

# 10 Other key areas of curriculum and student achievement

## 10.1 The 1997 National Literacy and Numeracy Plan

At the March 1997 MCEETYA meeting, the new national goal agreed to in July 1996, was refined to state:

*that every child leaving primary school should be numerate, and be able to read, write and spell at an appropriate level.*

Education Ministers also agreed on a sub-goal:

*that every child commencing school from 1998 will achieve a minimum acceptable literacy and numeracy standard within four years,*

recognising that a very small percentage of students suffers from severe educational disabilities.

Ministers agreed to deliver the national goal by endorsing a National Literacy and Numeracy Plan focussed on the crucial early years of school and comprising:

- comprehensive assessment of all students by teachers as early as possible in the first years of schooling, with the purpose of adequately addressing their literacy and numeracy needs and identifying those students at risk of not making adequate progress;
- intervention as early as possible to address the needs of all students identified as at risk;
- development of national benchmarks in literacy and numeracy;
- assessment of students against the year 3 benchmark to be numerate and to be able to read, write and spell from 1998 onwards (and against the year 5 benchmark as soon as possible), using rigorous State-based assessment procedures, aiming for all States to move to assessing every student rather than a sample; speaking, listening and viewing to be incorporated as soon as practical; and
- progress towards national reporting by systems and school authorities on student achievements in numeracy, reading, writing and spelling against the

year 3 and year 5 benchmarks, with reporting in 1999 on 1998 results, using data comparable by State/Territory.

It was also agreed that States will provide appropriate professional development for teachers to support the key elements of the national plan.

## 10.2 Literacy and numeracy – identifying students at risk

### School-entry level

Numerous initiatives occurred in government schools across Australia in 1997 to determine the literacy and numeracy needs of children at the preschool and school entry levels. Among those initiatives were:

- the investigation of the New Zealand School Entry Assessment Program for use in Victorian schools. The program, which provides a procedure to assess children's use of oral language, emergent concepts about print and numeracy when they begin school, is not suitable in its current form, but an Australian version should be available in 1999;
- Early Assistance Planning in South Australia which used a variety of strategies to assess the knowledge and skills in literacy and numeracy children bring to school, then supported teachers and schools to collect and analyse data and devise programs to meet the needs of all students;
- the distribution of \$3.1m to South Australian preschools and schools to assist them to develop, implement and evaluate early assistance plans to meet the needs of children at risk of not developing skills in literacy and numeracy;
- the Kindergarten Check Database provided to all education districts in Tasmania to improve tracking of students at that level identified as potentially at risk, estimated to be in the order of 7.5 per cent of all students; and
- the assessment by teachers in the Australian Capital Territory of students of concern at the end of kindergarten, with results used to target the learning needs of those at risk. Numeracy assessment procedures, also to be administered late in the kindergarten year, were being developed.

## Primary level

A range of assessment strategies for literacy and numeracy were also implemented across the States at the early primary level in 1997. For example, the New South Wales Department of Education developed a draft of *Foundation Outcomes in Mathematics* and consulted about the appropriateness of the descriptors as critical indicators at the commencement of schooling.

An early numeracy project, Count Me In Too, was also implemented in approximately 80 schools in New South Wales. The program involved teachers in assessing students' number knowledge and using this information to design teaching activities to improve students' solution strategies.

The reading, writing and number skills of all years 1, 2 and 3 students in Queensland government schools were monitored as part of the year 2 Diagnostic Net initiative, enabling teachers to undertake early identification and intervention for students requiring additional support. The Reading Recovery Observation Survey was also used by Queensland government schools involved in the Reading Recovery program as a means for early assessment of children in years 1 and 2.

The South Australian pilot Vacation Literacy program for years 6 and 7 students experiencing learning difficulties and at risk of not successfully making the transition from primary to secondary school began in October 1997. Six schools in low socioeconomic areas provided courses for 89 boys and 51 girls, including Indigenous students and students from non-English speaking backgrounds. The program focussed on explicit literacy teaching integrated with information technology.

Western Australia's Literacy Net—an assessment tool that assists teachers to focus on critical aspects of literacy learning—was being developed and implemented in stages aligned with the phases of schooling, commencing with K–3 in 1997–98.

The Northern Territory's Multilevel Assessment Program (MAP) monitored system-wide performance, reported individual student, school and system results and served as a tool to identify areas of strength and weakness in reading and mathematics. Years 4 and 6 students in urban schools and those aged 11 to 16 in non-urban schools (mainly Indigenous students) in the Northern Territory were also tested against the Outcomes Profiles for reading comprehension and mathematics.

Evaluation of the Flying Start program in Tasmania provided baseline data in literacy. It indicated that approximately 20 per cent of students in each of years 1 and 2 had Woodcock reading ages more than one year below their chronological ages based on United States norms.

## Secondary level

At secondary level, schools used various instruments and assessment methods to assess literacy and numeracy skills. Special programs to assist at risk students in these years included small class work, individual tuition and mentoring, special needs programs and access to specialised resources.

## 10.3 Strategies for intervention

### Government schools

States reported establishing many different teaching programs to address the literacy and numeracy needs of students identified as at risk. Teachers in government schools played a key role in establishing and running such programs.

In New South Wales, Count Me In Too assisted students in 53 schools identified through socioeconomic status indicators and the Reading Recovery program focussed on helping students in year 1 identified as most needing extra assistance. A total of 4,725 students participated in Reading Recovery in 1997, in programs lasting an average of 12 to 16 weeks. Evaluations showed that Reading Recovery has been very successful, with over 87 per cent of students going through the program requiring no further remedial literacy support.

In Victoria, 640 government schools provided the Reading Recovery program, the recommended option for the additional assistance component of the Early Years Literacy program for students who are not making expected progress in reading and writing after one year at school.

The Early Literacy Research Project conducted by the University of Melbourne and the Department of Education in 1996 investigated the effect of early intervention and other strategies for children at risk of not achieving appropriate literacy standards in the first two years of schooling. Fifty-two schools were involved in the sample study, comprising 27 research schools and 25 control schools. Results comparing the proportion of students achieving the stipulated standard in the Early Literacy Research Project schools, with those in control schools, show the success of the Early Literacy Strategy in

**Table 10A. Early Literacy Research Project: Proportion of students by year level achieving literacy standard, research group compared with control group, Victoria, 1996**

	<i>Target</i>	<i>Control</i>	<i>Early Literacy Research Project</i>
Prep	80%	48%	72%
Year 1	98%	69%	83%

*Source:* Department of Education, Victoria and University of Melbourne, 1996

improving literacy achievement towards the identified targets of the project (Table 10A).

Education Queensland continued to provide intervention funding to schools to enable the development of support programs for students identified as needing additional assistance in literacy and numeracy through the year 2 Diagnostic Net and Year 6 Test processes. Most schools used this funding to implement the highly successful Support-A-Reader and Support-A-Writer programs. The Reading Recovery program also continued to expand across government schools, with approximately 1,800 students participating in the programs in 1997.

In South Australia, \$405,000 of Commonwealth Early Literacy Component (ELC) funding was distributed to 214 Disadvantaged Schools Program (DSP) schools. ELC funding also supported the publication of *Early Literacy — practices and possibilities*, distributed to schools, together with in-service training. The first stage of the Early Years Strategy was also completed, with data collected and analysed in relation to outputs, while the Basic Skills Tests for students in years 3 and 5 provided schools and the system with information enabling the targeting of students in need of additional support in literacy and numeracy. *Texts on Television* was published, to present an approach to teaching school literacies in the first years of school through valuing what many students know and have learnt from their viewing of television.

In Western Australia, a taskforce reviewed the Education Department's Literacy Strategy in the light of national initiatives and the Curriculum Framework, developing it to ensure its alignment with other policies and adding sections focussing on guiding principles for literacy, key responsibilities for stakeholders and the selection and deployment of literacy resources. Although the Early Literacy Project (ELP) concluded after operating in 80 disadvantaged schools since May 1995, development of

First Steps in Mathematics (FSIM) continued. FSIM aims to increase primary teachers' understanding of teaching and learning in mathematics as well as outcomes for students at risk of not achieving their educational potential.

In Tasmania, the Flying Start program was implemented in years Prep to 2 to provide extra support for the needs of students in literacy, numeracy and social skills.

The Northern Territory did not have in place system-wide intervention programs for students considered at risk at the end of their first year of schooling. A variety of programs such as Parents as Teachers, First Steps, Walking Talking Texts and the Northern Territory Aboriginal Hearing Program supported students experiencing difficulties achieving acceptable literacy standards. The government and Catholic sectors provided specialist services and resources to help students with disabilities and learning difficulties to successfully access the common curriculum, for which literacy is essential.

In the Australian Capital Territory, data from the early assessment procedures were the basis for allocating resources to assist children in the lowest 20 per cent of achievement. As a result, the Reading Recovery program was in place in almost 60 per cent of primary schools, covering approximately 13 per cent of the year 1 cohort.

## Independent schools

Schools in the independent sector indicated that most had established systems for data collection and analysis in order to more fully assess the literacy and numeracy needs of their students in 1997.

In New South Wales, early intervention included Reading Recovery, small group tuition, special resource assistance, interactive spelling CD-ROMs and withdrawal programs.

Primary schools in South Australia reported that literacy and numeracy assessments were carried out in most primary years, particularly on entry to year 7. Literacy and numeracy assessment in the special school situation was a continuous, structured process, with programs being highly individualised. At risk students were assisted by special education teachers, Reading Recovery programs, and learning assistance programs.

In Western Australia, many independent primary schools sought to assess students at risk of not making adequate progress towards the national numeracy and literacy goals. The Association of Independent Schools collected extensive data and conducted a literacy needs analysis in

1997. A working party was then set up to seek expertise and guidance in supporting schools to achieve improved literacy and numeracy outcomes. The literacy strategic plan for the sector will facilitate schools' pursuit of the agreed national literacy and numeracy goal.

