

PISA 2000

Overview of Selected New Zealand Findings

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RESEARCH DIVISION

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Introduction

In 2000 nearly 3,700 New Zealand 15 year-old secondary students took part in PISA 2000 (Programme for International Student Assessment¹), a two-hour assessment to measure their reading, mathematical and scientific literacy (definitions of these literacies for PISA can be found on the back page). This same assessment was given to a sample of 15 year-old students in 31 other participating countries.

In particular, PISA 2000 looks at how well students are being prepared for life beyond school, and whether they are developing the capacity to continue learning throughout their lives.

What we know from the results is that, on the whole, New Zealand students are doing very well, with New Zealand ranking third overall in reading and mathematical literacy, and sixth in scientific literacy. Nevertheless, there is still a considerable number of New Zealand students who have relatively low reading, mathematical and scientific literacy levels.

The PISA study is designed to look at trends in student achievement over time. In order to do this it will be administered every three years in each participating country. Each administration of the study will focus on one area of achievement. In PISA 2000 this was reading literacy and in 2003 it will be mathematical literacy.

Survey facts in New Zealand:

- over 150 secondary schools took part
- students were chosen at random
- there was an equal mix of boys and girls
- the students who took part in PISA were representative of 15 year-olds in the New Zealand population in terms of their gender and ethnic grouping and in terms of the location and type of school they attended.

What this overview tells us

The focus of this overview is on information in areas where teachers and families can respond to students' different learning needs.

This overview covers what students said about themselves, their families and their schools, and how that relates to their achievement on the PISA tasks. It also captures what their principals said about the schools they attend.

PISA 2000 provided an opportunity to find out about students' attitudes to learning, the different strategies they use to learn and what effect outside influences could have on their achievement. These influences included, for example, whether they had access to educational resources in their homes, whether they discussed issues with their parents or what it was generally like in

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¹ PISA was commissioned by the Organisation for Economic Co-operation and Development (OECD)

their classrooms. These findings were put alongside students' scores for reading literacy to assess the relationship² between achievement in reading literacy³ and student attitudes. Achievement in reading literacy was chosen for this examination as it was the focus of PISA 2000.

For a brief summary of the reading, mathematical and scientific literacy results of New Zealand students in PISA 2000, and for an explanation of terms used in this overview, please see pages 11 and 12 of this report.

For more detailed information including the results of the study, actual figures and data collected, visit the Ministry of Education's website at www.minedu.govt.nz/goto/pisa to find:

- a more extensive report of the New Zealand results
- a summary report of the New Zealand results in an international context
- a link to the international website www.pisa.oecd.org.

About the students

Students were asked about their attitudes and different strategies that they use to learn. The following section looks at their interest and engagement in learning; their approaches to learning, and their use of computers.

Student interest and engagement in learning

A student's level of interest and engagement in learning can impact on their performance. To assess these attitudes and perceptions, students were asked to respond to a number of questions about their level of engagement in school. More specifically, they were asked about their level of engagement in reading and their interest and attitudes towards reading and mathematics. Having this information allows us to look at the link between how engaged and interested a student is and how they performed on the PISA reading literacy assessment tasks.

Engagement with school

To tap into their engagement with school, students were asked if school was a place where they: felt like an outsider; made friends easily; felt they belong; felt lonely or bored; and considered other students seem to like them.

The PISA study results for New Zealand established a clear link between the performance of 15 year olds and their expressed engagement in school. Students who reported positive attitudes towards school on these questions performed better on average than students who did not report such attitudes. For boys, the relationship between engagement with school and reading achievement was stronger than it was for girls. For Asian and Pasifika students the relationship was stronger than for Pakeha or Māori students.

These results reinforce the view that if a student holds positive attitudes toward school, they will get the most out of the learning opportunities that are provided there. Looking at students' responses to the questions they were asked in this study, we can see that developing and maintaining students' engagement with school would include creating a greater sense of belonging and making school a place where they want to be. Students who feel comfortable at school are likely to be doing better. The PISA study demonstrates this is particularly true for Asian and Pasifika students.

