

NEW SOUTH WALES

Introduction

In NSW, education is compulsory for children from the age of six until they turn 15, through attendance at a government school, a registered non-government school or by approval for home schooling. In 1996, there were 1,065,347 full-time students attending 3,053 government and non-government schools in NSW, which represented an increase of nearly one per cent over the previous year. There were 69,094 teaching staff and this figure represented a similar increase in teacher numbers over 1995. NSW accounts for 34 per cent of Australian school students.

Contextual information

Government schools

In 1996, one in eight NSW residents were students or were employed in a total of 2,220 government schools. Enrolments in government schools increased in 1996 by 0.7 per cent to a total of 761,037 students.

The Department of School Education strategic planning for 1996 was detailed in its key corporate planning document, *Agenda 96*. The document described the five priorities for the year, the major strategic initiatives under each priority and how the success of the initiatives would be measured. The priorities for government schools were:

- Teaching Traditional Values
Objective: to provide a positive set of values in all students;
- In Safe and Happy Schools
Objective: to ensure learning environments which promote scholarship, are motivating and free of disruption;
- Aiming for Excellence
Objective: to strive for good teaching, effective learning and the highest standards of scholarship;

- In High-Tech Classrooms
Objective: to ensure teachers and students are skilful users of personal computers and associated technology; and
- Providing a Fair Go for All
Objective: to ensure both equality of opportunity and equality of outcomes.

Catholic schools

There were 591 Catholic schools, including six special schools, serving a total of 218,663 students.

Catholic schools in NSW are classified for administrative and grant purposes as systemic and Congregational (non-systemic). Systemic schools are administered by 11 autonomous diocesan education structures. The Congregational (non-systemic) schools are independent of the diocesan administrative structures, although under the authority of the Diocesan Bishop, and operate as autonomous schools administered by boards of management or religious orders.

The Catholic school priority objectives for 1996 included:

- to support each school as a Catholic faith community in which practices and the school climate are conducive to ongoing faith development;
- to make principles of social justice central to the policies and practices of each school, particularly those principles embodied in the Church's preferential option for the poor;
- to develop each student's ability to learn, to think critically and creatively and to communicate effectively;
- to develop, implement and regularly evaluate, in each school, curriculum which is focused on the student and structured around key learning areas and their stated outcomes;
- to develop in each school, programs and structures which cater for students with special needs;

- to develop in each school, programs and structures which cater for the pastoral needs of all students; and
- to make provision for postcompulsory students in the context of the changing roles and relationships between secondary and tertiary education and industry.

Independent schools

In 1996, there were 277 independent schools (including Anglican systemic schools), serving 86,578 students. Independent schools generally framed their priority objectives around the development of well balanced human beings. Priority was given to encouraging personality integration and the development of the spiritual, intellectual, physical and social aspects of students.

Specific objectives varied from school to school but tended to relate to the social development of students and included self-esteem, education for life, vocational and career preparation, moral and religious perspectives, and community relationships.

Board of Studies

The NSW Board of Studies is responsible for the development of K–12 curriculum and curriculum support materials, the conduct of the School Certificate and the HSC examinations, and the registration of non-government schools. During 1996, the Board had a number of priority objectives which included:

- implementation of the recommendations of the Eltis Review of Outcomes and Profiles in NSW;
- provision of information to assist the review of the HSC and the preparation of the Green Paper, *Their Future: Options for Reform of the Higher School Certificate*;
- development of support documents to cater for students with special needs;
- development of support documents and teaching resource kits for Aboriginal Education;
- development of a draft citizenship education framework K–10;
- conduct of research into gender differences in participation and performance of school students;
- establishment of HSC marketing centres in country areas; and
- development and implementation of curriculum documents for primary and secondary schools.

Initiatives undertaken

Literacy

Extensive planning occurred during 1996 in the development of a Statewide literacy strategy for implementation in 1997. The literacy strategy was developed on the premise that effective literacy learning is best achieved where there is integration of reading, writing, talking and listening. The literacy strategy will particularly focus on:

- the teaching of reading from K–6;
- interventions where students are experiencing difficulty;
- careful monitoring of students' literacy needs as they move from primary to secondary schools through the introduction of the Year 7 English Literacy and Language Assessment (ELLA) Test; and
- meeting the needs of students in all secondary school classrooms.

In 1996, the Reading Recovery program was expanded by 100 extra teaching positions in 205 schools. In addition, two non-school based positions and \$435,000 were allocated to operate the program and 14 Reading Recovery tutors were located across the 40 districts. They provided professional development and support for Reading Recovery teachers Statewide. Nine cadet Reading Recovery tutors were in full-time training at the University of Western Sydney, Nepean, with a Senior Education Officer Reading Recovery trainer. By the end of 1996, a total of 381 schools across the State were implementing Reading Recovery.

