

# **Learning in an online world:**

**the school education  
action plan for the  
information economy**

**Progress report 2001**

**Ministerial Council for Education, Employment,  
Training and Youth Affairs**

**Education Network Australia (EdNA)  
Schools Advisory Group**

# Contents

Introduction	3
Overview	4
National Report	6
Commonwealth	15
New South Wales	21
Victoria	25
Queensland	32
Western Australia	38
South Australia	42
Tasmania	47
Australian Capital Territory	52
Northern Territory	57
National Catholic Education Commission	60
National Council of Independent Schools' Associations	64

## Introduction

In March 2000, the Ministerial Council for Employment, Education, Training and Youth Affairs (MCEETYA) endorsed *Learning in an Online World: the school education action plan for the information economy*. The action plan is available online at <http://www.edna.edu.au/onlineworld.pdf>.

The overarching goals of the action plan are:

- All students will leave school as 'confident, creative and productive users of new technologies, particularly information and communication technologies, and understand the impact of those technologies on society'. (National Goals for Schooling in the Twenty First Century, MCEETYA 1999)
- All schools will seek to integrate information and communication technologies into their operations, to improve student learning, to offer flexible learning opportunities and to improve the efficiency of their business practices.

*Learning in an Online World* provides an agreed national framework for change. By taking forward strategies identified in the action plan, school sector stakeholders will help ensure that young people have the school education that is needed for the knowledge society and information economy.

The Education Network Australia (EdNA) Schools Advisory Group (SAG), which developed *Learning in an Online World*, has responsibility for monitoring progress against the identified goals and strategies of the action plan.

School education authorities have agreed to provide annual progress reports to Ministers. This report, compiled in early 2001, focuses on progress towards the overarching goals of the action plan and provides a summary of key achievements in each jurisdiction. Reports in following years will highlight progress in the key action areas of Content and Services (2002), Infrastructure (2003) and People (2004).

*Dr Martyn Forrest*  
*Secretary, Department of Education, Tasmania*  
*Chair, Education Network Australia (EdNA)*  
*Schools Advisory Group*

## Overview

Australian school education is changing to meet the challenges of the information economy and knowledge society. Australian governments have made, and are continuing to make, major investments in information and communication technologies (ICT) in schools.

As a result of these investments, it is clear that:

- the availability and use of computers in schools is now widespread and that student use of computer-based applications is an increasingly routine part of their learning;
- most teachers have acquired minimum ICT skills but the application of more advanced skills to curriculum practice is not yet common;
- a basic level of internet connectivity has been provided for most schools, with problems still apparent for basic provision to schools in rural and remote Australia;
- harnessing advanced networked communications for learning, within and beyond the school, is yet to be achieved for most Australian schools.

The first major phase of ICT programs and projects is now nearing completion in most government education systems. As a result of these initiatives, most schools across Australia have begun the process of integration of ICT into the school curriculum and into the daily work of teachers. Many schools are demonstrating exciting and innovative approaches to teaching and learning, using ICT. Much has been achieved and much is yet to be done to ensure that all young Australians share the benefits of the knowledge society.

Education authorities are reviewing progress, particularly in relation to:

- the need to renew and update hardware and technical infrastructure, in an area of rapid technological change and obsolescence;
- their desire to position programs within new educational directions and whole-of-government information economy strategies;
- the need to take a holistic approach to ICT planning and implementation, developing greater coordination across areas of curriculum, professional development and ICT infrastructure;
- the need to give a higher priority to online learning and virtual schooling within an overall ICT strategy;
- the challenge of mainstreaming leading edge initiatives;
- the need to move teacher professional development programs from a skills approach to tackle issues of integration of ICT into curriculum practice;
- the need to document the perceived benefits to student learning that have occurred as a result of the ICT initiatives to date.

Increasingly, schools and systems are realising the potential to link ICT integration with whole school reform. ICTs are seen not as ends in themselves but as tools for improving student outcomes across all curriculum areas and as tools to drive organisational change.

Research into ICT and school education, particularly in the area of student outcomes, is emerging as a key issue for the year ahead. There is a need not only for more research to be undertaken, but for that research to be made readily available nationally to educators and policy makers.

Australian school education is well placed to move forward, not only because of initiatives by individual governments, but because there is a strong commitment across government and non-government sectors to national collaboration. All education authorities have made a major commitment to:

- the establishment of the Schools Online Curriculum Content Initiative to promote the provision of high quality online materials for schools;
- the work of the National Education Performance Monitoring Taskforce towards the establishment of performance indicators for students' ICT skills and knowledge;
- support for the work of **education.au limited**, particularly the EdNA Online service and work associated with ICT interoperability standards;
- collaborative work associated with legal and regulatory issues, including copyright;
- the ongoing work of the EdNA Schools Advisory Group to support and promote *Learning in an Online World*, which is providing a powerful, holistic framework to guide and support progress across the nation.

*Learning in an Online World* identified three key priorities: bandwidth, professional development and online curriculum content. In the past year, Australian school education authorities have made a major commitment to online content, through the Schools Online Curriculum Content Initiative. Professional development programs for teachers and school leaders are being given a high priority and progress is being made. Bandwidth provision remains the issue on which there has been insufficient progress to date.

Connecting schools to the internet with sufficient bandwidth to enable full curriculum integration of online learning requires much higher levels of bandwidth than can currently be provided to schools, except for a small minority. For large high schools in metropolitan areas, demand is outstripping the capacity of schools or systems to pay. For many schools in rural Australia and for remote communities, even basic bandwidth provision is unavailable. Until Australian telecommunications policies pay specific attention to the needs of education, schools will be limited in how they can prepare young people for the online world in which they will live and work.

# National report

## Introduction

All governments recognise that students must be prepared to participate in and contribute to a society marked by rapid technological change. The creation and management of knowledge is crucial to the success of individuals, groups and the nation. As policies and programs for information and communication technologies (ICT) in schools are taking effect, there is increasing evidence that the application of ICT to curriculum practice is extending and changing the way students work and learn.

In the government school sector, all states and territories have invested in major systemic programs to establish the necessary technical infrastructure and to develop teacher and student skills. Catholic schools, administered through 26 dioceses across Australia, have adopted a variety of approaches, depending on availability of resources, geography and internal organisation. In the independent sector, which represents a diverse group of individual schools and education philosophies, there are disparities between schools, with some undertaking ambitious ICT programs and others finding it difficult to provide services.

## National collaboration

Australia has an enviable record for collaboration in ICT policies and programs in education and training. Since 1996, the Education Network Australia (EdNA) Reference Committee and its sector specific advisory groups have provided a framework for the development of policy advice to Ministers and Chief Executives.

The EdNA initiative has provided a springboard for national cooperation and collaboration on a wide range of policy issues related to ICT in Australian education and training. Since 1999, considerations have focussed at the national level on the relationship between education and the information economy. In December 2000, Ministers released a **Joint Ministerial Statement on Education and Training in the Information Economy**, highlighting priorities for national cooperation over 2001-2003 in the areas of student skills, teacher professional development and affordable internet access for all education providers regardless of geographical location.

In the school sector, the EdNA Schools Advisory Group (SAG) has played a key role in taking collaboration forward. *Learning in an Online World*, developed by the SAG in 1999, is providing a holistic framework to guide and support progress across the nation. The school sector has now embarked on a major national collaborative effort through the Schools Online Curriculum Content Initiative, to promote the provision of high quality online content for schools.

