).

The following examples are tasks from the PISA 2000 survey that are associated with scores around the New Zealand average for 2003.

*Both questions refer to the text on scientific weapons shown opposite:*

*A task requiring students to retrieve information:*

**Question 1: POLICE**

To explain the structure of DNA, the author talks about a pearl necklace. How do these pearl necklaces vary from one individual to another?

- A They vary in length.
- B The order of the pearls is different.
- C The number of necklaces is different.
- D The colour of the pearls is different.

Correct answer B is associated with a score of 515 points.

This task requires students to locate information in a scientific magazine article for young people by making a synonymous match among competing information.

*A task requiring students to interpret a text:*

**Question 2: POLICE**

What is the purpose of the box headed "How is the genetic identity card revealed"?

To explain

- A what DNA is.
- B what a bar code is.
- C how cells are analysed to find the pattern of DNA.
- D how it can be proved that a crime has been committed.

Correct answer C is associated with a score of 518 points.

This task requires students to recognise an appropriate summary of a clearly identified paragraph in a scientific magazine article for young people by integrating information from several sentences. Some competing information is present.

## Box A continued

## Scientific Police Weapons

*A murder has been committed but the suspect denies everything. He claims not to know the victim. He says he never knew him, never went near him, never touched him...*

*The police and the judge are convinced that he is not telling the truth. But how to prove it?*

At the crime scene, investigators have gathered every possible shred of evidence imaginable: fibres from fabrics, hairs, finger marks, cigarette ends... The few hairs found on the victim's jacket are red. And they look strangely like the suspect's. If it could be proved that these hairs are indeed his, this would be evidence that he had in fact met the victim.

**Every individual is unique**  
Specialists set to work. They examine some cells at the root

of these hairs and some of the suspect's blood cells. In the nucleus of each cell in our bodies there is DNA. What is it? DNA is like a necklace made of two twisted strings of pearls. Imagine that these pearls come in four different colours and that thousands of coloured pearls (which make up a gene) are strung in a very specific order. In each individual this order is exactly the same in all the cells in the body: those of the hair roots as well as those of the big toe, those of the liver and those of the stomach or blood. But the order of the pearls varies from one person to another. Given the number of pearls strung in this way, there is very little chance of two people having the same DNA, with the exception of identical twins. Unique to each individual, DNA is thus a sort of genetic identity card.

Geneticists are therefore able to compare the suspect's genetic identity card (determined from his blood) with that of the person with the red hair. If the genetic card is the same, they will know that the

suspect did in fact go near the victim he said he'd never met.

**Just one piece of evidence**

More and more often in cases of sexual assault, murder, theft or other crimes, the police are having genetic analyses done. Why? To try to find evidence of contact between two people, two objects or a person and an object. Proving such contact is often very useful to the investigation. But it does not necessarily provide proof of a crime. It is just one piece of evidence amongst many others.

Anne Versailles

**We are made up of billions of cells**

Every living thing is made up of lots of cells. A cell is very small indeed. It can also be said to be microscopic because it can only be seen using a microscope which magnifies it many times. Each cell has an outer membrane and a nucleus in which the DNA is found.

**Genetic what?**

DNA is made up of a number of genes, each consisting of thousands of "pearls". Together these genes form the genetic identity card of a person.

**How is the genetic identity card revealed?**

The geneticist takes the few cells from the base of the hairs found on the victim, or from the saliva left on a cigarette end. He puts them into a product which destroys everything around the DNA of the cells. He then does the same thing with some cells from the suspect's blood. The DNA is then specially prepared for analysis. After this, it is placed in a special gel and an electric current is passed through the gel. After a few hours, this produces stripes similar to a bar code (like the ones on things we buy) which are visible under a special lamp. The bar code of the suspect's DNA is then compared with that of the hairs found on the victim.

Microscope in a police laboratory



Refer to the magazine article to answer the questions.

Source: OECD (2001). *Knowledge and Skills for Life – First Results from PISA 2000* (pp. 42). Paris: OECD Publications

Although New Zealand students are good readers on average, there is a wide range of reading abilities within the country. In fact, New Zealand students show wider disparities in reading performance than students in most of the other OECD countries.

There are several ways of looking at this dispersion of reading performance.

### Distribution of reading literacy

First, we can look at the *distribution of point scores* on the reading test, as shown in Table 3. This allows us to see how well particular percentages of New Zealanders do when compared with international benchmarks. To interpret the following point scores, it helps to know that the standard deviation across the OECD is 100, meaning that about two-thirds of OECD students have reading scores that are between about 400 and 600 points.

Table 3 shows that, in comparison to other OECD countries, New Zealand's top 15-year-old students excel in reading, but low-performing students are relatively weak readers in comparison to countries with average scores similar to New Zealand.

**Table 3: Reading scores at different points in the student distribution, selected OECD countries**

Country and Mean Score	5th Percentile <sup>1</sup>	25th Percentile	75th Percentile	95th Percentile
Finland (543)	400	494	599	666
Australia (525)	352	464	594	673
Canada (528)	373	472	590	663
New Zealand (522)	338	453	596	682
OECD average (494)	318	430	565	646
Difference between New Zealand and OECD average	-20	-23	-31	-36

1. Percentile refers to the percentage of students performing above or below a particular point on the scale (e.g. at the 5th percentile, only 5% of students achieved a lower score and 95% of students received a higher score).

- The *top 5% of 15-year old students* in New Zealand have very high reading proficiency, scoring at least 682 points on average. They outperform the top 5% of students in every other country and are 36 points above the equivalent group across all OECD students.
- The *top 25%* of New Zealand students all score 596 points or higher. This puts them 31 points above the OECD average for this upper quartile and ahead of the top quartile, or 25% in every other country in the survey except Finland. Only about a sixth of students across the OECD reach this high reading level attained by a quarter of New Zealanders.
- The *bottom 25%* of New Zealand students score below 453 points, showing a moderate reading ability. This score is 23 points above the equivalent score at the 25<sup>th</sup> percentile in the average OECD country. However, this group of New Zealand students falls well below the overall OECD average of 494.
- The *bottom 5%* of New Zealand students has reading scores of less than 338 points. These students have, at best, a very basic reading ability. All countries have at least a small minority of students who are performing poorly, and the average score at the 5<sup>th</sup> percentile in the OECD countries is 20 points lower than in New Zealand. However, in countries with less variation in performance, such as Finland, even the weaker students perform relatively well. At the 5<sup>th</sup> percentile, Finnish students are over 60 points above the equivalent group of New Zealand students (see Table 3).

