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Literacy and Numeracy in Australian Schools

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The Study

The Australian Study of School Performance sought to measure performance in reading, writing and number work of ten- and fourteen-year-old students in normal schooling throughout Australia. Background data on the students and information on teacher perceptions of the nature and extent of any learning difficulties experienced by individual students were also collected. The Study was undertaken at a time when there was increasing concern for quality and standards in Australian education.

Of the 7 000 ten-year-old and 7 000 fourteen-year-old students selected for testing, 6 628 ten-year-old and 6 247 fourteen-year-old students were tested in 600 primary and secondary schools. The samples were selected in such a way that test results obtained by students in the sample enable reliable estimates to be made of the achievement of all ten- and fourteen-year-old students in normal schooling throughout Australia.

The tests used were criterion referenced in that each test item was designed to test the mastery of a specific task or skill. The items finally chosen for inclusion in the tests were those testing content, abilities and usages considered by the test constructors to be essential for the student's full participation in the activities of Australian society and for his continued progress through the educational system.

Some details of the sampling and test development for the ASSP were given in the last *ACER Newsletter* (No. 26, March 1976).

An overview of the results obtained on the Reading, Writing and Numeration Tests is now given. Detailed

results will be available in the First and Item Reports, Literacy and Numeracy in Australian Schools, when these are published by the Australian Government Publishing Service.

Reading

From the results obtained it is estimated that three per cent of ten-year-old students and 0.8 per cent of fourteen-year-old students could not read very simple sentences. These proportions indicate that approximately 7 500 students at the ten-year-old and 2 000 at the fourteen-year-old levels in normal schooling throughout Australia have not mastered the skills of reading sufficiently well to comprehend the meaning of sentences such as 'He is taller than his sister' and 'The woman was surprised to see the horse inside'. At the younger age level these estimates indicate that, on the average, there is one child per classroom and at the older age level approximately one child in 100 who has not progressed sufficiently to read the simplest of school books.

Approximately twenty per cent of the ten-year-old students and fifteen per cent of the fourteen-year-old students were thought to need remedial instruction in reading. It is cause for some concern that about half the students thought to need remedial instruction had not been receiving it.

In the exercises involving reading comprehension of continuous prose, similar to that contained in normal

school texts and reference books, we found that approximately twenty-five to thirty per cent of the students in both samples were unable to provide correct answers to the questions asked. We did not judge the performance of Australian students in absolute terms or with respect to the norms obtained from standardized tests, but compared their performance with that of students in other English speaking countries. As can be seen in the following table, the evidence suggests that they differed little in their ability on tasks of reading comprehension from their age-mates in Britain and the United States, but were probably marginally inferior to students in New Zealand. Consequently, while there is no cause for complacency with regard to the reading standards of students in Australian schools on comprehension tasks of this type there is also no reason to be excessively critical of them.

Students performed satisfactorily on some tasks associated with reading a newspaper but their performance on other tasks necessary for an acceptable level of processing a newspaper was less than adequate. Some items involved comprehension of the literal or inferential meaning of words and passages, other items tested scanning to locate information and skimming to obtain an overall impression, and performance varied considerably. In general, the fourteen-year-old students had a higher level of performance than the ten-year-old students, although a quarter of the older students were unable to comprehend the literal meaning of one apparently straightforward

READING COMPREHENSION PERFORMANCES—
ENGLISH SPEAKING COUNTRIES

	Average Percentage Correct				
	Australia	England	Scotland	United States	New Zealand
ten-year-old level	71	72	72	67	Not tested
fourteen-year-old level	73	73	74	76	77



newspaper article. Whilst significant numbers of students had problems in processing the newspaper, the overall impression is that most students will leave school able to read newspapers effectively.

Teachers were asked whether each student in the sample needed and whether he received remedial instruction in reading. Approximately twenty per cent of the ten-year-old students and fifteen per cent of the fourteen-year-old students were thought to need remedial instruction. It is cause for some concern that about half the students thought to need remedial instruction had not been receiving it.

Writing

As might be expected, the performance of the fourteen-year-old students was much higher than that of the ten-year-old students on tasks which were either identical or similar. For example, whereas approximately one-tenth of the fourteen-year-old students were unable to record a telephone message satisfactorily, more than a quarter of the ten-year-olds were unable to do so. Similar differences were noticeable for the task of completing a form. Results indicate that, although a high proportion of students had mastered the tasks associated with the completion of a simple form by the age of fourteen years, a substantial number of ten-year-old students were unable to demonstrate mastery on this task. Common errors were associated with a failure to understand the meaning of such terms as surname, first name and signature.

