

# Focus on Pasifika Achievement in Reading Literacy

## Results from PISA 2000



### OVERVIEW

In 2000, around 3,500 Pasifika students in New Zealand schools reached school-leaving age after completing some ten years of compulsory schooling. By 2003 this number is estimated to have exceeded 4,000 and is projected to increase further. In the years ahead these young adults will need to apply the knowledge and skills they have learned in school to meet the challenges of adult life, and over time they will need the capacity to build on what has been learned as these challenges change and proliferate. How well prepared are they, and why are some in a better position than others?

Results from the Programme for International Student Assessment 2000 (PISA 2000) provide some answers to these questions. The current report first reviews educational outcomes for Pasifika 15-year-olds drawing on the PISA 2000 study, and then focuses on reading literacy and the factors associated with high achievement among Pasifika students. By highlighting the differences between high and low achievers within the Pasifika population, this report should assist in identifying some of the factors associated with success for Pasifika in education.

### About the Programme for International Student Assessment

The first cycle of the PISA survey was conducted in 2000 (PISA 2000) across 28 member countries of the Organisation of Economic Cooperation and Development (OECD), including New Zealand. Its primary focus was reading literacy, while mathematical literacy and scientific literacy were assessed as minor domains. The key domain for PISA 2003, the second cycle, was mathematics (reporting 2004), and in 2006 it will be scientific literacy. The study aims to provide reliable internationally comparable measures of educational achievement using a pencil-and-paper based assessment. In New Zealand, the language of assessment is English. As in other countries, New Zealand results are based on a representative sample of secondary school students aged from 15 years 3 months to 16 years 2 months. As most were aged 15 they are generally referred to as 15-year-olds for brevity.

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The term “literacy” is used to signify that PISA examines more than students’ mastery of the school curriculum. It focuses on how well young adults at age 15 are able to apply the knowledge and skills they have learned to meet the challenges they will face in life. This emphasis on what students can do with what they have learned, rather than simply on whether they have learned it, reflects recent trends in the goals and objectives of school curricula. Students’ knowledge is still assessed, but their ability to reflect on and apply that knowledge and experience to real life situations is also examined.

Age 15 is a crucial time to assess the outcomes of the education process. Students are reaching school-leaving age, and their current academic abilities represent the culmination of a decade of compulsory education. PISA provides a gauge of the cumulative impact of all the learning experiences in a country from early childhood up to age 15. Its findings reflect not only the effectiveness of schools, but the effects of all learning, which begins well before school age and continues in both formal and out-of-school settings.

In addition to the content-specific literacy measures, PISA collects data on general outcomes of learning such as the different strategies students use to learn. These have particular relevance in considering whether students are developing the capacity to continue learning throughout life. Part 1 of this report examines both the content-specific and general outcomes of learning for Pasifika students in PISA 2000. PISA also gathers further contextual information on student, family and school-related factors that may help explain differences in student achievement. It is important to note the subjective element in these indices as they are based on self reports and that cultural factors may influence Pasifika students’ responses. Part 2 of this report is concerned with the relationships found between these factors and different levels of reading literacy among Pasifika students.

### **The Cohort of Pasifika Students in PISA 2000**

Pasifika students enrolled in New Zealand are a diverse group. Of the 15-year-old Pasifika students attending New Zealand schools in 2000, approximately 49 percent were Samoan, 16 percent Cook Island Māori, 15 percent Tongan, seven percent Niuean, five percent Fijian, two percent Tokelauan and five percent identified with other Pacific Island groups. PISA 2000 results indicate that nearly one fifth (19 percent) of these students and their parents were born outside of New Zealand. Of the 84 percent of students who answered the question asking whether they mainly speak a language other than English at home more than a quarter (28 percent) reported that they did not mainly speak English at home (as noted above, in New Zealand the language of the PISA survey is English).

Many of the Pasifika cohort entered school in 1989/90, as part of the first wave of students destined to be educated entirely under the newly decentralised administration system for schools that came out of the Tomorrow’s Schools reforms. During the primary school years, new curriculum documents were mandated for mathematics (1994), science (1995) and English (1996) whose focus emphasised the attainment of outcomes and incorporated the eight essential cross curricular skills specified in *The New Zealand Curriculum Framework* (Ministry of Education, 1993).

Most of the cohort started high school in 1998, and were among the last New Zealand students to participate in a norm referenced qualifications system, before the introduction of the National Certificate of Educational Achievement (NCEA), a standards based approach. In 2000, nearly 85 percent were in Year 11.

Pasifika students tend to be concentrated in a relatively small number of schools often comprising a mainly Pasifika student body. Likewise, a large proportion of the cohort of Pasifika surveyed in PISA 2000 attended schools with a predominantly Pasifika enrolment. Approximately half of the secondary students who identify as Pasifika are enrolled in only six percent of the secondary schools in this country, and about half of the 15-year-old Pasifika students who participated in PISA 2000 attended 10 percent of the schools in the PISA sample.

The students sampled in PISA 2000 could identify with more than one ethnic group. However, for the purpose of this report, Pasifika is prioritised over other ethnic groups, therefore, Pasifika students who also identified with another ethnic group are counted as Pasifika<sup>1</sup>.

## 1. EDUCATIONAL OUTCOMES FOR PASIFIKA IN PISA 2000

PISA measures two types of educational outcome. This section looks first at Pasifika achievement in the content-specific domains of reading literacy, mathematical literacy and scientific literacy that provide students with knowledge and skills for life. It then examines the general outcomes of education that form the basis of lifelong learning. Achievement in the three literacy domains is viewed from several different perspectives that highlight different aspects of the overall picture. This section draws on Tables 1-5 in the Appendix.

Statistics from the PISA study are **estimates** of national performance based on a sample of students rather than values that could be calculated if every student had answered every question. Consequently there is a degree of uncertainty associated with each result, which is expressed in the Appendix tables through a standard error. Often attention focuses on whether a given value for a particular group is different from a second value for another group, e.g., whether Pasifika girls perform better than Pasifika boys, given the degree of uncertainty surrounding the results for each. In this report, the significance tests used to determine if the difference between two values is statistically significant meet  $\alpha=0.05$  (i.e., the 5% level). However, as Pasifika students are less than ten percent of the PISA 2000 sample, the standard error is large relative to other ethnic groupings, therefore differences between high and low achievement groupings need to be very large to be reported as significant.

### Ethnic Differences in Reading, Mathematical and Scientific Literacy Domains

In 2000, there were around 51,000 15-year-olds enrolled in New Zealand schools. Approximately two thirds (68 percent) were Pakeha, 18 percent Māori, 7 percent Pasifika<sup>2</sup> and 6 percent Asian. One percent belonged to other ethnic groups. The proportion of students in the PISA 2000 sample from each ethnic group, based on self-identification, was close to the enrolment figures reported by the Ministry of Education.

Reading, mathematical and scientific literacy domains are defined in Box 1. Across the three domains, a broadly consistent pattern of differences was found in the average achievement levels of the main ethnic groups in PISA 2000. Table 1 shows that in each literacy domain, Pasifika students' achievement, on average, was significantly lower than the mean scores of Pakeha, Asian and Māori students.

Only Pakeha students' average achievement was consistently above the OECD mean (the difference was statistically significant in all of the three domains) which, to the extent that it foreshadows the development of a highly skilled workforce, will likely give this group a considerable economic and social advantage in later life. In contrast, average achievement for Pasifika students was significantly lower than the OECD mean score.

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<sup>1</sup> The numbers in this report will differ from those reported in previous PISA 2000 New Zealand reports. This is because the Statistics New Zealand's 1996 hierarchy was applied to assign students to only one ethnic group. In other reports ethnicity was ordered as follows: Māori, Pasifika, Asian, Other and Pakeha. Therefore if a student indicated that they identified with both Pasifika and Māori the student was assigned Māori, but in this report the student is assigned Pasifika.

<sup>2</sup> The enrolment data collected by the Ministry of Education are not collected on an individual basis as in PISA but at a school level. Schools use Statistics New Zealand's 1996 hierarchy when reporting the number of students in each ethnic group. Schools' records of student ethnicity are based on either self-identification or identification by a parent or guardian. However, when prioritising Pasifika ethnicity over Māori, the proportion of Pasifika students in the PISA 2000 sample increased from 8 percent to 9 percent.

**Table 1: Average Scale Scores for Reading, Mathematical and Scientific Literacy Domains, from the PISA 2000 Study**

Domain	Pakeha		Asian		Māori		Pasifika		OECD Countries	
	Mean Scale Score	S.E.	Mean Scale Score	S.E.	Mean Scale Score	S.E.	Mean Scale Score	S.E.	Mean Scale Score	S.E.
Reading Literacy	554	(3.0)	513	(7.9)	486	(4.8)	459	(8.5)	500	(0.6)
Mathematical Literacy	557	(3.3)	547	(7.5)	503	(5.9)	469	(9.2)	500	(0.7)
Scientific Literacy	553	(2.6)	517	(9.7)	485	(5.4)	462	(8.8)	500	(0.7)

Results are scaled in each literacy domain so that the OECD mean equals 500 points, with about two thirds of students across OECD countries scoring between 400 and 600 points. The resulting numerical scale scores cannot be compared directly among the three domains.

**Bold** type indicates that the mean scale score is statistically significantly different to the score for Pasifika in this domain ( $\alpha=0.05$ ).

S.E. = standard error.

Gender differences in average reading literacy levels in favour of girls were found within all ethnic groups, including Pasifika students. In mathematical and scientific literacy, however, average achievement levels for Pasifika girls and boys were not statistically different. The pattern is similar for all other ethnic groupings.

### Box 1: Definitions of the Literacy Domains

**Reading literacy** is the ability to understand, use and reflect on written texts in order to achieve one's goals, to develop one's knowledge and potential, and to participate effectively in society.

**Mathematical literacy** is the capacity to identify, understand and engage in mathematics, and to make well founded judgements about the role mathematics plays in an individual's current and future private life, social life with peers and relatives, and life as a constructive, concerned and reflective citizen.

**Scientific literacy** is the capacity to use scientific knowledge, to identify questions, and to draw evidence-based conclusions in order to understand and help make decisions about the natural world and the changes made to it through human activity.

(OECD 2001: 21-23)

### Distribution of Literacy Scores among Pasifika and Non-Pasifika Students

Average scores are a useful way to summarise differences among ethnic groups. To highlight the range of achievement within the Pasifika population, this subsection examines the distribution of results for Pasifika students in PISA 2000. For purposes of comparison, similar distributions are also shown for all other ethnic groups in the study.