² This overview talks about the relationship or association between achievement (e.g. in reading literacy) and other factors (e.g. enjoyment of reading). It is important to remember that this is not intended to imply that one thing is causing the other. For example, it is not clear to what extent reading for enjoyment might improve reading skills or whether better readers might enjoy reading more or to what extent some other aspects of a student's background contribute to both reading skill and reading enjoyment.

³ Unless otherwise stated, when achievement or performance is referred to in this overview it relates to achievement in reading literacy in PISA 2000.

Interest in reading

There is often a strong link between interest in reading and performance, so students were asked whether they: read in their spare time; got absorbed in reading; and found it fun and not something they would want to give up.

Girls and Asian students were likely to indicate a stronger interest in reading than students in other groupings. In general, those students who indicated a greater interest in reading did better on the reading literacy assessment. This was true for both boys and girls. There was also a strong link between interest in reading and achievement for Pakeha, Māori and Asian students. Interest in reading was not so clearly linked to achievement in reading for Pasifika students.

Engagement in reading

To judge students' engagement in reading they were asked a number of questions. Typical examples were about: reading as a favourite hobby; finding it hard to finish books; and how much they liked talking about books with other people.

Although girls reported being generally more engaged with reading than boys, it was clear that, irrespective of their gender, those students who reported engagement with reading performed better than those who did not.

In general, Asian students reported the highest level of engagement in reading whereas Māori reported the least. The level of engagement in reading seemed to be mostly clearly linked to performance on the reading literacy tasks for Pakeha students.

Reading activities - what do students read and how often?

To assess their level of reading activity, students were asked both how often they read and what they were reading.

On the whole, the greater the amount of time spent reading a diverse range of material, the better the performance. However, the group of students who reported the highest level of reading activity did not outperform the students who reported more moderate levels of activity.

Overall, Asian students reported reading the widest range of material, and more often, than Pasifika, Pakeha and Māori students respectively.

The different aspects of reading that were explored in PISA give us an indication of the kinds of factors that are associated with success in reading. The information on reading that comes out of PISA suggests that, as well as simply encouraging students to read, providing material that students are interested in and encouraging them to read a variety of different types of material is also important. The biggest gains to be made here could be for some of our Māori students who, as a group, expressed the least interest in reading.

Interest in mathematics

Interest in maths is often linked with achievement in maths literacy, although the link can be less apparent than with interest in reading. To assess their interest in maths, students were asked whether they: thought maths was important to them personally; got absorbed in maths; and found it fun and not something they would want to give up.

Nearly three in five students thought maths was important to them personally and about half agreed that maths was absorbing. Interest in maths was found to be linked to achievement in maths literacy, but the link was not quite as strong as that between interest in reading and reading literacy.

In contrast to interest in reading, this time it was the boys rather than the girls who were more interested in maths. As a group, Asian students reported being considerably more interested in maths than students in other ethnic groupings.

Learning strategies

Good learners are able to apply a range of learning strategies in a flexible manner. On the other hand, students who have difficulty managing learning often lack learning strategies or use the wrong ones.

Some specific learning strategies were assessed in PISA. Questions about these strategies asked students how they controlled their learning, whether they used memorisation and elaboration techniques and how they worked with others. As with engagement and interest, this information provided by the students lets us look at the links between how students report applying learning strategies and how they do on the PISA reading literacy assessment tasks.

Control strategies

Control strategies are used by students to complete tasks. To find out how students used control strategies, they were asked the extent to which they: figured out what they needed to learn; checked back to remember what they had learned; tried to figure out what concepts they hadn't really understood; and sought additional information to clarify things they did not know.

In all countries, students who reported making the most use of these control strategies performed better in reading literacy than those who made less use of them. This association was particularly strong for New Zealand students.

Girls reported making more use of control strategies than boys. Asian students were likely to report making more use of control strategies than students in other ethnic groupings. Māori students, as a group, reported making less use of control strategies.