Independent schools in Tasmania were encouraged to identify, as early as possible, children requiring individual attention and to use, as necessary, the support available from the Commonwealth Targeted Programs staff in addition to their own resources. At risk students were assisted by special ESL, Early Literacy and special education teachers, Reading Recovery programs, and learning assistance programs. Parent tutors continued to assist development of reading competence as part of the Macquarie Reading Program.

The independent sector in the Northern Territory was also part of that State's Literacy Plan. Commonwealth funding of \$11,498 was made available to independent primary schools to assist in Early Literacy programs, through encouraging interest and confidence in literacy and numeracy, providing professional development and helping to improve classroom practice.

Primary schools surveyed in the Australian Capital Territory, reported that literacy and numeracy assessments were carried out in most year levels, using a range of instruments.

Assessment mechanisms for identifying students at risk in independent secondary schools were generally less structured than those used in primary schools, ranging from in-class observation to standard English and mathematics assessments. Some schools in South Australia reported using formal assessment instruments. Tasmanian schools used various instruments and assessment methods to assess literacy and numeracy skills and mechanisms in independent secondary schools in the Australian Capital Territory ranged from use of OLSAT tests in years 7 and 10 to compulsory participation in national English and mathematics competitions.

At risk secondary students in independent schools were assisted by small class work or individual tuition, access to specialised resources, learning assistance programs, vertical streaming and adaptive education. In New South Wales, special programs to assist at risk secondary students included modified programs, after school tuition programs, special-needs English and mathematics classes, and graded and remedial programs. Special Education Resource teachers and classroom support from Aboriginal Education Workers were also available at some schools.

## Catholic schools

With a similar emphasis on early intervention, the Catholic sector reported assessment initiatives in several States and a range of programs to assist students at risk.

In New South Wales, the Canberra and Goulburn Archdiocese provided a range of additional inputs for at risk students, including better discernment and understanding of educational disadvantage. As a result, the distinct needs of former target groups of the Early Literacy, ESL (General Support) and Disadvantaged Schools Programs were taken into consideration.

The Catholic Education Commission of Victoria developed Literacy Advance, a comprehensive strategy designed to advance the literacy learning of all students consistent with the National Literacy Plan. Central to the Literacy Advance strategy is the importance of early intervention literacy programs for students in years P–3, and the requirement to assess all year 1 students by using the Marie Clay Observation instrument.

The strategy also emphasises the development of a system capacity to improve literacy outcomes by delivery of high quality classroom programs reflecting a commitment to early intervention addressing the needs of all students identified as at risk.

In 1997, some 400 Catholic primary schools were required to select one of six high-quality literacy programs for implementation in 1998.

These programs are:

- Reading Recovery;
- Keys to Life;
- First Steps;
- ESL in the Mainstream;
- Children's Literacy Success strategy (ClaSS); and
- school-designed programs.

In South Australia, a literacy strategy was developed by the South Australian Commission for Catholic Schools (SACCS), integrated with the National Literacy and Numeracy Plan. To inform the development of the strategy, a pilot program involving six schools focussed on areas such as early years assessment, intervention practices, whole-school literacy programs and programming for literacy.

In Tasmania's Catholic schools, programs were put in place to assist at risk students identified under the assessment procedures in place for students at Kindergarten, Preparation

and year 1. Where possible, teacher aides assisted with individuals and small groups and support for at risk students was provided by special education teachers.

The Catholic sector in the Northern Territory was a signatory to that State's Literacy Plan which commenced development in late 1997.

All Catholic primary schools in the Australian Capital Territory took part in the First Steps program in 1997. Features of the literacy program during the year were:

- collation of system "literacy" data by way of outcomes achieved by all ESL students via the NLLIA Bandscales;
- extensive involvement of all Archdiocesan schools in the First Steps program;
- maintenance and development of extra literacy initiatives in schools identified previously under the Disadvantaged Schools Program;
- the development of the Archdiocesan Literacy and Numeracy Plan (aligned to the National Literacy and Numeracy Goal);
- trialling of the draft national literacy and numeracy benchmarks; and
- a system focus on literacy outcomes for all students, with a particular emphasis on students with special learning needs or established educational disadvantage.

## **Collaboration on the national literacy and numeracy goals**

The identification of improving literacy and numeracy as a key national goal led to many shared approaches and joint initiatives in Australian schools in 1997. For example, in New South Wales, grants for National Strategies and Projects — Professional Development funded the New South Wales Department of Education and Training, the Association of Independent Schools and the Catholic Education Commission to support literacy improvement in schools under the National Literacy and Numeracy Plan.

A number of key initiatives, with cross-sector benefits for students, were reported in Queensland, including:

- the trialling in selected schools of the Appraisal process, to be implemented from 1999 to enable teachers of years 1–10 students with learning difficulties and learning disabilities to determine the educational programs and types of special support these students need in the areas of literacy and numeracy;
- the revision of the year 2 Diagnostic Net, to provide early childhood teachers with a comprehensive set of

materials to monitor young children's literacy and numeracy development; and

- validation tasks and photocopy masters for 1997 in reading, writing and numeracy were finalised, published and distributed to systems.

In South Australia, \$300,000 was allocated for each year from 1997 to 1999, to support development of children's reading by implementing Reading Recovery. During 1997, tutors worked with teachers across all education sectors and 19 new school-based Reading Recovery tutors were trained. Support continued for 19 government, 12 Catholic and 4 independent schools already using the program.

In the Northern Territory, the Catholic and independent sectors participated in the development of the Northern Territory Literacy and Numeracy Plan, which embraced all three schooling sectors. Schools participated in the Northern Territory Board of Studies assessment strategies and programs. Items were also being developed in the MAP tests in order to identify student learning according to the newly developed benchmarks.

## **10.4 Developing national literacy and numeracy benchmarks**

The literacy and numeracy benchmarks are standards describing student achievement at a particular year level. Reporting against benchmarks is intended to improve national educational accountability, inform Australian governments, parents and the community about student achievement in literacy and numeracy and support improvement in programs and school performance.

MCEETYA established the Benchmarking Taskforce to oversee development of the benchmarks. The Taskforce comprises nominees of State and Commonwealth Ministers, the National Catholic Education Commission and the National Council of Independent Schools' Associations. Curriculum Corporation has responsibility for developing the benchmarks, under the auspices of the taskforce.

In 1997, benchmarks for years 3 and 5 were being developed and the taskforce considered benchmarks for years 7 and 9. Benchmarks at each year level are intended to identify the essential aspects of literacy or numeracy that must be demonstrated and define a minimum acceptable standard level of literacy and numeracy without which a student will have difficulty making sufficient progress at school.

The benchmark descriptions include indicators presented for a broad community audience. Each benchmark will also be accompanied by a professional elaboration of additional indicative material needed by teachers and other assessment experts. Illustrative work samples are also being developed to accompany the benchmarks.

In the context of developing the benchmarks, the following definitions of literacy and numeracy were adopted:

- *Literacy* is the ability to read and use written information and to write appropriately in a range of contexts. It also involves the integration of speaking, listening, viewing and critical thinking with reading and writing, and includes the cultural knowledge which enables a speaker, writer or reader to recognise and use language appropriate to different social situations; and
- *Numeracy* is the effective use of mathematics to meet the general demands of life at school and at home, in paid work, and for participation in community and civic life. The numeracy benchmarks refer to the contribution that school mathematics and other areas of learning make to the development of students' numeracy. They will incorporate the development of students' understanding and competence with number and quantity (i.e. measurement), shape and location, and the handling and interpretation of quantitative data.

The setting of the draft standards was assisted by reference to current levels of achievement (as demonstrated in national surveys and in State assessment programs), curriculum frameworks in the States (including national curriculum statements and profiles and State variants), and expert professional judgement about appropriate and necessary standards. Overseas work was also reviewed. Extensive consultations with experts and stakeholders was a key part of the benchmark development process.

At their December 1997 meeting, all education Ministers approved progress towards a set of benchmarks in literacy (writing, spelling and reading) for years 3 and 5 in Australian schools. They endorsed national trialling of numeracy benchmarks, subject to final approval, and they stated their commitment to reporting each year on plans and performance against the benchmarks, through publication in this Report.

Benchmarks in speaking, listening and viewing and in numeracy are expected to be considered by Ministers in the near future. Further work is also being done by the Benchmarking Taskforce to advise Ministers on issues relating to the development of literacy and numeracy

benchmarks for years 7 and 9/10 and common timing of assessment across States.

## 10.5 Professional development in literacy and numeracy

A wide range of professional development initiatives, particularly for literacy, was reported in 1997. Literacy support publications were developed and distributed to schools and training and development supported primary teachers to improve their literacy teaching skills.

Strategies included school-based training initiatives; the use of technology such as satellite broadcasts, video tapes, CD-ROMs, on-line discussions through the Internet; and courses and seminars.

In New South Wales, district literacy teams were established and trained to assist government teachers in literacy teaching and learning. District literacy teams provided:

- in-school professional development on literacy issues designated by individual schools;
- professional development for secondary teachers in school-based marking of the writing component of the Year 7 English Language and Literacy Assessment;
- professional development for primary teachers in the teaching of reading using an explicit and systematic approach; and
- continuing professional development to prepare primary teachers for the implementation of the revised English K–6 Syllabus in 1998.

Schools were provided with an extensive range of high quality materials to support school-based professional development in the teaching of literacy.

In Victoria, Early Years literacy training was conducted on three levels:

- Level 1 Trainer—once accredited, this literacy educator provides level 2 training. Sixty Trainers were accredited in 1997;
- Level 2 Coordinator—once accredited, this school-based literacy educator provides level 3 training to classroom teachers using the professional development modules included in the Keys to Life materials. Five hundred Coordinators were trained in 1997; and

- Level 3 Classroom teachers—once trained, these classroom teachers implement Early Years literacy programs in their classrooms.

Certificates were awarded to Early Years literacy educators participating at each level of training and a certificate was awarded to schools acknowledging that they had become accredited Early Years literacy schools.

Further training for Early Years literacy Trainers will be provided to update their accreditation to include *Teaching Writers*, and *Teaching Speakers and Listeners*.