***education.au limited***, the company owned by the Ministers, implements work as agreed by the education and training stakeholders. The company receives annual funding of \$1.26 million, with fifty per cent provided by the Commonwealth and the remainder by the states and territories. ***education.au limited*** provides a network of services and resources through EdNA Online (<http://www.edna.edu.au/>). In addition the company is developing the National Careers Information System (NCIS) which is being funded by the Commonwealth and is providing the information brokerage services to the Schools Online Curriculum Content Initiative (SOCCI).

## International perspectives

Australia participates in international activities related to ICT and learning, particularly through OECD/CERI and APEC projects. The Commonwealth Department of Education, Training and Youth Affairs (DETYA) is currently undertaking an International Comparisons Study on the effective use of ICT across all sectors of education and training. This project, which is expected to be completed by the end of 2001, is expected to provide a sound basis for assessing where Australia stands in relation to its international peers.

**education.au limited** has established a number of strategic alliances with overseas online education service providers in the United Kingdom, Europe and North America. Representatives of the company, in partnership with other education stakeholders, are active in international activities to identify, develop and promote technical and information management standards to support interoperable online services within Australia and internationally.

## Equity

Potentially, information and communication technologies can do much to overcome educational disadvantage, particularly when it is associated with isolation and special education needs. However, the access to technologies both at home and at school is not equitably distributed. Although 37% of Australian families now have internet access (and households with children are three times as likely to have internet access as those without children), geographical location and family income both have a major impact on access<sup>1</sup>.

All governments have a commitment to address educational disadvantage and to tackle issues associated with a lack of access to new technologies as a dimension of that disadvantage. Education authorities continue to seek better infrastructure provision for geographically isolated students and schools. Schools of Distance Education are increasingly using new technologies to complement or replace traditional delivery and virtual schooling or 'e-schooling' services are being trialled. Regional centres and schools are being provided with additional funding to support the implementation of ICT in country areas.

Across Australia, ICT infrastructure is increasingly being used to support home-school connections, for example through virtual private networks. While this is not yet widespread, it marks a trend and demonstrates the potential of communication technologies to link parents more closely with their children's education. In areas of socio-economic disadvantage, where home access is less common, schools have a particular role to play in providing access by parents and community to the schools' ICT facilities. Some access arrangements of this kind are being made by education systems and sectors.

---

<sup>1</sup> Australian Bureau of Statistics, February 2001

## Progress towards achievement of goals

### Goal One

All students will leave school as confident, creative and productive users of new technologies, including information and communication technologies (also National Goal 1.6).

Achievement of this goal for students requires coordinated strategies that include:

- provision of student access to computers that are networked within the school and have high-speed, reliable connections to the internet;
- teaching strategies that enable students to develop ICT skills and apply these skills to extend their learning;
- high quality online learning materials and software that supports the achievement of curriculum goals.

### Access

There is generally good provision of computers for student access across Australia<sup>2</sup> and the use of computer-based applications in classroom practice is becoming increasingly routine, where this is supported by the system and school's educational philosophy. Access to computers by teachers, both at school and at home, has been enhanced by 'laptops/computers for teachers' programs within some systems and individual schools.

However, for schools to fully enter the 'online world', there must be access to online services when needed and as needed. Initially education authorities sought to provide a 64kb connection to the internet. This has been achieved for most government schools, except for those in the more remote areas of Australia. However, a bandwidth connection into schools of 256kb, moving to 2Mb within three years, is now considered a minimum, if schools are to take advantage of increasingly 'bandwidth-hungry' education applications. Provision is restricted by the high cost of bandwidth in Australia. The National Bandwidth Inquiry (Commonwealth, 2000) found that the telecommunications market is really only working well in the Melbourne-Sydney-Brisbane axis. Even in metropolitan areas, high demand from large schools is pushing the boundaries of affordable bandwidth. To increase levels of connectivity to advanced levels, particularly in regional and rural Australia, is beyond the reach of most education systems because of issues associated both with access to provision and cost.

There are particular issues associated with provision to schools and isolated students in rural and remote Australia. These issues have been widely recognised, for example in the report on Australian telecommunications, *Connecting Australia* (2000). Those states and territories that have widely scattered populations, including remote indigenous communities, face significant cost imposts associated with the provision of services that would enable all students to benefit from online opportunities for learning. Independent schools are not in a position to take advantage of systemic solutions or cross-subsidies between metropolitan and rural regions.

---

<sup>2</sup> Taking note of the disparities that exist within the non-government sector

Connections to the internet must be complemented by networking within schools through local area networks (LANs) or clusters of schools through virtual private networks (VPNs) or wide area networks (WANs). While all systems have programs in place to enable schools to participate in LANs, VPNs or WANs, Australian schools are still some way from achieving the level of connectivity within and across schools that enable effective curriculum use of intranets and the internet. A number of systems have identified this area as one which will have priority in their next phase of program development.

### **Teacher quality**

All education systems, and individual schools, are giving a high priority to the development of ICT skills by teachers. Most teachers employed within education systems have participated in programs to develop basic skills in using information and communication technologies. Some states have initiated 'minimum ICT standards' for teachers and report the majority of teachers now reaching these standards.

There is now a need for a 'second generation' of professional development, to enable teachers to integrate ICT (and particularly online learning) into their own professional learning and into their curriculum practice. These programs must focus on student outcomes and on the most effective use of ICT to improve learning. Such programs are underway in all jurisdictions and are characterised by peer support networks, mentoring and coaching and by the involvement of leading practice schools. Post-graduate programs are increasingly available through partnerships between universities and education authorities. The Commonwealth **Quality Teacher Programme** (information technology focus area) is complementing the approaches of states and territories.

The impact of these programs will increase steadily over time, particularly as more high quality online curriculum applications become available across the curriculum areas. The engagement of all teachers will be critical to the success of this phase and to the achievement of the goals of *Learning in an Online World*.

Two Commonwealth funded projects, **Teacher Competency Standards for Information and Communication Technology** and **Models of Teacher Professional Development for the Integration of ICT into Classroom Practice** will provide further information about teacher skills at a national level during 2001. The former project will develop a framework for describing teacher competency standards in ICT to inform the work of teacher education faculties and education authorities. The latter project is researching the most effective models for initial teacher education in ICT and for the professional development of the existing workforce. Research to date highlights the need for closer relationships between teacher education faculties and employing authorities in taking forward the ICT agenda and the need for more collaboration and networking nationally on issues associated with ICT and teacher quality.

### **Curriculum content**

Significant progress has been made during the past year towards the development of high quality online learning materials for schools. Ministers agreed in March 2000 to the development of a strategy for generating online curriculum content. The Conference of Education Systems Chief Executive Officers (CESCEO) subsequently established the **Schools Online Curriculum Content Initiative** (<http://socci.edna.edu.au>).

During 2000-2001, under the direction of CESCEO, the Ministerial companies, Curriculum Corporation and **education.au limited** have undertaken project work to establish a framework for the development and management of online curriculum content in agreed priority areas. This framework includes quality assurance standards and technical standards that will enable portability of content across jurisdictions.

In January 2001, the Commonwealth announced that it will contribute \$34 million over five years to the Schools Online Curriculum Content Initiative, with an expectation that state and territory governments will also continue to support the initiative. It is expected that support by governments will stimulate the domestic educational online content market and position Australia in the global market.