Technology

The implementation of the Government's Computer in Schools initiative continued during 1996 with the allocation of \$24 million for computers and an additional \$5 million for teacher training in the use of computers. The Government has committed \$186.4 million over four years for this program.

The key features of the initiative are:

- providing all students with equitable access to computer resources;
- making computer education integral to all key learning areas; and
- delivering relevant and substantial training and development for teachers.

The \$184m Computers in Schools Policy has seen 55,000 new computers in schools and every NSW government school connected to the Internet.

The distribution of computers across schools in previous years had been inequitable and computers are being distributed at a ratio of one computer to 14 students. Combined with existing computers and school purchases, the program will result in a Statewide ratio of one computer to eight students.

Technology adviser positions were established in each of the Department's 40 district offices. These advisers lead the training and development of teachers in the use of computers in the classroom and provide technical advice to schools.

A program was established which involved the provision of a computer to each school and the connection of all schools to the Internet. These connections included technical barriers to restrict access to undesirable web sites. All government schools were connected to the Internet by the end of 1996.

Non-government schools also benefited from the government's initiative on computer education through increased per capita grants. The increased expenditure on computer education in the government schooling sector will be included in the base government schooling cost figure used to calculate per capita grants to independent and Catholic schools.

School accountability and improvement

The primary function of the Quality Assurance Directorate, which has been in operation since 1992, had been to review schools and the services provided to schools by regions and State Office. With over 60 per cent of government schools reviewed by mid 1995 it was apparent that there was a need for Quality Assurance to be refocused to address the needs of

the 40 per cent of schools which had not been reviewed and to develop new processes for the continuous improvement of the majority of schools which had already been reviewed. The NSW Teachers Federation had in 1995 directed its members to ban participation in Quality Assurance and, as a result, most schools withdrew from scheduled school reviews.

A new approach to school accountability and improvement was developed which took the best practices of the previous Quality Assurance initiative and added a number of features drawn from other school systems, other workplaces and consultation with community members. The new model was released in November 1996.

To support the school accountability and improvement process, the Director-General established the Corporate Performance Directorate to provide the data, support and training required to ensure the effectiveness of the process.

The first step of the process will be an annual self-evaluation by the school, in association with one of the Department's school improvement officers. Schools will form a committee to conduct the evaluation and computer software will be provided to facilitate the gathering and analysis of information. The evaluation will focus on student learning outcomes, specific areas of school practice and the school's quality systems and will involve parents, teachers and students.

Following the self-assessment, the school will produce an annual report for distribution to parents and the wider community. The reports will be public documents provided to school communities, the general public, the Director-General and the Minister. A software package will be provided to assist in report preparation and to ensure that they have a consistent format and contain information about the school, its programs, learning outcomes data and statements about future plans and priorities.

The program may also be supplemented with in-depth school reviews to be carried out at selected schools. These reviews will target specific areas and will focus on how student learning outcomes can be improved or will present an opportunity to share best practices.

By aggregating information from all school self-evaluations and from school reviews, the system will have clear evidence of how it is meeting the needs of its entire student population. The data will provide valuable information to assist with future planning.

At the end of 1996 the implementation of school accountability procedures was being negotiated with the

NSW Teachers Federation and interest groups. School accountability is a key issue in improving the performance of schools and in providing better information to the Parliament, parents and the wider community about the operation and achievements of schools.

Restructuring the Department of School Education

In August 1995, the Director-General announced a major restructure of the Department of School Education which eliminated regions and established 40 districts. The aims were to improve service and support for schools, to provide this support as near as possible to the schools and to contribute to the elimination of the Government deficit by reducing the size of the bureaucracy. At the same time the number of positions directly supporting teaching and learning was increased. This was achieved in 1996 with an increase on 1995 levels of 32 per cent in the number of officers providing support to schools and a reduction of 17 per cent in public service administrative staff and of 41 per cent in senior executive service staff. Total non-school-based staff numbers in the Department fell by 4.3 per cent or 107 officers, between 1995 and 1996.

The new district structure has some 800 officers whose focus is on directly supporting schools. In each district, there is an average of 55 schools. By the end of 1996, each district office had an average of 20 staff, comprising at least four curriculum consultants, a technology adviser, student and staff welfare officers, a home-school liaison officer, special education staff, and officers acting as the first point of contact on personnel and salary matters, along with school maintenance and cleaning staff.

A fully integrated State Office taking advantage of improved communications technologies has been established at the multiple locations of Bathurst, Blacktown, Newcastle, Wollongong and Sydney city. Regional administrative responsibilities which have been moved to State Office include financial management, personnel services, staffing, property management and capital works.

