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S Summary

New Zealand's National Education Monitoring Project commenced in 1993, with the task of assessing and reporting on the achievement of New Zealand primary school children in all areas of the school curriculum. Children are assessed at two class levels: year 4 (halfway through primary education) and year 8 (at the end of primary education). Different curriculum areas and skills are assessed each year, over a four year cycle. The main goal of national monitoring is to provide detailed information about what children can do so that patterns of performance can be recognised, successes celebrated and desirable changes to educational practices and resources identified and implemented.

Each year, small random samples of children are selected nationally, then assessed in their own schools by teachers specially seconded and trained for this work. Task instructions are given orally by teachers, through video presentations, on laptop computers, or in writing. Many of the assessment tasks involve the children in the use of equipment and supplies. Their responses are presented orally, by demonstration, in writing, in computer files, or through submission of other physical

products. Many of the responses are recorded on videotape for subsequent analysis.

The use of many tasks with both year 4 and year 8 students allows comparisons of the performance of year 4 and 8 students in 2003. Because some tasks have now been used twice, in 1999 and again in 2003, trends in performance across the four-year period can also be analysed.



| CHILD SINGLE FARES IN \$ DOLLARS | | | | | | | | | | | | | | |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|----|----|
| Panapaeramu | 4.00 | 4.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.50 | 2.50 | 2.50 | 2.00 | 2.00 | 1.00 | 30 | |
| Paeakakahi | 3.50 | 3.50 | 2.50 | 2.50 | 2.50 | 2.50 | 2.00 | 2.00 | 2.00 | 1.50 | 1.50 | 1.50 | 36 | |
| Muri | 3.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.50 | 1.50 | 1.50 | 1.00 | 1.00 | 1.00 | 48 | |
| Pukerua Bay | 3.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.50 | 1.50 | 1.50 | 1.00 | 1.00 | 1.00 | 48 | |
| Pinnermont | 2.50 | 2.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 48 | |
| Mana | 2.50 | 2.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 48 | |
| Paremata | 2.50 | 2.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 60 | |
| Ponoma | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 60 | |
| Kerepuru | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 60 | |
| Ukarewa | 1.50 | 1.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 72 | |
| Tairā | 1.50 | 1.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 72 | |
| Redwood | 1.50 | 1.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 72 | |
| Bikapu Road | 1.50 | 1.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 72 | |
| Kawarauwhara | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 96 | |
| Wellington | 24 | 42 | 42 | 42 | 42 | 42 | 48 | 60 | 60 | 60 | 72 | 72 | 84 | 96 |
| Wellington | 24 | 42 | 42 | 42 | 42 | 42 | 48 | 60 | 60 | 60 | 72 | 72 | 84 | 96 |

ASSESSING SKILLS IN THE USE OF GRAPHS, TABLES AND MAPS

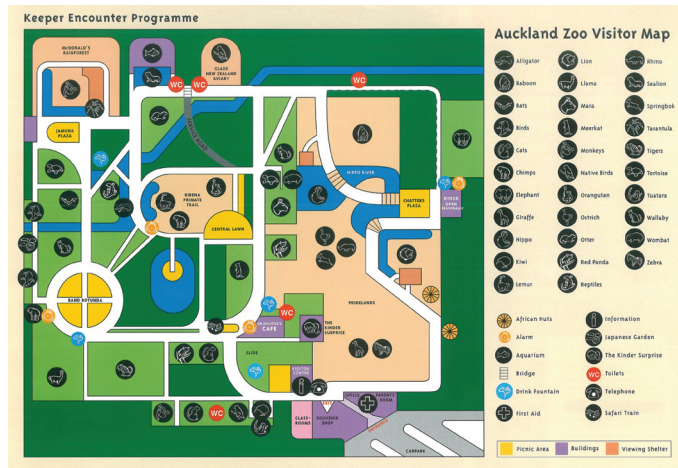
In 2003, the first year of the third cycle of national monitoring, three areas were assessed: science, art, and the use of graphs, tables and maps. This report presents details and results of the assessments of students' skills in the use of graphs, tables and maps. Understanding and using information presented in the form of graphs, tables and maps is an important part of everyday life in our community. This report highlights two aspects of the use of graphs, tables and maps: extracting and interpreting information, and constructing or completing graphs, tables and maps.

INTERPRETATION OF GRAPHS, TABLES AND MAPS

Chapter 3 focuses on extracting and interpreting information from a wide variety of graphs, tables and maps. Averaged across 116 task components used with both year 4 and year 8 students, 76 percent of year 8 students produced correct responses compared to 52 percent of year 4

students. This indicates that, on average, students have made substantial progress between year 4 and year 8 in the skills assessed by the tasks. Nearly one third of the task components were answered successfully by at least 90 percent of year 8 students. Some of the largest differences between year 4 and year 8 students occurred on tasks requiring students to interpret timetables.