Education Queensland provided:

- continuing professional development for all early childhood teachers in the areas of reading, writing and number as part of the year 2 Diagnostic Net initiative;
- the Reading Recovery Trainee Tutor course at the Queensland University of Technology, which trained six Reading Recovery tutors. A further 144 Reading Recovery teachers were trained at Reading Recovery Training Centres across the State; and
- a vacation school on literacy and numeracy across the curriculum for teachers of students in years 8–10.

In South Australia, training and development was provided for literacy and numeracy support programs, including:

- *Texts on Television*, to support teachers in improving literary learning through the use of television and popular culture;
- over 450 professional development sessions in country and metropolitan locations in respect of the national statements and profiles for years R–10;
- six early years literacy team officers and 21 school-based teachers were trained as First Steps tutors;
- a range of courses including First Steps was offered in Catholic schools and drawn together into a Certificate in Teaching Literacy;
- Para-professionals and Literacy Support in the Early Years, was trialled in preschools and schools; and
- a mathematics key teacher program, involving professional development and school-based intervention for students at risk of not making adequate progress, established for teachers from twelve schools in 1997.

The Flying Start program provided teachers in Tasmanian government schools with professional development in literacy, numeracy and social skills in 1997.

The Curriculum Advisory Support Unit in the Northern Territory provided cross-sector professional development programs in literacy at central, regional and school levels. The programs offered in 1997 were:

- ESL in the Mainstream;
- ESL in Anangu Schools;
- *Walking Talking Texts*; and
- First Steps literacy professional development program.

Professional development programs in early childhood and Indigenous student literacy and English as a second language were also offered.

In the Australian Capital Territory, professional development for government schools addressed areas of need identified by the literacy assessment program. A Literacy Team was also established to provide advice and facilitate professional development in schools on effective literacy teaching. In addition:

- 96 per cent of government primary schools undertook training in one of the four modes of the First Steps program;
- 36 tutors were trained and schools with tutors received grants to assist in delivering the program;
- system-wide professional development was conducted relating to numeracy from kindergarten to year 12; and
- professional development was provided for mathematics teachers on problem solving, use of technology, early childhood number development and using calculators.

The First Steps program was reported by non-government school authorities as being the focus for literacy professional development with the intention that teachers would use the program as an early intervention tool.

In late 1997, the Commonwealth Department of Employment, Education, Training and Youth Affairs (DEETYA) approved a grant to a joint initiative between the Queensland Catholic Education Commission, the Association of Independent Schools of Queensland and Education Queensland to develop in-service programs for teachers and parents in understanding the National Literacy and Numeracy Plan, particularly the national benchmarks.

Also during 1997, *Hand-in-Hand*, an information package prepared by the Queensland School Curriculum Council, was launched. *Hand-in-Hand* presents practical and achievable ways for parents and teachers to assist children's literacy and numeracy development.

**Table 10B. NSW Basic Skills Test, government schools, 1997**  
(mean test score) (a)

	Year 3		Year 5	
	Literacy	Numeracy	Literacy	Numeracy
Male	48.6	52.0	55.7	60.1
Female	50.7	52.0	57.5	59.9
All students	49.7	52.0	56.6	60.0
Indigenous	44.7	46.4	51.2	53.8
NESB(1)(b)	49.1	51.5	56.2	59.9
NESB(2)(c)	47.9	51.2	54.2	59.8

(a) Literacy and numeracy scores are not comparable

(b) NESB (1) (non-English speaking background) were those students who answered 'yes' to the question 'Does anyone speak a language other than English in your home?'

(c) NESB (2) (non-English speaking background) were those students who had lived in Australia for four years or less and never or only sometimes spoke English at home.

Source: Department of Education and Training, New South Wales

## 10.6 State reporting of outcomes in numeracy and literacy

### New South Wales

In New South Wales, the Basic Skills Test is an annual program designed to indicate achievement of years 3 and 5 government school students in aspects of literacy and numeracy. Since 1996, students' achievement has been reported on the basis of mean test scores on a scale of 25 to 80. The testing is voluntary for non-government school students and, while a number of the Catholic and independent schools participate, the data on these sectors is incomplete. Results for government schools in 1997 are indicated in Table 10B.

In general data shows standards are being maintained, with small fluctuations from year to year. Indigenous students generally scored below the rest of the population in both literacy and numeracy. Students from non-English speaking backgrounds scored lower than average on literacy.

### Victoria

The Victorian Learning Assessment Project (LAP) reports the proportions of students in years 3 and 5 who reach the Curriculum and Standards Framework (CSF) levels expected at various points in schooling. Level 1 is the standard expected for students on completion of the first (preparatory) year of schooling; level 2 covers to the end of year 2; level 3 covers to the end of year 4; level 4 covers to the end of year 6; and level 5 covers to the end of year 8.

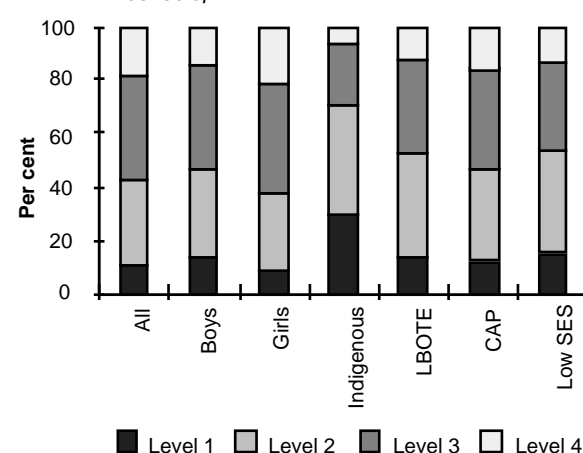
Level 5 was not applicable for year 3 students and level 1 was not applicable for year 5 students.

LAP tests were conducted early in the school year but students were not expected to reach the desired CSF level before the year's end. Hence results may be understated.

Combining data for all schooling sectors, to present a Statewide overview, the reading, writing and numeracy outcomes of students in years 3 and 5 from the 1997 LAP are reported here.

At year 3 for both reading and writing, girls performed better than boys, while students from language backgrounds other than English (LBOTE) and students from socioeconomically disadvantaged backgrounds (low SES) performed at a level below that of the overall student population. Indigenous students performed at a level below that of other target groups (Figures 10A and 10B).

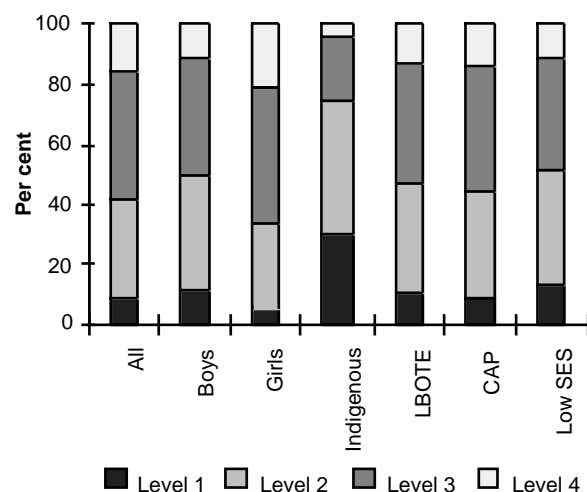
**Figure 10A. Year 3 Reading achievement, Victoria, all schools, 1997**



Source: Board of Studies, Victoria

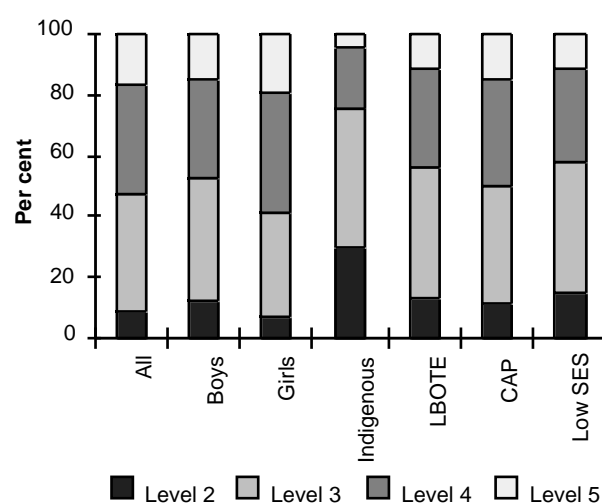


Figure 10B. Year 3 Writing achievement, Victoria, all schools, 1997



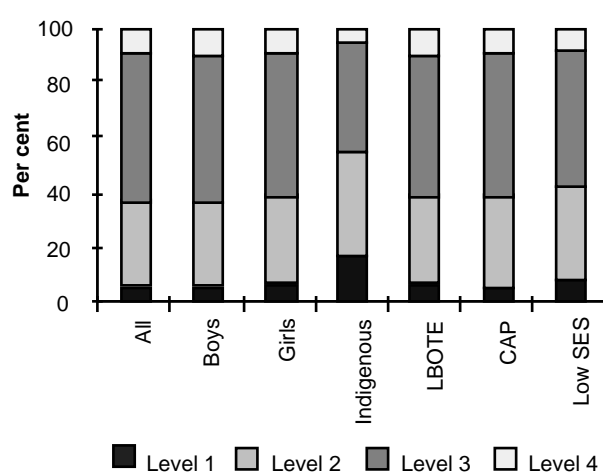
Source: Board of Studies, Victoria

Figure 10D. Year 5 Reading achievement, Victoria, all schools, 1997



Source: Board of Studies, Victoria

Figure 10C. Year 3 Number achievement, Victoria, all schools, 1997

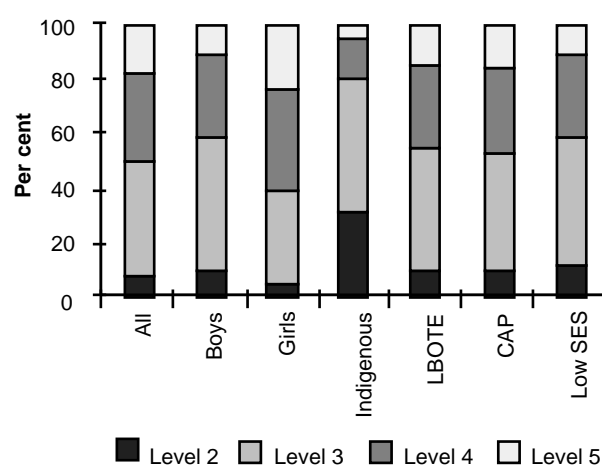


Source: Board of Studies, Victoria

At year 3 for number, the gender difference was less marked, although boys performed marginally better than girls. Students from language backgrounds other than English performed at a level marginally below the State average, as did students from socioeconomically disadvantaged backgrounds and Indigenous students. There was virtually no difference for students from rural or isolated schools (Figure 10C).