Benefits can already be identified from the new organisational structure. These include:

- a substantially increased level of support closer to schools;
- the utilisation of new technologies to improve communications, productivity and efficiency;
- new structures and work practices delivering substantial savings to the State Budget;

- cost savings from the release of former regional accommodation to other tenants; and
- more explicit and achievable service standards from the consolidation of regional administrative responsibilities into an integrated State Office.

The restructure was completed by the end of 1996.

Review of special education

In October 1995, the Minister for Education commissioned a study of issues associated with the integration and inclusion of students with disabilities. This was completed in 1996. The report contained discussion of the costs and benefits of greater integration and inclusion of students with disabilities.

The study included consideration of:

- support needs of the full range of students with disabilities, behavioural disorders, emotional disturbance and learning difficulties;
- current service delivery for students with disabilities;
- cost effectiveness indicators of the different service delivery models; and
- views of all stakeholders, including students, teachers, parents and community, unions, parent bodies, academics and disability support groups.

The key recommendations of the report were that:

- the provision of support should be based on the educational needs of the student rather than the type of disability or place of enrolment; and
- a need exists to maintain a range of options for students which includes the continued existence of special schools.

Schools in NSW improved education access and equity for students with disabilities by integrating them in regular classrooms.

Written submissions on the content of the report were invited by the steering committee which was established to oversee the consultation process and which received 650 submissions. The steering committee will report to the Minister at the conclusion of the consultation process.

Review of the Higher School Certificate

In 1996, Professor Barry McGaw, Director, ACER, undertook a review of the NSW HSC. In establishing the review, the Government sought advice on issues and directions to its commitment to provide an HSC that comprises:

- a coherent and comprehensive curriculum policy and framework across years 11 and 12;
- fair and valid assessment practices;
- clear reporting on what students know, understand and can do; and
- a clear and acceptable basis for gaining access to future learning, including student selection into post-school pathways.

A Green Paper, *Their Future: Options for Reform of the Higher School Certificate*, was released for public consultation in April 1996. The Department developed a substantial submission which addressed the options put forward in the Green Paper and stressed the importance of:

- incorporating clearly defined minimum standards in all subjects;
- enabling students to develop a broad base of skills, understanding and knowledge upon which to make future life, vocational and tertiary study choices;
- consolidating the education of students to the point where they can explore a variety of post-school options;
- providing students with a breadth of study while allowing specialisation in areas of interest and expertise; and
- assisting students to develop skills and attitudes which will support lifelong learning.

The Government will develop its White Paper in 1997 in response to the findings and recommendations of the review. The first students to benefit will be year 11 students in 2000.

Industrial agreement

On 25 September 1996, an agreement to enhance the salaries and status of teachers was registered in the

Industrial Relations Commission between the Department and the NSW Teachers Federation.

As part of the agreement, the Department and the Federation agreed to a number of system improvements. Some of these were specifically designed to enhance the status of the teaching profession and included:

- the introduction in 1997 of a deferred salary scheme to enable teachers to be paid deferred salary every fifth year while on leave undertaking further study, industry experience, working in overseas education systems or other activities;
- the establishment of a Professional Relations Forum which will have responsibility for advancing the quality of the teaching profession; and
- the establishment in 1997 of a pilot program to test the feasibility and desirability of voluntary salary packaging for teachers.

Teachers were provided with a salary increase cumulatively worth 16.95 per cent by January 1999. This consisted of an immediate six per cent increase, followed by four per cent on 1 July 1997, three per cent on 1 July 1998 and a further three per cent on 1 January 1999. The agreement means that teachers at the top of the salary scale will receive an income of \$50,000 per annum and that principals will receive an income of up to \$81,299 per annum by 1999.

Catholic sector initiatives

In addition to major initiatives regarding numeracy and science which are detailed within this chapter, Catholic schools were also active in several other areas. Technology was a major theme in many areas, with projects, including Windows into Science and Technology, which focused on student use of technology and its impact on conceptual development. A model for researching technology within the community and a common technical culture were promoted.

Road safety was also a major curriculum initiative, with the key feature being professional development for teachers. This was linked to ongoing support to extend the impact of road safety education within the Personal Development, Health and Physical Education Curriculum, Years 7–12.

Drug education was also given a high profile through the National Initiatives in Drug Education (NIDE) training course and distribution of related resources. The project focused on the concept of harm minimisation.

Independent sector initiatives

There was considerable diversity in the range of initiatives reported by independent schools as they catered for the needs of their students. However, some common themes were reported by schools in addition to those described in this chapter.

Most schools had developed programs which focused on student self-esteem and education for life. While individual talents and abilities were valued, most schools also connected respect for self with esteem for others. Schools also sought to provide an education which gave a foundation for lifelong learning.