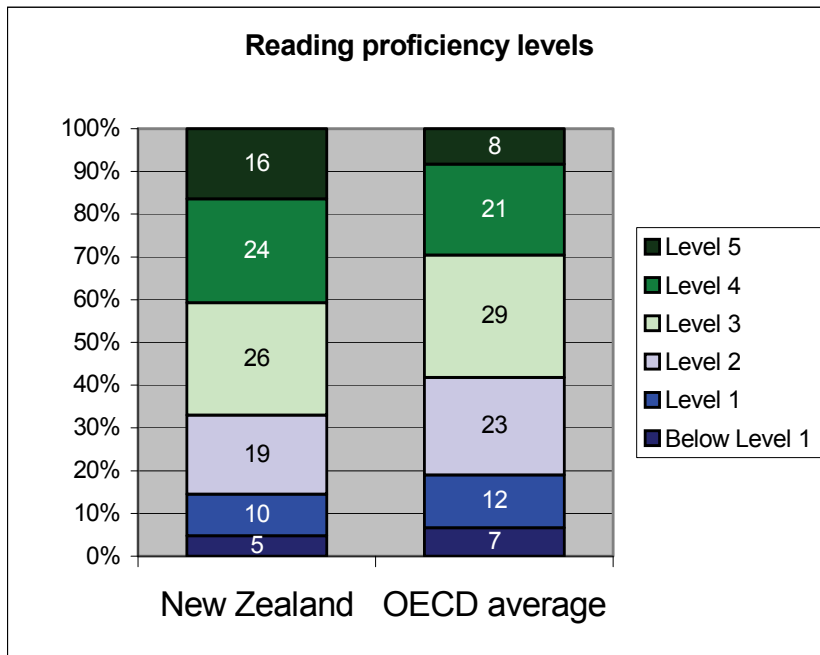
### Distribution of reading proficiency

A second way to analyse differences within New Zealand and in comparison with international benchmarks is to consider *levels of reading proficiency*. This takes a step beyond looking at the distribution of scores and considers what the results mean in terms of the reading tasks that students can actually perform. As shown in Table 1 earlier in this report, proficiency in reading in PISA is classified at five levels, with students at Level 5

able to perform highly sophisticated reading tasks, while students at below Level 1 were unable to perform the simplest tasks in the test.

Figure 1 shows the distribution of students proficient at each level. One in six New Zealand students has highly sophisticated reading skills that allow them to perform the complex tasks required to reach Level 5. (For examples of such tasks, see Box B on pages 13-15). This is a higher proportion than in any other country, and twice as many as the average OECD country, which shows that New Zealand is well endowed with young people capable of performing to a high level in a knowledge economy.

**Figure 1: Reading Proficiency Levels, New Zealand and OECD average**



At the other extreme, nearly one in six students (15%) do not reach Level 2, meaning that they cannot perform basic tasks that require low-level inferences (See Box B, pages 13-15, and Box D, pages 24-25, for examples). At most, these students can only perform reading tasks in the simplest and most familiar of situations. These students are likely to be severely disadvantaged when they enter the labour market. One in three students do not reach Level 3, the threshold at which students start to use reading in the more complex ways necessary in the 21st century knowledge economy.

**Box B: Examples of higher and lower proficiency reading tasks**

*All the following questions relate to the 'labour market' text shown opposite*

The first two questions in this box are examples of Level 5 proficiency tasks. Students who can complete such tasks are potentially tomorrow's high-level knowledge workers.

**Question 2: A task requiring students to retrieve information (Level 5):**

The task below requires students to locate correct numerical information in a tree diagram and combine it with conditional information given in a footnote. A correct answer of 949,900, or an appropriate approximation, is associated with a score of 631 points.

**Question 2: LABOUR**

How many people of working age were not in the labour force? (Write the **number** of people, not the percentage.)

**Question 3: A task requiring students to interpret information (Level 5):**

This task requires students to analyse and match several described cases to labour force status categories where some of the relevant information is in footnotes and is therefore not prominent. Correct answers in all five boxes (as shown) are associated with a score of 727 points, making it one of the hardest items in PISA.

**Question 3: LABOUR**

In which part of the tree diagram, if any, would each of the people listed in the table below be included?

Show your answer by placing a cross in the correct box in the table.

The first one has been done for you.

	"In labour force: employed"	"In labour force: unem-ployed"	"Not in labour force"	Not included in any category
A part-time waiter, aged 35	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A business woman, aged 43, who works a sixty-hour week	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A full-time student, aged 21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A man, aged 28, who recently sold his shop and is looking for work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A woman, aged 55, who has never worked or wanted to work outside the home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A grandmother, aged 80, who still works a few hours a day at the family's market stall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The next question is a Level 2 reading proficiency question.

**Box B continued**

**Question 4: A task requiring students to reflect on a text (Level 2):**

This task requires students to draw on knowledge of the form and content of a tree diagram about the labour force to distinguish between variables and structural features. Students who cannot complete such tasks risk being unable to fulfil their goals in adult life, both as workers and as citizens. Three out of four correct answers, as shown in the table, is associated with a score of 443 points.

**Question 4: LABOUR**

Suppose that information about the labour force was presented in a tree diagram like this every year.

Listed below are four features of the tree diagram. Show whether or not you would expect these features to change from year to year, by circling either "Change" or "No change". The first one has been done for you.