A wide range of achievement was found among both Pasifika and non-Pasifika students in PISA 2000. The results indicated that the difference in scale scores from the fifth to the ninety-fifth percentile, i.e., across the middle 90 percent of each sub-population (some 300-350 score points, depending on the domain), was several times wider than the differences in average literacy levels between the two groups (approximately 75-80 score points). This suggests that disparities in achievement were greater within than between the Pasifika and non-Pasifika subpopulations.

**Figure 1: Distribution of Literacy Scores for Pasifika and Non-Pasifika Students, from the PISA 2000 Study**

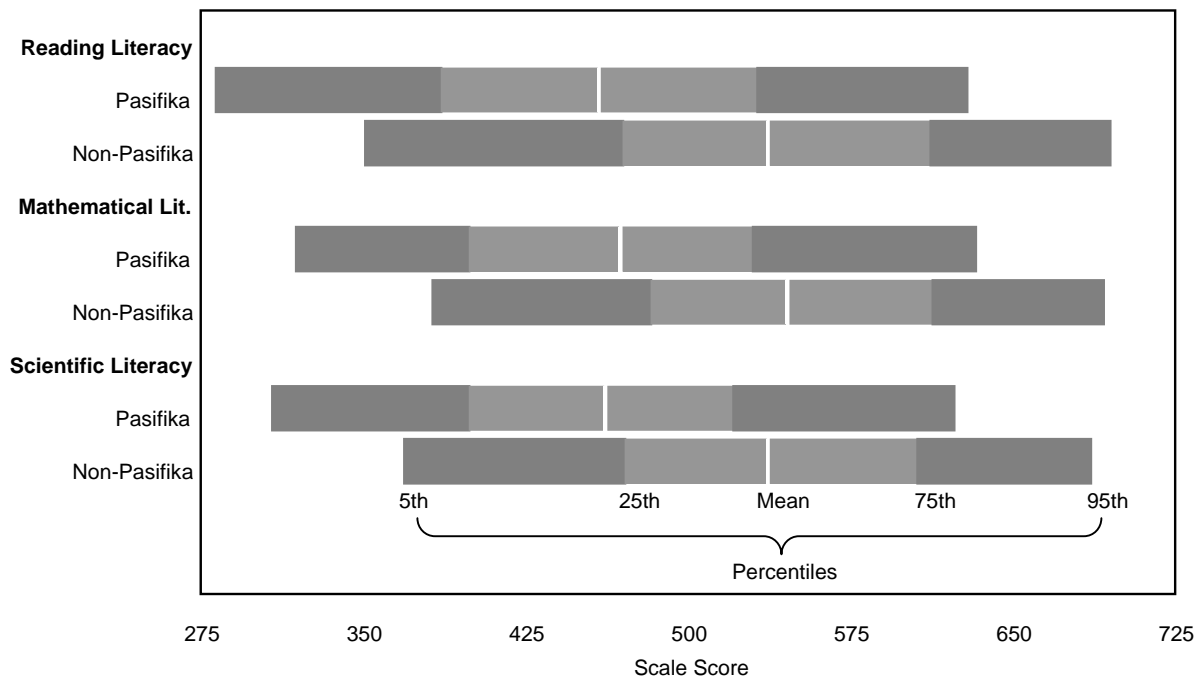


Figure 1 shows that in reading literacy, the entire distribution for Pasifika shifts to the left indicating generally lower achievement for this group than for non-Pasifika. However, a substantial proportion, nearly a quarter, performed above the mean score achieved by non-Pasifika students. Similar patterns can be seen for mathematical and scientific literacy.

The larger proportion of Pasifika students at the lower end of the reading literacy scale is potentially a concern. For example, school leavers with lower literacy skills may have poorer prospects of employment. To understand how the distribution of scale scores translates into concrete competencies, the next subsection examines the proportion of Pasifika students who reach varying levels of proficiency in reading literacy.

### Pasifika Students' Achievement in Reading Literacy Proficiency Levels

The reading literacy scale in PISA comprises three subscales, each measuring a particular aspect of reading literacy. The subscales report on student abilities in:

- retrieving information,
- interpreting texts, and
- reflection and evaluation.

In each sub-scale, the assessment tasks are divided into five levels of difficulty. The extent to which students are capable of completing tasks at each level determines which of five proficiency levels they have reached. Level 1 indicates competency in the simplest tasks, and Level 5 competency in the most complex tasks.

Students at each level were able to answer at least half of the items at that level correctly, and demonstrated proficiency at each of the lower levels. The sub-scales and the difficulty of tasks at each proficiency level are described in Box 2.

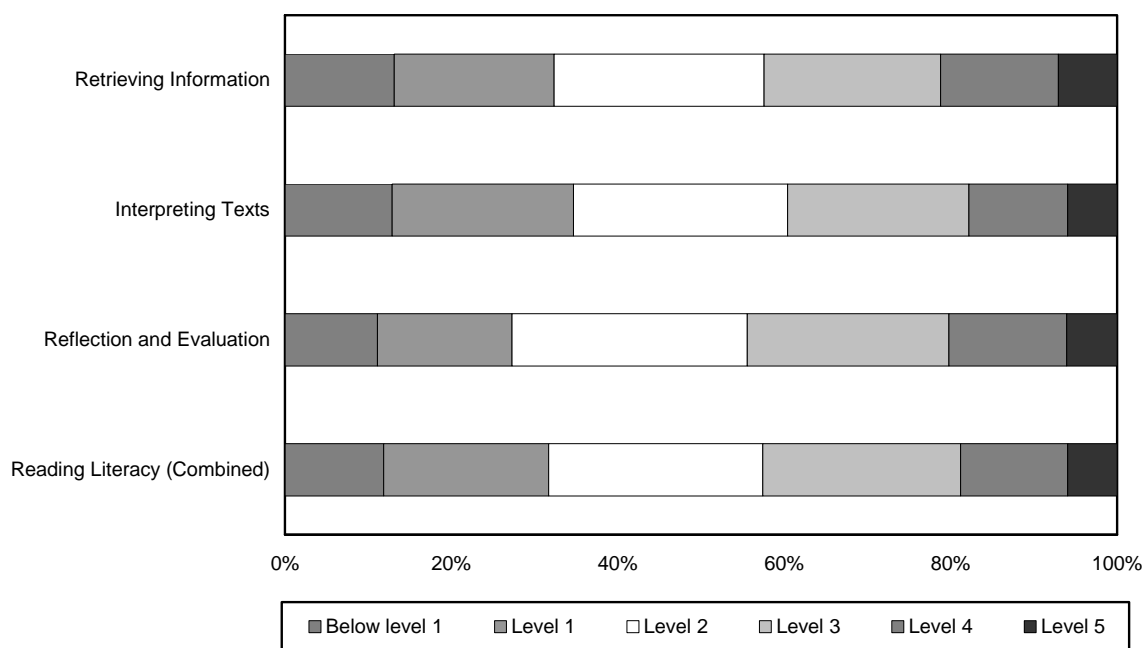
The results suggest that the proportions of Pasifika students at each proficiency level were quite similar across the three sub-scales. The overall (combined) reading literacy scale summarises the results from the three sub-scales. On the combined reading scale, 5.6 percent of Pasifika students reached Level 5, with a further 12.8 percent proficient at Level 4. Half were in the mid range of achievement (Levels 2 and 3), while another 31.5 percent were at or below Level 1. (Figure 2)

The 5.6 percent of Pasifika students at Level 5 were capable of completing sophisticated reading tasks. Tasks at Level 4 are complex and difficult, and 12.8 percent of Pasifika students were at this level.

Level 1 indicates competency in only the simplest tasks. Many of the 19.7 percent of Pasifika students at Level 1 may not have the necessary skills and knowledge to benefit fully from educational opportunities at school and in later life.

The 11.8 percent of Pasifika students below Level 1 were unable to correctly complete at least half of the easiest questions in the PISA 2000 assessment. It must be emphasised that reading literacy is defined at a level well above the most basic reading skills. The focus is on reading to learn. Those students below Level 1 may technically be able to read, but are considered severely limited in the skills required to fully utilise written texts and documents in the learning process.

**Figure 2: Distribution of Pasifika Students across Reading Literacy Proficiency Levels, from the PISA 2000 Study**



These results show a huge gap between the top six percent of Pasifika students who reached level 5 and the bottom 12 percent who were below level 1. Those students below level 1 will likely have serious difficulty using their reading skills to gain knowledge and skills in other areas, increasing the risk that as school leavers they will lack qualifications and have difficulty finding work.

**Box 2: What the Proficiency Levels Measure**

	Retrieving information	Interpreting texts	Reflection and evaluation
	What is being assessed on each of the reading literacy scales:		
	Retrieving information is defined as locating one or more pieces of information in a text.	Interpreting texts is defined as constructing meaning and drawing inferences from one or more parts of a text.	Reflecting and evaluation is defined as relating a text to one's experience, knowledge and ideas.
	Characteristics of the tasks associated with increasing difficulty on each of the reading literacy scales:		
	Task difficulty depends on the number of pieces of information that need to be located. Difficulty also depends on the number of conditions that must be met to locate the requested information, and on whether what is retrieved needs to be sequenced in a particular way. Difficulty also depends on the prominence of information, and the familiarity of the context. Other relevant characteristics are the complexity of the text, and the presence and strength of competing information.	Task difficulty depends on the type of interpretation required, with the easiest tasks requiring identifying the main idea in a text, more difficult tasks requiring understanding relationships that are part of the text, and the most difficult requiring either an understanding of the meaning of language in context, or analogical reasoning. Difficulty also depends on how explicitly the text provides the ideas or information the reader needs in order to complete the task; on how prominent the required information is; and on how much competing information is present. Finally, the length and complexity of the text and the familiarity of its content affect difficulty.	Task difficulty depends on the type of reflection required, with the easiest tasks requiring simple connections or explanations relating the text to external experience, and the more difficult requiring an hypothesis or evaluation. Difficulty also depends on the familiarity of the knowledge that must be drawn on from outside the text; on the complexity of the text; on the level of textual understanding demanded; and on how explicitly the reader is directed to relevant factors in both the task and the text.
<b>Level</b>			
<b>5</b>	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.
<b>4</b>	Locate and possibly sequence or combine multiple pieces of embedded information, each of which may need to meet multiple criteria, in a text with unfamiliar 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.
<b>3</b>	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.
<b>2</b>	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.
<b>1</b>	Take account of a single criterion to locate one or more independent pieces of explicitly stated information.	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.