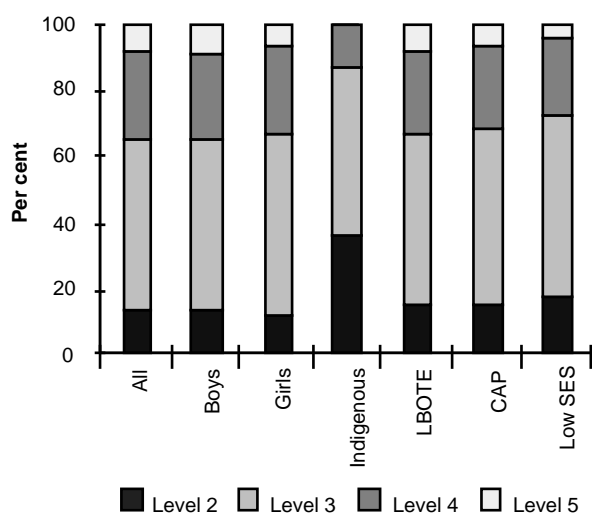
At year 5 for reading and writing, the results were similar to year 3. Girls performed better than boys, while students from language backgrounds other than English,

Figure 10E. Year 5 Writing achievement, Victoria, all schools, 1997



Source: Board of Studies, Victoria

Figure 10F. Year 5 Number achievement, Victoria, all schools, 1997



Source: Board of Studies, Victoria

Indigenous students and those from socioeconomically disadvantaged backgrounds performed less well than the average. Students from rural or isolated schools performed slightly worse than other students (Figures 10D and 10E).

For number at year 5 there was a marked deterioration in performance compared with year 3, although the relationships between the groups were maintained. The proportion performing at below satisfactory level had more than doubled for all groups, compared with year 3 (Figure 10F).

Table 10C. Queensland Year 6 Test, 1997 (mean score) (a)

	All	Male	Female	NESB (b)	Indigenous
<i>Aspects of literacy</i>					
Reading and viewing	38.0	36.9	39.2	37.2	26.1
Writing	40.9	39.0	42.9	41.4	32.7
<i>Aspects of numeracy</i>					
Number	38.7	38.3	39.1	39.9	30.4
Measurement	39.0	39.6	38.3	39.3	32.1
Space	39.0	39.7	38.2	39.6	32.7

(a) Results are expressed on a scale of 15 to 55

(b) NESB (non-English speaking background) students are those who answered 'no' to either of the questions 'Is English the language you speak at home most of the time?' or 'Is English the first language spoken by both your parents or caregivers?' and who are not classified as Indigenous.

Source: Education Queensland

## Queensland

In Queensland the Year 6 Test provided information about student performance in aspects of literacy and numeracy in 1997 (Table 10C).

## South Australia

In 1997, the Department of Education, Training and Employment collected samples of student achievement from students in years 1 to 8 using curriculum profile levels in the English, science, studies of society and environment and technology key learning areas.

Table 10D. Mean scores in literacy and numeracy, Basic Skills Tests, year 3 and year 5, government schools, South Australia, 1995–1997

	<i>Literacy</i>		<i>Numeracy</i>	
	<i>Year 3</i>	<i>Year 5</i>	<i>Year 3</i>	<i>Year 5</i>
1995	48.6	54.6	51.2	58.1
1996	48.8	55.2	50.3	57.0
1997	48.6	55.5	48.8	57.5

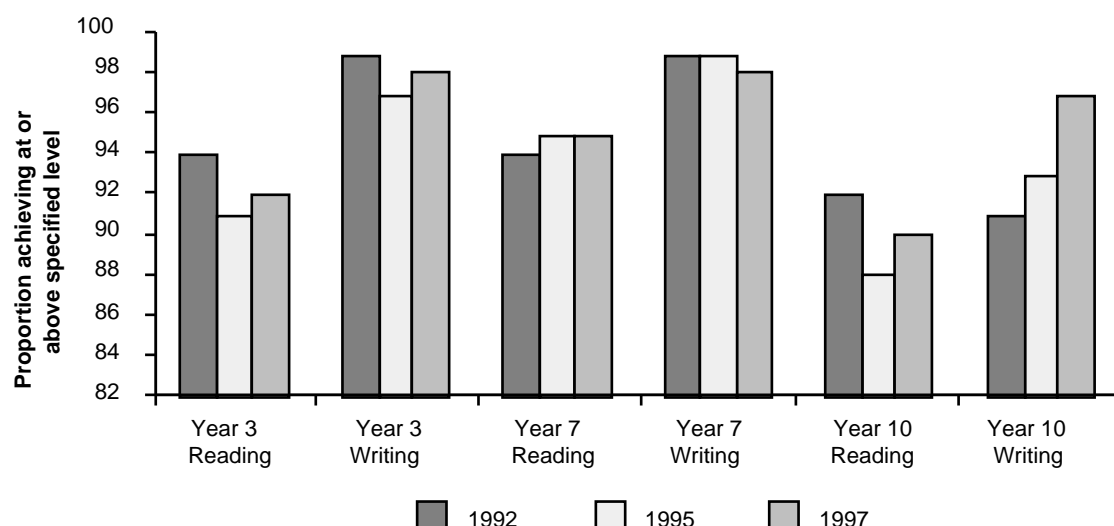
Source: Department of Education, Training and Employment, South Australia

In addition, since 1995, there has been monitoring in government schools of year 3 and year 5 student achievement in aspects of literacy (reading, spelling, punctuation and grammar) and numeracy (number, measurement and space) through the Basic Skills Tests. In this time, mean literacy scores have risen marginally at year 5 and remained steady at year 3. Mean numeracy levels have declined marginally at year 3 and year 5 (Table 10D).

## Western Australia

In the Western Australian government sector, the Monitoring Standards in Education (MSE) project tested a 1997 random sample of years 3, 7 and 10 students in reading and writing. Information on students' skills and understandings in these strands had previously been collected in 1990, 1992 and 1995. The results are reported as the percentage of students achieving a specified standard (Figure 10G).

Figure 10G. WA Monitoring Standards results, English (a), 1997



(a) The specified levels for each year were level 2 for year 3; level 3 for year 7; and level 4 for year 10.

Source: Education Department, Western Australia

## Reading

Approximately 1,400 students in each of years 3 and 7 were randomly selected from 356 government schools throughout the State, and approximately 1,400 students in year 10 were randomly selected from 60 government schools. To enable longitudinal comparisons to be made, 300 students from each year group completed both the 1997 and 1995 tests. Schools with significant numbers of Indigenous students were over-sampled to ensure that valid judgements about the performance of these students could be made.

The Reading test instruments were developed by the Australian Council for Educational Research (ACER), in close consultation with the Education Department. On the advice of literacy experts and classroom teachers, texts for the 1997 test material were selected to engage the interest of all sub-groups, including boys and Indigenous students. The tests utilised a wider range of text types than in the past and the questions required a more sophisticated response to the Contextual Understandings sub-strand.

On average, year 3 students achieved at least some Level 2 outcomes, reversing the decline in performance between 1992 and 1995 as a result of improvements in the performance of boys, Indigenous students and students from non-English speaking backgrounds (NESB). However, the decline in the performance of girls compared with 1995 is of concern.

A small downward trend was evident among year 7 students over the three testing cycles and, while the performance of Indigenous students and students from non-English speaking backgrounds improved between 1995 and 1997, there was a continuing decline in the performance of girls.

In 1997, the mean achievement of year 10 students was Level 5, the same as in 1995 and 1992. About 20 per cent of students achieved some Level 6 outcomes.

Since 1992, the trend has been for girls to outperform boys; however, girls' mean scores have decreased in each testing round. This change of performance may, in part, be attributable to declining interest in the test materials among girls.

Over this period, the performance of Indigenous students has remained consistently lower than that of the rest of the sample; however, their mean score has increased in each testing round. In 1997, Indigenous students attempted more questions in the reading tests than ever before. About three-quarters achieved some Level 4 outcomes or better.

Since 1992, the performance of students from non-English speaking backgrounds (NESB) has been consistent at a slightly lower level than students from English speaking backgrounds. The difference in 1997 was not statistically significant and about 85 per cent achieved some Level 4 outcomes or better.

## Writing

Monitoring Students in Education uses scenarios known as 'prompts' to encourage students to write on specific topics. In years 3 and 5 five prompts were used: two narratives, two argumentative letters and one recount. Three had been developed in 1995 and two were new for 1997. The 1995 prompts were used to enable comparisons to be made with the previous testing rounds.

For year 10 four prompts were used: two narratives and two argumentative letters. Two prompts had been developed in 1995 and two in 1997. The 1995 prompts were used to enable comparisons to be made with previous rounds of testing.

A complicated sample design ensured linkage of year groups and prompts: it required 300 year 3 students, 750 year 7 students and 750 year 10 students to complete two tests from a range of test combinations.

The mean for year 3 was high in Level 2, indicating a statistically-significant improvement between 1995 and 1997, while that for year 7 was in Level 4, indicating a statistically-significant improvement between 1992 and 1997.

As in 1992 and 1995, girls continued to outperform boys at both levels; however, the difference was less in 1997 than in 1995.

At both levels, the mean results for Indigenous students were higher in 1997 than in 1995. Eight-five per cent of year 3 Indigenous students achieved some Level 2 outcomes or better, while 89 per cent of year 7 Indigenous students achieved some Level 3 outcomes or better. However, because of the small number of students tested, the statistical significance cannot be confirmed. Although other sub-groups continue to outperform Indigenous students at both year levels, the difference was less in 1997 than in 1995.