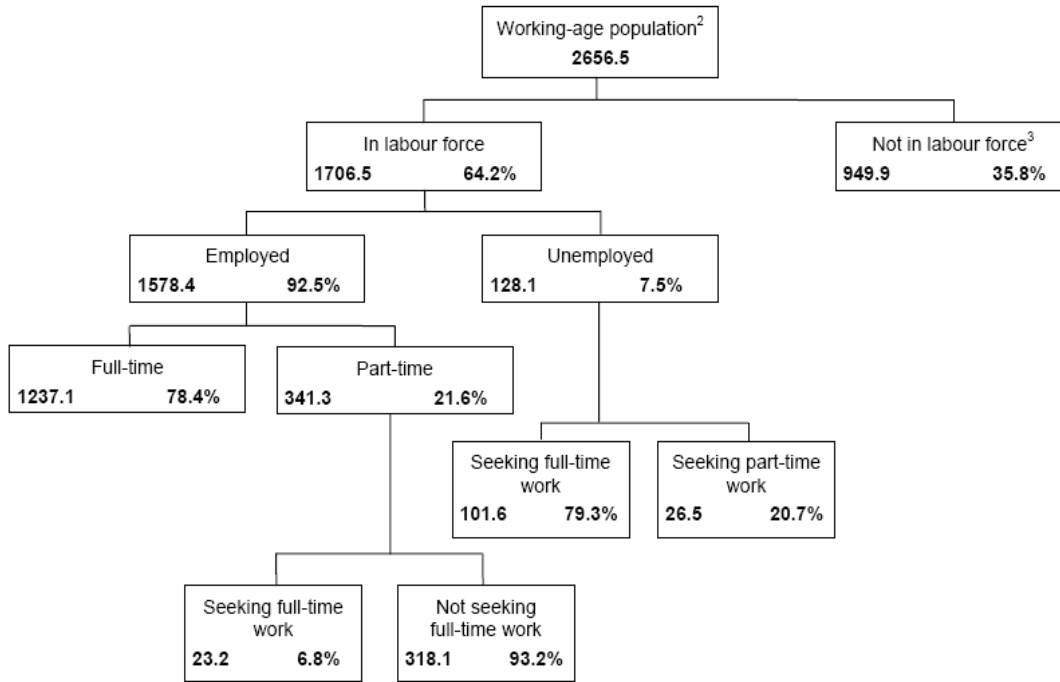
Features of Tree Diagram	Answer
The labels in each box (e.g. "In labour force")	Change / <u>No change</u>
The percentages (e.g. "64.2%")	Change / No change
The numbers (e.g. "2656.5")	Change / No change
The footnotes under the tree diagram	Change / No change

Students who are at Level 2 proficiency are proportionately fewer in New Zealand than in the average OECD country. On the other hand, there are a number of countries that have much higher proportions of students with at least basic reading skills. It is interesting, for example, to contrast New Zealand with Korea. Slightly fewer Korean students than New Zealand students (12% rather than 16%) are highly advanced readers at Level 5. However, Korea has only half as many 15-year-olds as New Zealand (7% rather than 15%) who cannot perform tasks beyond Level 1.

**Box B continued**

The tree diagram below shows the structure of a country's labour force or "working-age population". The total population of the country in 1995 was about 3.4 million.

**The Labour Force Structure year ended 31 March 1995 (000s)<sup>1</sup>**



Notes

- 1. Numbers of people are given in thousands (000s).
- 2. The working-age population is defined as people between the ages of 15 and 65.
- 3. People "Not in labour force" are those not actively seeking work and/or not available for work.

Source: OECD (2001). *Knowledge and Skills for Life – First Results from PISA 2000* (pp. 40). Paris: OECD Publications.

**Overall variation within New Zealand**

Finally, a third way of measuring the distribution of reading performance is through the *standard deviation*: a summary indicator showing the extent to which student scores are dispersed around the mean. The international standard deviation is 100 points; New Zealand's is 105, which, along with that of Greece, is the fourth highest in the OECD. In contrast, Finland has a standard deviation of 81 and Korea one of 85. These are substantial differences, meaning, for example, that the gap in achievement between the top and bottom quarters of students is about a third greater in New Zealand than in Finland or Korea.

These results show that New Zealand's best readers are world class but also that its weaker readers are falling behind their OECD counterparts to a greater extent than average. PISA results can provide information about particular groups of students who are performing poorly in reading and assist in lifting student performance among these groups.

## Who are the stronger and weaker readers within New Zealand?

Low reading abilities are not evenly distributed among different groups of students or different schools in New Zealand. Even though there are good readers in all schools and social groups, achievement in reading literacy varies by characteristics such as gender, ethnicity and socio-economic status. The PISA study collects a wide range of information about the students who take part, through a questionnaire filled out by each student, and this information provides a profile of stronger and weaker readers.

### *Gender differences in reading performance*

Girls have higher average reading scores than boys in all of the OECD countries. Table 5 shows that internationally, there is a significant 34 point difference, on average, between girls and boys in PISA 2003. In New Zealand, this difference is also significant at 28 score points, on average, although it is relatively modest when compared with other OECD countries. Only five countries have a smaller advantage of girls over boys. Note, however, that due to sampling error we cannot say with confidence that the gender gap in New Zealand is below the OECD average.

Table 5: Gender difference in average reading scores

Country	Mean score Males		Mean score Females		Difference: Males minus Females	SE
	Males	SE	Females	SE		
Iceland	464	(2.3)	522	(2.2)	-58	(3.5)
Norway	475	(3.4)	525	(3.4)	-49	(3.7)
Austria	467	(4.5)	514	(4.2)	-47	(5.2)
Finland	521	(2.2)	565	(2.0)	-44	(2.7)
Germany	471	(4.2)	513	(3.9)	-42	(4.6)
Poland	477	(3.6)	516	(3.2)	-40	(3.7)
Italy	455	(5.1)	495	(3.4)	-39	(6.0)
Australia	506	(2.8)	545	(2.6)	-39	(3.6)
Spain	461	(3.8)	500	(2.5)	-39	(3.9)
France	476	(3.8)	514	(3.2)	-38	(4.5)
Greece	453	(5.1)	490	(4.0)	-37	(4.1)
Belgium	489	(3.8)	526	(3.3)	-37	(5.1)
Sweden	496	(2.8)	533	(2.9)	-37	(3.2)
Portugal	459	(4.3)	495	(3.7)	-36	(3.3)
Switzerland	482	(4.4)	517	(3.1)	-35	(4.7)
<b>OECD average</b>	<b>477</b>	<b>(0.7)</b>	<b>511</b>	<b>(0.7)</b>	<b>-34</b>	<b>(0.8)</b>
Turkey	426	(6.8)	459	(6.1)	-33	(5.8)
Luxembourg	463	(2.6)	496	(1.8)	-33	(3.4)
Slovak Republic	453	(3.8)	486	(3.3)	-33	(3.5)
United States	479	(3.7)	511	(3.5)	-32	(3.3)
Canada	514	(2.0)	546	(1.8)	-32	(2.0)
Czech Republic	473	(4.1)	504	(4.4)	-31	(4.9)
Hungary	467	(3.2)	498	(3.0)	-31	(3.8)
Ireland	501	(3.3)	530	(3.7)	-29	(4.6)
<b>New Zealand</b>	<b>508</b>	<b>(3.1)</b>	<b>535</b>	<b>(3.3)</b>	<b>-28</b>	<b>(4.4)</b>
Denmark	479	(3.3)	505	(3.0)	-25	(2.9)
Japan	487	(5.5)	509	(4.1)	-22	(5.4)
Mexico	389	(4.6)	410	(4.6)	-21	(4.4)
Korea	525	(3.7)	547	(4.3)	-21	(5.6)
Netherlands	503	(3.7)	524	(3.2)	-21	(3.9)