There were substantial differences in ability to write different types of letters. At both age levels, students had much higher performance on writing informal, personal letters than writing formal letters requesting information. Students were required to include their own or the school's address in the formal letter but not in the informal letter. The table below enables the results to be compared.

PERFORMANCE ON LETTER WRITING

Task	Percentage Correct	
	10 Years	14 Years
Informal letter	76	92
Formal letter	50	74

The fourteen-year-old students were also asked to write an application for employment. It was necessary in this letter for students to give a return address, include a greeting, make application for the job and sign the letter. Only fifty per cent met these requirements. This seems a low level of performance for such an important task.

The ten-year-old students were asked to copy a passage consisting of

forty-nine words. Only eighteen per cent were able to complete the transcription without any errors in spelling, punctuation, capitalization, addition and omission of words.

There were also some writing tasks which were assessed by impression marking of general writing ability. It is not possible to summarize in a concise way the levels of performance of students on these tasks. Examples of writing by ten- and fourteen-year-old students and indications of relative standards are contained in the Item Report.

Number Work

The most disturbing finding in this area was that four per cent of the fourteen-year-old students tested did not subtract nine from seventeen correctly, four per cent did not multiply seven by six correctly, and eight per cent did not divide fifty-six by seven correctly. Furthermore, ten per cent of the fourteen-year-old students did not read a clock-face correctly. If we were to accept that not all students should know their number facts by the age of ten years, although some would question the wisdom of this, then we must surely accept that four years later they should know these basic facts so that they can carry out simple calculations. However, the results indicate that, among fourteen-year-old students in Australian schools many of whom would be shortly leaving school, there are large numbers, estimated at 10 000, who do not know simple subtraction and multiplication facts, and an estimated 20 000 who do not know simple division facts.

Approximately twenty per cent of ten-year-old students and fifteen per cent of fourteen-year-old students were thought to need remedial instruction in number. However more than half the ten-year-olds and more than two-thirds of the fourteen-year-olds thought to need remedial instruction had not been receiving it.

Consequently it was not surprising to record an even lower level of achievement in more complex addition, subtraction, multiplication and division calculations, and problems based on these operations by ten- and fourteen-year-old students. The table

below shows the Australian results obtained together with the results for nine- and thirteen-year-old students in the United States on the same items. The fact that Australian fourteen-year-olds performed no better than thirteen-year-old students in the United States is, we believe, a matter of some concern.

Although most ten-year-old students could calculate simple exercises involving money accurately, many did not know their number facts and could not calculate correctly using the four formal operations. This would seem to us to indicate that what they learnt outside the school was more effectively mastered than what they learnt within. But the consequences of inadequate mastery of school learning were apparent at the fourteen-year-old level where substantial numbers of students were unable to perform successfully slightly more complex calculations involving money. If these tasks have not been taught at school before a student is able to leave at the age of fifteen years, we believe he would be very seriously disadvantaged for the remainder of his life.

Teachers were also asked whether students needed and whether they received remedial instruction in number work. Approximately twenty per cent of ten-year-old students and fifteen per cent of fourteen-year-old students were thought to need remedial instruction in number. However, more than half the ten-year-olds and more than two-thirds of the fourteen-year-olds thought to need remedial instruction had not been receiving it. It seems that, outside normal classroom teaching, remedial instruction in number is not provided as often as the equally necessary remedial instruction in reading.

Performances of Different Groups

Results on the reading, writing and numeration test items have been examined for a few specific groups of students: students have been categorized by sex, location (metropolitan/non-metropolitan), school type (Government, Catholic and Independent) and languages spoken in the home.

Female students were found to have a consistently higher level of performance than male students for all tests except the Numeration Test at the

PERFORMANCE ON USE OF THE FOUR OPERATIONS BY AUSTRALIAN AND USA STUDENTS¹

Item	Percentage Correct			
	9-Year-Old USA	10-Year-Old Aust	13-Year-Old USA	14-Year-Old Aust
1. $38 + 19$	79	83	94	94
2. $36 - 19$	55	74	89	90
3. 38×9	25	55	83	80
4. $125 \div 5$	15	65	89	90

¹ The USA results were obtained from the National Assessment of Educational Progress Newsletter, Vol. 8, No. 1, January-February 1975.

fourteen-year-old level. For this test the male students performed at least as well as the females and had a higher level of performance for some tasks. In comparison, metropolitan/non-metropolitan differences in performance were small and inconsistent. There was a slight tendency, however, for students at metropolitan schools to have higher performances on the Reading and Numeration Tests at both levels. Differences in performance on the Writing Tests were less clear with the non-metropolitan students doing better at some tasks.

It is clear that much more research into individual learning problems is required before specific suggestions for educational practice can be made.