Education authorities also provide significant collections of online information and resources to support school curricula, with the larger government systems being positioned to provide more comprehensive services. **EdNA Online**, through its harvesting processes, is able to index these collections and facilitate access and sharing across all jurisdictions. CESCEO has agreed that the EdNA Metadata Standard will underpin resource discovery and content creation and management across jurisdictions.

Education authorities also find that online curriculum projects, which provide structured activities for students to learn and work with students from other schools and cultures, are a practical way of introducing students to online learning, and supporting the professional development of teachers. An OzProjects site is now being established within EdNA Online to aggregate information about online curriculum projects offered by education authorities and other organisations. OzProjects will promote the active engagement of Australian school students in national and international online curriculum projects. In 2000, over 300 Australian schools participated in the Netd@ys 2000 initiative of the European Commission through an online curriculum project, *Cultural Journey into Australia*. This participation was funded by the Commonwealth, South Australia and Queensland and had in-kind support from all States and Territories.

### **Measuring student achievement**

Within Australia, the most recent survey of student skills in IT is the Real Time report (Commonwealth, 1999). Ministers have charged the National Education Performance Monitoring Taskforce (NEPMT) with the development of key performance measures in information technology to facilitate monitoring of the National Goals for Schooling in the Twenty First Century. The 2000 Australian National Report on Schooling will provide a progress report on developments and will include case studies from states and territories.

The NEPMT has agreed on a high-level framework, to be used as the basis for developing instruments to assess students' ICT skills and knowledge, and is proceeding with development of an assessment schedule.

Assessment needs to capture both the basic skills required for using information and communication technologies and also those skills and understandings required for applying ICTs to learning across all curriculum areas. The development of assessment instruments in an area where the technologies are changing rapidly, and in which access issues and teacher skills significantly affect student achievement, is an enormously challenging task.

Within States and Territories, assessment of generic student ICT skills across the curriculum is being incorporated into curriculum frameworks for Years K-10, using a variety of approaches, with a trend towards structured pathways to work or further study in ICT being offered in the senior years. In addition, some systems are providing generic or industry-accredited ICT skills and knowledge certification for Year 10 students.

## Goal Two

All schools will seek to integrate information and communication technologies into their operations, to improve student learning, to offer flexible learning opportunities and to improve the efficiency of their business practices.

The focus of this goal is on individual schools and on the integration of ICT into their curriculum and management practices. Across Australia, school management is generally devolved to the local level, supported in the government and Catholic systems by frameworks for curriculum standards and accountability and by coherent programs of technical infrastructure support. The critical success factors in achieving this goal for all schools are:

- effective leadership and strategic planning at the school level;
- committed, skilled teachers and support staff;
- provision of a technical infrastructure that supports both curriculum and administrative requirements;
- research data that supports and informs change;
- a coherent policy framework within which schools can operate effectively.

### **Leadership and planning**

Australian school education systems are resourcing major leadership programs, recognising the crucial role of principals in successful change management in schools. These are complemented by programs run by professional associations, including the Australian Principals' Associations Professional Development Council (APAPDC) and the Association of Heads of Independent Schools of Australia (AHISA). Such programs assist principals and other school leaders to be effective decision-makers about ICT infrastructure for their schools and to provide leadership on effectively using ICT to improve student learning.

Common practices across Australian school education to support school leaders and strategic planning in schools include:

- specific professional development programs and study tours;
- funding a small number of 'lighthouse' schools to demonstrate exemplary ways of incorporating ICT into school programs;
- establishing centres of excellence which draw together expertise in curriculum, professional development and technology, often in partnership with tertiary institutions, teacher professional associations and commercial organisations.

All schools within government and non-government education systems are expected to have three to five year strategic plans for the integration of ICT into school management and into curriculum. Development of the plans enables school leaders to involve their staff in ICT school planning and to monitor the deployment of resources and the

outcomes achieved. In many systems this is a component of an accountability framework for resource provision.

Introducing ICT into school education is closely linked to change management and innovation. Programs appear to be most effective when they are tied to broader educational and curriculum reform. There are however symptoms of 'change overload' in the teaching profession, so programs need to support both leaders and their staff in clearly identifying the benefits to students and in supporting people to accommodate and manage change.

### **Skilled staff**

The development of teaching skills is discussed under Goal One.

Professional development approaches that address the needs of all staff, including administrative and support staff, are being undertaken across Australia. The issue of ongoing technical support for schools is being handled differently in different jurisdictions and is proving a difficult challenge for all schools and systems.

### **Infrastructure**

As in all areas of government and business, school education systems and individual schools are part of a shift towards e-commerce. Education departments are part of whole-of-government initiatives to provide information and transactions online. The Commonwealth's initiatives towards online reporting and service provision for non-government schools has provided incentives for schools in that sector to examine their ICT needs and usage for administrative purposes.

A number of government education systems have recently introduced, or will shortly introduce, new school administration systems, based on electronic record keeping and transactions. Increasingly the administrative business of schools – enrolment of students and records of their attendance and progress, curriculum planning and time-tabling, staff development and financial management – will be integrated under such systems. Issues to be addressed include the management of legacy systems and the interface between such administrative systems and the emerging curriculum management or e-learning systems products on the market. While schools are increasingly doing their 'business' online, unless electronic systems address the core business of schools – curriculum – and meet standards that support interoperability across the administrative-curriculum interface, investments may be jeopardised.

The issue of adequate bandwidth, to support schools e-learning and e-business needs is discussed under Goal One.

### **Research and evaluation**

As major programs for integration of ICT into school education are rolled out across Australia, research and evaluation into the effectiveness of these programs is increasing. Research interest focuses on how ICT is making a difference to learning, what teaching approaches are most effective in facilitating change, what school organisation and change management strategies best support the embedding of ICT into teaching and learning and how specific uses of technology can lead to improved school-home linkages.

Research is being undertaken or commissioned:

- in schools, particularly in the specially funded technology focus schools;
- within universities, particularly teacher education faculties;
- to underpin the development or refinement of policies and programs, for example for the National Education Performance Monitoring Taskforce and the Schools Online Curriculum Content initiative;
- in international studies such as the Program for International Student Assessment (PISA) and the IEA Second Information Technology in Education Study (SITES);
- to support formal evaluation of programs.

To facilitate access to research about ICT in school education, the Commonwealth has funded the development of an ICT Research website associated with EdNA Online. The site will provide access to database records of research undertaken on ICT and teaching and learning in Australian schools, with links to key international research findings. A prototype is expected to be operational in the second half of 2001.

### **Policy frameworks**

The integration of ICT into school education is taking place within policy, legal and regulatory frameworks at the local, system and national levels.

A critical area for policy agreement is on the technical and information management standards that support interoperability between IT systems across jurisdictions and support the exchange of data and the portability of online content. The ERC Standards Committee is working to identify and support interoperability standards across the education and training sectors and to participate in international standards discussions. In the school sector, interoperability standards will be crucial for the success of the Schools Online Curriculum Content Initiative. Significant progress has been made, particularly in the revision of the EdNA Metadata Standard, but more remains to be achieved.