A more meaningful way of looking at this difference is by proficiency levels. The weakest readers can be defined as those who do not reach the basic proficiency Level 2 in reading. This means that they are likely to be able to do only simple reading tasks at best, such as the task shown in Box C, which is rated near the top of Level 1. In many cases, students at Level 1 or below will be unable to do this type of task, which allows them to understand, in very broad terms, what a text is about.

**Box C: Two examples of Level 1<sup>2</sup> reading tasks rated at about 400 score points**

Students who score below 400 are severely disadvantaged in reading. The following Level 1 tasks are among the easiest tasks in the PISA survey.

Both of the following questions refer to the 'Scientific police weapons' text below.

**Scientific Police Weapons**

*A murder has been committed but the suspect denies everything. He claims not to know the victim. He says he never knew him, never went near him, never touched him... The police and the judge are convinced that he is not telling the truth. But how to prove it?*

At the crime scene, investigators have gathered every possible shred of evidence imaginable: fibres from fabrics, hairs, finger marks, cigarette ends... The few hairs found on the victim's jacket are red. And they look strangely like the suspect's. If it could be proved that these hairs are indeed his, this would be evidence that he had in fact met the victim.

**Every individual is unique**  
Specialists set to work. They examine some cells at the root of these hairs and some of the suspect's blood cells. In the nucleus of each cell in our bodies there is DNA. What is it? DNA is like a necklace made of two twisted strings

of pearls. Imagine that these pearls come in four different colours and that thousands of coloured pearls (which make up a gene) are strung in a very specific order. In each individual this order is exactly the same in all the cells in the body: those of the hair roots as well as those of the big toe, those of the liver and those of the stomach or blood. But the order of the pearls varies from one person to another. Given the number of pearls strung in this way, there is very little chance of two people having the same DNA, with the exception of identical twins. Unique to each individual, DNA is thus a sort of genetic identity card.  
Geneticists are therefore able

to compare the suspect's genetic identity card (determined from his blood) with that of the person with the red hair. If the genetic card is the same, they will know that the suspect did in fact go near the victim he said he'd never met.

**Just one piece of evidence**  
More and more often in cases of sexual assault, murder, theft or other crimes, the police are having genetic analyses done. Why? To try to find evidence of contact between two people, two objects or a person and an object. Proving such contact is often very useful to the investigation. But it does not necessarily provide proof of a crime. It is just one piece of evidence amongst many others.

*Anne Versailles*

**Genetic what?**

DNA is made up of a number of genes, each consisting of thousands of "pearls". Together these genes form the genetic identity card of a person.

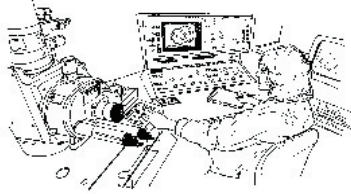
**How is the genetic identity card revealed?**

The geneticist takes the few cells from the base of the hairs found on the victim, or from the saliva left on a cigarette end. He puts them into a product which destroys everything around the DNA of the cells. He then does the same thing with some cells from the suspect's blood. The DNA is then specially prepared for analysis. After this, it is placed in a special gel and an electric current is passed through the gel. After a few hours, this produces stripes similar to a bar code (like the ones on things we buy) which are visible under a special lamp. The bar code of the suspect's DNA is then compared with that of the hairs found on the victim.

**We are made up of billions of cells**

Every living thing is made up of lots of cells. A cell is very small indeed. It can also be said to be microscopic because it can only be seen using a microscope which magnifies it many times. Each cell has an outer membrane and a nucleus in which the DNA is found.

Microscope in a police laboratory



A task requiring students to reflect on a text:

**Question 3: POLICE**

What is the author's main aim?

- A To warn.
- B To amuse.
- C To inform.
- D To convince.

The correct answer, C, is associated with a score of 406 points.

This task requires students to identify the writer's general purpose in a scientific magazine article written for young people.

<sup>2</sup> Level 1 proficiency is between 335 and 407 score points.

*Box C continued*

*Another task requiring students to reflect on a text:*

**Question 4: POLICE**

The end of the introduction (the first shaded section) says: "But how to prove it?"

According to the passage, investigators try to find an answer to this question by

- A interrogating witnesses.
- B carrying out genetic analyses.
- C interrogating the suspect thoroughly.
- D going over all the results of the investigation again.

The correct answer, B, is associated with a score of 402 points.

This task requires students to integrate information from different paragraphs in order to identify the main idea of a scientific magazine article written for young people.

One in five readers (19%), on average, in the OECD countries is a weak reader, with reading literacy at Level 1 or below. However, for boys, almost one in four (24%) are reading at this level, whereas for girls, it is only one in seven (14%). In New Zealand, the corresponding figures are 18% of boys and 11% of girls, a similar ratio. Yet, in some relatively high-performing countries, the extra disadvantage of low-performing boys is much greater. For example, in Norway, like New Zealand, 11% of girls are weak readers, but 25% of boys are weak readers compared with only 18% in New Zealand. Thus, while underachievement among boys is a significant issue in New Zealand, as elsewhere, the gender gap is less than in some other OECD countries.

In the case of very high achievement, the gender gap is even more modest by international standards. On average, one in seven students in the OECD countries has very high reading literacy – defined as Level 5 - where students can perform such sophisticated reading tasks as the those shown in Box B above. In other countries, only 11% of girls and 6% of boys get such high scores. In New Zealand, it is 19% and 14% respectively. Not only is the ratio of girls to boys in this category smaller in New Zealand, but a higher proportion of boys are excellent readers at Level 5 proficiency, compared with any other country. Only in Australia do a comparable proportion of boys (11%) reach Level 5; elsewhere, it is 10% or below. New Zealand stands out as a country where reading is something that not only girls excel at.