Memorisation strategies

Students need to memorise new information and to understand how it relates to their prior knowledge. To assess their use of memorisation strategies, they were asked how frequently they tried to memorise: everything that might be covered; as much as possible; all new material so that they could recite it; and how often they practised saying the material to themselves over and over.

New Zealand students reported using memorisation strategies far more frequently than students in other countries. New Zealand students who scored well in reading literacy said they used these strategies more often than those who did not score well. Girls were more likely to use memorisation than boys and Asian students were more likely to use memorisation strategies than students in the three other ethnic groupings.

Elaboration strategies

Elaboration strategies involve students relating new material to what they already know. Students were asked about the frequency of: trying to relate new material to things they have learned in other subjects; figuring out how the information might be useful in the real world; trying to understand the material better by relating it to things they already know; and figuring out how the material fits in with what they have already learned.

New Zealand students reported using elaboration strategies more frequently than students in other countries. In New Zealand those students who reported using elaboration strategies frequently did not perform a great deal better on average than those students who used the strategies less often. This was the case for both boys and girls. They reported about the same level of use of these strategies.

Elaboration strategies had a stronger link with performance on the literacy tasks for Pakeha and Māori students, than for Asian and Pasifika students. Asian students reported the most frequent use of elaboration strategies.

It is clear from the responses of these 15 year-old students - to questions about the strategies they adopt in every day situations to assist their learning - that there are differences in the extent to which and manner in which the strategies are used.

This information suggests it would be helpful to find out more about the strategies students use to work things out for themselves. The use of control strategies, which focus on how students complete tasks, is, in particular, consistently linked to better performance on the reading literacy tasks. This points to the value of developing and encouraging the use of such strategies. The information from this study indicates that encouraging boys and Māori students to develop and use control strategies is particularly relevant. Working with students to develop the type of memorisation and elaboration strategies tapped into in PISA is also likely to facilitate learning.

Co-operative and competitive learning

Co-operative and competitive learning can complement each other and add to learning efficiency. To tap into co-operative learning, students responded to questions such as whether they liked to work with other students and whether it is helpful to put together everyone's ideas when working on a project. To tap into competitive learning, they responded to questions such as whether they liked to try to be better than other students and whether they learn faster if they are trying to do better than others.

Most students indicated that they liked to work both co-operatively **and** competitively. However, girls were more likely to agree they liked to work co-operatively and boys were more likely to agree they liked to work competitively.

Among ethnic groupings, Pasifika students were most likely to agree that they worked co-operatively, while Asian students reported working more competitively.

Both competitive and co-operative strategies were positively associated with reading performance, although the relationship was stronger for competitive than for co-operative learning. For Asian and Pasifika students, the link between competitive learning and reading performance was weaker.

It is evident from PISA that students enjoy the challenges of working in both competitive and co-operative ways and that both are positively linked to achievement. Although there is evidence in PISA to suggest gender and ethnic grouping preferences, in terms of links with achievement, PISA suggests it is appropriate to encourage all students to make the most of opportunities that allow for both co-operative and competitive learning.

Time spent on homework

Time spent on homework represents the amount of time students were engaged in doing homework for language, science and mathematics.

Girls reported spending more time on homework than boys. Among ethnic groupings, Asian students reported the biggest investment in homework followed by Pakeha, Pasifika and Māori students.

While, in general, the more time students invested in doing homework the better their outcomes, those students who reported doing a moderate amount of homework performed just as well as those who reported doing a heavy amount of homework. This could indicate either that investment in homework beyond an amount of time may not have many benefits or, more probably, that less able students tended to invest more time in homework to perform well.

Students' self-concepts

It is generally understood that if students feel confident in their work they are more likely to do well. Here we look at the link between the way students felt about themselves in relation to reading and mathematics⁴ and, more generally, in terms of their academic ability and their performance.