Legal and regulatory issues that affect the whole Australian education and training community (schools, VET and higher education) are being addressed through the EdNA Reference Committee, which reports directly to Ministers. One issue that is currently being addressed is the policy and administration of the .edu domain space. On a number of legal and regulatory issues there is ongoing liaison between government departments at both Commonwealth and state level and liaison between the EdNA Reference Committee and other national groups such as the MCEETYA Copyright Taskforce.

The Copyright Amendment (Digital Agenda) Bill came into effect in March 2001. The Bill ensures that copying of digital materials is covered by copyright law and maintains the same exemptions and provisions for fair dealing in the digital environment as in the print environment. The implementation of the new bill will require close monitoring, as will the associated costs of statutory licences for schools and schooling systems.

The MCEETYA Copyright Taskforce members are giving attention to the development of training and awareness materials to inform educators about their rights and obligations under the new legislation, with support from DETYA. In addition, the Taskforce has prepared guidelines for systems, titled 'Using the Internet – Legally', which covers not only copyright, but all legal aspects of internet usage including privacy, illegal and offensive material and defamation.

At the system level, all education authorities have made available online a range of documents setting out policies for internet usage and web publishing, including filtering and acceptable use policies to manage inappropriate sites, privacy, data protection and security of online transactions.

## Conclusion

The picture that emerges across jurisdictions is one where much progress has been made but where much remains to be achieved. Significant achievements during 2000 have been :

- the commencement of the Schools Online Curriculum Content Initiative;
- the development of a high-level national framework as the basis for developing instruments to assess students' ICT skills and knowledge;
- the provision of basic infrastructure for all but the most remote schools;
- the achievement of minimum ICT competencies by most teachers;
- demonstration by many leading schools of ways in which ICT can extend and transform learning.

To maximise the benefits of their investments, all education authorities recognise the need for:

- vision, leadership, strategic planning and coordination at all levels of the school education enterprise;
- 'learning first' strategies, to ensure that information and communication technologies are not seen as an end in themselves but as tools for improving learning;
- identification of the skills and knowledge students must acquire to use ICT and apply ICT effectively to their learning;
- teacher professional development programs that move from basic skills to the integration of ICT into curriculum practice;
- telecommunications policies that provide equitable online access for all schools and communities.

There is confidence that Australian school education is moving towards the provision of high quality online curriculum content. There is a belief that professional development for teachers and school leaders will progress from the sound base that has been established. However, similar levels of progress have not been made in the provision of affordable bandwidth for all schools, regardless of their geographical location. Until all three priorities identified in *Learning in an Online World* - bandwidth, professional development and online content - are given equal priority, Australia's student will not reap the full benefits of new technologies for learning.

# Commonwealth Department of Education, Training and Youth Affairs

## Strategic Overview

The Commonwealth Government is taking a leadership role in the information economy by providing an environment that both supports and encourages local decision-makers to take advantage of the opportunities being presented by information and communication technologies (ICT) in ways which realise the advantages achievable through collaboration and promote the rapid diffusion of good practice while maximising the economic benefits of ICT. The Government has also been providing direct support for a range of strategic initiatives to enhance the education and training sector's ability to capitalise on the benefits of the online revolution.

Following the release of the *Strategic Framework for the Information Economy* (December 1999), which presented the Government's vision for Australia in the information age, DETYA worked collaboratively with the education and training sector to develop an Education and Training Action Plan for the Information Economy, *Learning for the Knowledge Society* (September 2000) which was supported by MCEETYA. The Action Plan articulates the sector's response to the Commonwealth's strategic framework. The school education action plan for the information economy, *Learning in an online world*, is integral to this.

The subsequent release by MCEETYA of the *Joint Statement on Education and Training in the Information Economy* (December 2000) provides the strategic agenda and identifies the priority areas for cooperation where the Commonwealth, States and Territories and all parts of the education and training sector can work together to achieve the outcomes identified in the Action Plan.

The Commonwealth has also taken a major role in providing a supportive legislative and regulatory environment to allow Australia to benefit from the information economy. In this context, legislation on copyright in the digital environment, electronic transactions and privacy has been put in place. The Commonwealth, through DETYA, is also facilitating the establishment of an entity to manage the .edu domain space on behalf of the education and training sector.

The release of the Government *Backing Australia's Ability: An Innovation Action Plan for the Future* (January 2001), provides a comprehensive and integrated package of support for the national innovation system including several initiatives which will assist in supporting the education and training sector's uptake of information and communication technologies. The innovations package represents a commitment by the Commonwealth to pursue excellence in research, science and technologies and to build a more highly skilled workforce to meet the challenges of the global information economy.

## Key Achievements

### People

#### **Teachers for the 21<sup>st</sup> Century: Making the Difference**

This Commonwealth initiative, launched in 2000, will provide approximately \$80 million over three years, to improve teacher quality and increase the number of highly effective Australian schools in order to maximise student learning outcomes and raise standards of school education in Australia. One of the four key elements of *Teachers for the 21<sup>st</sup> Century* is the Quality Teacher Programme, which focuses on the renewal of teachers' skills and understanding in the priority areas of information technology, literacy, numeracy, mathematics, science and vocational education in schools. The Programme targets casual teachers, teachers who completed initial teacher education ten or more years ago, teachers entering the teaching profession and teachers of disadvantaged students.

#### **Models of Teacher Professional Development for the Integration of ICT into Classroom Practice**

The project commenced in 2000 and funded with \$420 000 over three years, is examining models of teacher professional development for the integration of information and communication technologies (ICT) into classroom practice. In the first phase of the project a detailed examination of existing models of pre-service education and in-service professional development is being undertaken, both in Australia and overseas. The second phase will focus on setting up collaborative mechanisms to facilitate the sharing of information about good practice models through a national network involving all States and Territories, and across all key learning areas.

#### **Teacher Competency Standards for Information and Communication Technology**

The project will examine ways in which different Australian school systems are using criteria, standards and benchmarks for beginning and existing teachers to underpin effective use of information and communication technologies in curriculum practice. It will develop a framework for describing teacher competency standards to inform the work of teacher education faculties and education authorities. The project is expected to be completed late 2001.

#### **National Education Performance Monitoring Taskforce (NEPMT)**

In April 1999, agreement was reached by State/Territory and Commonwealth Ministers of Education on *Australia's National Goals for Schooling in the Twenty-First Century*. One of the goals which has been identified is that 'when students leave school they should be confident, creative and productive users of new technologies, particularly information and communication technologies, and understand the impact of those technologies on society'. Flowing on from this, the National Education Performance Monitoring Taskforce (NEPMT) has been established to progress action relating to the national reporting of comparable educational outcomes, including information technology. The NEPMT IT sub-group has overseen an initial scoping study for IT performance measures.

#### **Innovation and Best Practice Project**

The Innovation and Best Practice Project (IBPP), funded with \$2 million, beginning in 1998 and completed in 2000, was commissioned by the Commonwealth to provide a model through which schools could develop the capacity to evaluate the success of innovations in terms of their impact on student learning outcomes. The project was undertaken by a consortium led by Professor Peter Cuttance (University of Sydney).

Following a public advertisement and with the agreement of education systems, 107 government and non-government schools were selected to participate in the project.

The key finding of the project is that it is possible for schools to demonstrate a significant impact on student learning outcomes with targeted interventions or strategies, given the support of school leadership and staff and the provision of research support and assistance. Of the 107 schools participating, 70% reported clear (40%) or significant (30%) improvement in educational outcomes as a result of their innovation.