## General Outcomes of Learning

Once students leave school, they have to manage most of their own learning. The ability to add to the knowledge and skills learned in reading, mathematics, science and other curriculum areas will be enhanced by a positive disposition toward learning and a grasp of the different ways to approach learning itself. An important goal of education is to foster these outcomes that prepare students to continue learning throughout life. In PISA they are referred to as general outcomes of learning, and are measured by constructing indices that summarise student responses to a series of related questions. As these measures rely on self-reporting by students they may be influenced by cross-cultural differences in response behaviour or the social desirability of certain responses.

## Motivation and Engagement

On average, Pasifika and Māori 15-year-olds' reported greater *engagement with school* than other ethnic groups.

*Engagement with school:* Index derived from student's level of agreement or disagreement with the following statements prefaced with 'My school is a place where': I feel like an outsider (or left out of things); I make friends easily; I feel like I belong; I feel awkward and out of place; other students seem to like me; I feel lonely; I do not want to go; I often feel bored.

Pasifika and Pakeha students tended to indicate a greater *interest in reading* than Māori students, but significantly less than Asian students.

*Interest in reading:* Index derived from students' level of agreement or disagreement with the following statements: because reading is fun, I wouldn't want to give it up; I read in my spare time; and, when I read, I sometimes get totally absorbed.

...this was also true for the *reading activities* index.

*Reading activities:* Index derived from students' indication of whether they 'never or hardly ever', 'a few times a year', 'about once a month', 'several times a month', or 'several times a week' read because they wanted to: magazines, comic books, fiction (novels, narratives, stories), non-fiction books, e-mails and web pages or newspapers.

On average, Pasifika students' report of their *engagement in reading* was greater than that of their Māori peers, but not significantly different to Pakeha and Asian students.

*Engagement in reading:* Index derived from students' level of agreement or disagreement with the following statements: I read only if I have to; reading is one of my favourite hobbies; I like talking about books with other people; I find it hard to finish books; I feel happy if I receive a book as a present; for me reading is a waste of time; I enjoy going to a bookstore or a library; I read only to get information that I need; and, I cannot sit still and read for more than a few minutes.

As measured by the *time spent on homework* index, there were no statistical differences in the average amount of time Pasifika, Māori and Pakeha students spent on homework. However, Asian students tended to report spending a significantly greater amount of time on homework.

*Time spent on homework:* Index derived from summarising the combined weekly time students spent on homework for language (i.e., English for New Zealand), science and mathematics classes.

On the *interest in mathematics* index, Pasifika students tended to express a greater interest than both Māori and Pakeha 15-year-olds, but significantly less than Asian students.

*Interest in mathematics:* Index derived from students' level of agreement or disagreement with the following statements: when I do mathematics, I sometimes get totally absorbed; mathematics is important to me personally; and because doing mathematics is fun, I wouldn't want to give it up.

Pasifika students' responses to the motivation and engagement indices suggest they are generally more positive about their school environment and well disposed towards reading than some other ethnic groupings, and have a high interest in mathematics. These characteristics may enhance and develop Pasifika students' capacity to participate in educational activities in later life, as students who engage with learning effectively are inclined to leave school with the autonomy to set their own learning goals and have a sense that they can reach those goals.

### Learning Strategies

On average, Pasifika and Pakeha students' reports of how frequently they used *control strategies* were greater than Māori students, but were significantly less than their Asian peers.

*Control strategies:* Index derived from the frequency with which students used the following strategies when studying: I start by figuring out what exactly I need to learn; I force myself to check to see if I remember what I have learned; I try to figure out which concepts I still haven't really understood; I make sure that I remember the most important things; and, when I study and I don't understand something, I look for additional information to clarify this.

Pasifika tended to differ little from Māori and Pakeha 15-year-olds in their estimation of the extent to which they use *memorisation strategies*, but their estimated level of use was significantly less than for Asian students.

*Memorisation strategies:* Index derived from the frequency with which students used the following strategies when studying: I try to memorise everything that might be covered; I memorise as much as possible; I memorise all new material so that I can recite it; and practise by saying the material to myself over and over.

This was also the case for *elaboration strategies* ...

*Elaboration strategies:* Index derived from the frequency with which students used the following strategies when studying: I try to relate new material to things I have learned in other subjects; I figure out how the information might be useful in the real world; I try to understand the material better by relating it to things I already know; and, I figure out how the material fits in with what I have already learned.

... and the *competitive learning style*.

*Competitive learning style:* Index derived from students' level of agreement or disagreement with the following statements: I like to try to be better than other students; trying to be better than others makes me work well; I would like to be the best at something; and, I learn things faster if I'm trying to do better than the others.

However, Pasifika students' reporting of adopting a *co-operative learning style*, on average, was greater than those from any of the other ethnic groupings.

*Co-operative learning style:* Index derived from students' level of agreement or disagreement with the following statements: I like to work with other students; I learn the most when I work with other students; I do my best work when I work with other students; I like to help other people do well in a group; and, it is helpful to put together everyone's ideas when working on a project.

Pasifika's mean index scores did not tend to differ from those of Māori and Pakeha on their reports of the way in which they used many of the learning strategies (as defined by PISA). However, as noted above, Pasifika students did tend to indicate a greater preference for a co-operative learning style than other ethnic groupings.

### Students' Self-Concepts

On average, Pasifika and Asian students tended to report a lower *self-concept in English*, the language of the assessment, than their Pakeha and Māori peers.

*Self-concept in English:* Index derived from students' level of agreement or disagreement with the following statements: I'm hopeless in English classes; I learn things quickly in the English class; and, I get good marks in English.

On average, Pasifika reports of their *self-concept in mathematics* were not statistically different from Māori and Pakeha 15-year-olds', but were significantly lower than that of their Asian peers.

*Self-concept in mathematics:* Index derived from students' level of agreement or disagreement with the following statements: I get good marks in mathematics; mathematics is one of my best subjects; and, I have always done well in mathematics.

This was also true for the *self-concept in academic ability* index.

*Self-concept in academic ability:* Index derived from students' level of agreement or disagreement with the following statements: I learn things quickly in most school subjects; I'm good at most school subjects; and, I do well in tests in most school subjects.

On average, Pasifika students, tended indicate a similar level of *comfort with and perceived ability to use computers* as Māori and Asian students but lower than that of Pakeha.

*Comfort with and perceived ability to use computers:* Index derived from students' responses to the following questions: How comfortable are you with using a computer?, How comfortable are you with using a computer to write a paper?, How comfortable are you with taking a test on a computer?, and, If you compare yourself with other 15-year-olds, how would you rate your ability to use a computer?

While Pasifika students generally indicated a similar level of confidence in their overall academic ability as Māori and Pakeha students, and their engagement in reading books and a range of other reading materials, their reports of self-concept in English tended to be low.

The general outcomes here are important in providing students with a foundation for lifelong learning, but are they linked to levels of achievement in reading literacy?

## 2. FACTORS ASSOCIATED WITH PASIFIKA ACHIEVEMENT IN READING LITERACY

This section is specific to Pasifika, and investigates the relationships between achievement levels in reading literacy and a range of student, family and school-related factors that may be associated with these differences in performance. PISA 2000 found both high and low achievers in the Pasifika student population at age 15.

The analysis focuses on reading literacy. Because reading literacy was the major domain assessed in PISA 2000, the study provides more information about it than the other two domains. This includes information on students' reading proficiency levels that are used here to define high and low achievers. There are also more student responses to the reading literacy assessment, allowing more detailed analysis to be undertaken.

The reading proficiency levels allow us to define high achievers in absolute terms, based on what they can do. For the purposes of this report, students reaching Level 4 and above are considered high achievers. Tasks at Levels 4 and 5 are complex and difficult, as described in the previous section. (See Box 2 for further details.) Approximately 18 percent of Pasifika students reached Level 4 or above, and were considered high achievers.

Another consideration in defining high achievers at this level, rather than at Level 5 which includes approximately six percent of Pasifika students, is that the larger sample size facilitates more detailed analysis. Where comparisons are made with medium and low achievers, these are defined as students at Levels 2 and 3 (medium achievers) and those at or below Level 1 (low achievers).

Caution is advised in the interpretation of causality in the following results. While the analysis seeks to identify factors associated with high achievement, such statistical relationships do not in themselves establish a causal link. Nor is a particular direction of causation necessarily implied. For instance, interest in reading and performance may be mutually reinforcing.

This section draws on Tables 6-8 in the Appendix. The differences described in the text and shown in the charts between demographic subgroups, and between high and low achievers, should be read as statistically significant unless otherwise indicated. This can be confirmed by referring to the Appendix tables, which include significance tests for these comparisons.

### Demographic Characteristics

Across all of the Pasifika students who participated in PISA 2000 18.4 percent are defined as high achievers, 50.1 percent as medium achievers and 31.5 percent as low achievers. However, on examining the results of specific demographic sub-groups, this distribution of students across achievement levels can vary considerably, indicating that Pasifika students are less likely to be low achievers in some demographic subgroups than in others.

#### Gender

PISA 2000 showed that compared to Pasifika boys (38 percent), Pasifika girls (25 percent) were less likely to be low achievers in reading literacy.

#### Ethnic Identification

Among the Pasifika students participating in PISA 2000, over half (57 percent) identified as solely Pasifika, while most of the others also identified with either Pakeha (18 percent) or Māori (18 percent) ethnic groupings. Pasifika students identifying with another ethnic group were less likely to be low achievers in reading literacy (25 percent) than those who identified solely Pasifika (37 percent).

## Place of Birth

All students in PISA 2000 were asked about their place of birth and that of their parents in order to examine some of the issues that may impact on the learning of school-age children of migrants, such as cultural differences or coming from a different school system. It is important to note, however, that students were not asked to indicate how long they had lived in New Zealand.

To enable comparisons of place of birth across countries, the OECD adopted a specific terminology to categorise where students and their parents were born. A student was described as:

- *Native* if they, and at least one of their parents, were born in the country in which they were currently living. The term native included both indigenous students and those who were second generation or more.
- *First-generation* if they were born in the country in which they now live but their parents were born outside that country.
- *Non-native* if they and their parents were born outside the country in which they were currently living.

On average, PISA 2000 found that Pasifika students ‘native’ to New Zealand (22 percent) or first-generation (31 percent) were less likely to be low achievers compared to ‘non-native’ students (50 percent).

## Language

Students were also asked what language they mainly speak at home. The findings indicated that Pasifika students who mainly speak English at home (the language of the PISA assessment) were less likely to be low achievers (20 percent) in reading literacy than those who did not (49 percent).

Due to the constraints of the sample size comparisons of student results in the high achievement reading literacy among demographic subgroups were not examined. Nor was it possible to do such analyses of further demographic factors examined in PISA 2000, such as students’ parental education, family structure and socio-economic background, or the gender, decile and locality of the school attended by students in the high and low reading literacy achievement groupings.

