PISA 2003: LEARNING FOR TOMORROW’S WORLD

What is PISA?
The Programme for International Student Assessment (PISA) is a three-yearly survey of 15-year-old students that assesses their knowledge and skills in the three subject areas of reading, mathematics, and science. The assessment tasks tested how well students could use their skills and knowledge in everyday situations.

PISA 2003 was the second assessment in the cycle. Each survey assesses one subject in more detail. In 2003 the focus was on mathematics, and it asked students about their attitudes and approaches to learning mathematics and to their schools. In addition, PISA 2003 also assessed the generic skill of problem-solving.

More than a quarter of a million students from 41 countries (30 in the OECD) took part in PISA 2003, including 4,500 from New Zealand.

A summary of the results were presented in our earlier publication, Learning for Tomorrow’s World: Programme for International Student Assessment (PISA) 2003 – New Zealand Summary Report. A series of five thematic reports build on the summary and provide more comprehensive analysis.

How did New Zealand students compare internationally?
The results show New Zealand students performed significantly higher than the OECD average in reading, mathematics, science, and problem-solving. The average performance of our students placed us in the second highest performing group of countries, along with Australia, Canada, and Japan.

We also had proportionally more high-achieving students in all four areas compared to other OECD countries. In particular, we had an exceptionally high proportion of very strong readers.

New Zealand had proportionally fewer low-achieving students in mathematics, science, and problem-solving than most OECD countries. However, compared with other high performing countries, we had a relatively high proportion of low-skill students in mathematics and science and a significant group of students who were weak readers. Thus, in terms of the spread of scores, New Zealand had a wider distribution than many other high performing countries.

What were the differences between different groups in New Zealand?
Overall, in New Zealand, boys did slightly better than girls in mathematics and science, primarily because of the higher proportions of boys reaching high levels of performance. Girls were more likely than boys to be stronger readers, although many boys did read well and the gender gap in reading was smaller in New Zealand than most other OECD countries. There was no significant difference between our boys and girls in problem-solving.

All major ethnic groups have students achieving at the highest level in each of reading, mathematics, science, and problem-solving. However, Māori and Pasifika students were more likely, on average, to have weaker performance in all areas than Pakeha and Asian students. There were significant numbers of Māori and Pasifika students who were very weak readers.

Students from families with high socio-economic status were more likely to perform better than students from families with low socio-economic status.

What do these results mean?
The analysis documented in these reports highlights population groups where few students are reaching high levels of performance. That is, while these students are usually able to master simple tasks, they are less likely to be able to provide solutions for more complex and unfamiliar tasks in mathematics, reading, science and problem-solving. This can have implications for them as adults in a society like New Zealand in which the demand for higher levels of literacy is significantly higher than in the past.

Let’s look at the case of Pasifika girls.
Pasifika girls showed a restricted range of performance compared with how New Zealand students performed, in general, in mathematics. This restricted performance was caused, in particular, by the fact that very few Pasifika girls achieved the higher levels of proficiency (Levels 3 – 6). For example, in mathematics only 11 percent of Pasifika girls were proficient at or above Level 3 and none in the assessment achieved at the highest Level 6.

So, to better support these Pasifika girls in mathematics, we might ask whether information from PISA can shed any light on barriers that make very high performance in mathematics among Pasifika girls unlikely. If schools and families could better understand what factors might be contributing to excellent or poor performance by Pasifika girls they would be in a better position to support their learning in mathematics.

These reports provide insights on pathways to address this issue. For example, the results of the PISA survey revealed girls and boys had different attitudes to mathematics. Girls were less likely to have strong self-belief and were less inclined to say that they were strongly interested in the subject. There is evidence that those attitudes were closely linked to girls’ lower chance of being highly proficient in mathematics. This suggests the need for us to factor in the importance of students’ attitudes to what they are learning and, in this case, to encourage Pasifika girls to feel more positive about mathematics and their ability to do it.

Furthermore, there is evidence that in some domains the variations in scores among students in the different ethnic groupings is less marked than in others. For example, there is less variation in problem-solving between major ethnic groups than in reading, mathematics and science. This suggests some students were showing potential in problem-solving that was not being fully realised in the other subject domains, and that they have cognitive skills that could be a springboard for improving in other areas.

In addition, while their reading results were below the national average, the report notes that Pasifika girls overall had a base of reading ability to build on. Their average reading scores were near the top of Level 2 where students start to provide responses to more complex and less familiar assessment tasks than at the lower levels of proficiency.

For more information on PISA, go to www.educationcounts.govt.nz/goto/pisa