The mean level for NESB students increased at both years 3 and 7, reversing the downward trend evident between 1992 and 1995: 96 per cent of year 3 NESB students achieved some Level 2 outcomes or better and 95 per cent of year 7 NESB students achieved some Level 3 outcomes or better.

Between 1995 and 1997, average performance of year 10 students improved significantly: the mean was in Level 5, with 97 per cent of students achieving at least some Level 4 outcomes. As in 1992 and 1995, girls

continued to outperform boys, but by a lesser margin than in 1995.

The mean results for year 10 Indigenous students were higher in 1997 than in 1995. However, because of the small number of students tested, the statistical significance cannot be confirmed. Although other sub-groups continue to outperform Indigenous students, the difference was less in 1997 than in 1995. Eighty-three per cent achieved some Level 4 outcomes or better. The mean level for NESB students increased, reversing the downward trend evident between 1992 and 1995. The improvement between 1995 and 1997 is statistically significant. Ninety-eight per cent of NESB students achieved some Level 4 outcomes or better.

## Tasmania

Information regarding numeracy achievement by year 9 government school students in Tasmania indicated that females performed slightly better than males and that English speaking students performed slightly better than non-English speaking students. Indigenous students and those from socioeconomically disadvantaged groups performed at levels markedly lower than other students (Table 10E).

## Northern Territory

Outcomes for year 10 English and mathematics students were provided by the Northern Territory Assessment Program (NTAP) of the Board of Studies. Assessment combined the results of an externally moderated, school assessed component with a common, system-wide, externally assessed component. Results were analysed to show proportions in each sector as well as for the total Northern Territory achievement, using the grade bands from A to E, which appear on the Junior Secondary Studies Certificate (JSSC).

The grade distributions reported from the assessment of JSSC English in 1997 are shown in Table 10F. The most notable result was the degree to which girls out-performed boys, with 57 per cent of girls achieving an A or B grading, compared with 33.3 per cent of boys. Girls also out-performed boys among those students studying ESL (not included in Table 10F).

**Table 10E. Achievement of year 8 key intended numeracy outcomes by year 9 students, government schools, Tasmania, 1997**

	<i>% achieving year 8 outcomes</i>
All students	65
Male	63
Female	66
Indigenous students	51
Non-Indigenous students	71
English speaking background	68
Non-English speaking background	66
STAS (a) students	58
Non-STAS	73

(a) STAS indicates students from low SES groups

Source: Department of Education, Community and Cultural Development, Tasmania

**Table 10F. Grade distribution for English, Junior Secondary Studies Certificate (JSSC), Northern Territory, 1997 (per cent)**

<i>Grades for English</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
All students	7.5	37.7	34.4	9.7	10.8
Boys	3.8	29.5	40.0	12.7	14.0
Girls	11.2	45.8	28.6	6.9	7.7
Government schools	5.8	34.1	36.6	10.9	12.6
Catholic schools	10.0	44.3	27.1	8.6	10.0
Independent schools	12.3	46.8	31.2	5.5	4.2

Source: Department of Education, Northern Territory

Reporting also included details of achievement for Level 1, Level 2 and Level 3 mathematics in 1997, summarised similarly by gender and schooling sector. The information reported indicated that:

- a higher percentage of students achieved an A or B grade in Level 1 mathematics (37.4 per cent) than in Level 2 mathematics (21.7 per cent) or Level 3 mathematics (17.1 per cent); and
- there was no consistent pattern in the difference between the overall achievement of boys and girls.

Reporting on the mathematics achievements of ESL students also confirmed a lack of consistency in the relative performance of boys and girls across the three mathematics levels. Boys performed relatively better at Level 1 than at other levels, with 80 per cent achieving a grading of C or better, compared with 34.8 per cent at Level 2 and 35.3 per cent at Level 3. In comparison, 52.5 per cent of girls achieved a C grading or better at Level 1 mathematics, 43.8 per cent at Level 2 and 41.4 per cent at Level 3.

**Table 10G. Mean performance of students at year 3 and year 5 against the national English profiles, by gender and language background, government schools, Australian Capital Territory, 1997**

	<i>Variable</i>	<i>Boys</i>	<i>Girls</i>	<i>NESB</i>	<i>All</i>
Year 3	Listening	15.3	16.8	13.9	16.1
	Reading	15.0	16.9	14.4	15.9
	Speaking	10.7	11.5	10.4	11.1
	Viewing	16.6	17.8	15.1	17.2
	Writing	9.8	10.8	10.2	10.3
Year 5	Listening	18.9	20.2	17.4	19.6
	Reading	16.6	18.6	16.6	17.6
	Speaking	8.7	9.4	8.7	9.1
	Viewing	22.3	25.1	22.0	23.6
	Writing	17.7	19.3	18.0	18.5

Source: Department of Education, Australian Capital Territory

## Australian Capital Territory

The literacy achievement levels of year 3 and year 5 students in government schools were measured against the national English profile levels in 1997. Outcomes of that testing indicated that 19 per cent of year 3 students were at Level 4 for listening and speaking and over 50 per cent were at Level 3 for writing, listening and speaking. In the case of year 5 students, testing indicated that 50 per cent of students were performing at level 4 for listening and 65 per cent for viewing. A majority of students were performing at Level 4 for reading, listening and viewing and at Level 3 for writing and speaking.

Data in Table 10G indicates that the mean scores for girls in each of the variables assessed were above those of boys, in both year 3 and year 5. The performance of students from non-English speaking backgrounds, the only target group specifically identified, was consistently lower than the overall student mean.

## 10.7 National surveys and reporting of outcomes

### The National School English Literacy Survey

In September 1997, the Commonwealth Minister released the results of the National School English Literacy Survey (NSELs). Results were published in the report *Mapping Literacy Achievement: Results of the 1996 National School English Literacy Survey*.

The survey was funded by the Commonwealth and conducted by the ACER. Its purpose was to collect reliable national

base-line data on literacy achievements of Australian school children in years 3 and 5. Survey methodology was developed collaboratively, with the support of government and non-government education authorities, professional literacy associations, teacher unions, parents and the business sector. The survey assessed reading, writing (including spelling), speaking, listening and viewing.

The NSELS was conducted in government and non-government schools in Australia in August and September 1996. Two separate samples of students were established to collect data for the survey:

- the *main sample* included 8,200 students in years 3 and 5 and provided a reliable view of the literacy achievements of all students and of the larger sub-groups in the population; and
- the *special Indigenous sample* was made up of approximately 700 students from years 3 and 5, a significant proportion of whom lived in rural and remote parts of the country. This was not a nationally representative sample of all Indigenous students, but only of Indigenous students in schools reporting at least five Indigenous students in each of years 3 and 5.

Some of the key findings emerging from NSELS were:

- there is a wide range of literacy achievement among Australian school children at both year 3 and year 5. In a typical class, the top 10 per cent of students perform at about five grade levels above the bottom 10 per cent;
- student enjoyment of literacy activities in class declines between year 3 and year 5. Those who report higher levels of enjoyment of literacy activities in class tend to be those with higher levels of literacy achievement;
- between year 3 and year 5, most students progress more rapidly in the receptive areas of literacy—that is reading, viewing and listening—compared with the expressive areas of literacy—writing and speaking;
- in each aspect of literacy, girls consistently outperform boys, and this does not change significantly between year 3 and year 5;
- students from a language background other than English have, on average, lower English literacy levels than students from English speaking backgrounds;
- literacy achievement of children varies according to the occupation of parents. Those with parents in upper professional or managerial occupations have noticeably higher average levels of literacy achievement than children of parents from clerical and skilled manual

occupations, who in turn, have higher levels of achievement than children of parents in unskilled manual occupations. The difference between boys' and girls' levels of literacy achievement is greater among children from unskilled and manual occupations than among children from other higher socioeconomic groups;

- students in the special Indigenous sample have average levels of English literacy achievement equal to three or four year levels below students in the main sample;
- there is a wide range in the literacy achievements of the highest and lowest achieving Indigenous students, with evidence that the lowest achieving year 3 Indigenous students make little or no progress over the following two years;
- students in the special Indigenous sample have relatively high rates of absence from school, and this higher rate of absence appears to be a factor in the lower literacy achievements of these students; and
- English literacy achievements of Indigenous students increase with the frequency of speaking English at home. About 30 per cent of the Indigenous students sampled did not normally speak English at home.

## ACER report on literacy standards

At the same time as the report on NSELS was released, the Commonwealth Minister asked ACER to prepare a second report, *Literacy Standards in Australia*. The purpose of this was to inform the development of literacy benchmarks and to provide the Australian community with information about the performance standards of Australian school children in reading and writing.

*Literacy Standards in Australia* used assessment tasks from NSELS to illustrate, through concrete examples, year 3 and year 5 student performances in relation to the draft benchmark standard. The report found that approximately 30 per cent of students in year 3 and year 5 did not meet the benchmark standard in reading and writing. However, the exercise conducted by ACER was based on drafts of the literacy benchmark which changed quite significantly before being published in the latter half of 1998.

## LSAY – reading and numeracy data

The Longitudinal Surveys of Australian Youth (LSAY) Programme is a joint project of DEETYA and ACER. LSAY comprises a series of past and continuing cohort surveys of young Australians, with data focussed largely, but not exclusively, on education, employment and training issues.

For the earlier cohorts, samples were selected through a school-based sampling system when the respondents were aged 14. The current samples, one selected in 1995 (Y95) and the other in 1998 (Y98), are both school-based, but selected from the population of year 9 students.

At the time of sample selection students undertake tests of basic reading comprehension and numeracy, the results of which are comparable over time. The first such testing was conducted in 1975. In describing the test results, the term *mastery* is used. For example, to say that thirty per cent of year 9 students have not achieved mastery means they have not achieved what is regarded as a satisfactory result on tests of basic reading comprehension, or of numeracy.

The Y95 sample will undergo its third annual telephone survey late in 1999 and the 1998 cohort will be interviewed for the first time in the year 2000. Around 22,000 young people are involved in the studies.