## Student Motivation and Engagement

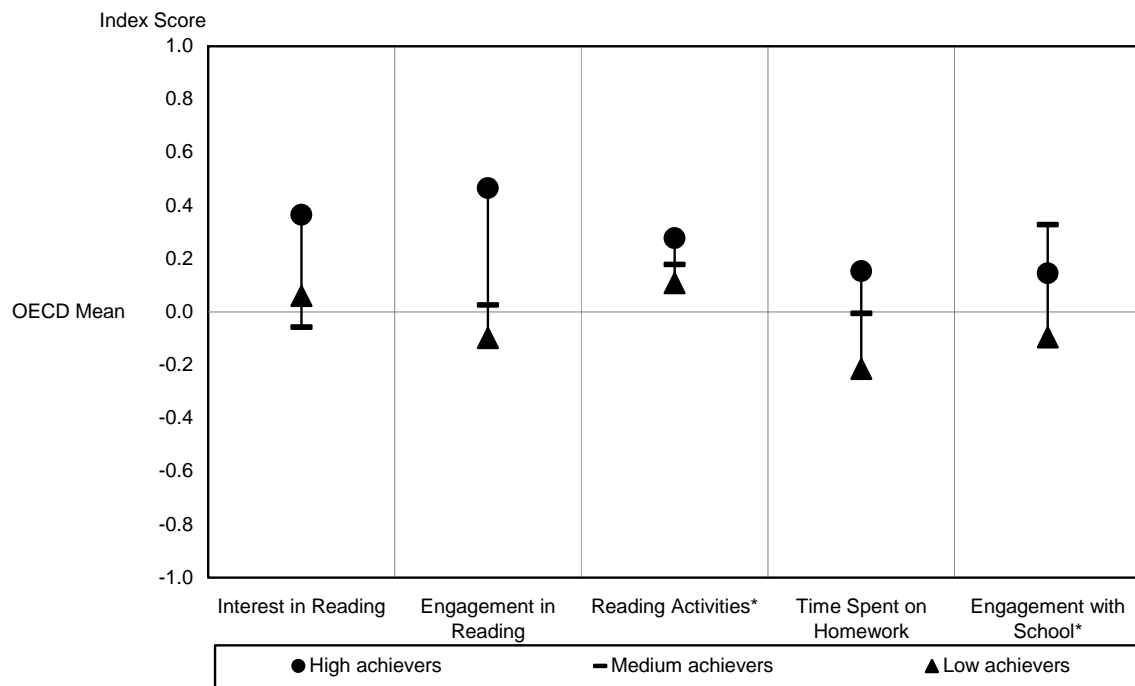
The mean scores for Pasifika 15-year-old high, medium and low achievers in PISA 2000 on the reading literacy indices relating to motivation and engagement in learning are shown in Figure 3. These indices (and those presented in Figures 4 and 5) are described above under General Outcomes of Learning.

The indices shown in this and subsequent charts are constructed so that the mean for OECD countries equals zero, and the scores for two thirds of students across the OECD fall between the values of 1 and –1. A negative value on an index does not necessarily mean that students responded negatively to the underlying questions; it simply indicates that they are less positive, on average, than all students across the OECD. The numerical index scores cannot be compared directly among indices. As noted earlier, differences reported throughout this paper are statistically significant, unless otherwise indicated, at the 5% level of confidence and differences between high and low achievers need to be very large to be reported as significant due to the sample size.<sup>3</sup>

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<sup>3</sup>That is, the chance of difference measured between high and low achievers being reported as significant, when there is no actual difference between these two groupings, is less than one in twenty.

**Figure 3: Pasifika Students' Average Index Scores for Motivation and Engagement in Learning, from the PISA 2000 Study**



\*The difference between high and low achievers is not statistically significant.

On the three reading-related measures of interest, engagement and reading activities shown in Figure 3, high achievers' mean index scores were generally high relative to the OECD average. However, no statistical differences from the international mean were observed for low achievers on these three reading-related indices. The reports of students from both high and low achievement groupings on the average amount of time spent on homework and their engagement with school, on average, were not significantly different to the OECD mean.

On average, high achievers' reports of their *engagement in reading* was much greater (more than half a standard deviation) than low achievers. Similarly, reported *interest in reading* and average amount of time generally spent on *homework* were also greater. However, no statistical differences were found between high and low achievers' reports on their participation in recreational *reading activities* and their level of *engagement with school*.

Overall, the mean scores for both high and low achievers on the motivation and engagement indices are close to or above the OECD mean, although differences between high and low achievers on the interest in reading, engagement in reading and the homework indices were observed. The large difference between high and low achievers on the engagement in reading index suggests that active engagement in reading increases students reading literacy skills.

### Use of Learning Strategies

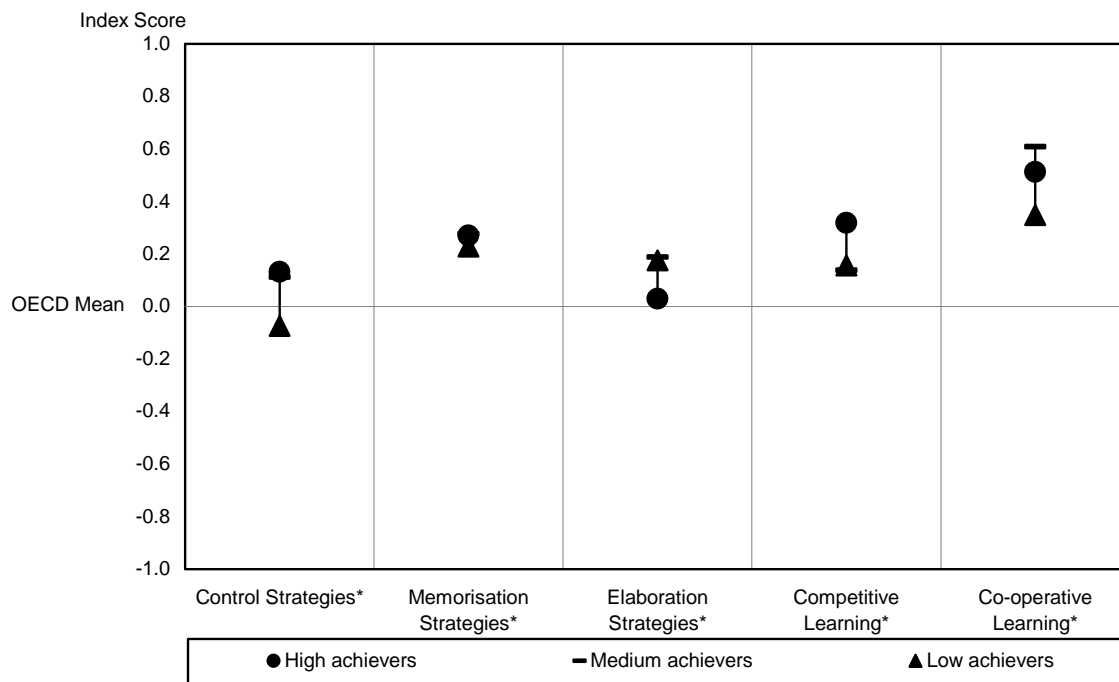
Figure 4 shows the mean scores for the three reading achievement groupings on the *control strategies*, *memorisation strategies*, *elaboration strategies*, *competitive learning* and *co-operative learning style*. High and low achieving students, on average, tended not to differ in their reporting on their use of each of these learning strategies.

The mean index scores of both high and low achievers on the memorisation strategies and co-operative learning style indices were greater than the OECD mean. On average, high achievers' reports on the co-operative learning style was much greater (more than half a standard deviation) than the OECD mean and greater on the competitive learning style measure, while low achievers' reports tended not to differ on the latter. Nor, on

average, did either achievement group differ from the international mean on the control strategies and elaboration strategies.

On the five learning strategy indices, both high and low achievers' reports were close to or above the OECD mean, while no differences were observed between high and low achievers' mean index scores.

**Figure 4: Pasifika Students' Average Index Scores for Use of Learning Strategies, from the PISA 2000 Study**



\* The difference between high and low achievers is not statistically significant.

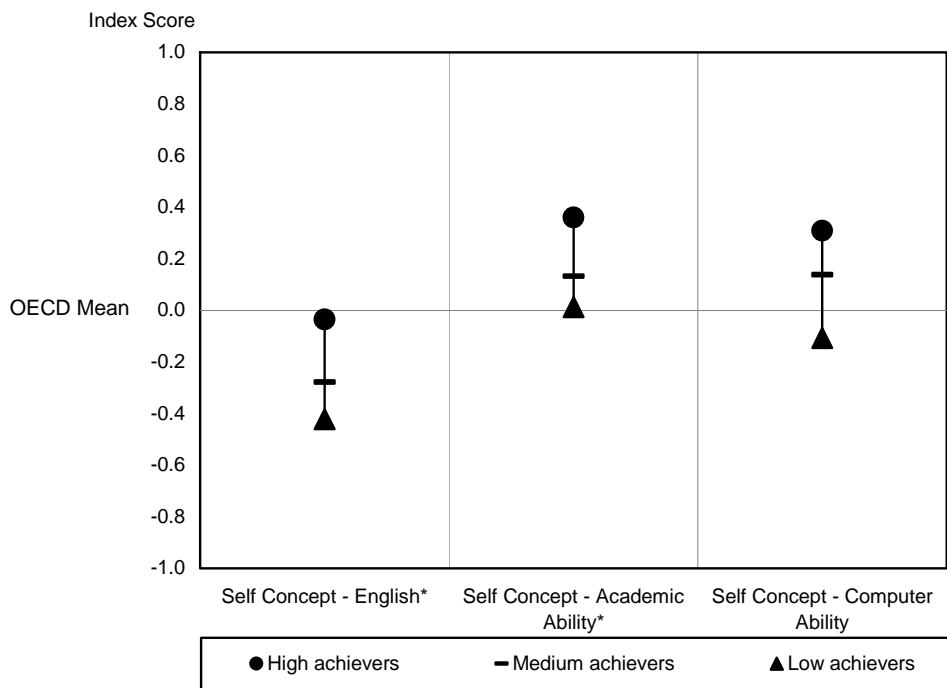
### Student Self-Concepts

High and low achievers' reports on two of the self-concept indices, self-concept in *English* and *academic ability*, on average, were not significantly different. On the *comfort with and perceived ability to use computers* index, generally, high achievers reported a greater confidence than students in the low reading achievement grouping.