There were 20 schools in the IBPP that sought to enhance learning outcomes through the innovative use of ICT - four focused on the early years of schooling, eight on the middle years and the remainder in the senior years. The rigorous evaluations supported through the IBPP demonstrated that ICT can be effectively integrated into school learning environments to enhance the quality of teaching and learning and to achieve improved student learning outcomes in both the cognitive and non-cognitive domains.

The report of the IBPP project outcomes being prepared for public release in 2001 will include details and analysis of the outcomes of the projects involving innovations in information and communications technologies.

## Infrastructure

### **Computers for Schools**

The Computers for Schools initiative provides surplus Commonwealth Government computers and IT equipment to schools across Australia to enable students and teachers to better understand new technologies and to participate in the information economy. Commonwealth departments and agencies have provided approximately 20, 400 computers since the commencement of the project. State and Territory education departments are participating in the initiative with government and non-government school education authority committees operating in some States and Territories to ensure equitable distribution of the IT equipment to schools. The project will continue during 2000/01 and will include strategies to raise the profile of the project and to encourage private sector participation.

### **Innovative Bandwidth Project**

The research study is assessing the feasibility of adopting innovative approaches to meeting the bandwidth needs of schools and others in regional communities. The initial stage will review innovative approaches being used in Sweden, Canada and the United States, and assess their applicability to Australia. If the overseas approaches are found to be applicable to Australia, a more detailed examination of how these approaches might be applied in Australia will be undertaken in Stage 2.

### **International Comparisons on the effective use of Information and Communication Technologies**

This project will undertake research on government policies in Australia and overseas to support education and training providers in making effective use of information and communication technologies (ICTs). The project will provide a sound basis for assessing where Australia stands in relation to its international peers. It is anticipated that the project will be completed by the end of 2001.

### ***education.au limited***

The Commonwealth continues to contribute \$0.63m per annum, representing fifty per cent of the company's operational costs, with the remainder from the states and territories. The company fosters collaboration and cooperation in the use of the Internet in education and training and provides a network of services and resources through the website, EdNA Online. **education.au** also manages sibling websites eg the EdNA technical standards which supports the effective use of ICT in education and training. In addition, **education.au** is developing a National Career Information System (NCIS), funded by the Commonwealth. The NCIS is to provide a single comprehensive and effective Internet based career exploration service for all Australians to be launched early 2002.

### **Research Database**

This project is developing a prototype for a comprehensive, current and updateable online database of State/Territory and Commonwealth research on the use of ICT in school education to improve the quality of teaching and learning. The project is expected to be completed mid 2001.

## Content and services

### **Backing Australia's Ability**

One of the initiatives announced in the Government's innovation statement "*Backing Australia's Ability*" by the Prime Minister in his Federation Speech on 29 January, 2001 is for the provision of \$34.1 million over five years to support the development of online curriculum resources, services and applications for Australian schools. In this initiative the Commonwealth will be working with the States and Territories, as it has been in the preliminary phase of 'Online curriculum content for schools' outlined below.

First-class online curriculum resources for Australia's school students will underpin other initiatives in the innovation statement, notably that supporting the teaching of science, mathematics, technology and innovation skills through an outlay of \$130m. The initiative will help to ensure that our young Australians have the skills, knowledge and experience in working online that they need to live and work successfully in the 21<sup>st</sup> century.

### **Online curriculum content for schools**

In 2000-2001 the Commonwealth has collaborated with the States and Territories through a high-level project steering group reporting to CESCEO and Ministers. The pilot project work has been focussed on preliminary planning. The Commonwealth has provided \$350,000 (matched by the States) for the coordination of a preparatory review and planning by a Project Officer, and scoping of the technical framework requirements for the intellectual property rights management that is essential to enable joint development and shared use of online materials.

### **Education Network Australia (EdNA) Online**

EdNA Online (<http://www.edna.edu.au/>) provides free access to quality education resources on the Internet covering all education and training sectors. The website is a tool for educators and students in using the Internet more effectively, finding resources that are relevant and useful to them and providing opportunities to communicate with

others who share the same interests and aspirations and has particular benefits for those who are isolated by location, disability or illness.

The Commonwealth and the schools, vocational education and training and higher education sectors in all states and territories have contributed to the development of EdNA Online, through their advice and services to produce a large quality national education database. The ongoing hosting, maintenance and technical development of the website are funded by the Commonwealth, the 2000/01 contribution being \$0.76m.

### **Netd@ys**

In 2000, DETYA provided \$56 000 for Australia to participate in the European Commission's Netd@ys project through EdNA Online. Netd@ys is opening the way for a heightened level of online cultural information exchange among Australian and European schools, as well as providing a good opportunity for promotion of Australian education in Europe. Australia's contribution to Netd@ys was an online curriculum project, *Cultural Journey into Australia*.

### **Technical Standards for the Education and Training Sector**

The EdNA Reference Committee (ERC) has established a Standards Sub-Committee to address standards issues relating to the use of information and communication technologies (ICT) for education and training in an integrated and pro-active way.

The Standards Sub-Committee will advise on technical standards matters of relevance to all three education sectors and where possible, gain national agreement on preferred standards for all of education and training in Australia.

In early 2000, DETYA commissioned a Scoping Study to:

- assist in establishing the role and operation of the ERC Standards Sub-Committee;
- research and advise on issues related to technical standards which could enable;
- interoperability on demand for efficient and effective information management, shared use and joint development of ICT education and training materials; and
- review and monitor national and international activities in these areas.

The Standards Sub-Committee has met twice since December 2000. Key achievements include: endorsement of the EdNA Metadata Standard 1.1, and confirmation of Committee representation on the IT-19 Committee of Standards Australia.

The secretariat for the Standards Sub-Committee is being funded by DETYA. A process is currently underway to outsource the secretariat work of the Standards Sub-Committee and several priority projects, namely *Endorsement of an ERC Technical Standard* and *Mapping of Whole of Government Initiatives on Technical Standards*.

## Supporting policies

### **Education Network Australia**

All Ministers for Education and Training are continuing to support Education Network Australia (EdNA), a collaborative and cooperative network which addresses major national issues of importance for the education and training sector in the rapidly developing information economy. It advises MCEETYA through the ERC, representing schools, vocational education and training and higher education.

## Enabling regulation

### **Copyright for Digital Materials**

As the Copyright Amendment (Digital Agenda) Bill was being drafted in 2000, the MCEETYA Taskforce on Copyright Law and the Australian Vice-Chancellors Committee (AVCC) made considerable representations to DETYA about the needs of the education and training sector, which were then brought to the attention of the Attorney-General and Senator Alston. As a result, the final Bill took these needs into account. Following the passage of the Bill in mid-August 2000, representatives of the education and training sector again provided submissions to the Attorney-General's Department regarding factors which needed to be taken into consideration in the drafting of regulations to accompany the legislation. The MCEETYA Taskforce is also giving attention to the development of a training and awareness package to inform educators about their rights and obligations under the new legislation, with support from DETYA.

### **Research into policies and administration of the .edu domain**

A strategic research project is providing a present state analysis of the policy and administration of the .edu domain space, identifying any present and future needs of the education and training sector and will make recommendations to inform the development of future policy in the management of the .edu domain. The project is expected to be completed in the first half of 2001.