Some key results from the tests conducted in 1975 and 1995 are:

- in 1975, 28 per cent of 14-year-old year 9 students failed to achieve mastery in basic reading comprehension. In 1995 this was largely unchanged, at 30 per cent;
- since 1975 reading comprehension levels for boys have declined. In 1975, 30 per cent of boys did not possess adequate reading comprehension skills; in 1995 that figure was 35 per cent. Over the same time the proportion of girls who did not attain mastery remained stable (26 per cent and 27 per cent respectively);
- there has been little change in these “literacy” levels of students from homes where English was not the main language used. In 1975, 53 per cent of such students in the survey did not achieve mastery, while 20 years later that figure was 51 per cent;
- results of the numeracy tests suggest a slight improvement over the period from 1975 to 1995, with around 15 per cent of the 1995 sample failing to achieve mastery. Males consistently achieve a slightly better result than females; and
- reading and numeracy skills are also linked to other characteristics, including being Indigenous or having a less skilled occupational background (based on parents' occupation).

As well as this sort of analysis, the LSAY programme is able to describe the impact of relatively better or worse reading comprehension and numeracy skills. Such analysis makes clear, for example, the close association of higher levels of numeracy and reading achievement with higher

rates of school completion. Relatively lower levels of reading comprehension and numeracy are associated with relative disadvantage in the labour market after leaving school.

## OECD student achievement survey

Late in 1997, Australia agreed to participate in the OECD's series of surveys of student achievement in reading, mathematics and science. Fifteen-year-old students will be assessed every three years, the first cycle of assessment to occur in the year 2000. The focus in the 2000 assessment will be on reading, with mathematics and science to be treated in more detail in 2003 and 2006 respectively.

Unlike some other international comparative studies, the Program for International Student Assessment (PISA) emphasises the need to obtain measures of performance that will be comparable over time. Thus Australia will be able to obtain both regular comparisons of our students' performance against the performance of students from overseas countries, and information on Australian students' achievements over time.

Around 30 countries have indicated their intention to participate in the first cycle of assessment, including, in our own region, Japan, Korea and New Zealand. The OECD group overseeing the project at the international level, the Board of Participating Countries, will also be looking for non-OECD member countries to join the project.

Following consultation with States, the Commonwealth Minister accepted the OECD's invitation for Australia to participate in the first round of the PISA surveys. A National Advisory Committee representing State schooling authorities and others will be established to manage the process locally, and a National Project Manager appointed to implement the survey program.

## Achievement in middle primary mathematics and science

The Third International Mathematics and Science Study (TIMSS) aimed to identify curriculum, instructional and other variables related to differences in student achievement in school-level mathematics and science. Since the early 1990s this study has investigated achievement among three groups of students: 9-year-olds, 13-year-olds and those in their final year of secondary schooling. Results for 13-year-olds were outlined in the 1996 edition of this Report.

During 1997, the results of testing Population 1 (9-year-olds) under the TIMSS were released. This group consists of students from the two adjacent grade levels containing the

largest proportion of 9-year-old students. In Australia, they are spread across years 3 and 4 (the “lower grade”) and years 4 and 5 (the “upper grade”), depending on the State in which they live. Some 12,500 Australian 9-year-olds participated in the study, with testing conducted at the end of 1994.

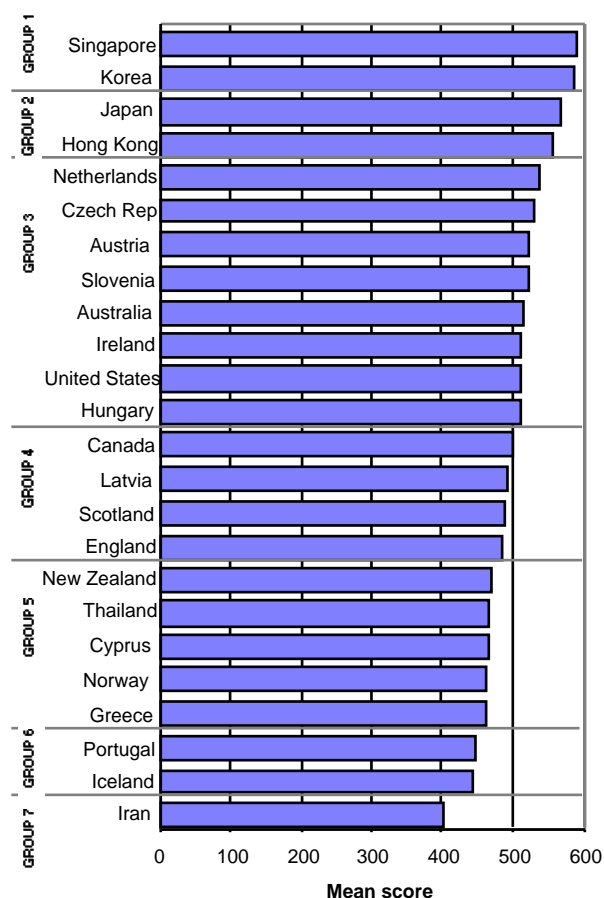
## Mathematics results

In international terms, TIMSS testing showed 9-year-olds in Australia performing very well in mathematics.

Singapore, Korea, Japan and Hong Kong did best overall.

In the upper grade, Australia effectively tied in seventh place with five other countries and in the lower grade tied with eight others in fifth place. On average, Australian students performed on a par with those from the United States and the top European countries – the Netherlands, the Czech Republic, Austria, Slovenia, Ireland and Hungary. They performed significantly better than students from most other English speaking countries (Canada, Scotland, England and New Zealand) (Figure 10H).

**Figure 10H. TIMSS Population 1 – Mathematics achievement, by country, 1994**



Source: ACER

**Table 10H. Mathematics achievement, TIMSS population 1, by State, 1994**

	<i>Best estimate of mean score</i>
Queensland	546 ± 6
Western Australia	545 ± 6
Northern Territory	543 ± 10
South Australia	540 ± 8
Australian Capital Territory	523 ± 11
New South Wales	498 ± 7
Victoria	498 ± 8
Tasmania	490 ± 8

Source: ACER

Australian students did particularly well on questions dealing with properties of three-dimensional figures, number patterns and obtaining information from graphs, but poorly in more complex computation questions.

As in most other countries, there were no gender differences among Australian students in mathematics achievement, either on the total test or in most of the content areas.

The highest-scoring Australian States—Queensland, Western Australia, the Northern Territory and South Australia (Table 10H)—scored on par with the highest scoring European nations, the Netherlands and the Czech Republic, each performing well above the international average. The Australian Capital Territory was comparable with European countries such as Austria and Slovenia, while the remaining States scored approximately at the international average.

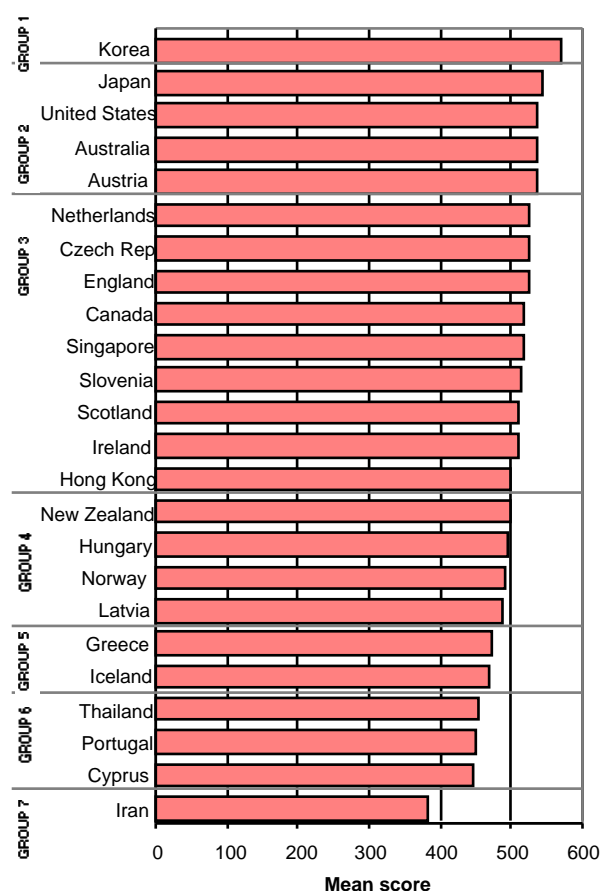
When comparing States it is important to bear in mind the structural and curriculum differences between States and the differences in age and length of schooling arising from different enrolment policies. Students were drawn from years 3 and 4 in the Australian Capital Territory, New South Wales, Victoria and Tasmania and from years 4 and 5 in Queensland, South Australia, Western Australia and the Northern Territory.

## Science results

In science, Australian 9-year-old students performed significantly better than their counterparts in two-thirds of the countries taking part in TIMSS (Figure 10I). Korea did best. Singapore and particularly Hong Kong performed less well than they had in mathematics. Upper grade Australian students tied in third place with six other countries and in the lower grade tied in second place, also with six others. Australian students performed on a par with their counterparts from Japan, the United States and Austria.



Figure 10I. TIMSS Population 1 – Science achievement, by country, 1994



Source: ACER

Australian students performed particularly well on questions related to environmental issues, achieving the highest scores in the world in questions about the function of the heart and why it is important to use sunscreen, but they did poorly on some other life science questions.

Internationally, there were marked gender differences in science and Australian boys in the upper grade marginally outperformed girls (mainly in the “Earth and Beyond” and “Energy and Change” sections of the test).

Within Australia, the outstanding performance by students from Western Australia was notable (Table 10I). When upper and lower grade scores were combined and the States’ performance compared internationally, Western Australia was at the top of the table, on par with Korea. Four other States also did very well: South Australia and the Northern Territory outperformed Japan, while Queensland and the Australian Capital Territory performed at a level equivalent to the USA and Japan. The other States all achieved similarly to each other, and well above the international average.