⁴ The questions around self-concept were a component of PISA that was considered in the context of literacy and numeracy in a broad sense. This is why analyses with reading literacy and mathematical literacy but not scientific literacy have been reported here.

Self-concepts in reading and mathematics

Although English is broader than just reading, to get an indication of students' self-concept in reading they were asked about whether they: thought they were hopeless in English; learned things quickly in English; and got good marks in English.⁵ Similarly, in terms of their self-concept in maths, students responded to questions on whether they: got good marks in maths; had maths as one of their best subjects; and have always done well in maths.

New Zealand students generally expressed a lower level of confidence in their ability in English than students in other countries in their language of assessment. This was in contrast to the fact that New Zealand's student mean score for reading literacy was the third highest among the 32 participating countries.

However, the story for maths was more consistent. The high ranking gained overall by New Zealand students in mathematics literacy reflected the students' higher expressed level of confidence in maths.

Girls were more confident in their ability in English while boys were more confident in their mathematical abilities. There was a strong link between self-concept and performance for both girls and boys.

Students in each of the four ethnic groupings, particularly Pasifika and Asian, reported a relatively low self-concept in English. Nevertheless, there was a strong positive association with reading literacy for all groupings. There is some indication that Asian and Pasifika students may underestimate their ability in English.

Asian students were by far the most confident in mathematics, although students in other ethnic groupings had positive self-concepts. For all students, particularly Asian and Pakeha, a positive self-concept was related to higher average scores on the maths literacy tasks.

Self-concept in academic ability

In this context students were asked if they learned things quickly and were good at and/or did well in tests in most school subjects.

New Zealand students generally had a more positive self-concept about their academic ability than students in other countries. Both boys and girls were generally confident in their academic ability, as were students in all ethnic groupings. There was a strong positive relationship between a positive self-concept and achievement.

PISA clearly shows how critical it is to reinforce students' positive perceptions of their own abilities if we want them to perform well in school and beyond. Such encouragement would assist them to build the confidence in themselves that is linked to good outcomes. It is important to recognise that some Asian and Pasifika students can feel less confident in English and building their confidence in this area is a particular challenge.

Computers as a tool for learning

Computer skills are seen as a particular asset for further education, training and getting a job. Students with little or no experience with computers may experience limitations, particularly in relation to getting a job. To gauge students' comfort with, ability to use and interest in computers they were asked a number of different questions.

⁵ In all countries the language that students were asked about was the language in which they were assessed in PISA.

Comfort with and perceived ability to use computers

Students were asked how comfortable they were with using a computer and using a computer to write a paper or take a test; and, if they had to compare themselves with other 15 year-olds, how they would rate their ability to use a computer.

Almost two-thirds of the New Zealand students rated their computer ability as good or excellent. Computer ability was linked to higher achievement in reading literacy.

Boys reported being slightly more comfortable with and able to use computers than girls but the association with reading achievement was stronger for boys. While students in each of the ethnic groupings were comfortable and able with computers, Pakeha and Asian students generally reported that they were more comfortable than their Māori or Pasifika counterparts.

Interest in computers

To gauge student interest in computers they responded to statements about the importance of their working with a computer, whether playing or working with a computer is fun and whether they forget the time when working with a computer.

In their responses to these statements, New Zealand students signalled they were less interested in computers than students generally in the other countries. The association between how well students performed on reading literacy tasks and interest in computers was weak in New Zealand.

Girls were less interested in computers than boys, while Asian students expressed more interest than other students. Pakeha and Māori reported the least interest in computers.

In New Zealand, interest in computers was not strongly linked to achievement in reading in PISA. However, there was a much clearer link between achievement and a student's self-assessment of their ability with computers. This suggests there may be benefits in devising new and interesting projects for using a computer and enabling students to have access to a computer.

About the family

The results from this study establish clear links between aspects of the family and student performance on the PISA assessment tasks. The aspects we focus on here relate to communication between students and their parents and the different resources that can support learning.