# Department of Education and Training New South Wales

## Strategic Overview

During 2000 the Department of Education and Training finalised its *Information and Communications Technologies Strategic Plan 2000-2003*. The Plan builds on the use currently being made of information and communications technology (ICT) across the Department. It is shaped by a number of strategic documents including the *Information Management and Technology Blueprint for NSW*; *connect.nsw*, the NSW Government's electronic service delivery strategy; and the *Education and Training Action Plan for the Information Economy*.

The Department's ICT Strategic Plan focuses on four goals:

- **Education and Training Services**  
Enhance the quality of learning and teaching through the provision of innovative, technology-based educational programs and services which position the Department as a global leader in the provision of quality education and training services.
- **ICT Literacy**  
Enhance the ICT literacy of students, staff and members of the community to meet their education, work and life needs.
- **E-service**  
Enhance the quality, efficiency and effectiveness of services, systems and support for students, staff and the community through innovative e-services.
- **ICT Infrastructure**  
Enhance the ICT infrastructure to meet the changing educational, management and business needs of the Department.

Clearly, there are strong parallels between these goals and the priorities of bandwidth, professional development and online content expressed in *Learning in an Online World*.

A series of strategies are identified in the Department's ICT Strategic Plan to progress its goals. Key strategies in the Strategic Plan that will also move the Department's schools towards the achievement of the overarching goals of *Learning in and Online World* include:

- provision of integrated online services to support the delivery of education and training in a range of contexts and in flexible modes;
- provision of support for the development and generation of online and other digital curriculum content;
- integration of state and national strategies supporting flexible learning;
- provision of a broad range of online training and development services in a range of contexts and a variety of modes;
- development of online content and provision of quality online education services to students in rural and isolated communities;
- provision of enhanced access to ICTs for students with special needs;

- provision of ongoing training for teachers and staff in the use of ICTs;
- integration of student use of ICTs into all curriculum areas;
- introduction of statewide computing skills assessments for school students;
- provision of a broad range of ICT education and training programs to meet the needs of the community, business and industry in general, and the specific needs of the ICT industry;
- recruitment of teaching and administrative staff with appropriate ICT skills; and
- provision of e-mail services to facilitate communication between staff, students and the community.

The Department will continuously review its progress towards the achievement of the goals of the ICT Strategic Plan.

## Key Achievements

A number of key initiatives, forming part of the NSW Government's Computers in Schools Program, have been assisting schools to better integrate ICTs into their operations since 1995. These initiatives will also assist in achieving the goals of *Learning in an Online World*.

### People

The Technology In Learning and Teaching (TILT) program provides training and development for teachers in the use of computers and associated communications technologies in the Key Learning Areas, Kindergarten to Year 12. A total of 19,839 teachers had completed TILT training by December 2000.

The 1999/2000 State Budget provided funding, over four years, to train a further 10,000 teachers in TILT and up to 15,000 teachers, school executive and specialist staff in a new advanced program, TILT Plus. A total of 1,318 staff participated in TILT Plus programs during 2000.

A Technology Adviser has been appointed to each of the State's 40 district offices to provide technology advice and support to district schools. The Computer Coordinator Allowance, provided to all schools, enables the better coordination and integration of information and communication technology resources with teaching and learning programs in schools.

### Infrastructure

NSW government schools were connected to the Department's Internet service by the end of 1996. Since then, the Department has enhanced student and teacher access to the Internet by progressively connecting government schools to the Department's wide area network. The connection provides fast, reliable and simultaneous access to the Internet and the Department's data network. Ninety-five per cent of NSW government schools were connected to the Department's wide area network as of December 2000.

The Department continues to explore alternative solutions to terrestrial-based telecommunications services for schools and students in remote and rural areas. Several trials of satellite-based services were undertaken for students attending conventional school sites and those studying by distance education during 2000.

During 2000, the Department completed projects providing all principals and schools with electronic mail accounts. Each school was also provided with a Web presence and tools to facilitate the further school-based enhancement of their Web space.

The equivalent of more than 77,000 multimedia computers have been distributed to government schools under the Computers in Schools Program. The computers provide enhanced access to ICTs for both teachers and students. This leased computer equipment is being replaced progressively to ensure that NSW students continue to be supported by the latest technology. The 1999/2000 State Budget announced that an additional 25,000 multimedia computers will be distributed across all schools during the Government's current term further enhancing access to computers for teachers and students.

## Content and services

All teachers in the State have received curriculum support materials to assist in the integration of computer technologies into teaching and learning. The Department's World Wide Web sites will continue to be expanded and improved to include additional resources that further support teachers and students.

An area of increasing priority for the Department is the use of online curriculum materials by both teachers and students. Participation in the development and utilisation of online materials is a key focus for current and future projects and one that has major implications for the ways in which we view teaching and learning.

In order to explore the potential of online learning, the Department is developing a range of projects, with a focus on materials for direct use by students. The Languages Online projects will explore the use of online resources, learning activities and course materials, and remote teaching methods. The Science Stage 4 CD-ROM builds on Web-based materials developed as part of the national Schools Online Curriculum Content Initiative, providing student resources and teaching ideas to support the new Science 7-10 syllabus.

Snapshots documenting the integration of ICT into classroom practice continued to be developed in all key learning areas and vocational education during 2000.

The Department has developed a number of Internet-based projects for students in NSW government schools. The projects address NSW syllabus outcomes in several curriculum areas and will encourage students to use the Internet to participate in collaborative activities, communicate with others and publish to a wider audience.

The Department, in partnership with the University of Technology, Sydney (UTS), has been successful in obtaining a grant from the Commonwealth Government for further research into the effects of ICT on the achievement of learning outcomes. The research will identify factors critical to the successful integration of ICT into teaching and learning practices. This work will build on initial research commissioned by the Department and undertaken by UTS in 2000.

The NSW HSC Online web site (<http://hsc.csu.edu.au>) is a joint project between the Department of Education and Training and Charles Sturt University with the cooperation of the Board of Studies and the Professional Teachers' Council. To support the new Higher School Certificate, NSW HSC Online was completely redesigned during 2000. There are currently thirteen subject nodes live with a further ten nearing completion.

# Department of Education, Employment and Training - Victoria

## Strategic Overview

Since the early 1990's the Victorian Government has identified the effective integration of information and communications technology into school education as a key priority. Changes of Government have not seen the importance of information and communications technology in schools diminish.

*Connecting Victoria* is Victoria's strategy for strengthening the use of information and communications technologies (ICT) and for sharing the benefits of these technologies across the entire Victorian community. In moving to a knowledge based society the Victorian Government has placed increased emphasis on harnessing the potential of technology to develop the whole of Victoria and maximize opportunities for all citizens. The Government sees the information society today as a mainstream element in the state's economic and social agenda. *Connecting Victoria* outlines six major strategic elements that support the government's goal to grow the ICT industry and to share the benefits of these industries across the whole of the Victorian community:

- building a learning society;
- growing the industries of the future;
- boosting e-commerce;
- connecting communities;
- improving infrastructure and access;
- promoting a new politics.

Recent education policy documents, including *Public Education – the Next Generation*, confirm that the emphasis on the role of information and communications technologies in schools must continue to support the Government's strategies that relate to building a learning society, connecting communities and growing industries of tomorrow. Schools play a fundamental role in establishing lifelong learning habits and in providing those underpinning skills in the use of technology. Teachers therefore play a pivotal role in modelling lifelong learning and appropriate use of technology in classrooms. Schools must increasingly equip students with ITC literacy and fluency skills to both grow the pool of skilled labour to support the ongoing development of an internationally recognised ICT industry and to support the evolution of a knowledge economy characterised by sophisticated users and consumers of ICT in all areas of the society.