These results show that while New Zealand, like other OECD countries, needs to address the question of why boys do worse than girls in reading, it would be inappropriate to focus strategies to raise underachievement only on boys. Of the 15% of New Zealand students with reading scores below Level 2, well over a third are girls, and they would be left out of programmes aimed only at boys.

***Differences in reading performance by ethnic group***

The four main ethnic groups in New Zealand have different reading profiles. Every ethnic group has strong, medium, and weak readers, but the distribution of achievement across each group varies considerably.

These differences can be looked at first in terms of average reading scores, bearing in mind that an average score does mask wide variation within each group. Overall, Pākehā/European students (at 547 score points) perform above the New Zealand average (494), Asian students (514) perform close to the average, and Māori

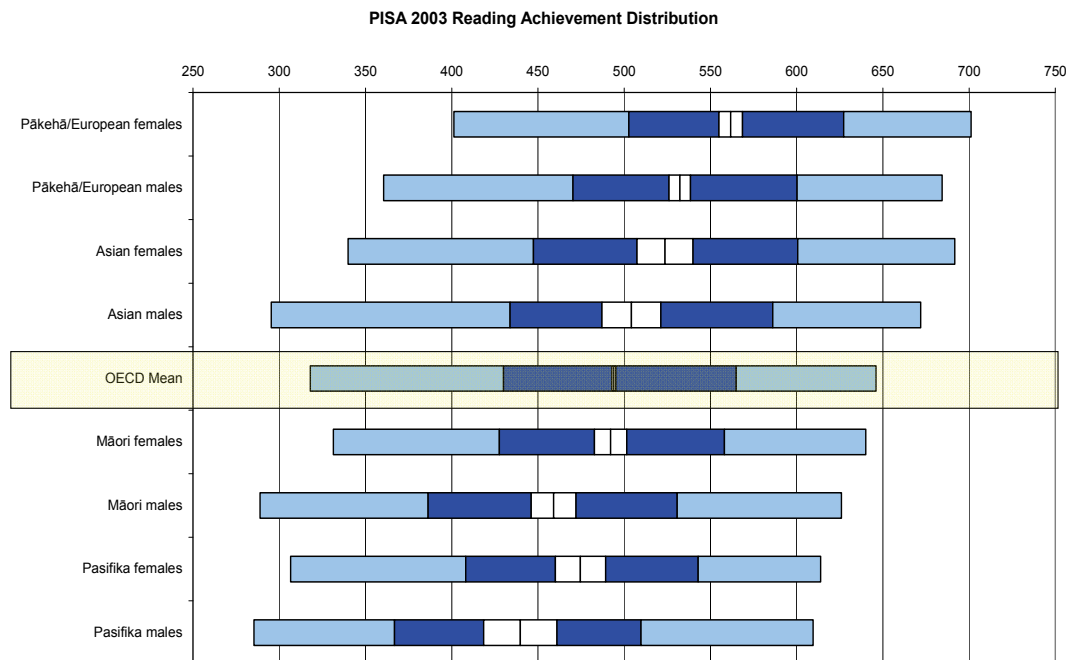
(476) and Pasifika (458) students perform well below the average. Pasifika students have reading scores slightly below those of Māori and the difference is statistically significant.

In comparison to other OECD countries, Pākehā/European students' average scores, at 547, are as good as those of students in the best-performing country, Finland. However, the average score for both Māori and Pasifika students is well below that of the OECD average of 494. Pasifika students' average, at 458, is lower than that in any OECD country, other than Mexico or Turkey (see Table 2, page 7).

In terms of proficiency levels, Pākehā/European and Asian students are able to complete tasks at Level 3, on average, and Māori and Pasifika students at Level 2. Box D gives an idea of what these differences imply. On average, Māori and Pasifika students show a basic level of understanding when reading and reflecting on a text from the real world, but the average Pākehā/European student is able to perform at a greater level of complexity in reading, and attempt tasks that make analogies and connections.

Of course, there is a range of reading abilities within each ethnic group. As Figure 2 shows, within each group girls generally read better than boys. In the case of Asian boys and girls, the gender difference is not statistically significant, but this does not mean that there is no gap – only that it cannot be confirmed on the basis of the relatively small sample tested within this group. Figure 2 also shows that there is some overlap between ethnic groups broken down by gender. For example, Pasifika girls read about as well as Māori boys, and Māori girls read about as well as Asian boys.

Figure 2: Mean reading score by ethnic group and gender



**Box D: Examples of reading tasks at Levels 2, 3, and 4**

PISA reading tasks get progressively more complex as they go up the scale of difficulty. The following questions are examples of tasks based on an article about graffiti. The first task, at the top of Level 2 proficiency, is close to the average score achieved by Māori students. The second task, near the top of Level 3, is close to the average achieved by Pākehā/European students. An average Pākehā/European student would also have about a 50% chance of correctly answering the third question, rated at Level 4.

*A Level 2 question requiring a student to reflect on a text:*

**Question 4: GRAFFITI**

Which of the two letter writers do you agree with? Explain your answer by using **your own words** to refer to what is said in one or both of the letters.

Correct answers, associated with a score of 471 points, explain the student's point of view by referring to the content of one or both letters. They may refer to the writer's general position (i.e. for or against) or to a detail of her argument. The interpretation of the writer's argument must be plausible and must not be copied word-for-word from the text.

This task requires students to compare writers' claims with their own views and attitudes. They are also required to demonstrate a broad understanding of at least one of the two letters.

*A Level 3 question requiring a student to interpret a text:*

**Question 3: GRAFFITI**

Why does Sophia refer to advertising?

Correct answers, associated with a score of 542 points, must either (a) recognise that a comparison is being drawn between graffiti and advertising and be consistent with the idea that advertising is a legal form of graffiti or (b) recognise that referring to advertising is a strategy to defend graffiti.

This task requires students to infer an analogical relationship between two phenomena in the text.

*A Level 4 question requiring a student to reflect on a text:*

**Question 5: GRAFFITI**

We can talk about **what** a letter says (its content).

We can talk about **the way** a letter is written (its style).

Regardless of which letter you agree with, in your opinion, which do you think is the better letter? Explain your answer by referring to **the way** one or both letters are written.