Students at Government schools had a lower level of performance than others and students at Independent schools normally had the highest performance. The level of performance of students at Catholic schools was, in most cases, between the performances of students at Government and Independent schools except for the Numeration Test for ten-year-old students where Catholic school students had the highest performance. These differences could be due to a variety of factors including, as other studies indicate, the cultural and socio-economic levels of the homes from which the students have been drawn.

There were some consistent differences in the performances of students with different language backgrounds. Students from homes where only English or both English and a North European language were spoken generally had the highest levels of performance on the tests and students from homes where no English was spoken had the lowest level. There was less consistency in the performances of students from homes where English and South European or another language were spoken. Generally, the levels of their performance tended to be between the two extremes with the other language group below the South European language group in performance.

Concluding Remarks

This was a large-scale survey research project which obtained information relevant to the literacy and numeracy of Australian school students. We are most grateful to the schools, throughout Australia, which took part and hope that this brief report suggests that the efforts Principals and teachers put into the testing program was worthwhile. It is clear that much more research into individual learning problems is required before specific suggestions for educational practice can be made.

Every reading, writing and numeration test item used in this project will

be available for scrutiny and criticism when the Australian Government Publishing Service publishes the Item Report (*Australian Studies in School Performance, Report 1976: 2*). In the light of experience, improvements could be made both in the formulation of the tasks to be tested and in the test items themselves. However we believe that the tasks basic to the achievement of literacy and numeracy have been identified and, further, that reliable estimates have been obtained of the numbers of ten- and fourteen-year-old students throughout Australia who can and who cannot do the tasks identified as important for literacy and numeracy.

We believe that the tasks basic to the achievement of literacy and numeracy have been identified and, further, that reliable estimates have been obtained of the numbers of ten- and fourteen-year-old students throughout Australia who can and who cannot do the tasks identified as important for literacy and numeracy.

It is to be hoped that all interested persons will examine each task and its associated test items and ask themselves whether they consider that the tasks and items selected are essential, desirable or irrelevant as measures of literacy and numeracy. Furthermore it is hoped that some of those who disagree with our choices will give thought to what tasks, if any, they consider essential for the literate and numerate person to master if he is not to be disadvantaged in his everyday life in or out of school. We would be grateful to receive the results of readers' thoughts on this difficult question.

New Publications

ACER has published a new set of tests for use in primary schools.

ACER Tests of Learning Ability—TOLA 4 and TOLA 6

Range:

TOLA 4—8.6 to 11.5 years of age; recommended for testing in school year 4.

TOLA 6—10.3 to 13.2 years; recommended for testing in school year 6.

Materials:

At each level: 16 page re-usable booklet; answer sheet; scoring key; manual common to both levels.

Time:

Instructions and practice about 15 minutes. Test, 33 minutes each level.

Description:

The *Tests of Learning Ability* do not claim to predict academic achievement, but aim to provide a

measure of the general ability required for such achievement.

Norms are provided in the form of stanines, percentile ranges, and IQ ranges. They are presented in three month age-bands for pupils in New South Wales. 'Special' school students and migrant children were excluded from the sample. In addition norms are provided for grade 6 pupils in the Lilydale Inspectorate (an outer suburban/rural area east of Melbourne).

Restricted sale:

Within New South Wales this test is for use by the psychology and guidance branches of the Education Department and may not be purchased direct by Departmental Schools.

Prices:

TOLA 4 Test	35c
TOLA 4 Answer Sheet	50c per 10
TOLA 4 Score Key	30c
TOLA 6 Test	35c
TOLA 6 Answer Sheet	50c per 10
TOLA 6 Score key	30c
Specimen Set (incl. both levels)	\$6.50

Perceptual Skills Curriculum

ACER has recently become the sole Australian distributor of the *Perceptual Skills Curriculum* which Advisory Services has been evaluating during 1975 and 1976.

The *Perceptual Skills Curriculum*—Rosner J., is an individualized program for teaching children the basic perceptual skills essential for success in primary school reading, mathematics and handwriting.

It has been designed as a comprehensive, low-cost, easily-managed system to detect and correct children's perceptual shortcomings before these can lead to school failure. The *PSC* has a clear research base and was fully validated prior to publication.

The programs consist of 133 carefully sequenced behavioural objectives paired with criterion-referenced tests, recording charts and more than 1 800 correlated learning activities.

The *Curriculum* is useful for over a year's core program for preparatory, year one and year two children. It is effective as a developmental program in traditional, individualized and open classrooms. With minor adaptations the *Curriculum* can also be used in remedial programs for older children.

Further information on the *PSC* and resources to assist teachers considering adopting the *Curriculum* are available from Advisory Services.

Price: Complete set of programs \$88

The *ACER Newsletter* is published approximately four times a year and is serially numbered. Each issue is dated according to its month of publication. It is not a quarterly.