Table 10I. Science achievement, TIMSS population 1, by State, 1994

	<i>Best estimate of mean score</i>
Western Australia	577 ± 5
South Australia	562 ± 7
Northern Territory	561 ± 7
Queensland	555 ± 6
Australian Capital Territory	550 ± 9
Tasmania	523 ± 9
Victoria	521 ± 9
New South Wales	520 ± 6

Source: ACER

Teachers were also surveyed on their levels of satisfaction regarding their work. The TIMSS questionnaires revealed a high level of discontent among Australian teachers, with approximately 45 per cent saying they would change career if they could. This is despite the fact that 80 per cent had stated that teaching had been their first career choice.

Much work has still to be done on the student variables which affect achievement, but preliminary analysis suggests that home background and language background are important. ACER also concludes that word knowledge is more highly correlated with achievement in mathematics and science at the Population 1 level than with the 13-year-olds of Population 2.

Further details are available in ACER’s reports on TIMSS in Australia, *Maths and Science on the Line: Australian Middle Primary Students’ Performance in the TIMSS* (1997) and *Australian Junior Secondary Students’ Performance in the TIMSS* (1996).

## 10.8 Subject enrolments at year 12

### Reporting nationally

Table 10J summarises the participation by Australian students in 1997 in tertiary-accredited subjects in the eight key learning areas (KLAs). It shows, for example, that the English KLA attracted the participation of more students than any other in 1997, as had also occurred in 1996 and 1995. In 1997, some 97 per cent of all students undertaking tertiary-accredited subjects enrolled in at least one subject from the English KLA, a marginal increase from 1996, when 93 per cent of year 12 students studied at least one English subject. On average, students studying in

this KLA enrolled for marginally more than one English

subject each.

**Table 10J. Participation by year 12 students in tertiary-accredited subjects, by key learning area, by gender, Australia, 1997**

Key Learning Area	Males			Females			Total		
	Subject enrolments	Students		Subject enrolments	Students		Subject enrolments	Students	
		No. (a)	Per cent (b)		No. (a)	Per cent (b)		No. (a)	Per cent (b)
English	76,388	76,074	93	91,885	90,918	100	168,273	166,992	97
Mathematics	79,596	69,793	85	77,307	71,683	79	156,903	141,476	82
Society and environment	85,666	69,739	85	110,628	85,620	94	196,294	155,359	90
Science	71,793	54,949	67	78,430	60,508	66	150,223	115,457	67
Arts	22,834	19,034	23	38,557	30,774	34	61,391	49,808	29
Languages other than English	8,257	8,169	10	16,524	16,224	18	24,781	24,393	14
Technology	43,004	40,395	49	28,625	32,867(c)	36	71,629	73,262(c)	42
Health and physical education	17,946	17,616	22	20,597	21,670(c)	24	38,543	39,286(c)	23
<b>Total subject enrolments</b>	<b>405,484</b>	<b>n.a.</b>	<b>n.a.</b>	<b>462,553</b>	<b>n.a.</b>	<b>n.a.</b>	<b>868,037</b>	<b>n.a.</b>	<b>n.a.</b>
<b>Total year 12 students</b>	<b>n.a.</b>	<b>81,723</b>	<b>n.a.</b>	<b>n.a.</b>	<b>91,049</b>	<b>n.a.</b>	<b>n.a.</b>	<b>172,772</b>	<b>n.a.</b>

n.a. not applicable.

(a) Number of year 12 students studying at least one subject in the key learning area.

(b) Percentage of year 12 students studying at least one subject in the key learning area.

(c) Numbers of students exceed subject enrolment numbers in some KLAs. Enrolments are classified to KLA by DEETYA, while student numbers are classified by State authorities.

Source: Commonwealth DEETYA, derived from data supplied by State secondary accreditation authorities

There were more subject enrolments in 1997 in Society and Environment than in any other KLA except English, again reflective of the position in 1996. Although the total number of subject enrolments in the KLA fell marginally in 1997 compared with 1996, the number of students studying at least one subject in the KLA grew significantly. Information presented about this KLA also indicates that:

- a total of 90 per cent of all students studied at least one subject in the society and environment KLA in 1997, compared with 80 per cent in 1996;
- 22.6 per cent of all enrolments at this level were reported in this one KLA (compared with 23.3 per cent in 1996), with 21.1 per cent of enrolments by boys (21.7 per cent in 1996) and 23.9 per cent of enrolments by girls (24.7 per cent in 1996) falling within this area; and
- on average, students undertaking tertiary-accredited courses undertook 1.1 subjects from this KLA in 1997.

The mathematics and science KLAs were the only others to achieve participation by more than 50 per cent of those students undertaking tertiary-accredited subjects in 1997 (as also occurred in 1996). Of these two KLAs, mathematics

attracted some 82 per cent of students (79 per cent in 1996), while science attracted 67 per cent of students (64 per cent in 1996). Information presented about the science KLA also suggested a greater incidence of multiple subject enrolments than was the case in mathematics.

The KLAs attracting the smallest percentage of year 12 students in 1997 were LOTE (14 per cent of students), health and physical education (23 per cent of students) and arts (29 per cent of students). These same KLAs were the three attracting lowest levels of student participation in 1996.

There were some gender differences evident in respect of the subjects undertaken. For example:

- boys were somewhat more likely to undertake studies in the mathematics KLA than girls and considerably more likely to undertake studies in the technology KLA;
- girls were more likely to undertake studies in the society and environment, arts and LOTE KLAs than boys; and
- gender participation rates were similar in the science and health and physical education KLAs.

Shifts over time in the relative levels of enrolments in the different KLAs serve as useful indicators of the changes in

community expectations of schooling outcomes. Changes in the focus of government policies and perceptions about areas of future employment, for example, can change enrolment trends over a period of relatively few years.

Table 10K presents a view of changes in student enrolment patterns from 1992 to 1997. Against a background of a 10.3 per cent fall in the number of year 12 students from 1992 to 1997 and a fall of eight per cent in the total number of year 12 subject enrolments over the same period:

- the science, mathematics and society and environment KLAs each had a marginally smaller share of total subject enrolments in 1997 than in 1992;
- the rate of student participation in the arts, LOTE and technology KLAs all increased to a limited extent from 1992 to 1997; and
- student participation in health and physical education in 1997 was higher than in 1992.

Table 10K also allows a closer focus on changes occurring to enrolment levels in particular subjects within KLAs in the period from 1992 to 1997. It shows that subject enrolments in humanities and the social sciences fell around 20 per cent, exceeding the fall in total subject enrolments and reflecting changed student preferences.

Enrolments in economics and business fell at less than one quarter of the rate by which total subject enrolments fell, resulting in an increase in the subject's share of total enrolments.

Again from the same KLA, enrolments in religion subjects increased over the five years, with a similar growth in total enrolment share.

Subject enrolments in the physical sciences and in the biological and other sciences both fell during the period 1992–1997, the loss of enrolment share being greater in the case of the physical sciences.

There was major contrast evident within the technology KLA, where enrolments in computer studies increased by some 26 per cent, with an even greater increase in enrolment share, while enrolments in home economics fell by more than 60 per cent, with a corresponding loss in enrolment share.

participation rates and decreasing participation in some subject areas, including the humanities and science.

## Reporting from the States

Although not all States reported in detail on student participation in KLAs at year 12, information which was provided generally supported comments already made in respect of national data about gender differences in

Table 10K. Number (a) and percentage (b) of year 12 enrolments in tertiary-accredited subjects, by key learning area, by gender, Australia, 1992 and 1997

Key Learning Area and Subject	Male		Female		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
<b>1992</b>						
<i>English</i>	84,660	18.6	98,000	19.8	182,660	19.2
<i>Mathematics</i>	91,793	20.1	83,961	16.9	175,754	18.5
<i>Society and environment</i>						
Humanities and social sciences	59,728	13.1	76,442	15.4	136,170	14.3
Economics and business	52,022	11.4	59,099	11.9	111,121	11.7
Religion	868	0.2	1,640	0.3	2,508	0.3
Total for society and environment KLA	112,618		137,181		249,799	
<i>Science</i>						
Physical sciences	53,517	11.7	31,584	6.4	85,101	8.9
Biological and other sciences	37,298	8.2	52,282	10.5	89,580	9.4
Total for science KLA	90,815		83,866		174,681	
<i>Arts</i>	17,893	3.9	34,446	6.9	52,339	5.5
<i>Languages other than English</i>	7,176	1.6	14,590	2.9	21,766	2.3
<i>Technology</i>						
Computer studies	14,068	3.1	12,194	2.5	26,262	2.8
Home science	2,151	0.5	17,742	3.6	19,893	2.1
Technical studies	21,048	4.6	4,916	1.0	25,964	2.7
Agriculture	2,575	0.6	1,210	0.2	3,785	0.4
Total for technology KLA	39,842		36,062		75,904	
<i>Health and physical education</i>	11,163	2.4	7,981	1.6	19,144	2.0
<b>Total subject enrolments</b>	<b>455,960</b>	<b>100.0</b>	<b>496,087</b>	<b>100.0</b>	<b>952,047</b>	<b>100.0</b>
<b>Total year 12 students</b>	<b>92,944</b>		<b>99,567</b>		<b>192,511</b>	
<b>1997</b>						
<i>English</i>	76,388	18.8	91,885	19.9	168,273	19.4
<i>Mathematics</i>	79,596	19.6	77,307	16.7	156,903	18.1
<i>Society and environment</i>						
Humanities and social sciences	39,341	9.7	55,123	11.9	94,464	10.9
Economics and business	41,055	10.1	48,740	10.5	89,795	10.3
Religion	5,270	1.3	6,765	1.5	12,035	1.4
Total for society and environment KLA	85,666		110,628		196,294	
<i>Science</i>						
Physical sciences	42,077	10.4	27,655	6.0	69,732	8.0
Biological and other sciences	29,716	7.3	50,775	11.0	80,491	9.3
Total for science KLA	71,793		78,430		150,223	
<i>Arts</i>	22,834	5.6	38,557	8.3	61,391	7.1
<i>Languages other than English</i>	8,257	2.0	16,524	3.6	24,781	2.9
<i>Technology</i>						
Computer studies	21,960	5.4	13,387	2.9	35,347	4.1
Home science	1,156	0.3	5,936	1.3	7,092	0.8
Technical studies	17,031	4.2	7,628	1.6	24,659	2.8
Agriculture	2,857	0.7	1,674	0.4	4,531	0.5
Total for technology KLA	43,004		28,625		71,629	
<i>Health and physical education</i>	17,946	4.4	20,597	4.5	38,543	4.4
<b>Total subject enrolments</b>	<b>405,484</b>	<b>100.0</b>	<b>462,553</b>	<b>100.0</b>	<b>868,037</b>	<b>100.0</b>
<b>Total year 12 students</b>	<b>81,723</b>		<b>91,049</b>		<b>172,772</b>	

(a) These figures refer to enrolments in all subjects which are publicly examined and/or tertiary-accredited. As each student may be enrolled in several subjects, the total number of enrolments shown in this Table far exceeds the total number of year 12 students.