**Box D continued**

Correct answers, associated with a score of 581 points, must explain opinion with reference to the style or form of one or both letters. They should refer to criteria such as style of writing, structure of argument, cogency of argument, tone, register used, or strategies for persuading readers. Terms like 'better arguments' must be substantiated.

This task requires students to evaluate the writer's craft. Students need to draw on their understanding of what constitutes good style in writing.

**GRAFFITI**

I'm simmering with anger as the school wall is cleaned and repainted for the fourth time to get rid of graffiti. Creativity is admirable but people should find ways to express themselves that do not inflict extra costs upon society.

Why do you spoil the reputation of young people by painting graffiti where it's forbidden? Professional artists do not hang their paintings in the streets, do they? Instead they seek funding and gain fame through legal exhibitions.

In my opinion buildings, fences and park benches are works of art in themselves. It's really pathetic to spoil this architecture with graffiti and what's more, the method destroys the ozone layer. Really, I can't understand why these criminal artists bother as their "artistic works" are just removed from sight over and over again.

Helga

There is no accounting for taste. Society is full of communication and advertising. Company logos, shop names. Large intrusive posters on the streets. Are they acceptable? Yes, mostly. Is graffiti acceptable? Some people say yes, some no.

Who pays the price for graffiti? Who is ultimately paying the price for advertisements? Correct. The consumer.

Have the people who put up billboards asked your permission? No. Should graffiti painters do so then? Isn't it all just a question of communication – your own name, the names of gangs and large works of art in the street?

Think about the striped and chequered clothes that appeared in the stores a few years ago. And ski wear. The patterns and colours were stolen directly from the flowery concrete walls. It's quite amusing that these patterns and colours are accepted and admired but that graffiti in the same style is considered dreadful.

Times are hard for art.

Sophia

*These two letters come from the Internet and are about graffiti. Graffiti is illegal painting and writing on walls and elsewhere. Refer to the letters to answer the questions.*

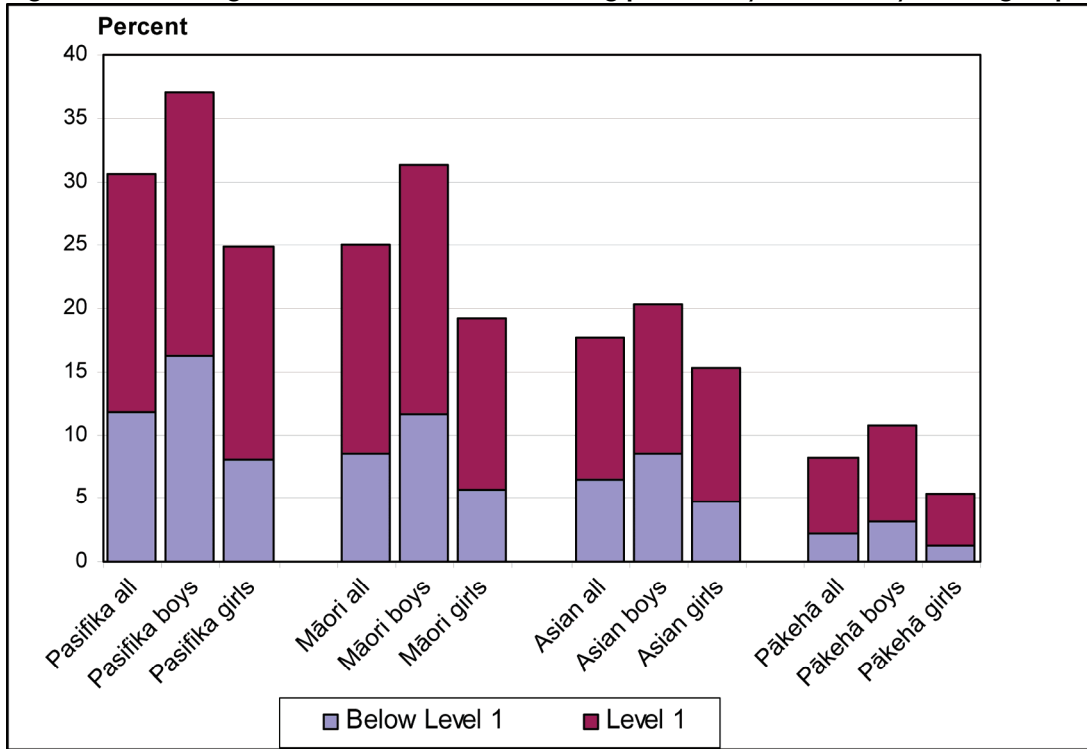
Source: OECD (2001). *Knowledge and Skills for Life – First Results from PISA 2000* (pp. 38). Paris: OECD Publications.

While there is a range of performance within each of the four main ethnic groups, relatively few Māori or Pasifika students reach the highest reading levels. For example, only 5% of Māori boys and 3% of Pasifika boys are at level 5 proficiency. The majority in both groups (58% and 66% respectively) are below Level 3, which is sometimes considered to be the minimum level of literacy needed to succeed in the adult world. In contrast, 26% of Pākehā/European girls are at Level 5, and only a small minority, 18%, do not reach Level 3.

Of particular concern is the proportion of Māori and Pasifika students who are very weak readers at proficiency Level 1 or below. Figure 3 shows that the risk of being in this group is about three times as high for Māori and nearly four times as high for Pasifika students as for Pākehā/European. Another issue for Māori and Pasifika is the relatively wide gap between boys and girls. As Figure 3 shows, 37% of Pasifika boys and 31% of Maori boys are at or below Level 1 proficiency, compared with only 25% and 19% for their female counterparts. Only 11% of

Pākehā/European boys and 5% of girls are at this level in reading. Literacy programmes that target low performers by gender and ethnic group may help to reduce disparities between the different groups.

**Figure 3: Percentage of students at Level 1 reading proficiency or below by ethnic group and gender**



***Differences in reading performance by socio-economic status***

Across countries taking part in PISA, one factor that is strongly related to performance is socio-economic status. In PISA this is measured using a single index, based on parental occupation, parents' level of education, and aspects of home life, including the number of books in the home and the availability of space to do homework.

New Zealand students can be divided into four, roughly equal groups, according to socio-economic status, by using the International Socio-Economic Index of Occupational Status (ISEI) as a simplified or proxy measure. There are substantial differences in the average reading score achieved by students from different ISEI groups. Average reading scores for students in the high ISEI group are 86 score points above those in the low ISEI group. Differences between the mean scores of all four groups are statistically significant.