Social and cultural communication - talking to parents

To gauge the extent of social communication with their parents, students were asked how often they: discussed how well the student was doing at school; spent time just talking; and ate the main meal together. To gauge cultural communication, students were asked how often they discussed social and political issues, books, films or television programmes and/or listened to music together. These both represented measures of the quantity not quality of the communication.

As parents' or guardians' involvement in their children's education can be an important contributor to their achievement, students in PISA were asked about two types of communication - social and cultural. While it is acknowledged that there are different aspects to cultural and social communication, those covered here have been established through previous research to be good indicators of cultural and social communication in many countries.

Compared with students in other participating countries, overall students in New Zealand reported lower levels of *social* communication, but reported slightly higher levels of *cultural* communication. The link between both these types of communication and reading achievement tended to be weaker in New Zealand than in other countries.

Girls, on average, reported talking to their parents or guardians more often about *cultural* topics and for girls the link between this type of communication and reading achievement was stronger than for boys. For boys the link was still positive, but weak.

Compared with other ethnic groupings, Asian students reported talking the most with their parents about *cultural* topics. However, for Asian students, those who reported the most cultural communication tend to have slightly lower achievement in reading literacy.

Students in all four ethnic groupings reported low levels of *social* communication.

The links between students' communication with their parents or guardians and their level of achievement were somewhat weaker in New Zealand than in other countries that participated in the PISA study. However, the benefits of talking to students about their activities at school, discussing family matters and wider community or national issues are still evident. There is a stronger association for Māori and Pakeha students between achievement and communicating frequently with parents.

Educational resources in the home

To gauge the level of educational resources they had at home, students were asked about specific items. Students were asked to report on the availability (and numbers) of a dictionary, a quiet place to study, a desk for study and textbooks and calculators.

On the whole New Zealand students reported about the same level of resources in their homes as found on average in other participating countries.

Girls were slightly more likely to indicate access to these educational resources in the home than boys and Asian and Pakeha students more likely to indicate access than Māori and Pasifika students.

Although some students seem to be able to produce good results without access to these educational resources, overall there is a strong link between home education resources and achievement for students irrespective of their gender or ethnic background. But it is important to note that higher levels of educational resources tend to be found in wealthier homes and we have not attempted here to disentangle the associations with performance that are due to the wealth of the family and the presence of these resources.

These results are quite consistent with those found in other studies and reinforce the importance of students having access to places where they can study quietly with a desk and other tools that support their learning. Creating access to this type of resource, particularly for Māori and Pasifika students, is a challenge that people are already responding to and one which, it seems, has the capacity to make a real difference to learning.

Family education support

Family support measures the extent to which family members (mothers, fathers, brothers and sisters) help students with their schoolwork. It is used here as a further measure of family involvement in education.

New Zealand students, both boys and girls, reported a high level of family support in their education but the level of support was generally not strongly related to reading achievement. As a group, Pasifika students reported receiving the most support.

Those students who reported the very highest level of family support generally did not tend to perform as well on the PISA assessment reading tasks as those reporting more moderate levels of family support. This was true in almost all countries that took part and probably means that these students were in greater need of assistance and tended to receive more support from their family members.

About the school

As well as relating aspects of the family to how students performed on the PISA assessment tasks, the PISA study also looked at aspects of the school environment. The aspects related to their teachers, the school and classroom climate and the material and educational resources invested in education.

The PISA study did not seek information from teachers. In describing aspects of schools it has drawn only on information from the students and from school principals.

We would really have liked to have been able to seek teacher perspectives on some of these issues as well, but this was complicated by two issues. Firstly, students at this age have a number of teachers and the question arises as to which ones should be nominated to respond to PISA background questions. In other studies we nominate the class teacher, but this would not work well for PISA because the students are selected from various classes throughout the school. Secondly, students have also been taught by many teachers throughout their school life – and PISA is interested in assessing the impact of all school experience – what it calls the *cumulative yield* of education.