To support the Government's wider vision, the Department of Education Employment and Training has put in place a strategy for embedding ICT to:

- improve learning outcomes for students;
- improve school business operations; and
- provide students with the skills to live and work in an information age.

The strategy is being delivered through:

- equitable provision of learning technologies infrastructure and common educational services;
- professional skills development in learning technologies, with an increased emphasis on embedding the effective use of technology in curriculum implementation;
- development and dissemination of online curriculum content and teaching resources;

- research, best practice and performance measurement;
- development of business support applications.

More recently *skills x knowledge = growth* has outlined the Victorian Government's strategy for specifically increasing the pool of skilled labour that will facilitate the emerging knowledge economy. Included in that is a range of programs within schools aimed at encouraging a higher take up of ICT related studies and training pathways by Victorian students, particularly girls.

Victoria has made a substantial investment in the provision of computing and communications infrastructure in its public schools. Programs are now in place to open up that infrastructure to wider community use, to provide important digital literacy skills to other members of the Victorian community and to build on the significant role played by schools in bringing communities closer together.

Investment in the development and delivery of quality curriculum and professional development materials is another high priority for Victoria. An extensive range of high quality curriculum and professional development resources is already available, with new products currently under development. Resources to support teaching and learning increasingly embed the effective use of ICT. Increasingly, online delivery is replacing, or at the very least, augmenting the traditional print form of information dissemination. This has resulted in an explosion of content being available to teachers, necessitating the development of improved access and content delivery platforms, such as the Education Channel.

Victoria has been seen as a leader in the introduction of technology in schools to support teaching and learning. A desire to maintain a leadership position is still strong, not for the kudos it brings the public education system, but for the benefits to our students and, in the longer term, to our society as a whole.

## Key Achievements

### People

Since 1996 over 40,000 participants have undertaken professional development programs in learning technologies developed or supported by DEET. These include extended professional development programs such as Computing Across the Primary Curriculum and Learning with the Internet, which equip teachers with skills necessary to embed the use of technology into their everyday classroom practice. Over 10,000 people from Victoria, other states and overseas have participated in professional development programs delivered by the Navigator Schools. In addition, DEET has supported a range of programs aimed at providing teachers with basic computing skills as well as supporting conferences and seminars where teachers can share their practices with others. Skills levels in computing have risen significantly as a result of this comprehensive program.

During 2000 a review of existing professional development programs was conducted. The review revealed a strong need for redeveloping existing programs to place greater emphasis on equipping teachers with skills in how to effectively integrate technology into everyday curriculum implementation in the classroom. The review also reinforced the strong preference for teachers to receive professional development from their peers at their schools. It was also timely to review the content of existing programs in light of the

overwhelming shift in skills levels of teachers and the changes in technology that have occurred since these programs were developed.

A new strategy for increasing the skills levels of teachers to facilitate the effective integration of learning technologies into everyday classroom practice is being implemented during 2001. It comprises leadership professional development, a new modular approach to teacher professional development delivered using a train-the-trainer model, redevelopment of the Teacher Learning Technologies Capabilities Matrix to assist in learning technologies professional development planning, and advanced programs to ensure that our leading edge teachers continue to push new boundaries in the effective application of technology to support teaching and learning.

## Research

An annual survey of teachers and principals is used to gather data on the effectiveness of DEET's ICT strategy and to generate performance measures for output indicators and targets. This longitudinal research demonstrates a significant shift in skill levels by teachers and principals, to the extent that the majority of teachers report either intermediate or advanced computing skills. Complementary research on new users of the Teacher Notebooks shows that when barriers to access to computers are removed, usage as a teaching and learning tool increases significantly.

In partnership with the University of Sydney, DEET is conducting a major piece of research into the effective use of learning technologies in schools. Successful Integration of Learning Technologies (SILT) involves 29 schools in three regions. Measurement tools have been developed to gather data on use and the impact of technology on student learning, school organisation and structure, the role of technology in engaging middle years students, preferred professional development models, and the role of student learning teams.

## Infrastructure

### **Computer to student ratio**

The statewide computer to student ratio is now 1:4.3. Over 63% of curriculum computers are less than 3 years old.

Schools receive an annual technology grant based on their expected enrolment and the school's Special Learning Needs (SLN) Index. The funding provided is expected to be used to purchase or lease computers or other ICT infrastructure. For 2001 this funding totalled \$9.8m and is in addition to the proportion of the school global budget allocated by the school to infrastructure expenditure.

Almost 14,000 surplus computers and printers have been allocated to Victorian Government schools. Contracts have been negotiated by DEET for the provision of all ICT products and services to schools, resulting in 10% - 15% cost reductions to schools as a result of these contracts.

### **Networking Schools**

The Victorian Government has in place a whole of government broadband wide area network, VicOne, that connects over 3000 government sites across the State. Education

is the largest customer to the VicOne Services, with all schools connected to the network at varying bandwidths:

- 80% school sites currently have a 64kbps link
- 17% have a 128kbps link
- 4% have between 128kbps and 2 MB.

VicOne is also used by over 500 Catholic and Independent schools. Up to 17 million Internet requests per day are being serviced across VicOne

Bandwidth, or more specifically the cost of bandwidth, is still a major concern for many schools, as they experience exponential growth in use of the Internet and VicOne services in the curriculum. VicOne is developed and managed by a private sector company, which has recently announced an investment of \$52 million in new infrastructure in country and regional Victoria. This will enable bandwidths to be significantly enhanced to 512kbps and higher with only a small increment in cost payable by schools. Upgrades will occur over the next 12 – 18 months with higher bandwidth progressively being made available at points around the state.

In addition to working with the VicOne provider on tariff issues and increasing bandwidth, DEET has assisted schools to maximizing bandwidth use without the ongoing costs associated with a bandwidth upgrade through the provision of proxy servers. Over 1,100 proxy servers supplied and installed, reducing wide area network traffic and increasing local response times to internet resources.

To facilitate the development of local area networks within schools DEET runs NetDays to network school classrooms free of charge to schools. NetDays involve a combination of professional and volunteer labour from the school community. To date, almost 3,900 classrooms have been networked and almost 14,500 data points installed in over 600 schools under the NetDays program.

### **VicOne Services**

- EduNet is DEET's preferred internet service provider for schools. Nearly 1,500 schools are now using EduNet. EduNet provides users with a customizable home page, intranet for schools and over 300,000 students with their own Internet and Email accounts. The EduNet service also blocks 12.5 million inappropriate sites and provides the Education Selected Cache – a collection of over 23,000 safe internet sites and low cost access by schools.
- EduMail - email service with 57,601 staff, Principals and School Council Presidents with email accounts and over 100,000 staff in DEET and other Government Departments in the address book. There are up to 6,000 concurrent users and 3 million messages per month. EduMail is available from schools, home, etc. and via the Internet. The benefits of the EduMail services are that it enables all Departmental documentation to be distributed electronically; reduced costs (printing, postage, fax and voice); and improved communications between and within schools.
- EduLibrary - online document repository of all major Departmental documents. All communications from DEET to schools is conducted electronically. After electronic distribution all Departmental documents are be stored on EduLibrary.
- EduConf - IP-based videoconferencing service enabled by the VicOne network. Video-conferencing solution available at all schools, in all classrooms and at all desktops. Central conference servers enable one-to-one or many-to-many

conferences. This initiative builds on the DEET's successful non-IP (H320) video-conferencing services.