A further comparison between the top and bottom ISEI groups also shows that one in three high-ISEI students are proficient at Level 5 or above, compared with only one in ten students from low ISEI backgrounds.

***Difference in reading performance by school attended***

The reading performance of students varies across schools, and this can be partly attributed to the different socio-economic mix of students at different schools.

One way of looking at differences in reading literacy by schools is to use decile ranking. New Zealand schools are ranked into 10 percent groups, roughly equal in number, which are called deciles. The Ministry of Education allocates funding to state and state-integrated schools based on their decile ranking. Decile 1 schools are the 10 percent of schools with the highest proportion of students from socio-economically disadvantaged communities,

whilst Decile 10 schools are the 10 percent of schools with students from the lowest level of socio-economically disadvantaged communities<sup>3</sup>. A school's decile does not necessarily reflect the overall socio-economic mix of students attending the school.

Average reading scores for the three decile groupings; Low (Deciles 1 to 3), Medium (Deciles 4 to 6) and High (Deciles 7 to 10) vary significantly<sup>4</sup>. Students in high-decile schools score 555 points on average in reading, 91 points above those in low-decile schools (464 score points).

Enrolment at a low-decile school is not necessarily a recipe for failure; many students who attend them do very well. Nevertheless, there is a much higher than average concentration of students who are still weak readers by the age of 15 in these schools. Over a quarter (29%) of students in low-decile schools have reading skills at Level 1 Proficiency or below. In contrast, only 7% of students in high-decile schools are at this same level.

The following table shows reading scores achieved by boys and girls according to whether they attend co-educational or single-sex schools.

**Table 6: Average reading scores by gender and type of school**

	<b>Boys</b>	<b>Girls</b>
Co-educational	500	525
Single-sex	528	559
Difference	28 pts	24 pts

On the surface, the reading scores in Table 6 suggest that there is a substantial advantage in attending a single-sex school, for both boys and girls. However, single-sex schools enrol more students with higher socio-economic status than average, and these students are more likely to do well regardless of school, which is likely to be a contributing factor to the differences in scores.

Among low-decile schools, too few are single-sex to produce a valid comparison. Among medium- and high-decile schools, students obtained the following scores:

**Table 7: Average reading scores by gender, type of school, and student**

**Medium-decile schools**

	<b>Boys</b>	<b>Girls</b>
Co-educational	492	522
Single-sex	513	546
Difference	21 pts*	24 pts

<sup>3</sup> Ethnicity was also a factor in the calculation of deciles in 2003.

<sup>4</sup> These groupings are not equal in size; note that the low-decile group contains 30% of all schools but has only 17% of the total student population.

**High-decile schools**

	<b>Boys</b>	<b>Girls</b>
Co-educational	567	539
Single-sex	575	549
Difference	8 pts*	10 pts*

*\*This difference is too small to be statistically significant based on the size of the sample.*

These results show smaller differences and only the difference between girls in medium-decile schools is statistically significant (Table 7). In the case of high-decile schools, which account for nearly half of single-sex school enrolments, there is no significant difference between co-educational and single-sex schools' average reading scores. From these figures, we can conclude that much of the difference between co-educational and single-sex schools can be accounted for by school intakes, although there may be some advantage in single-sex schooling for girls attending medium-decile schools.

## First estimates of change over time

The PISA survey takes place every three years and is designed to monitor student performance over time. The 2003 survey was only the second assessment, so it is too early to identify clear trends. In addition, less assessment time was allocated to reading in 2003 and results were reported only on a single reading literacy scale. However, some preliminary comparisons are possible between reading performance in PISA 2003 and in the first survey, PISA 2000.

New Zealand, like most other OECD countries, saw no significant change between 2000 and 2003, and New Zealand performed strongly overall in reading in both surveys, with average scores of 529 and 522 respectively. These scores were well above the OECD average in both cases and similar to the top-performing countries. We cannot conclude that New Zealand students' performance declined in this period as the difference in average scores between the two surveys is not statistically significant.

In fact, the only significant change between 2000 and 2003 is performance by gender. In 2000, New Zealand had one of the largest gender differences among the OECD countries, with girls 46 points ahead of boys, on average. In 2000, New Zealand girls were estimated to do better than girls in any other country except Finland, where there was also a large gender gap. In 2003, New Zealand girls' reading scores declined significantly, from 553 points to 535 points, with boys performing about the same as in 2000; the gender gap had narrowed significantly to 27 points on average.

A drop in girls' average scores is not the most desirable way for a gender gap to be reduced. However, interpretation of this change should also take into account the statistical error based on the sample size. Although the result allows us to say with a high degree of confidence that there was some decline in New Zealand girls' reading performance between 2000 and 2003, the reduction could have been quite small. The 'confidence interval' of girls' average score – the range within which we can say with 95% confidence that the average lies – was 546–560 points in 2000 and 529–541 points in 2003.

The 2006 PISA results will provide further information on trends. In particular, they will help us to see whether the performance of lower-performing students has improved over the six-year period from 2000.

## Conclusion

Overall, New Zealand's 15-year-olds rate well as readers in international terms. As well as having a high average level of reading literacy, the country also has more students with very high reading proficiency than any other. Over time, a challenge for New Zealand's education system is to sustain and build on this high standard.

There is, however, no room for complacency. The average level of performance masks inequalities in reading literacy levels that exceed those in most other countries. Certain groups, in particular, fall behind. Relatively low performance is especially prevalent within two ethnic groups, Māori and Pasifika, and among students from lower socio-economic status backgrounds. There are also gender differences, with boys performing less well than girls, but these are much less severe than those across socio-economic and ethnic groups.

In responding to these inequalities, it is important to acknowledge that most students, even those in groups with lower-than-average reading proficiency, have at least some base of reading ability to build on. For example, Māori students' reading levels are as good, on average, as those of students in a number of European countries. Also, on average, Maori students can complete basic reading tasks at Level 2 in PISA. This is also the case for students from lower socio-economic status backgrounds. The challenge for these students is to master more complex reading tasks in a country where reading standards are high and where the future knowledge economy will require higher levels of literacy than were adequate in the past.