At the moment the organisation that runs the PISA study is looking at ways in which it can incorporate teacher perspectives. This is because there is a real consensus among countries that teacher views are very important. While such views are not able to be sought in the next phase of PISA that takes place in 2003, this is becoming a priority for future phases.

Teacher attitudes and behaviour

Teacher support

There is plenty of evidence to show that teacher support can greatly influence students' learning. Such support encompasses teachers' expressed interest in, expectations of and assistance for their students. In this study it was gauged through the students' answers to questions about how often in English lessons teachers: showed an interest in every student's learning; gave students an opportunity to express opinions; helped students with their work; and continued teaching until the students understood.

The level of support students felt they received from their teachers varied substantially across the different countries that took part in the study, but it was clear from their responses that New Zealand students considered their teachers to be supportive. However, the extent to which students felt supported by their teachers was not linked in any systematic way to how they performed on the PISA assessment tasks.

Overall girls reported their teachers as being more supportive than boys. In some cases, of course, the teachers are the same for the boys and girls.

Pasifika students reported the highest level of support from their teachers. However, for these students, there was some evidence that students registering the most support from their teachers were not performing as well as their peers on the reading literacy assessment tasks. This may indicate that teachers were providing the most support for students considered in most need.

For Māori the pattern was reversed. Māori students reported the second highest level of support from their teachers, but for these students there was a positive link between the level of teacher support and their performance. The links between perceived teacher support and performance were very weak for Pakeha and Asian students.

Student-teacher relations

To assess student-teacher relations students were asked about how strongly they agreed (or otherwise) that: they get along with most teachers; most teachers are interested in students' well-being; most of their teachers really listen to what they have to say; if they need extra help they will receive it from their teachers; and most of their teachers treated them fairly.

New Zealand students rated their relations with their teachers slightly less positively than they had the support they received from those same teachers. While this did not represent a substantial gap it is possible that, while students might recognise and acknowledge a teacher's support, they do not necessarily establish a positive relationship with that teacher.

Both girls and boys generally reported positive relationships with teachers. Asian students reported the strongest level of agreement to these questions about their teacher, followed, in order, by Pasifika, Pakeha and Māori. The study showed that there is some link between how students generally perceive their relationship with their teacher and how they perform on the assessment tasks, although this did not hold for Asian students.

Teacher-related behaviour and school climate

Principals were asked whether they thought teachers' behaviours and attitudes hindered learning in their school. The specific teacher behaviours and attitudes that principals were asked to reflect on included whether teachers: had low expectations about their students; had poor relationships with students; did not encourage students, particularly in relation to reaching their full potential; and did not meet individual students' needs. In addition principals were asked about teacher absenteeism, staff resistance to change and how strict teachers were with students.

From the perspective of New Zealand principals generally, the behaviours and attitudes of teachers in their schools did not hinder student learning any more or less, on the whole, than reported by principals in the other countries taking part.

In line with international trends, in New Zealand schools where principals reported that teacher behaviour and attitudes did not hinder learning, the students performed better on the PISA assessment tasks.

In terms of the schools that students attended, Pasifika students were most likely to attend schools where the principal reported that teachers' behaviours and attitudes **could** hinder learning. Māori were next most likely to attend these schools, followed by Pakeha and Asian respectively.

Teacher morale and commitment

Principals were also asked the extent to which they agreed (or otherwise) that the morale of teachers in their school is high and whether teachers: work with enthusiasm; take pride in the school; and value academic achievement.

Principals reported a higher level of morale and commitment among teachers in their schools than was the case, on average, for principals in other participating countries.

Students in schools with high teacher morale, as gauged by principals, generally tended to achieve higher reading scores. The association was stronger for boys than girls. Asian students tended to be in schools where the principal reported the highest level of morale, while Pasifika students tended to be in schools where they reported the lowest level of morale. For non-Pakeha students in particular, the greater the perceived morale and commitment of teachers, the higher students' scores in reading literacy.