Compared to the OECD mean, students in the high reading achievement grouping tended to indicate a greater level of confidence in their academic ability and a broadly similar level of confidence in their self-concept in English. Low achievers, on the other hand, were generally less positive on the self-concept in English index and as confident about their academic ability as the OECD average. Both high and low achievers' reports on their comfort and perceived ability with computers, on average, were not significantly different to the OECD mean. (Figure 5)

On the three self-concept measures, the computer ability index was the only significant difference observed between high and low achievers. And when compared with the OECD, only one significant difference was found for each of the two achievement groupings: low achievers were less positive about their ability in English and high achievers were more positive about their academic ability than the international average. As Figure 5 shows, when comparing students' reports on these two indices with the OECD mean, both high and low achievers tended to compare less favourably in their English ability than their academic ability.

**Figure 5: Pasifika Students' Average Index Scores for Student Self-Concepts, from the PISA 2000 Study**



\* The difference between high and low achievers is not statistically significant.

## Family Background

The largest difference in the family background index scores, presented in Figure 6, was the gap between high and low achievers' reported access to *home educational resources*. Students in the low achieving grouping tended to score much lower (more than half a standard deviation) on this index relative to high achievers.

*Home educational resources*: Index derived from students' reporting the availability in their home of a dictionary, a quiet place to study, a desk for study, textbooks and the number of calculators.

Among high achievers, 99 percent reported having a dictionary in the home compared to 86 percent of low achievers, 85 percent had a quiet place to study compared to 77 percent of low achievers, 97 percent had text books compared to 70 percent of low achievers, 84 percent had a desk for study compared to 71 percent, and 69 percent had more than three calculators compared to 56 percent of low achievers.

In contrast, low achievers generally reported a greater level of *family educational support* compared to high achievers. The international and national PISA 2000 findings showed that low achievement is associated with high family educational support, perhaps indicating that low achievers have a greater need of assistance than high achieving students do. On the *family wealth* index, high achievers tend to come from more affluent families than low achievers do.

*Family educational support*: Index derived from students reporting of the extent to which immediate family members (mothers, fathers and siblings) help them with their schoolwork.

*Family wealth*: Index derived from students' report on i) the availability, in their home, of a dishwasher, a room of their own, educational software and a link to the Internet; and ii) the number of cellular phones, television sets, computers, motor cars, and bathrooms at home.

PISA 2000 also asked students questions about the extent of their *parental social* and *cultural communication*. High and low achieving Pasifika 15-year-olds tended not to differ on their reporting of how often they communicated with their parents on both these indices.

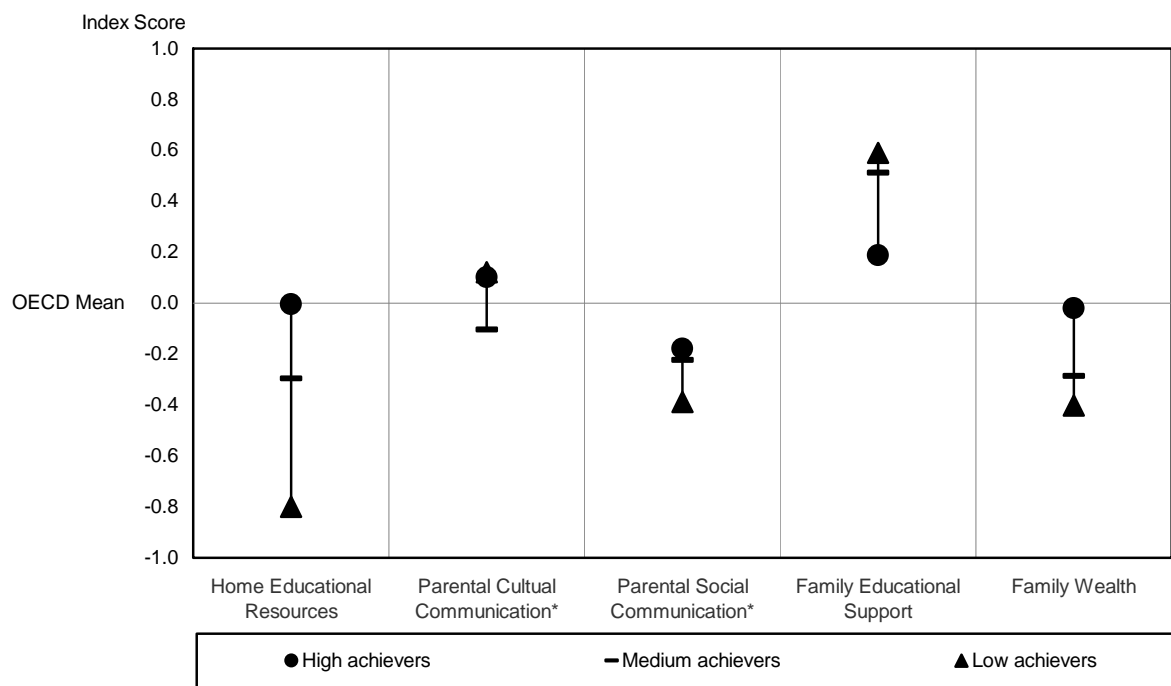
*Parental social communication:* Index derived from students' responses to questions about: discussing how well they were doing at school; eating their main meal together, and spending time just talking.

*Parental cultural communication:* Index derived from students reporting of the frequency with which they discussed social or political issues; books, films or television with their parents; and listened to classical music together.

No statistical differences were observed between high achievers' mean index scores on any of the family background indices when compared with the international mean, while low achievers tended not to differ only on the cultural communication index. However, low achievers reported, on average, much greater family educational support (more than half a standard deviation), but lower home educational resources (more than half a standard deviation), family wealth and parental social communication than the OECD mean.

On the family background factors, differences were observed between high and low achievers on the two educational-related measures and the family wealth index. In relation to the OECD mean, low achievers also differed on these indices and the social communication index, but high achievers' mean index scores did not differ.

**Figure 6: Pasifika Students' Average Index Scores for Family Background Factors, from the PISA 2000 Study**



\* The difference between high and low achievers is not statistically significant.

## In the Classroom

Figure 7 shows that, on average, there were no significant differences in the way in which high and low achievers tended to rate the level of *teacher support*, and *disciplinary climate* in their English classes and *teacher-student relations* in their schools.

*Teacher support:* Index derived from students' reports of the frequency with which, in English lessons: the teacher shows an interest in every student's learning; the teacher gives students an opportunity to express opinions; the teacher helps students with their work; the teacher continues teaching until the students understand; the teacher does a lot to help students; and, the teacher helps students with their learning. (In non-English speaking countries students are asked about classes in their own language of assessment.)

*Teacher-student relations:* Index derived from students' level of agreement or disagreement with the following statements: students get along well with most teachers; most teachers are interested in students' well-being; most of my teachers really listen to what I have to say; if I need extra help, I will receive it from my teachers; and most of my teachers treat me fairly.

*Disciplinary climate:* Index derived from students' reports on the frequency with which, in their English class: the teacher has to wait a long time for students to quiet down; students can not work well; students don't listen to what the teacher says; students don't start working for a long time after the lesson begins; there is noise and disorder; and, at the start of class, more than five minutes are spent doing nothing. (The index is inverted so that lower values tend to indicate a poorer disciplinary climate. In non-English speaking countries students are asked about classes in their own language of assessment.)

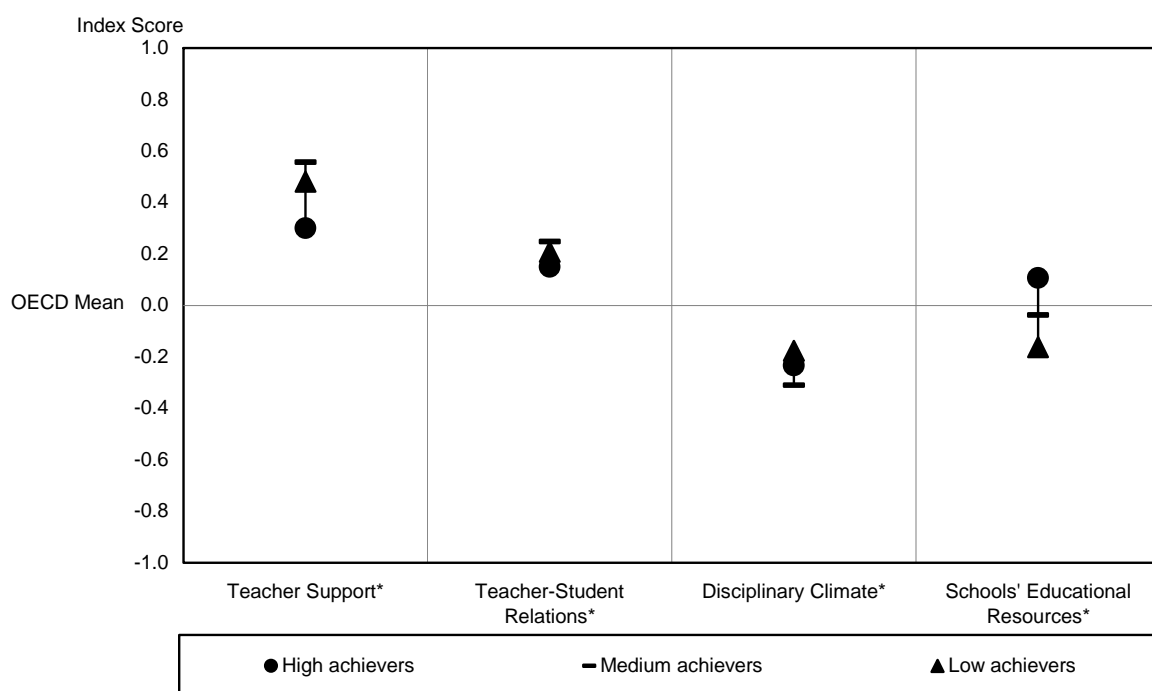
When compared with the OECD mean, both high and low achievers' mean scores on the teacher support measure were significantly greater, but no significant difference was observed on the disciplinary climate index. However, low achievers tended to rate their teacher-student relationships higher than the international mean, while high achievers' rating tended not to differ.

School principals were asked a series of questions to gauge the quality of educational resources available for student learning at their school. From their responses PISA derived an index of the *quality of schools' educational resources*. On average, there were no significant differences in the index based on the reports of principals' perception of the extent to which learning by 15-year-olds is hindered by the quality and accessibility of educational resources available at the schools of high and low achievers, or with the OECD mean.

*Schools' educational resources:* Index derived from principals' reports of the extent to which learning by 15-year-olds is hindered by: not enough computers for instruction; lack of instructional materials in the library; lack of multi-media resources for instruction; inadequate science laboratory equipment; and inadequate facilities for the fine arts. (The index is inverted so that lower values tend to indicate greater hindrance.)