There is also the problem of how to help students, who face extreme limitations as readers, to become more comfortable working with written materials. Students at Level 1 or below are not necessarily illiterate – they may well be able to read out written words – but they find it difficult to recognise, even in general terms, what a text is about or to interpret its main message. Around a third of Māori and Pasifika boys are in this category. As most of these students demonstrate at least some reading proficiency – the majority being capable of tasks at Level 1 – the challenge will not, generally, be to teach them to decode words, but rather to help them become competent in applying reading and writing skills in everyday situations.

PISA gives policy makers and educators a benchmark against which to measure progress towards these goals. The three-yearly cycle of PISA will help to monitor not just how well New Zealand students are doing overall against international standards, but also whether low-performing groups are making progress in reading literacy between cycles.

## Appendix A: What students can do at five levels of literacy – further detail

	Retrieving information	Interpreting	Reflecting and evaluating
5	Locate and possibly sequence or combine multiple pieces of deeply embedded information, some of which may be outside the main body of the text. Infer which information in the text is relevant to the task. Deal with highly plausible and/or extensive competing information.	Either construe the meaning of nuanced language or demonstrate a full and detailed understanding of a text.	Critically evaluate or hypothesise, drawing on specialised knowledge. Deal with concepts that are contrary to expectations and draw on a deep understanding of long or complex texts.
	<p><b>Continuous texts:</b> Analyse texts whose discourse structure is not obvious or clearly marked, in order to discern the relationship of specific parts of the text to its implicit theme or intention.</p> <p><b>Non-continuous texts:</b> Identify patterns among many pieces of information presented in a display which may be long and detailed, sometimes by referring to information external to the display. The reader may need to realise independently that a full understanding of the section of text requires reference to a separate part of the same document, such as a footnote.</p>		
4	Locate and possibly sequence or combine multiple pieces of embedded information, each of which may need to meet multiple criteria, in a text with familiar context or form. Infer which information in the text is relevant to the task.	Use a high level of text-based inference to understand and apply categories in an unfamiliar context, and to construe the meaning of a section of text by taking into account the text as a whole. Deal with ambiguities, ideas that are contrary to expectation and ideas that are negatively worded.	Use formal or public knowledge to hypothesise about or critically evaluate a text. Show accurate understanding of long or complex texts.
	<p><b>Continuous texts:</b> Follow linguistic or thematic links over several paragraphs, often in the absence of clear discourse markers, in order to locate, interpret or evaluate embedded information or to infer psychological or metaphysical meaning.</p> <p><b>Non-continuous texts:</b> Scan a long, detailed text in order to find relevant information, often with little or no assistance from organisers such as labels or special formatting, to locate several pieces of information to be compared or combined.</p>		
3	Locate, and in some cases recognise, the relationship between pieces of information, each of which may need to meet multiple criteria. Deal with prominent competing information.	Integrate several parts of a text in order to identify a main idea, understand a relationship or construe the meaning of a word or phrase. Compare, contrast or categorise taking many criteria into account. Deal with competing information.	Make connections or comparisons, give explanations, or evaluate a feature of text. Demonstrate a detailed understanding of the text in relation to familiar, everyday knowledge, or draw on less common knowledge.
	<p><b>Continuous texts:</b> Use conventions of text organisation, where present, and follow implicit or explicit logical links such as cause and effect relationships across sentences or paragraphs in order to locate, interpret or evaluate information.</p> <p><b>Non-continuous texts:</b> Consider one display in the light of a second, separate document or display, possibly in a different format, or combine several pieces of spatial, verbal and numeric information in a graph or map to draw conclusions about the information represented.</p>		

	Retrieving information	Interpreting	Reflecting and evaluating
2	Locate one or more pieces of information, each of which may be required to meet multiple criteria. Deal with competing information.	Identify the main idea in a text, understand relationships, form or apply simple categories, or construe meaning within a limited part of the text when the information is not prominent and low-level inferences are required.	Make a comparison or connections between the text and outside knowledge, or explain a feature of the text by drawing on personal experience and attitudes.

**Continuous texts:** Follow logical and linguistic connections within a paragraph in order to locate or interpret information; or synthesise information across texts or parts of a text in order to infer the author's purpose.

**Non-continuous texts:** Demonstrate a grasp of the underlying structure of a visual display such as a simple tree diagram or table, or combine two pieces of information from a graph or table.

1	Locate one or more independent pieces of explicitly stated information, typically meeting a single criterion, with little or no competing information in the text.	Recognise the main theme or author's purpose in a text about a familiar topic, when the required information in the text is prominent.	Make a simple connection between information in the text and common, everyday knowledge.
---	--	--	--

**Continuous texts:** Use redundancy, paragraph headings, or common print conventions to form an impression of the main idea of the text, or to locate information stated explicitly within a short section of text.

**Non-continuous texts:** Focus on discrete pieces of information, usually within a single display such as a simple map, a line graph or a bar graph that presents only a small amount of information in a straightforward way, and in which most of the verbal text is limited to a small number of words or phrases.

Source: OECD (2004a). *Learning for Tomorrow's World - First Results from PISA 2003*. Paris: OECD Publications.

## Administration of PISA 2003

The Australian Council for Educational Research (ACER) led the PISA Consortium which managed the international coordination of the project. Other partners in this consortium include:

- The Netherlands National Institute for Educational Measurement (Citogroep);
- The National Institute for Educational Research in Japan (NIER);
- The Educational Testing Service in the United States (ETS); and
- WESTAT in the United States.

The Comparative Education Research Unit was responsible for carrying out the PISA activities in New Zealand. This Unit is located within the Research Division of the Ministry of Education.

## Sources for this summary

OECD (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills*. Paris: OECD Publications.

OECD (2004a). *Learning for Tomorrow's World - First Results from PISA 2003*. Paris: OECD Publications.

OECD (2004b). *Problem Solving for Tomorrow's World - First Measures of Cross-Curricular Skills from PISA 2003*. Paris: OECD Publications.

OECD (2004c). *PISA 2003 Technical Report*. Paris: OECD Publications.

## For further information in New Zealand

Enquiries about this project may be directed to the:

National Project Manager  
PISA 2003  
Research Division  
Ministry of Education  
P O Box 1666 Wellington  
EMAIL: [research.info@minedu.govt.nz](mailto:research.info@minedu.govt.nz)  
or PHONE: 0800 846 777  
or FAX: 64-4-463 8312