Student attitudes and behaviour

Student-related behaviours and school climate - classroom discipline

Principals and students were asked to comment on discipline at their schools. Students were asked about work habits, how their classmates knuckled down to tasks, and noise and disorder in the classroom. Principals were asked about absenteeism, disruption, wagging, bullying and drug use etc.

Although students and principals were asked to respond to different questions, in New Zealand, as in many countries taking part, there was a relatively high level of agreement between the views of principals and students on student-related aspects of disciplinary climate.

When the responses from New Zealand students were compared with those from students in other countries that took part in PISA, boys and girls in this country generally reported disruptive student behaviour hindered learning in their class to a greater extent. This was also the case for students in all ethnic groupings, but particularly for Māori and Pasifika students.

Students reporting a greater degree of student discipline in their classroom achieved, on average, higher reading literacy scores. Students attending schools where their principals said they had few disciplinary problems also tended to perform better.

Relative to students in other ethnic groupings, Pasifika and Māori students tended to be in schools where principals reported a relatively negative perception of discipline.

The schools' physical infrastructure and educational resources

To gauge the quality of a schools' infrastructure, principals were asked about the extent to which learning by 15 year-olds in their school was hindered by: poor conditions of buildings; poor heating and cooling and or lighting; and lack of instructional space (e.g. classrooms). To gauge the quality of the educational resources they were asked similarly about whether they had a lack of computers: for instruction; laboratory equipment; and facilities for the fine arts.

Principals did not report that either the quality of their schools' infrastructure or a lack of resources were a hindrance to learning in their school. Any perceived problem with infrastructure or resources had little or no link to how students performed on the reading literacy tasks, except for Pasifika students. Here there was a moderate association.

More Information and future activities

This summary report provides a brief overview of only some of the extensive information available from the PISA study. We have focused here on students interest and engagement in learning, the learning strategies they used, their self-concepts, their family environment, and their school environment. As noted on page two, more information can be found at the Ministry of Education's website at www.minedu.govt.nz/goto/pisa. Any future reports on PISA from New Zealand's Ministry of Education will be placed on this site. In addition to the information currently available, there are many more reports planned by the OECD and other research organisations which focus on particular aspects of PISA.

PISA will be administered around the world every three years. While reading literacy, mathematical literacy and scientific literacy will continue to be examined, the focus area will rotate. Consequently, whereas in 2000 reading literacy was the focus, in 2003 mathematical literacy will be the focus and in 2006 scientific literacy will be the focus.

Key findings of reading literacy

- New Zealand students were among the best with the:
 - highest proportion of students at the top level of reading literacy
 - third highest mean score on the combined reading literacy scale
- Girls, students from high decile schools, students from high socio-economic status families, students from single-sex schools (although this is probably linked to socio-economic status) and students from major urban areas perform relatively well
- Some groups who didn't perform as well were still above the OECD mean
- There was a wide spread of scores within schools - it is likely that each school is working with a diverse range of student ability
- It was evident that there were students from each gender and each ethnic grouping who were high performers. Similarly, there were students from each of these groups who were low performers. The performance differences within these groups was greater than the difference between these groups (e.g. there was more variation in performance *among* girls than there was *between* boys and girls).

Key findings of maths and science literacy

- New Zealand is in the top performing group of countries for both maths and science literacy with the:
 - third highest mean score for mathematical literacy, sixth highest for scientific literacy
- There is not much difference between boys and girls in New Zealand in these areas of literacy.
- Students from high decile schools, high socio-economic families and single-sex schools (although this is probably linked to socio-economic status), perform relatively well
- For science literacy, students from major urban schools perform better (no statistical difference for mathematical literacy)
- There was a wide spread of scores within schools - it is likely that each school is working with a diverse range of student ability.

Definitions of literacy in PISA

The following definitions are taken from *Knowledge and Skills for Life: First Results From PISA 2000*, published by the OECD, 2001.

Reading literacy

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

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, occupational life, social life with peers and relatives, and life as a constructive, concerned and reflective citizen.

Scientific literacy

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.