(b) The proportion of enrolments in a particular subject is the number of enrolments in that subject divided by the number of enrolments in all subjects.

Source: Commonwealth DEETYA, derived from data supplied by State secondary accreditation authorities

**Table 10L. Entries in Board-developed courses, by KLA and gender, all schools, HSC examination, New South Wales, 1997**

<i>Key Learning Area</i>	<i>% of total entries</i>	<i>Male %</i>	<i>Female %</i>
English	18.8	47.6	52.4
Mathematics	18.5	48.1	51.9
Human society and its environment	27.4	45.6	54.4
Science	13.6	52.4	47.6
Creative arts	5.3	36.2	63.8
Languages other than English	2.6	33.5	66.5
Technological and applied studies	9.9	57.8	42.2
Personal development, health and physical education	3.8	40.3	59.7

*Source:* Department of Education and Training, NSW

## New South Wales

New South Wales provided an overview of year 12 enrolments across all schooling sectors, in Board-developed subjects, summarised by KLA (Table 10L). Some gender differences in enrolments are clearly evident within this data. A comparison of the relative enrolment shares of the eight KLAs also suggests some variations from the national view presented in Table 10K.

Every Higher School Certificate candidate, male or female, must present at least one unit from either the mathematics, science or technology and applied sciences key learning areas. Within that broad framework:

- the total number of females who did not take any mathematics was 741, from a total of 29,460 female students;
- at least 10,151 girls did not do any science subject in 1997; and
- at least 16,500 girls did not do any technology subjects.

On average, boys chose 1.4 subjects in the human society and its environment KLA, while girls chose an average of 1.5 subjects from that KLA.

## Victoria

The Board of Studies collects information for Victoria. It is not reported by sector or equity group. There are discernible gender differences in mathematics and technology (where boys predominate) and LOTE and health and physical education (where girls outnumber boys) (Table 10M). The gender difference in mathematics may be explained by the number of boys doing more than one subject from this Key Learning Area.

**Table 10M. Year 12 enrolments, all schools, by KLA, by gender, Victoria, 1997**

<i>Key Learning Area</i>	<i>Total</i>	<i>Female %</i>
English	52,512	55.8
Mathematics	40,000	46.1
Society and the environment	43,903	53.0
Science	40,892	59.8
Arts	22,845	54.6
LOTE	8,387	63.0
Technology	26,151	41.1
Health and physical education	17,524	64.7

*Source:* Board of Studies, Victoria

**Table 10N. Proportion of year 12 students enrolled in at least one Board subject within a KLA, by gender, all schools, Queensland, 1997**

<i>Key Learning Area</i>	<i>Male %</i>	<i>Female %</i>	<i>Total %</i>
English	90	96	93
Mathematics	91	91	91
Studies of society and environment	45	58	51
Science	72	64	68
The arts	25	47	36
Languages other than English	7	16	11
Technological and applied studies	50	51	51
Health and physical education	31	20	25

*Source:* Education Queensland

## Queensland

Queensland also reported in terms of its total student population, without differentiation by schooling sector (Table 10N). Gender differences are again evident in subject choices. However, the differences evident between the enrolment shares of some KLAs in Queensland, compared with the national view presented in Table 10K are particularly noticeable. Enrolments in the mathematics and technology KLAs, for example, occurred at a significantly higher rate in Queensland than occurred nationally.

## South Australia

The South Australian Certificate of Education (SACE) requires each student to successfully complete at least one year 12 subject from the mathematics/science/technology grouping and one from the humanities/social and cultural grouping. Therefore, all year 12 students who complete the SACE study at least one subject from each group. This compulsory element of the SACE pattern was designed to ensure balance in the subjects chosen by all students.

From research conducted in 1997 into male and female enrolments, it is clear that both girls and boys enrolled in subjects in the quantitative/experimental and language-rich groups as required for SACE completion, but fewer boys than girls enrolled in the broader range of Group 3 subjects. *The Effect of Gender on Subject Combinations in 1996*, released by SSABSA in 1997, confirmed that boys tended to enrol in a narrower range of predominantly Publicly Examined Subjects (PES), while girls tended to enrol in a broader range of science, mathematics and language-rich subjects, which may or may not have included high numbers of PES units.

## Western Australia

Information from Western Australia related to participation by government school students in specific subject areas, not KLAs. Table 100 presents two gender-related perspectives on subject enrolments. Data is presented indicating the gender shares of enrolments in each subject, in a manner similar to that used in reporting from Victoria, as well as revealing the differing percentages of total male and female students enrolled in each of the subjects listed, reflecting the perceived levels of importance of each subject to boys and girls respectively.

**Table 100. Participation of year 12 students in selected subjects, Tertiary Entrance Examinations, by gender, all schools, Western Australia, 1997 (per cent)**

<i>Subject</i>	<i>Males %</i>	<i>Females %</i>	<i>% of all male enrolments</i>	<i>% of all female enrolments</i>
Accounting	45.0	55.0	12.4	11.7
Applicable mathematics	53.3	46.7	50.4	34.2
Art	28.2	71.8	5.9	11.6
Biology	36.3	63.7	14.7	20.0
Calculus	67.3	32.7	24.5	9.2
Chemistry	51.4	48.6	37.8	27.6
Discrete mathematics	39.7	60.3	44.5	52.4
Economics	54.1	45.9	31.3	20.6
English	47.4	52.6	69.8	60.0
English literature	30.0	70.0	17.2	31.0
Geography	48.8	51.2	43.4	35.2
History	31.7	68.3	17.5	29.2
Human biology	27.5	72.5	21.6	44.1
Undifferentiated LOTE (a)	29.3	70.7	9.5	17.8
Physical science	45.7	54.3	3.3	3.0
Physics	67.9	32.1	38.8	14.2

(a) Assumes students took one LOTE only.

**Source:** Education Department of Western Australia, from Curriculum Council data

## Tasmania

Although the nature of the Tasmanian Certificate of Education prevented reporting in precisely the manner undertaken by some States, some details of participation in courses designated as year 12 courses were provided:

- 47 per cent of girls in year 12 were not undertaking any year 12 course in mathematics, science or technology, while only 23 per cent of year 12 boys were not undertaking a course in any of these three areas; and
- 34 per cent of girls in year 12 were not undertaking any year 12 course in English while as many as 50 per cent of year 12 boys were not undertaking a course in English.

Further detail indicated that about 90 per cent of students do a mathematics course of some description at some stage during their years 11/12 course. All students have access to both year 11 and year 12 courses in each year of study. In 1997, 33 per cent of boys and 44 per cent of girls in years 11 and 12 were not doing a designated year 11 or 12 mathematics course. However, of these students, 81 per cent had completed a year 11/12 mathematics course in 1996 and a further 8.5 per cent would complete such a course in 1998.

The number of boys at year 12 in Catholic schools increased by 13 per cent over 1996 levels, while the number of girls grew by 3 per cent. Forty-eight of the 221 boys did not study any humanities subjects and 107 of the 269 girls did not study any mathematics, science or technology subjects.

Eight male and 11 female Indigenous students were enrolled in Catholic schools in years 11 and 12 in 1997. Of these, five studied subjects at pre-tertiary level.

## Northern Territory

Information provided by the Northern Territory showed total enrolments in a range of year 12 subjects, with gender details suggesting some differences in subject popularity (Table 10P). For a number of the subjects reported, student numbers were very small, rendering meaningful comment about areas such as gender differences impossible.

Thirty-seven Indigenous students in government schools received a Northern Territory Certificate of Education, eighteen of whom qualified for entry to the Northern Territory University. Two Indigenous students were amongst those who received Certificates of Merit.

In 1997, four Indigenous students completed year 12 in Catholic schools.

**Table 10P. Subject enrolments at year 12, Indigenous and other students, by gender, government schools, Northern Territory, 1997**

<i>Subject</i>	<i>Males</i>	<i>Females</i>	<i>Indigenous students</i>	
			<i>Males</i>	<i>Females</i>
Mathematics 1	138	131	2	2
Mathematics 2	45	20	0	0
Physics	87	63	2	2
English studies (a)	128	248	1	5
English	205	226	15	28
Australian legal system	4	16	1	2
Legal studies	46	91	1	6
Australian history	7	24	0	0

(a) Externally examined subject.

Source: Department of Education, Northern Territory

### Australian Capital Territory

The Australian Capital Territory provided data on year 12 certificate student participation and outcomes in the key learning areas in government and non-government schools for all students and for Indigenous students, disaggregated by gender (Table 10Q). Data for other equity target groups are not available.

**Table 10Q. Enrolments in year 12 KLAs, Indigenous students and all students, by gender, all schools, Australian Capital Territory, 1997**

<i>KLA</i>	<i>All students</i>		<i>Indigenous students</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
English	2,413	2,832	14	13
Mathematics	1,999	2,050	14	9
Humanities	1,834	2,890	12	12
The sciences	1,634	1,519	8	4
The arts	527	801	3	3
LOTE	216	495	0	0
Technology	1,744	1,050	15	7
Health/sport/PE	898	465	12	7

Source: Department of Education and Training, ACT

In 1997, six per cent of girls undertaking year 12 courses were not undertaking a course in mathematics, 54 per cent were taking no science and 59 per cent were taking no technology subjects. Of all boys undertaking year 12 programs, 25 per cent were not enrolled for any humanities subjects.