Schools reported a high level of activity in the area of vocational education and career preparation, expanding a pragmatic approach by ensuring that both the theoretical and practical aspects of subjects were well presented. Many schools with religious affiliations also reported initiatives related to moral and religious perspectives of education, and a large proportion also indicated a strong commitment to forming closer relationships with the community during 1996.

Capital projects

The Department's capital strategy was focused on the need to provide both additional education facilities in new and developing areas of the State, and to ensure the provision of essential facilities to existing schools. There is currently a surplus of school accommodation in many parts of the Sydney metropolitan area and demand outside this area is being met by new accommodation or demountable classroom provision.

Total capital payments were \$174.4 million in 1995–96 and are projected to be \$150.3 million in 1996–97. A total of 58 capital works projects using Commonwealth funding and amounting to approximately \$72 million were in progress in 1996. Of these, 32 were completed during the year. The projects ranged from building a school to upgrading libraries, gymnasiums and classrooms.

The Commonwealth provided \$27.5 million towards capital projects in the Catholic sector. This included \$8.63 million under the QCATS Element to help broaden the secondary curriculum. There were 60 projects funded and completed during 1996.

The Commonwealth provided \$7.7 million towards capital projects in the independent sector, including QCATS funding. Of the 29 capital projects funded by the

Commonwealth and completed during 1996, the most common facilities provided were classrooms and laboratories. Approximately 80 per cent of the funding was spent on upgrading existing facilities.

Focus areas

Students' attitudes to the social objectives of schooling

The Department continued its commitment to the social objectives of schooling during 1996. The State SRC provided a forum for senior school students from across NSW to contribute to the development of Departmental planning and policy. Members were also involved in training as student welfare consultants in areas relevant to school leadership.

These SRCs are well established in secondary and central schools and the concept is being increasingly supported in primary schools. They are designed to promote inter-personal skills, citizenship, enhanced confidence and responsibility through student leadership.

Forty district student welfare consultants provided support to schools in strengthening student leadership and participation. They were supported by the establishment of a new State Office position, Senior Education Officer (Student Leadership).

'Buddy' programs operated in the majority of primary schools. These programs provided opportunities for senior students to act as leaders, and have lowered the incidence of bullying and harassment. Young students reported an increased sense of confidence and security. Many schools conducted formal peer support programs, and peer mediation programs were established in a large number of schools. Mediation programs addressed playground conflicts, resolved low level disputes and extended student leadership opportunities.

Promotion and support of student leadership and student-led programs in schools were highlighted in the revised Student Welfare Policy and support materials distributed during the year.

Independent schools promoted an educational environment where responsibility and dignity for both self and others was the expected norm. Many schools linked self-esteem and respect for others by adopting community service oriented objectives.

Further developments of social objectives in independent schools include:

- extending student welfare and discipline policies;
- enhancing the school's peer support program;
- encouraging community feedback;
- participating in cooperative learning programs; and
- encouraging students to establish their own personal social objectives through programs such as Adopt a Granny, forming links with other schools and improving the school's pastoral care.

A wide range of strategies was used by Catholic schools during 1996 to promote student self-confidence, optimism, self-esteem, respect for others, respect for learning and positive attitudes for lifelong education.

Particular initiatives in Catholic schools were:

- Indigenous education, including special programs to welcome Indigenous families into Catholic schools, the appointment of Aboriginal advisory staff, and the development of scope and sequence in Aboriginal studies;
- programs specifically designed for students at risk, including provision of specialist intervention for 'at risk' learners;
- initiatives for students with special needs, including extensive and increased participation by schools in professional development programs addressing the needs of students with disabilities, increased levels of parent involvement in the review of programs, and the implementation of a range of individual education programs; and
- programs in vocational education, which continued to grow rapidly and involved continued programs in teacher training and support for shared initiatives with TAFE and industry.

During 1996, the NSW Board of Studies engaged in a range of curriculum projects that have an impact on students' attitudes as they apply to the social objectives of schooling.

Development of the K–6 Human Society and its Environment Syllabus and a related citizenship module progressed during 1996. The document will undergo a period of broad consultation and refinement before distribution to schools in 1998. It focuses on the development of students' sense of personal, community, national and global identity and their ability to participate

NSW secondary school students took part in peer mediation training. The program taught students the skills to resolve conflict non-violently, enhance relationships and use conflict in a positive and productive manner.

effectively in maintaining and improving the quality of their society and environment.

Initial planning commenced for the redevelopment of the K–6 Personal Development, Health and Physical Education Syllabus which aims to enhance students' self-esteem, social well-being, sense of self and community responsibility, respect for others and commitment to realising their full potential. The syllabus is planned for release in 1999.

For years 11–12, the development of a 3 unit Personal Development, Health and Physical Education Syllabus commenced. The planned syllabus contains a detailed analysis of issues pertaining to adolescence, gender and health leading to enhanced self-esteem, self-confidence and respect for others.

