

## **Achievement in Literacy and Numeracy by Australian 14 year-olds, 1975-1998.**

**(LSAY Research Report Number 29)**

**Sheldon Rothman**

**November 2002**

### **EXECUTIVE SUMMARY**

Literacy and numeracy are mainstays in Australian schools and have formed the basis for the first national education benchmarks. In 1997, Education Ministers agreed on a national goal, 'that every child leaving primary school should be numerate, and be able to read, write and spell at an appropriate level'. This goal was given more formal status in April 1999, when the Ministerial Council on Education, Employment, Training and Youth Affairs agreed on a wider set of goals for education in Australia in The Adelaide Declaration on National Goals for Schooling in the Twenty-first Century.

This LSAY Research Report examines student achievement scores on tests of reading comprehension and mathematics from five studies conducted between 1975 and 1998. The data are from five studies involving young people in Australian schools. The first, the Australian Studies in School Performance, conducted in 1975, and the second, the Australian Studies of Student Performance, conducted in 1980, were major studies of the academic achievements of 10-year-olds and 14-year-olds in Australian schools. The other studies—Youth in Transition in 1989 and the Longitudinal Surveys of Australian Youth in 1995 and 1998—were studies of young people's transitions from school, and included tests of reading comprehension and mathematics similar to the tests used in the earlier achievement studies. The first three studies, in 1975, 1980 and 1989, used 14-year-olds in Australian schools; most of these students were enrolled in Year 9 at the time of the study. The last two studies, in 1995 and 1998, used students in Year 9, most of whom were 14 years of age at the time.

The report examines trends for all students and for smaller groups of students, with results reported by gender, language background, socioeconomic status and location. Multivariate analyses examine how influences on literacy and numeracy among 14-year-old students have changed between 1975 and 1998. It was determined that the subgroup of 14-year-old students was the most appropriate group to use for the multivariate analyses, because changes in school-entry ages and grade retention practices affected the composition of the subgroup comprising 14-year-olds in Year 9. For the trends reported in this Executive Summary, results are presented for only the subgroup of 14-year-old students. Details for all subgroups are contained in the body of the report.

#### Trends In Literacy

There has been little change in the average level of achievement on tests of reading comprehension between 1975 and 1998. During this period, mean scores have been stable, and there has been little change in the distribution of scores.

- Female 14-year-old students scored higher in reading comprehension in 1998 than they did in 1975, and male 14-year-old students scored lower. As a result, the difference between males and females in reading comprehension scores increased between 1975 and 1998. In all cohorts, the difference between males and females in reading comprehension was statistically significant.

- Achievement on tests of reading comprehension improved significantly over the period for students whose main language was not English. In all cohorts, the mean for students from language backgrounds other than English (LBOTE) was significantly lower than the mean for students from English-speaking backgrounds; however, mean scores increased for LBOTE students, the proportion of students with scores of 50 and above increased, and the proportion with scores below 40 decreased. Language background also had a statistically significant effect at the school level. In addition to the influence of language background at the student level, as a school's percentage of students from other language backgrounds increased, its scores on tests of reading comprehension decreased.
- The mean score for students with parents in the professional/managerial group decreased significantly over the period, but the distributions have been relatively constant. For students with parents in the production/labourers group, there has been little change in the mean score or in the distributions. Although the difference in the means for these two groups has decreased between 1975 and 1998, all differences were statistically significant. During this period, the school-level measure of socioeconomic status has increased in its influence on reading comprehension scores.
- Mean scores and distributions for student location showed little change over the period. Differences by location were small and not significant across all cohorts, with students from metropolitan locations scoring at the same level as students from non-metropolitan locations.
- The analysis of data for Indigenous Australian students was limited to results for 1995 and 1998, because of sample sizes in the earlier data. The mean score for Indigenous Australian students in the 1995 cohort was not significantly different from the mean score for the 1998 cohort. Differences between Indigenous students' mean scores and non-Indigenous students' mean scores were statistically significant in both years.

#### Trends In Numeracy

Between 1975 and 1998, students' scores on mathematics tests fluctuated, but there was no significant difference between scores achieved by the 1975 and 1998 cohorts. There were some significant differences between groups, and within groups.

- Male students increased their mean score between 1975 and 1998, but there was no difference in female students' means over the period. In all cohorts, differences between male and female students' mean scores were statistically significant. This result is different from results reported for Australia from recent international studies of academic achievement for 13-year-olds (TIMSS) and 15-year-olds (PISA).

- In mathematics, 14-year-old LBOTE students improved their mean score, while there was no change for English-language background students. Although differences in the mean scores between the two groups decreased over the period, the differences were statistically significant in both 1975 and 1998. In the multivariate analyses, the negative influence of other-language background on achievement scores decreased over the period but remained statistically significant. In addition to the influence of language background at the student level, as a school's percentage of students from other language backgrounds increased, its scores on tests of mathematics decreased.
- Among 14-year-old students, those with parents in the production/labourers group had stable mean scores in mathematics, while mean scores for students from the professional and managerial occupational group declined significantly during the period. As a result, differences between groups I and IV declined, but remained statistically significant. These differences were confirmed in the multivariate analyses, which also showed that the school-level measure of socioeconomic status increased in its influence over the same period, as it did for reading comprehension.
- There were no significant differences in mean scores between students from non-metropolitan schools and students from metropolitan schools. There were also non-significant differences noted in the multivariate analyses.
- The analysis of data for Indigenous Australian students was limited to results for 1995 and 1998, because of limitations of the earlier data. The mean score for Indigenous Australian students in the 1995 cohort was not significantly different from the mean score for the 1998 cohort. Differences between Indigenous students' mean scores and non-Indigenous students' mean scores were statistically significant in both years.

#### Implications

Between 1975 and 1998, there have been many changes in Australian society and Australian education. Enrolments in Australian schools increased rapidly, and the completion of Year 12 by all students has become a major target. The cultural mix of Australia has increased, with increases in the numbers of people from countries where English is not the main language spoken. There has been increased interest in the academic performance of females and males, as separate groups with individual needs, and there has been increased understanding of the role of socioeconomic status in academic and non-academic aspects of education.

The results reported here indicate that the achievements of Australian 14-year-olds in reading comprehension and mathematics have remained constant during the period. For some groups, there has been improvement, most notably for students from language backgrounds other than English. For other groups, however, results indicate a significant achievement gap. The most significant gap is between Indigenous Australian students and all other students in Australian schools. Indigenous Australian students' scores suggest that they will be less likely to complete Year 12 at school, enter higher education or make a

successful transition to employment. Without support targeted at their educational needs early in their school careers, Indigenous Australian students will continue to have less favourable outcomes in the future.