Averaged across all 37 components, two percent fewer students succeeded in 2003 than in 1999. This indicates a very small decline in performance for year 4 students over the four-year period. Ten trend tasks involving 60 task components were administered to



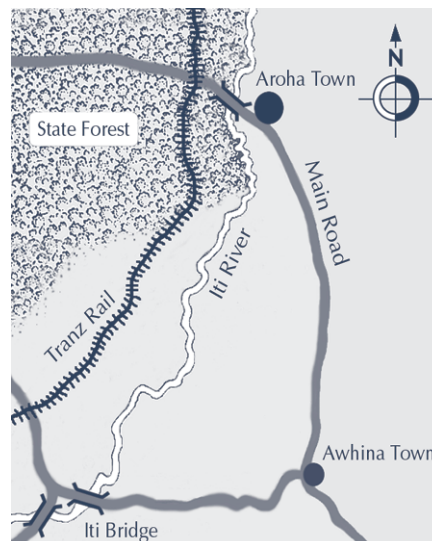
year 8 students in both the 1999 and 2003 assessments. Averaged across all 60 components, one percent fewer students succeeded in 2003 than in 1999. This is not a meaningful change in performance for year 8 students over the four-year period.



CONSTRUCTING OR COMPLETING GRAPHS, TABLES AND MAPS

The focus of **Chapter 4** is constructing or completing graphs, tables and maps. Averaged across 68 task components used with both year 4 and year 8 students, 63 percent of year 8 students produced correct responses compared to 39 percent of year 4 students. This indicates that, on average, students have made substantial progress between year 4 and year 8 in the skills assessed by the tasks. A quarter of these task components were answered successfully by at least 90 percent of year 8 students. Students at both levels were least successful in providing titles and appropriate labels for axes and values, seeming to believe that it was sufficient to display the data.

Three trend tasks involving a total of 14 components were administered to year 4 students in both the 1999 and 2003 assessments. Averaged across the 14 components, 8 percent fewer students succeeded in 2003 than in 1999. Four trend tasks involving 25 task components were administered to year 8 students in both the 1999 and 2003 assessments. Averaged across the 25 components, one percent fewer students succeeded in 2003 than in 1999, an insignificant change.



PERFORMANCE OF SUBGROUPS

Chapter 5 reports the results of analyses that compared the performance of different demographic subgroups. School type (full primary or intermediate), school size, community size, geographic zone and student gender did not seem to be important factors predicting achievement on the graphs, tables and maps tasks. The other four factors revealed more substantial differences.

There were statistically significant differences in the performance of students from low, medium and high decile schools on 51 percent of the tasks at year 4 level and 73 percent of the tasks at year 8 level (the comparable figures in 1999 were 52 percent and 84 percent).

In earlier NEMP reports, the performance of Māori students was compared to that of all other students. Starting with the 2003 reports, three groups are now distinguished: Māori



students, Pasifika students and all other students (described as Pakeha students). This change prevents satisfactory direct comparisons with the results from 1999.

For the comparisons of Pakeha with Māori, Pakeha with Pasifika students, and students for whom the predominant language at home was English with those for whom it was not, effect sizes were used. Effect size is the difference in mean (average) performance of the two groups, divided by the pooled standard deviation of the scores on the particular task.

Pakeha students scored statistically significantly higher than Māori students on 49 percent of year 4 tasks and 71 percent of year 8 tasks, with average effect sizes of 0.33 and 0.40 respectively. These can be described as moderate effect sizes.

Pakeha students scored statistically significantly higher than Pasifika students on 59 percent of year 4 tasks and 78 percent of year 8 tasks, with average effect sizes of 0.50 and 0.70 respectively. These can be described as large effect sizes.

Compared to students for whom the predominant language at home was English, students from homes where other languages predominated scored statistically significantly lower on 43 percent of year 4 tasks, reducing to 27 percent of year 8 tasks. The corresponding mean effect sizes were 0.35 and 0.27, which can be described as moderate effect sizes.

SUMMARY OF PERFORMANCE TRENDS

An indication of overall trends in performance across the four-year period between 1999 and 2003 can be obtained by looking at the patterns of change across all of the trend tasks. Averaged across 51 components of the year 4 trend tasks, 4 percent fewer students succeeded in 2003 than in 1999. Averaged across 85 components of the year 8 trend tasks, one percent fewer students succeeded in 2003 than in 1999.

The report on the 1999 graphs, tables and maps assessments reported trends between 1995 and 1999, with an average gain over that four-year period of six percent on year 4 trend task components and a decline of one percent on year 8 trend task components. Taken together, these two sets of trend results suggest little change in performance overall, at either year level, for the eight year period from 1995 to 2003.