Geographically isolated students

Geographically isolated students require equitable, quality educational provision. All students in remote schools experience teaching and learning face-to-face and, where appropriate, this is supplemented by distance education provisions.

Distance education provides students in remote schools with:

- single subject enrolments in courses unavailable at the local school;
- access clusters where a number of schools are linked telematically and operate as a single provider of a range of subjects; and
- a distance education support unit which provides assistance for students with special needs.

Equity programs supplement the educational provision available to remote schools. The CAP aims to improve the educational opportunities, learning outcomes and personal development of geographically isolated students. In 1996, \$3.17 million was allocated to school-based initiatives and program running costs. In 1996, 25 remote schools participated in the DSP, attracting total funds of \$362,840. The DSP aims to improve the educational opportunities and learning outcomes of students disadvantaged by socioeconomic factors.

Schools and students in rural and remote areas benefited from a number of initiatives to improve educational provision. These included:

- the allocation to small country schools of an additional 30 teaching positions to be phased in over a four year period. Most of the schools to benefit have fewer than 100 students and the principal teaches a class as well as undertaking administrative and school leadership duties;
- the HSC On-Line Project which is designed to provide substantial support to HSC students and teachers using Internet technology;
- additional resources in terms of telephone lines, staff and on-line hours for the HSC Advice Line so that students in rural and remote areas could contact highly experienced teachers for the cost of a local call;
- the utilisation of technology through distance education to ensure that students in rural and isolated areas were able to access a wider choice of subjects;
- the allocation of additional literacy resources at the district level; and
- more effective development, coordination and delivery of services and resources to students and schools in rural and remote areas through the establishment of a highly specialised directorate.

In addition to these initiatives, the CAP involved some 28,000 students in 213 schools and implemented a range of programs including:

- a languages program for students in years 7 and 8;
- elective options for secondary students;
- professional development opportunities for teachers with an interest in languages;
- learning centres;
- opportunities for students to visit places of historical, cultural or urban significance;

- numeracy and literacy support and enhancement (including Reading Recovery);
- computer education; and
- access to sporting facilities.

A total of 254 students from remote schools made use of distance education to study courses for the HSC and a total of 267 single subjects were completed in this way. Access cluster schools provided HSC courses for students in central schools. These students studied using a range of communications technologies. Sixteen remote schools were part of four access clusters which received staffing supplementation to ensure appropriate staffing levels and effective educational leadership.

The educational provisions offered by remote schools have been enhanced through the provision of satellite dishes, dedicated shared telephone lines and voice conferencing facilities.

Teachers in remote schools have gained increased professional support from training and development, welfare and consultancy staff in district offices. Small remote schools benefited from the appointment of experienced principals rather than teachers-in-charge. In central (K–10/12) schools, whole-school staffing was established which means that, where appropriate, teachers may teach at any level across the school according to the needs of the students and teacher expertise.

Incentives to attract teachers to remote schools include:

- rural pre-service teacher education scholarships which assist to fill teaching positions in hard to staff remote locations; and
- favourable transfer treatment for teachers and school executives following an initial service period in isolated schools.

Over 60 per cent of remote primary schools have very small enrolments. In these schools, small student and staff numbers exacerbate disadvantages stemming from geographic isolation. Remote secondary schools, including central schools, also tend to be small compared to those in non-remote areas.

Technology, especially in the form of satellite and telematics, will be an increasingly important means of enhancing the capacity of remote schools to offer a diverse range of quality educational provisions, and develop the professional expertise of staff.

A variety of special programs were adopted by independent schools to encourage participation by geographically

Students in remote NSW schools benefited through distance education provisions including satellite dishes, dedicated telephone lines and voice conferencing facilities.

Isolated students. Scholarships, boarding bursaries and other financial assistance were provided as required. Isolated students were welcomed in boarding houses for short stays to encourage participation in extracurricular activities. Some students were better served through homestay or host family arrangements. All isolated students were encouraged to participate in excursions to experience cultural and sporting activities not available in their home communities. Homestay arrangements for boarders provided an important contribution to students' educational outcomes in independent schools.

Travel time is an issue for most geographically isolated students in independent schools. This is even more an issue for students with disabilities. Access to leisure pursuits was a problem for their geographically isolated students. Students dependent on country buses or parent transport find it difficult to participate in out-of-hours activities.

Independent schools in isolated areas encouraged parent and community involvement through regional parent groups, residential inservice sessions for parents, host family arrangements and classroom support.

There were 38 Catholic schools with a total enrolment of almost 4,000 students involved in CAP. Many of these schools use CAP funding to increase staffing. They also made extensive use of communications and information technology to improve the educational outcomes for their students. A communications and technology infrastructure called WESTNet was established, together with the necessary technical and professional support required by schools, to offer learning environments in which students learn with and through technology.