Therefore, on the classroom indices, there were no significant differences between high and low achievers' reports on any of the indices and their mean index scores were all close to or above the OECD mean.

**Figure 7: Pasifika Students' Average Index Scores for Classroom Factors, from the PISA 2000 Study**



\* The difference between high and low achievers is not statistically significant.

## Wider School Factors

Principals were also asked to assess factors relating to the school learning environment. Several limitations to the information collected from principals should be taken into account in the interpretation of the data. Although principals are best suited to provide information about their schools, generalising from a single source of information for each school, and then ‘matching’ that information with students’ reports is not straightforward. It is also important to note here, as mentioned earlier, that Pasifika students are clustered in a small number of schools. This was also the case for students in the high, medium and low reading literacy groupings. For example, half of the low achievers were enrolled in six percent of the schools participating in PISA 2000 and half of the high achievers were clustered in nine percent of the schools. The findings of the wider school factors will be highly influenced by the reports of principals at a small number of schools.

As Figure 8 shows, compared to low achievers, high achievers tend to come from schools where principals’ reports indicate that in their schools the learning by 15-year-olds was hindered less by four of the five wider school factor indices (there was no statistical difference on the *teacher morale and commitment* index). Low achievers tend to come from schools where, principals’ perception of the negative impact that *teacher shortages*, *teacher-related behaviours* and *student-related behaviours*, in particular, have on learning, as measured by PISA, was relatively much greater (more than a half a standard deviation).

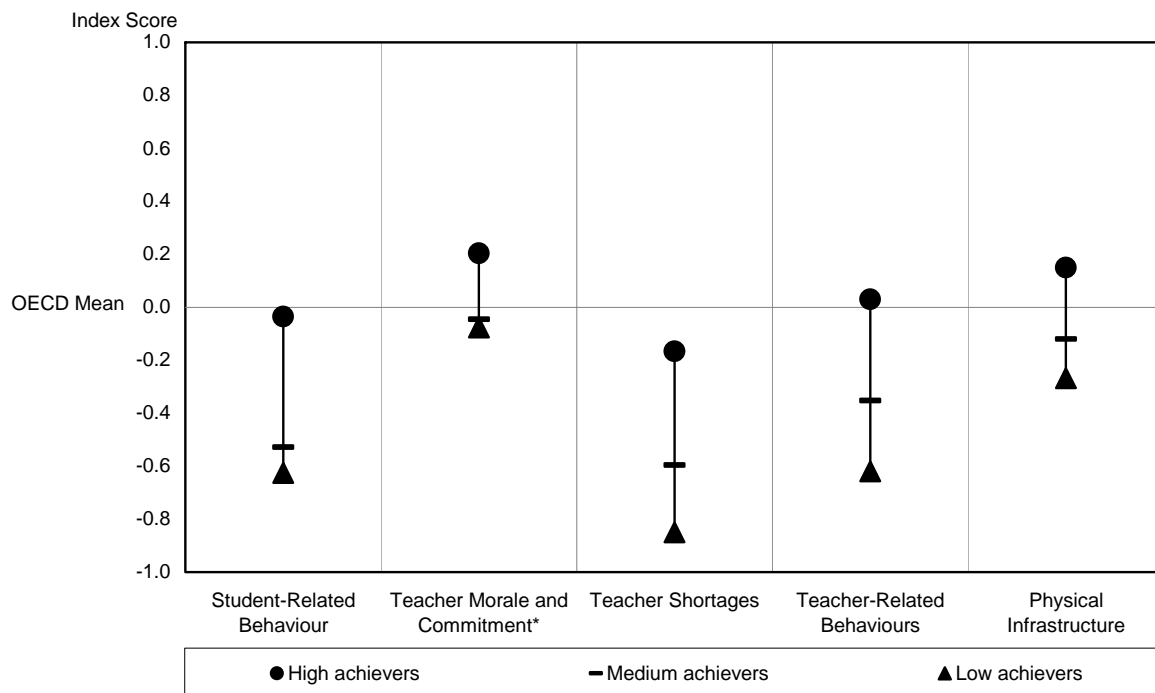
*Teacher morale and commitment:* Index derived from the extent to which principals at each student’s school agree or disagree with the following statements: the morale of the teachers in this school is high; teachers work with enthusiasm; teachers take pride in this school; and teachers value academic achievement.

*Teacher shortages:* Index derived from principals’ view on how much learning by 15-year-old students is hindered by the shortage or inadequacy of teachers in English, mathematics or science. (The index is inverted so that lower values tend to indicate greater hindrance. In non-English speaking countries principals are asked about teachers in their own language of assessment.)

*Teacher-related behaviours:* Index derived from principals’ perspective on the extent to which learning by 15-year-olds was hindered by: the low expectations of teachers; poor student-teacher relations; teachers not meeting individual students’ needs; teacher absenteeism; staff resisting change; teachers being too strict with students; and students not being encouraged to achieve their full potential. (The index is inverted so that lower values tend to indicate greater hindrance.)

*Student-related behaviours:* Summarises principals’ reports of the extent to which learning by 15-year-olds at each student’s school is hindered by: student absenteeism; disruption of classes by students; students skipping classes; students lacking respect for teachers; the use of alcohol or illegal drugs; and students intimidating or bullying other students. (The index is inverted so that lower values tend to indicate greater hindrance.)

**Figure 8: Pasifika Students' Average Index Scores for Wider School Factors, from the PISA 2000 Study**



\* The difference between high and low achievers is not statistically significant.

PISA 2000 also found that high achievers, compared to low achievers, tended to come from schools where principals were more positive about the quality of the school *physical infrastructure*. However, there was no significant difference between these two groupings on the *teacher morale and commitment* index.

*Physical Infrastructure*: Index derived from principals' reports on the extent to which learning by 15-year-olds in their school was hindered by: poor condition of buildings; poor heating and cooling and/or lighting systems; and lack of instructional space (e.g., classrooms). (The index is inverted so that lower values tend to indicate greater hindrance.)

When compared with the OECD mean, on average, there were no statistical differences in school principals' reports on each of the wider school factors for high achievers. In contrast, low achievers tended to come from schools where principals reports of their perceptions on the student-related behaviours (more than half a standard deviation), teacher related behaviours and teacher shortages indices were less positive. Their perception of teacher morale and commitment and the school physical infrastructure were not statistically different from the international mean.

High and low achievers differed on four of the five wider school factors and low achievers' mean scores were also different from the international mean on three of the indices. There were no statistical differences between high achievers and the OECD mean.

## **SUMMARY**

The findings presented in this report show that close to one in five Pasifika students (18.5 percent) achieved a high level of proficiency in reading literacy, the major domain in PISA 2000. However, achievement levels vary widely within the student population. Pasifika achievement in reading, mathematical and scientific literacy as assessed by PISA 2000 is, on average, lower than for Pakeha, Asian or Māori students.

Of the Pasifika demographic subgroups analysed, girls, multi-ethnic students, those who are born in New Zealand or those who usually speak English at home were less likely to be low achievers in reading literacy.

High achievement among Pasifika students was found to be associated with 11 of the 27 PISA indices investigated (this does not mean that some of the other indices are not associated with achievement, rather that due to the constraints of the sample size we cannot provide evidence of a significant difference between the high and low achievement groupings). On the student-related factors (Student Motivation and Engagement; Use of Learning Strategies; and Student Self-Concepts), differences included interest in reading, engagement in reading, time spent on homework and self-concept in computers. Family-related factors (Family Background) included home educational resources and family wealth, while school-related factors (both In the Classroom and Wider School Factors) included student-related behaviours, teacher shortages, teacher-related behaviours and the school physical infrastructure. In particular, large differences were observed between high and low achievers' engagement in reading, the availability of home educational resources and principals' perceptions of student-related behaviours, teacher-related behaviours and teacher shortages at their schools.

Differences were also observed between the OECD mean and low achievers' mean scores on a number of indices. On three of the school-related factors (including student-related behaviours, teacher shortages and teacher-related behaviours), as well as the home educational resources, parental social communication, family wealth and self-concept in English indices, the mean scores for low achievers were below the OECD mean. However, low achievers' mean index scores were close to or above the international mean for the remaining 20 indices and the high achievers' mean scores for all of the indices were close to or above the international mean.

When comparing Pasifika on the general outcomes of learning indices with Pakeha and Māori, Pasifika students were lower on the self-concept in English than both of these ethnic groupings and lower on the self-concept in computers than Pakeha. For the remaining 13 indices, Pasifika students mean index scores were either close to or above those of Pakeha and Māori.

The associations found in PISA 2000 do not prove that these factors are responsible for high achievement. Such statistical relationships, while often very clear in this study, cannot in themselves establish a causal link. Furthermore, while the study examines a range of key factors relating to students, their families and the learning environment, it provides only a partial picture of the possible determinants of educational achievement. However, when seen in conjunction with existing research, knowledge and experience the findings should assist educators, policy-makers, parents and students to recognise the role these factors may take in promoting success for Pasifika students, not only at secondary level but also in the earlier years.

In making such judgements, due consideration should be given to the effect on the wider school factors from the clustering of Pasifika students in a small number of schools; the subjective element in these indices, which are based on self-reports by students or principals; and that attitude questions might be linked to cultural factors which may influence students to respond positively. The index scores must be read in conjunction with the definitions provided in the report. In some cases the PISA definition of a factor may differ from the meaning generally understood in this country. The way in which PISA assesses achievement may also differ to a degree from that used in the school system.

In 2001 the Minister of Education launched the Pasifika Education Plan. Increasing achievement in the compulsory education sector is a key component of the Plan. This report provides a baseline for tracking trends in 15-year-old Pasifika students' achievement and indicators of general outcomes of learning through the

successive cycles of the PISA study. While English was the major domain for PISA 2000, mathematical literacy was the major domain in 2003 (reporting 2004) and scientific literacy will be the major domain in 2006, in each cycle the study will enable progress to be measured in all of the three PISA literacy domains.

## APPENDIX: PISA 2000 DATA TABLES

The tables presented in this appendix use bold face type to indicate statistically significant differences, as noted under the relevant tables. The significance tests used here and throughout the report meet  $\alpha=0.05$  (i.e., the 5% level). The symbol *S.E.* stands for standard error, which is included in the tables as an indicator of the uncertainty associated with each estimate. Numerical scale and index scores cannot be directly compared among the different domains or indices. Table 1 also appears in the main body of the report.