Educating for Leisure

Doug Fox

In September 1975, at the request of the Department of Tourism and Recreation of the Australian Government, the Council commenced the second phase of a research investigation into the influence of the secondary school on young peoples' leisure and recreation interests, attitudes and activities in Australia.

The focus of the study is upon the meaning of leisure within the lives of young people, the factors which affect recreational choice and the relevance of the contribution of the school within its geographic and socio-cultural setting. A primary objective is to seek to specify the types of school programs and practices which are most effective in helping young people to use their leisure time in satisfying and rewarding ways.

Although the Department of Tourism and Recreation has ceased to exist, its functions and the research project now come under the responsibilities of the Department of Environment, Housing and Community Development. The project is at present in the data collection phase and a final report is expected in late 1977.

Context and Rationale of the Study

In Australia during the past three years, public funds have been allocated on an unprecedented scale to assist the development of leisure programs and facilities of all kinds. In essence the aim of Federal and State government participation in recreational activities is to provide an avenue to improved quality of life and the maintenance of a healthy, productive and adaptive society.

Measurement of the contribution of the secondary school to the achievement of this aim is but one of a range of possible research issues which might have some bearing on the program. However, as an important and active educational agent, it is likely that the school's role may be one of the most influential in the range. It is within this context that framing of the objectives and tasks of the present research study was undertaken.

Underlying the specific rationale is a series of interrelated broader issues which are concerned with the role of leisure in a changing society. For example, sociologists have referred to what they see as a fundamental re-orientation of the fabric of social values regarding work and leisure. They suggest we are reaching an 'age of leisure' for which we are in many ways unprepared (see Dumazedier, 1971; Parker, 1975 and Morrison, 1972). The western urban social problems of crime, violence, drop-outs and drug abuse are cited as evidence of the difficulties people find in using leisure time in a way which comple-

ments other aspects of their lives. This leads us directly to the question of the need for educating for leisure.

Although cognitive development is generally regarded as the primary objective of education, a strengthening case is being argued for the need for greater attention to non-academic aspects of personal development. A number of recent reports of research in Australia have questioned the adequacy of our school and community practices as preparation for life. For example, the *Youth Say Report* has described the recreational interests, needs and priorities of young people in a way which poses a number of pertinent questions to educators, social planners and recreational organizations. Complaints are frequent regarding the constraints which are imposed by schools, other formal institutions and adult aspirations on the recreational experiences of young people.

A number of recent reports on research in Australia have questioned the adequacy of our school and community practices as preparation for life.

Connell's (1975) study of Sydney youth and an ACER study *Concerning Leisure* (Ozolins and Keeves, 1975) both confirm the very limited nature of self-management and independence training that schools provide for students. Both agree that these components should and could be an integral part of a program of education for leisure. The *Concerning Leisure* report claims that insufficient is known about what the schools do or what they might do, although there is evidence to show that schools can and do make a difference to the leisure attitudes and practices of their students.

The present study is about schools and their influence on young people; a study which works from the premise that schools do have a significant socializing role and that everything possible should be done to ensure that this role is a relevant and effective one with respect to leisure pursuits. The study is seen as continuing on from previous studies such as *Youth Say* and the *Concerning Leisure* report, to examine some of the critical issues they pose and to collect data of a type that bears comparison with them.

Research Aims and Methodology

Data collection for the study is based on a random sample of secondary schools around Australia, involving students drawn from two different age levels. The information being collected is diverse, in that it covers a range of issues on all types of leisure and recreation interests. However, it falls largely into two categories.

Firstly, information is to be ob-

tained on the recreational resources, programs, attitudes and practices of the school and its interaction with the community which it serves. These data are being collected by means of student group discussion and report sessions, with supplementary information from a case study questionnaire filled out by a staff member of the school.

The format of the discussion sessions is aimed at allowing the students to report freely about their own experiences and feelings. Selected parts of this information will be collated for statistical analysis as predictor variables in a 'school press' model aimed at identifying the outcome of different school programs and practices. The model incorporates measures of the *opportunities* provided by the school, as well as the nature of *encouragement* and *reinforcement* used and the extent of *linkages* that are made with recreational opportunities outside the school.

The second major body of information to be gathered relates to students' recreational interests, attitudes and activities, both inside and outside of school.

A questionnaire is being used to secure this information, incorporating a comprehensive activities checklist. This will be the source of criterion variables for the testing of the school press model. Additional small group and individual interviews will be made at some schools to supplement and broaden the perspectives of the study.

In addition to the collection of a basic set of data from the random sample of schools some extra schools will be selected as a 'paragon' sample to include schools significantly committed to leisure education programs.

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