Other initiatives of Catholic schools in catering for isolated students included the establishment of learning centres, the development of resources for literacy and

numeracy, identification of the particular difficulties in catering for isolated students with special needs, and the promotion of educational excursions.

Numeracy

Numeracy continued to be a priority for NSW schools and a range of initiatives were introduced. Count Me In, a program which focuses on developing the strategies children use when learning mathematics in the early years of schooling, was introduced in four districts as a research and development pilot.

Case studies addressing the middle school transition in mathematics were conducted in 25 districts. The outcomes of this project reflect the emerging issue of continuity of numeracy development across the transition from primary to secondary education.

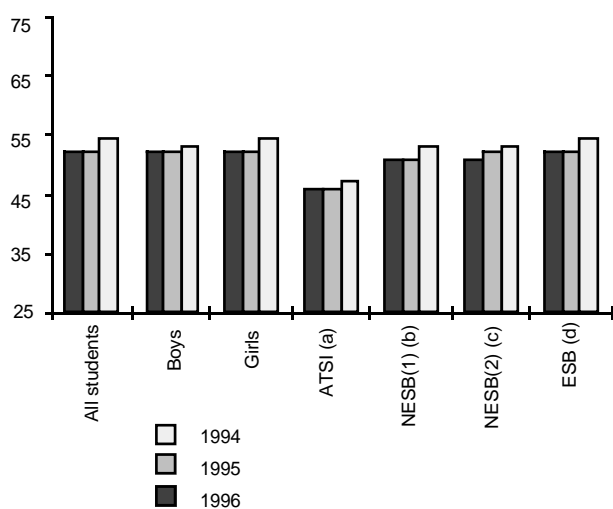
Additionally, the establishment of 40 district consultant positions in mathematics to provide strategic support to schools was a highlight of 1996. Consultants' work focused on within-school and in-class support to effect strategic improvements in the teaching and learning of mathematics.

During 1996, considerable progress was made in implementing the recommendations of the Eltis Review of Outcomes and Profiles. Draft outcomes derived from the content of the Mathematics K–6 Syllabus were written, and will be sent to all NSW primary and infants schools for consultation early in 1997. Comments from the responses will be collated and will form the basis for the final editing of the outcomes.

Procedures were investigated for collecting work samples matched to a small number of the draft outcomes from 30 schools across the State. These should be finalised and released to schools in late 1997. At a later date it is planned to provide schools with work samples on CD-ROM, to allow for video and audio work samples as well as print-based work.

The Years 9–10 Syllabus was released to schools early in term 4, 1996 for implementation with year 9 in 1997. This syllabus, which is divided into three courses (advanced, intermediate and standard), is significantly different from its predecessor. The content is very clearly defined and each part is supported by a number of suggested applications, activities and sample questions. A major feature of the new syllabus is the significance of problem-solving and investigations, as well as the opportunity for extension and enrichment.

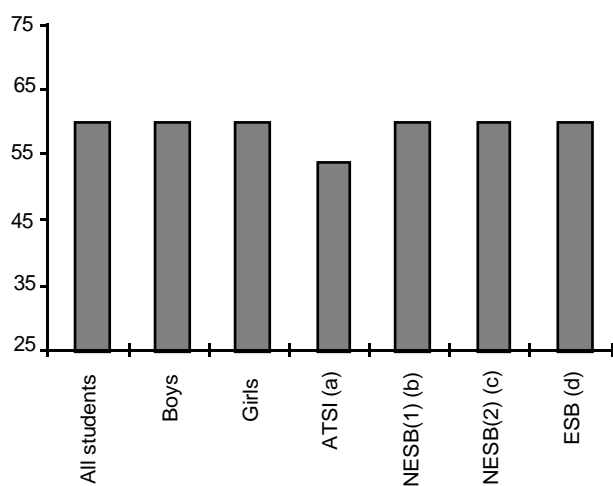
Figure 14. Basic Skills Test results, mean test scores, 1994–1996, year 3 numeracy, government students, NSW (Test results reported on a scale of 25–75)



- (a) ATSI: Aboriginal and Torres Strait Islander students.
 (b) NESB (1): Another family member uses a language other than English in the home.
 (c) NESB (2): Students have been in Australia for four years or less and never/rarely speak English at home.
 (d) ESB: English speaking background.

Source: Department of School Education, NSW

Figure 15. Basic Skills Test results, mean test scores, 1996, year 5 numeracy, government students, NSW (Test results reported on a scale of 25–75)



- (a) ATSI: Aboriginal and Torres Strait Islander students.
 (b) NESB (1): Another family member uses a language other than English in the home.
 (c) NESB (2): Students have been in Australia for four years or less and never/rarely speak English at home.
 (d) ESB: English speaking background.