**Table 1: Average Scale Scores for Reading, Mathematical and Scientific Literacy, from the PISA 2000 Study**

Domain	Pakeha		Asian		Māori		Pasifika		OECD Countries	
	Mean Scale Score	S.E.	Mean Scale Score	S.E.	Mean Scale Score	S.E.	Mean Scale Score	S.E.	Mean Scale Score	S.E.
Reading Literacy	554	(3.0)	513	(7.9)	<b>486</b>	(4.8)	459	(8.5)	500	(0.6)
Mathematical Literacy	557	(3.3)	547	(7.5)	503	(5.9)	469	(9.2)	500	(0.7)
Scientific Literacy	553	(2.6)	517	(9.7)	485	(5.4)	462	(8.8)	500	(0.7)

**Bold type indicates that the mean scale score is statistically significantly different to the score for Pasifika in this domain ( $\alpha=0.05$ ).**

**Table 2: Average Scale Scores by Ethnic Group and Gender, from the PISA 2000 Study**

Domain/Gender	Pakeha		Asian		Māori		Pasifika		New Zealand*	
	Mean Scale Score	S.E.	Mean Scale Score	S.E.	Mean Scale Score	S.E.	Mean Scale Score	S.E.	Mean Scale Score	S.E.
<b>READING LITERACY</b>										
Girls	577	(3.8)	541	(8.4)	510	(5.6)	475	(8.5)	553	(3.8)
Boys	532	(3.9)	485	(11.7)	462	(7.2)	443	(12.7)	507	(4.2)
<b>MATHEMATICAL LITERACY</b>										
Girls	556	(4.1)	556	(9.5)	511	(8.5)	462	(11.0)	539	(4.1)
Boys	558	(5.1)	537	(13.8)	497	(8.4)	475	(13.3)	536	(5.0)
<b>SCIENTIFIC LITERACY</b>										
Girls	560	(3.9)	525	(12.2)	490	(6.3)	465	(9.1)	535	(3.8)
Boys	546	(5.0)	509	(13.6)	481	(8.8)	459	(12.9)	523	(4.6)

**Bold type indicates a statistically significant difference between girls and boys in this domain and ethnic group ( $\alpha=0.05$ ).**

\* New Zealand figures include students from the "Other" ethnic group.

**Table 3: Pasifika and Non-Pasifika Scale Scores at Selected Percentiles, from the PISA 2000 Study**

Domain/Ethnicity	5 <sup>th</sup> Percentile		25 <sup>th</sup> Percentile		Mean		75 <sup>th</sup> Percentile		95 <sup>th</sup> Percentile	
	Scale Score	S.E.	Scale Score	S.E.	Mean Scale Score	S.E.	Scale Score	S.E.	Scale Score	S.E.
<b>READING LITERACY</b>										
Pasifika	282	(19.1)	386	(11.4)	459	(8.5)	532	(9.3)	629	(16.5)
Non-Pasifika	351	(6.3)	470	(3.9)	537	(2.7)	612	(3.0)	695	(6.3)
New Zealand	337	(7.2)	459	(3.9)	529	(2.8)	606	(3.0)	692	(5.7)
<b>MATHEMATICAL LITERACY</b>										
Pasifika	319	(20.6)	399	(13.0)	469	(9.2)	530	(10.4)	633	(16.5)
Non-Pasifika	382	(6.9)	483	(4.5)	546	(3.0)	613	(3.9)	692	(5.2)
New Zealand	364	(6.7)	472	(4.0)	537	(3.1)	607	(4.2)	689	(5.1)
<b>SCIENTIFIC LITERACY</b>										
Pasifika	308	(25.2)	399	(10.7)	462	(8.7)	521	(13.3)	623	(22.9)
Non-Pasifika	369	(5.5)	471	(3.9)	537	(2.3)	606	(3.1)	686	(5.5)
New Zealand	357	(5.4)	459	(3.8)	528	(2.4)	600	(3.3)	683	(4.3)

**Bold** type indicates that the mean scale score is statistically significantly different to the score for Pasifika in this domain ( $\alpha=0.05$ ). Significance tests have not been applied to the percentile scale scores.

**Table 4: Percentage of Pasifika Students at Each Reading Proficiency Level, from the PISA 2000 Study**

Proficiency Level	Retrieving Information		Interpreting Texts		Reflection and Evaluation		Reading Literacy (Combined)	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Below Level 1	13.2	(3.0)	13.1	(2.3)	11.2	(2.6)	11.8	(2.3)
Level 1	19.0	(2.6)	21.5	(3.9)	16.4	(2.7)	19.7	(2.7)
Level 2	25.4	(4.3)	25.5	(3.1)	27.9	(3.7)	25.9	(2.8)
Level 3	21.0	(4.3)	22.1	(3.0)	24.2	(3.8)	24.2	(2.6)
Level 4	14.0	(2.4)	12.3	(2.2)	14.2	(3.4)	12.8	(2.2)
Level 5	7.4	(1.9)	5.5	(1.3)	6.0	(1.8)	5.6	(1.5)
<b>TOTAL</b>	100.0	-	100.0	-	100.0	-	100.0	-

Due to rounding figures may not sum exactly to 100 percent.

**Table 5: Mean Index Scores for General Outcomes of Learning, from the PISA 2000 Study**  
(Results based on students' self-reports)

Index	Pakeha		Asian		Māori		Pasifika		OECD Countries	
	Mean Index Score	S.E.	Mean Index Score	S.E.	Mean Index Score	S.E.	Mean Index Score	S.E.	Mean Index Score	S.E.
<b>MOTIVATION &amp; ENGAGEMENT</b>										
Interest in Reading	0.08	(0.02)	0.23	(0.06)	-0.08	(0.04)	0.06	(0.05)	0.00	(0.00)
Engagement in Reading	0.02	(0.03)	0.18	(0.06)	-0.21	(0.04)	0.07	(0.04)	0.00	(0.00)
Reading Activities	0.12	(0.02)	0.45	(0.08)	0.03	(0.03)	0.18	(0.05)	0.00	(0.0)i
Time Spent on Homework	0.07	(0.03)	0.42	(0.06)	-0.12	(0.04)	-0.04	(0.07)	0.00	(0.00)
Engagement with School	-0.04	(0.02)	-0.25	(0.05)	0.12	(0.05)	0.16	(0.05)	<b>0.00</b>	(0.0)i
Interest in Mathematics	0.00	(0.03)	0.69	(0.05)	0.06	(0.04)	0.31	(0.05)	0.00	(0.00)
<b>LEARNING STRATEGIES</b>										
Control Strategies	0.07	(0.03)	0.41	(0.06)	-0.13	(0.05)	0.06	(0.06)	0.00	(0.01)
Memorisation Strategies	0.22	(0.02)	0.48	(0.05)	0.16	(0.04)	0.26	(0.06)	0.00	(0.00)
Elaboration Strategies	0.06	(0.02)	0.38	(0.06)	0.10	(0.04)	0.15	(0.06)	0.00	(0.00)
Competitive Learning	0.27	(0.02)	0.78	(0.05)	0.16	(0.05)	0.18	(0.07)	0.00	(0.00)
Co-operative Learning	0.24	(0.02)	0.27	(0.06)	0.37	(0.04)	0.51	(0.06)	0.00	(0.00)
<b>STUDENT SELF-CONCEPTS</b>										
English	-0.06	(0.02)	-0.40	(0.07)	-0.09	(0.05)	-0.27	(0.05)	0.00	(0.0)i
Academic Ability	0.22	(0.03)	0.29	(0.07)	0.12	(0.05)	0.14	(0.05)	0.00	(0.0)i
Computer Ability	0.28	(0.02)	0.27	(0.06)	0.14	(0.04)	0.10	(0.07)	0.00	(0.00)
Mathematics	0.16	(0.03)	0.64	(0.07)	0.10	(0.05)	0.12	(0.05)	0.00	(0.0)i

**Bold** type indicates that the mean index score is statistically significantly different to the score for Pasifika on this index ( $\alpha=0.05$ ).

i indicates that the standard error has been imputed.

**Table 6: Percentage Breakdown of Pasifika High and Low Achievers by Selected Demographic Characteristics, and Percentage Distribution of Subgroups across Achievement Levels, from the PISA 2000 Study**  
(Results based on students' self-reports)

Characteristic/ Subgroup	BREAKDOWN								DISTRIBUTION					
	Composition of Pasifika students who are high achievers		Composition of Pasifika students who are medium achievers		Composition of Pasifika students who are low achievers		Composition of all Pasifika students		Percentage of subgroup who are high achievers		Percentage of subgroup who are medium achievers		Percentage of subgroup who are low achievers	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
All PASIFIKA STUDENTS									18.4	(2.6)	50.1	(2.9)	31.5	(3.7)
<b>GENDER</b>														
Girls	58.3	(7.5)	55.1	(5.8)	40.4	(6.5)	51.1	(5.0)	21.0	(3.3)	54.0	(3.6)	24.9	(3.7)
Boys	<i>c</i>	<i>c</i>	44.9	(5.8)	59.6	(6.5)	48.9	(5.0)	<i>c</i>	<i>c</i>	45.9	(4.3)	38.3	(5.4)
Not Known	0.0	-	0.0	-	0.0	-	0.0	-						
TOTAL	100.0	-	100.0	-	100.0	-	100.0	-						
<b>ETHNIC IDENTIFICATION</b>														
Sole Pasifika	<i>c</i>	<i>c</i>	59.4	(4.6)	66.0	(5.2)	56.5	(3.2)	<i>c</i>	<i>c</i>	52.6	(4.5)	36.7	(4.7)
Multi-ethnic	67.4	(6.9)	40.6	(4.6)	34.0	(5.2)	43.5	(3.2)	28.6	(3.9)	46.7	(4.9)	24.7	(4.3)
Not Known	0.0	-	0.0	-	0.0	-	0.0	-						
TOTAL	100.0	-	100.0	-	100.0	-	100.0	-						
<b>PLACE OF BIRTH</b>														
'Native'	67.0	(6.8)	42.6	(4.6)	30.8	(6.6)	43.4	(3.5)	<i>28.5</i>	<i>(4.0)</i>	<i>49.1</i>	<i>(5.3)</i>	<i>22.4</i>	<i>(4.7)</i>
First-Generation	<i>c</i>	<i>c</i>	37.1	(4.4)	32.5	(5.1)	33.4	(2.8)	<i>c</i>	<i>c</i>	55.7	(5.5)	30.7	(5.9)
'Non-native'	<i>c</i>	<i>c</i>	<i>c</i>	<i>c</i>	30.0	(5.2)	19.4	(2.0)	<i>c</i>	<i>c</i>	<i>c</i>	<i>c</i>	50.3	(6.9)
Not Known	0.0	-	<i>c</i>	<i>c</i>	<i>c</i>	<i>c</i>	<i>c</i>	<i>c</i>						
TOTAL	100.0	-	100.0	-	100.0	-	100.0	-						
<b>LANGUAGE SPOKEN AT HOME</b>														
English	85.1	(5.6)	66.4	(3.5)	39.7	(6.7)	61.5	(2.8)	25.5	(3.3)	54.1	(4.1)	20.4	(4.3)
Other Language	<i>c</i>	<i>c</i>	19.2	(3.6)	35.8	(6.5)	22.9	(2.6)	<i>c</i>	<i>c</i>	42.0	(7.0)	49.2	(8.2)
Not Known	<i>c</i>	<i>c</i>	<i>c</i>	<i>c</i>	<i>c</i>	<i>c</i>	15.6	(2.8)						
TOTAL	100.0	-	100.0	-	100.0	-	100.0	-						

In the *breakdowns*, **bold** type indicates that the percentage is statistically significantly different to the percentage for Pasifika high achievers in this subgroup ( $\alpha=0.05$ ). In the *distributions*, **bold** type indicates a statistically significant difference between the subgroups shown for a given characteristic, e.g., girls versus boys, at that achievement level ( $\alpha=0.05$ ). Where there are three subgroups shown, i.e., 'native', first-generation and 'non-native' students, the **grey type** indicates that the 'Native' category is not included in the significance test.

