

LSAY Research Report 36

Influences on Achievement in Literacy and Numeracy

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EXECUTIVE SUMMARY

This report examines the influence of a range of factors on the literacy and numeracy achievement levels of Year 9 students in Australia. The data are from the Longitudinal Surveys of Australian Youth (LSAY), which studies the progress of cohorts of young Australians as they make the transition from school to work and further education and training, beginning in Year 9. Previous reports from LSAY have shown that strong skills in literacy and numeracy assist young people in making successful transitions from school. This report examines what factors influence levels of achievement in literacy and numeracy in Year 9, by examining data on students and schools.

Three sets of questions form the basis of this report:

- What factors contribute to differences in literacy and numeracy achievement among Year 9 students in Australian schools? Are these factors the same as factors that have been found to contribute to literacy and numeracy achievement in other studies, from Australia and overseas?
- How much of the variation in student achievement in literacy and numeracy can be attributed to differences between students and how much can be attributed to differences between schools?
- How much of the overall variation in student achievement in literacy and numeracy can be explained at both the student and school levels?

The data used in this report were obtained from students in the first wave of LSAY, when Year 9 students took a reading comprehension test and a mathematics test, and completed a questionnaire that provided other student background information. The data were analysed using hierarchical linear modelling to account for the sample design of LSAY. Modelling procedures followed a theoretical construct, incorporating variables believed to be important influences on achievement in literacy and numeracy. In addition, variables were selected to ensure consistency between cohorts and between literacy and numeracy. Included in the analyses were variables relating to students (gender, Indigenous background, language background, home location), their parents (education level, occupation, birthplace), attitudes toward school, aspirations and self-concept.

Influences on Literacy and Numeracy

Approximately one-sixth of the variation in achievement scores on both the reading comprehension tests and the mathematics tests could be attributed to differences between schools. This finding is similar to findings for Australian students who participated in TIMSS and PISA, two recent international studies of student achievement. A little more than one-half of this between-schools variance could be explained by differences in the student composition—school socioeconomic status (SES) and the proportion of students from language backgrounds other than English in the school—and the school climate.

At the student level, there were similarities and differences between literacy and numeracy findings across the cohorts. Similarities include influences of SES, students' aspirations and students' attitudes, although there were some differences in the strength of each influence. Gender was shown to influence both literacy and numeracy achievement levels, but in opposite directions: Males scored higher than females in mathematics, and females scored higher than males in reading comprehension. For Indigenous students, achievement scores were significantly lower on the reading comprehension tests and significantly lower on the mathematics tests. Students with plans to attend university scored significantly higher on both the reading comprehension tests and the mathematics tests.

A number of variables were shown to influence achievement in literacy but not in numeracy. Students had lower reading comprehension scores if they were born in a non-English-speaking country or their mothers were born in a non-English-speaking country. Students whose fathers had completed some form of post-secondary education scored higher in reading comprehension. Finally, among the Year 9 class of 1998, students whose mothers had completed secondary education scored higher on the tests of reading comprehension. The statistically significant influences on literacy and numeracy achievement represented a little more than 10 per cent of the student-level variation.

Implications

Previous LSAY reports have identified the importance of achievement in literacy and numeracy. Lower achievement has been associated with lower engagement with school, lower participation in Year 12, lower tertiary entrance scores and less successful transitions from school. The identification of influences on literacy and numeracy achievement levels among Year 9 students can assist schools and education systems to develop appropriate responses to reduce the incidence of low achievement in literacy and numeracy.

The magnitude of the differences in achievement test scores for Indigenous students indicates that much work is still required to increase literacy and numeracy achievement among Indigenous Australians. Literacy and numeracy programs, such as the Commonwealth Government's National Indigenous English Literacy and Numeracy Strategy, are required to increase achievement in these areas, not only in the early years but through the middle years as well.

Gender is a factor that influences both literacy achievement and numeracy achievement, with females scoring higher on tests of reading comprehension and males scoring higher on tests of mathematics. While early school programs focus on the needs of boys in literacy and girls in numeracy, the middle-school years also require the exploration and implementation of gender-relevant programs designed to ensure all students achieve appropriate levels in reading comprehension and mathematics.

This report has shown a strong link between SES and student achievement in both literacy and numeracy, consistent with other research in LSAY and other studies. The link was found to influence differences in achievement levels between students and differences in achievement levels between schools. It is suggested that further research be conducted to examine the nature of this link, to investigate how SES influences individual student achievement and how a school's average SES influences achievement.