Source: Department of School Education, NSW

The recommended time requirement relating to mathematics instruction in NSW government primary schools is part of a guiding principle that the greatest emphasis should be placed on English and mathematics. Government secondary schools provide 500 indicative hours of mathematics from year 7 to 10. In years 11 and 12, standard courses of two units require students to undertake 200 hours work over the two years. Each additional unit of study within the same study area requires an additional 50 hours of study.

The 1996, BST results show that boys and girls performed at the same level overall in numeracy. The results also indicated an overall level of achievement by students from non-English speaking backgrounds in numeracy comparable to the full population in numeracy. The performance of Indigenous students was lower than the performance of the total student population and the performance of other groups.

Some of the key results of the 1996 BST in numeracy were:

- 72 per cent of year 3 students were placed in the top three skill bands for numeracy;
- a rise in year 3 numeracy levels between 1995 and 1996; and
- 77 per cent of year 5 students were placed in the top three skill bands in numeracy.

In government schools, the proportion of A grades awarded to girls in School Certificate Intermediate Mathematics increased for girls attending single-sex, specialist and selective high schools in 1996 when compared to 1995. Specialist high schools showed the greatest improvement in School Certificate A grades for girls and boys in Advanced Mathematics.

In 1996, 96 per cent of the total Department of School Education candidature of 33,457 students sat for an HSC mathematics exam. The majority of these students chose either Mathematics in Society or 2 Unit Mathematics. This pattern was reflected among students attending DSP and CAP schools. The majority of Indigenous students chose either Mathematics in Practice or Mathematics in Society.

Performance in HSC mathematics courses was generally lower for targeted groups than the State average. Students attending remote schools had encouraging results in 4 Unit Mathematics with mean scores similar to those at the State level, while results in the general mathematics strands exceeded the State's average.

There was an adequate supply of both primary and secondary mathematics teachers in government schools with

Table 83. 1996 HSC candidates in mathematics, government and non-government students

<i>Course</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
2 Unit Maths in Practice	2,164	2,946	5,110
2 Unit Maths in Society	10,511	13,175	23,686
Mathematics	8,172	8,736	16,908
3 Unit Mathematics	4,796	3,812	8,608
4 Unit Mathematics	1,577	774	2,351
Totals	27,220	29,443	56,663

Source: Board of Studies, NSW

positions filled by 400 new graduates and 200 targeted casuals in addition to those drawn from a pool of applicants currently waiting for positions.

Independent schools focused on a comprehensive approach to numeracy. Schools introduced problem solving and an investigative approach to numeracy across all levels. Many also emphasised basic numeracy skills and introduced specialist mathematics to secondary students.

Streamed classes, one-on-one assistance and after school programs for extension and remediation were all used to meet the needs of students at both extremes of the ability spectrum.

A survey of independent schools indicated that primary schools devoted more than three hours per week to numeracy. More than 86 per cent of secondary students were enrolled in mathematics during years 11 and 12.

A variety of mathematics-related professional development activities were attended by staff from independent schools. These included subject association meetings, conferences, and seminars and Association of Independent Schools' workshops. A number of teachers also attended sessions on using computers to teach numeracy which produced immediate improvements.

A professional development program, Numeracy for All, was implemented in many Catholic schools. This initiative is an early intervention program based on identification of students aged 6–8 years, at risk or experiencing difficulties in numeracy. Over two years, teachers from many primary schools will be trained as clinical interviewers to implement this program.

Other outcomes in numeracy achieved in Catholic schools in 1996 include:

- significant professional development of teachers;
- a number of schools now have teachers trained to identify early numeracy difficulties;

- teachers have set up clusters for ongoing contact; and
- modifications and developing strategies for early identification, screening and multi-age groupings are in place in many schools.

The Numeracy for All strategy has been extremely successful and will continue and expand in 1997.

The development of an Integrated Mathematics Program assisted staff in Catholic schools to develop fully the year 7 and 8 mathematics program and develop stronger connections with neighbouring schools.

Science

In May 1996, the Board of Studies convened a Science Years 7–10 Symposium to consider certain recommendations of the Eltis Review. This provided a forum to consider the widest possible range of views relevant to the content of, and approach to, the Science Years 7–10 Syllabus. The Board invited all groups involved in science education to nominate participants, which resulted in 180 committed delegates from a diverse range of backgrounds, including a large number of teachers from country schools. Speakers addressed the scope, depth and balance of content from each of the science disciplines, and the workshops raised valuable debate.

The Years 7–12 Science Syllabus Advisory Committee examined and reported to the Board on the areas of strong agreement raised at the symposium. This advice and the report of the symposium subsequently formed the basis for a writing brief for the new Stage 4 and 5 Syllabus. A project team was convened in December 1996.