*c* indicates that there are too few observations to provide reliable estimates (i.e., fewer than 30 students with valid data for this cell).

Due to rounding figures may not sum exactly to 100 percent.

**Table 7: Mean Index Scores for Pasifika Students on Selected Indices, from the PISA 2000 Study**  
(Results based on students' self-reports or reports from school principals)

Index	Pasifika High Achievers		Pasifika Medium Achievers		Pasifika Low Achievers		All Pasifika Students		OECD Countries	
	Mean Index Score	S.E.	Mean Index Score	S.E.	Mean Index Score	S.E.	Mean Index Score	S.E.	Mean Index Score	S.E.
<b>MOTIVATION &amp; ENGAGEMENT</b>										
Interest in Reading	0.37	(0.12)	-0.06	(0.07)	0.06	(0.10)	0.06	(0.05)	0.00	(0.00)
Engagement in Reading	0.47	(0.12)	0.03	(0.06)	-0.10	(0.09)	0.07	(0.04)	0.00	(0.00)
Reading Activities	0.28	(0.11)	0.18	(0.08)	0.11	(0.14)	0.18	(0.06)	0.00	(0.0)i
Time Spent on Homework	0.15	(0.13)	-0.01	(0.09)	-0.21	(0.14)	-0.04	(0.07)	0.00	(0.00)
Engagement with School	0.15	(0.14)	0.33	(0.08)	-0.10	(0.11)	0.16	(0.05)	0.00	(0.0)i
<b>LEARNING STRATEGIES</b>										
Control Strategies	0.13	(0.13)	0.11	(0.08)	-0.07	(0.11)	0.06	(0.06)	0.00	(0.01)
Memorisation Strategies	0.27	(0.14)	0.28	(0.08)	0.23	(0.11)	0.26	(0.06)	0.00	(0.00)
Elaboration Strategies	0.03	(0.12)	0.19	(0.09)	0.18	(0.12)	0.15	(0.06)	0.00	(0.00)
Competitive Learning	0.32	(0.12)	0.14	(0.09)	0.16	(0.17)	0.18	(0.07)	0.00	(0.00)
Co-operative Learning	0.51	(0.11)	0.61	(0.08)	0.35	(0.17)	0.51	(0.06)	0.00	(0.00)
<b>STUDENT SELF-CONCEPTS</b>										
English	-0.04	(0.17)	-0.28	(0.09)	-0.42	(0.12)	-0.27	(0.05)	0.00	(0.0)i
Academic Ability	0.36	(0.14)	0.13	(0.07)	0.01	(0.13)	0.14	(0.05)	0.00	(0.0)i
Computer Ability	0.31	(0.17)	0.14	(0.10)	-0.11	(0.09)	0.10	(0.07)	0.00	(0.00)
<b>FAMILY BACKGROUND</b>										
Home Educational Resources	0.00	(0.16)	-0.30	(0.11)	-0.80	(0.14)	-0.40	(0.09)	0.00	(0.0)i
Parental Cultural Communication	0.10	(0.13)	-0.10	(0.09)	0.12	(0.11)	0.00	(0.06)	0.00	(0.00)
Parental Social Communication	-0.18	(0.13)	-0.22	(0.09)	-0.39	(0.13)	-0.27	(0.06)	0.00	(0.00)
Family Educational Support	0.19	(0.15)	0.51	(0.08)	0.59	(0.11)	0.47	(0.06)	0.00	(0.0)i
Family Wealth	-0.02	(0.12)	-0.29	(0.09)	-0.40	(0.11)	-0.27	(0.07)	0.00	(0.00)
<b>CLASSROOM FACTORS</b>										
Teacher Support	0.30	(0.11)	0.56	(0.09)	0.48	(0.11)	0.49	(0.06)	0.00	(0.01)
Teacher-Student Relations	0.15	(0.10)	0.25	(0.08)	0.21	(0.09)	0.22	(0.06)	0.00	(0.0)i
Disciplinary Climate *	-0.23	(0.15)	-0.31	(0.10)	-0.18	(0.10)	-0.25	(0.07)	0.00	(0.01)
Schools' Educational Resources *	0.11	(0.15)	-0.04	(0.14)	-0.16	(0.18)	-0.05	(0.13)	0.00	(0.02)
<b>WIDER SCHOOL ISSUES</b>										
Student-Related Behaviours *	-0.04	(0.18)	-0.53	(0.23)	-0.63	(0.25)	-0.46	(0.21)	0.00	(0.01)
Teacher Morale and Commitment	0.20	(0.18)	-0.05	(0.19)	-0.08	(0.25)	-0.01	(0.17)	0.00	(0.01)
Teacher Shortages *	-0.17	(0.19)	-0.60	(0.19)	-0.85	(0.18)	-0.59	(0.16)	0.00	(0.01)
Teacher-Related Behaviours *	0.03	(0.18)	-0.35	(0.25)	-0.62	(0.26)	-0.35	(0.23)	0.00	(0.01)
Schools' Physical Infrastructure *	0.15	(0.15)	-0.12	(0.18)	-0.27	(0.20)	-0.11	(0.16)	0.00	(0.01)

**Bold type** indicates the mean index score is statistically significantly different to the score for Pasifika high achievers on this index ( $\alpha=0.05$ ).

\* indicates that the index has been inverted so that lower values correspond to less positive reports on the factor being measured.

i indicates that the standard error has been imputed.

**Table 7a: Comparison of Mean Index Scores for Pasifika Low Achievers and OECD Countries on Selected Indices, from the PISA 2000 Study**  
(Results based on students' self-reports or reports from school principals)

Index	Pasifika Low Achievers		OECD Countries	
	Mean Index Score	S.E.	Mean Index Score	S.E.
<b>MOTIVATION &amp; ENGAGEMENT</b>				
Interest in Reading	0.06	(0.10)	0.00	(0.00)
Engagement in Reading	-0.10	(0.09)	0.00	(0.00)
Reading Activities	0.11	(0.14)	0.00	(0.0)i
Time Spent on Homework	-0.21	(0.14)	0.00	(0.00)
Engagement with School	-0.10	(0.11)	0.00	(0.0)i
<b>LEARNING STRATEGIES</b>				
Control Strategies	-0.07	(0.11)	0.00	(0.01)
Memorisation Strategies	0.23	(0.11)	0.00	(0.00)
Elaboration Strategies	0.18	(0.12)	0.00	(0.00)
Competitive Learning	0.16	(0.17)	0.00	(0.00)
Co-operative Learning	0.35	(0.17)	0.00	(0.00)
<b>STUDENT SELF-CONCEPTS</b>				
English	-0.42	(0.12)	0.00	(0.0)i
Academic Ability	0.01	(0.13)	0.00	(0.0)i
Computer Ability	-0.11	(0.09)	0.00	(0.00)
<b>FAMILY BACKGROUND</b>				
Home Educational Resources	-0.80	(0.14)	0.00	(0.0)i
Parental Cultural Communication	0.12	(0.11)	0.00	(0.00)
Parental Social Communication	-0.39	(0.13)	0.00	(0.00)
Family Educational Support	0.59	(0.11)	0.00	(0.0)i
Family Wealth	-0.40	(0.11)	0.00	(0.00)
<b>CLASSROOM FACTORS</b>				
Teacher Support	0.48	(0.11)	0.00	(0.01)
Teacher-Student Relations	0.21	(0.09)	0.00	(0.0)i
Disciplinary Climate *	-0.18	(0.10)	0.00	(0.01)
Schools' Educational Resources *	-0.16	(0.18)	0.00	(0.02)
<b>WIDER SCHOOL ISSUES</b>				
Student-Related Behaviours *	-0.63	(0.25)	0.00	(0.01)
Teacher Morale and Commitment	-0.08	(0.25)	0.00	(0.01)
Teacher Shortages *	-0.85	(0.18)	0.00	(0.01)
Teacher-Related Behaviours *	-0.62	(0.26)	0.00	(0.01)
Schools' Physical Infrastructure *	-0.27	(0.20)	0.00	(0.01)

**Bold** type indicates Pasifika low achievers mean index score is statistically significantly different to the OECD mean score on this index ( $\alpha=0.05$ ).

\* indicates that the index has been inverted so that lower values correspond to less positive reports on the factor being measured.

i indicates that the standard error has been imputed.

**Table 8: Percentage of Pasifika Students with Selected Educational Resources in the Home by Achievement Level, from the PISA 2000 Study**  
(Results based on students' self-reports)

Educational Resource	Pasifika High Achievers		Pasifika Medium Achievers		Pasifika Low Achievers		All Pasifika Students	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.
A Dictionary	99.4	(1.4)	96.0	(1.2)	85.5	(3.7)	93.3	(1.5)
A Quiet Place to Study	84.5	(4.8)	86.0	(3.1)	76.8	(5.2)	82.4	(2.3)
A Desk for Study	83.6	(5.0)	81.2	(3.5)	71.1	(4.7)	78.5	(2.5)
Text Books	96.9	(2.3)	86.9	(3.1)	70.2	(4.5)	83.5	(2.6)
Three or More Calculators	69.4	(7.7)	59.6	(4.9)	56.1	(4.7)	60.3	(3.0)

**Bold** type indicates that the percentage is statistically significantly different to the percentage of Pasifika high achievers with this resource ( $\alpha=0.05$ ).

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