The Board endorsed a proposal by the Science and Technology K–6 Syllabus Advisory Committee to undertake a limited evaluation of the K–6 Science and

NSW schools implemented new teaching strategies to increase students' interest in science and to better involve them in investigative tasks.

Table 84. 1996 HSC candidates in science, NSW

<i>Course</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
2 Unit Science for Life	2,489	2,006	4,495
2 Unit General Science	1,180	922	2,102
2 Unit Biology	5,253	9,355	14,608
2 Unit Chemistry	5,821	4,847	10,668
2 Unit Geology	159	96	255
2 Unit Physics	7,157	2,562	9,719
3 Unit Science	89	112	201
4 Unit Science	265	266	531
Total	22,413	20,166	42,579

Source: Board of Studies, NSW

Technology Syllabus by conducting group interviews in schools across the State. The interviews took place in September/October 1996. It is expected that the information gained from this limited evaluation will inform the Board of the degree and type of support required by teachers until a full evaluation of the syllabus can be undertaken.

Twenty-one units of work for K–6 teachers of science and technology were distributed to schools. Schools in several districts were supported to attend workshops using the Australian Science Teachers Association science teacher development package. The Department provided major sponsorship for the Young Scientist Competition run by the Science Teachers Association of NSW and continued its funding for 19 field study centres scattered throughout the State, two education centres (one each at Taronga and Western Plains Zoos) and an education officer position at the CSIRO Science Education Centre at Lindfield.

The outcomes in levels model embedded in the science national profile and the outcomes in stages model for NSW Board of Studies syllabuses have been instrumental in focusing teacher attention on the classroom implications of an outcomes-based curriculum. Classroom-based educational research is providing powerful new teaching strategies that improve student metacognition and student knowledge and understanding of science concepts, laws and principles.

The increased access by schools to computers and the Internet means that teachers and students are continuing to use computer-based technologies to support high quality learning in science.

Science teachers in government schools are beginning to take up the Department's own Certificate of Teaching and

Learning which supports teachers in their workplace to become reflective practitioners. Support is given at the school and district level for collegial groups to form stable networks geared to meeting the local needs of the teachers in that network. The Department continues to fund professional development activities run by the professional teachers' association.

Independent schools used a variety of initiatives to increase student interest in science, including increased time spent on science teaching, adoption of a hands-on approach to science, exploring the connections between language and science or the history and philosophy of science, and cross-level integration of the science program. Students were also encouraged to participate in science clubs and the environmental awareness and monitoring program, Streamwatch.

Teachers from independent schools attended a variety of professional development activities relating to science. These included physics inservice education sessions, subject association workshops, systemic inservice education activities, and sessions on science and literacy and occupational health and safety.

In Catholic primary schools, science education was a priority in 1996. Significant professional development of primary teachers occurred, and the focus on the development of new teaching programs in science and teaching continued. Several schools have successfully established annual science and technology days.

In Catholic secondary schools, the number of science courses undertaken by students for the HSC continued to grow.

Professional development of teachers in both science and technology remained an important focus. With the introduction of design and technology as a compulsory area of the curriculum for students in secondary schools, the areas of industrial arts/technics, home science/textiles and design, agriculture and computing were placed within one subject framework. Conceptually this is a different structure but can be taught either as an integrated course, or by focusing on the different strands separately.

Schools continue to offer technics and home science and textiles and design and/or design and technology. The new vocational courses in furnishing, hospitality, metals and engineering and building and construction require high levels of specific technical knowledge and skill. There is a concern that the focus on training teachers for design and technology does not equip teachers with

these specific skills to the level required for technics, home science, textiles and design and the vocational courses.

A number of professional development issues which will need to be addressed are arising from this new and divergent approach. Schools are also finding difficulty in employing teachers with the skills to teach in the area.

A number of Catholic schools were involved in the piloting of the TALENT program being developed by the Catholic Education Commission with funding from the NPDP. As a result of the trial it is expected that at least one diocese will make the TALENT program available to all teachers in 1997.

Other Catholic school-based projects in science education included:

- trialling of the *Investigating Science Program* published by the Australian Academy of Science;
- Windows into Science and Technology, which focused on children's use of technology and its impact on conceptual development;
- Learning and Measuring, which focused on the relationship between students' learning and assessment in science and technology;
- Talking Technology, which investigated the ways in which a range of technologies can be used by teachers to enhance oral language, higher order thinking and cooperative learning strategies within the context of science and technology; and
- Storage – Science and Technology through Outcomes, Recording, Assessing, Genres and Evaluating continues. It aims to continue the exploration of assessment within science and technology with particular emphasis on talking and listening of students engaged in investigative tasks.