- EduCast – web casting service coming on line shortly.
- EduLink - data transfer service.
- Education Channel – see below.
- SOFWeb (DEET's school web site) – the highest used education site in Australia.
- HRMS, DEET central human resource management systems.
- Access to cultural institutions – Victoria's art gallery, museum and state library.

### **Videoconferencing**

Videoconferencing is used as a means to provide improved curriculum choice for country students. 79 H320 video conferencing units in place across country Victoria are providing access to 70 subjects by 771 students currently being taught by videoconferencing and telematics.

### **Notebook Computers for teachers**

Longitudinal research conducted by DEET showed that lack of access to computers was the single biggest barrier to teachers using ICT in their everyday classroom practice. As a result the Victorian Government initiated the Notebook computers program, under which every Victoria Government school teacher will be offered the use of a state of the art notebook computer. To date 31,272 notebooks have been distributed with a 95% take-up. The final round of the notebook roll out will occur in April 2001. In return for the notebook, teachers agree to participate in 40 hours of learning technologies professional development and pay \$150 per year.

### **Technical support**

The Victorian Government initiated a program of increased financial support to schools in recognition of the increasing burden costs of technical support were making on school global budgets. Schools receive an annual allocation based on the number of computers for routine technical support and operational maintenance. This has enabled many teachers who were spending significant time maintaining school networks and computers to return to classroom teaching. In addition, DEET has contracted with over 280 specialist technicians to provide clusters of schools with high end technical support.

### **Software licensing**

DEET has successfully negotiated software licences on behalf of all Government schools to a wide range of Microsoft product resulting in virtually free access by schools. In addition, statewide licences have been negotiated with other applications that DEET deems essential to the effective operation of a statewide network.

DEET also uses aggregated purchasing power to negotiate discount prices on software titles and applications that, following evaluation by practicing teachers, are felt to be most useful in supporting the implementation of technology enriched curriculum in schools.

## **Content and services**

DEET provides extensive online curriculum resources to schools via:

- The Education Channel – a gateway to information about all aspects of education and training in Victoria, customisable for different audience segments - schools, teachers, students and the community. The Education Channel also provides

enhanced discoverability to an extensive range of over 200,000 online curriculum resources including those outlined above and resources from over 200 affiliated content providers. Resources are catalogued against the Victorian Curriculum and Standards Framework. The Education Channel includes a "Schools Online" facility that makes available to the public an enhanced level of information concerning schools and includes an Online Enrolment Inquiry. The Education Channel also contains a Life Events section that enables users to access Government resources and services via key events, e.g. Starting School.

- Curriculum@work - an online set of support materials for teachers, linked to the CSF, easily searchable. In 2001 curriculum@work will be enhanced through the modification of the user interface for the online version, and the addition of new units and learning activities, multimedia interactives and enhancements to support existing units of work, and an editorial workbench to facilitate the publishing on additional content. Users of curriculum@work will also be able to conduct simultaneous searches of other online curriculum resource repositories including Global Classroom, IdeaBank and the Resource Centre.
- Global Classroom is a vehicle for encouraging teachers and students to use ICT for collaboration and communication. Over 60 projects are available in which schools can participate, ranging from simple email based programs, to online publishing projects to projects that use videoconferencing for real time communication between students. All projects are linked to the CSF.
- IdeaBank is a collection of over 1000 teaching and learning activities written by teachers for sharing with other teachers. All activities are linked to the CSF, embed the use of technology and go through a quality assurance process.
- PRISM – online interactive resources for the Science curriculum in Years 7 & 8. PRISM has also been instrumental in moving the national online curriculum agenda forward by demonstrating a platform for content sharing.
- STEPS and Science Trek – video and associated online curriculum resources targeting Science in primary and middle years.
- Where's English – a rich, interactive multimedia CDROM aimed at supporting English as a Second Language.
- SOFWeb – one of the Most heavily used educational website in Australia, containing 30,000 web documents and downloadable files. SOFWeb is the primary distribution channel for support information, including curriculum and professional development resources, on major DEET initiatives such as the Early Years and Middle Years of Schooling strategies, Drug Education, Student Welfare, Science in Schools (including extensive professional development materials and the Family Science site) as well as providing a publishing platform for interactive database resources such as IdeaBank and Global Classroom. Two thirds of teachers use SOFWeb regularly. All SOFWeb resources are easily discoverable via the Education Channel.

- SOFNet schools TV - Educational television programs via digital satellite to schools, including Catholic schools. It includes access to Discovery, National Geographic, CNN and Weather21 through partnership with Austar in country areas.

### **CASES 21**

A major study of business processes has been undertaken to inform the development of a new school administration application. CASES21 provides school business systems which cover most of the business process identified. It provides:

- full integration of all systems used in schools including library systems;
- flexible management information and decision support capabilities, especially ad-hoc reporting and school council reporting;
- system support for essential functions related to teacher's core work;
- flexibility to schools in the use of business packages they wish to use to meet their specific requirements.

### **SafetyNet Internet Guidelines**

Advice has been provided to all Government schools on the development of appropriate use Internet policies. The Guide provides sample policies and student codes of conduct as well as advice on issues such as filtering, monitoring student Internet use, copyright, and netiquette to inform the development of school policies.

# Education Queensland

## Strategic Overview

Education Queensland has developed a blueprint for the direction of state education for the next ten years outlined in the document *Queensland State Education – 2010* (<http://education.qld.gov.au/corporate/qse2010/strategy.html>). This document together with the Smart State and Networked Learning Community initiatives provides a solid platform for the delivery of *Learning in an Online World* and for the encouragement of schools to adopt new paradigms of learning.

As part of the 2010 strategy, Education Queensland is developing *New Basics*: an integrated framework for curriculum, pedagogy and assessment to give students the knowledge, skills and competencies they need for their future community, economic and political life. It is developing an environment in which information and communication technologies are inextricably linked to educational skills and the capacity to undertake life long learning and renewal of individual skills.

Education Queensland has provided access to online learning through a range of complementary programs supporting the key areas of professional development, infrastructure and curriculum content. These programs include Schooling 2001 (completed in 2000), School-based Apprenticeship and Traineeship Program, Virtual Schooling Service, Digital Resource Centre, Connect-Ed, School Local Area Network Project and School Management Systems Project. Planning activities involving all units of Education Queensland have focused on ensuring that online learning is considered as the foremost element of our E-business strategy.

### Professional development

As part of the 1999/2000 state budget, the Queensland government committed to spending \$40M over 4 years on ICT support in schools and ICT professional development and training for teachers, commencing in 1999/2000. Funding is to be provided on the basis of \$5M in 1999/2000, \$5M in 2000/2001, \$15M in 2001/2002 and \$15M in 2002/2003. As part of Schooling 2001 \$14M grants were allocated to schools in the years 1997-2000 for ICT professional development.

Professional development for all Education Queensland staff is coordinated by the Learning and Development Foundation. The activities of the Foundation encourage staff to be informed, critical and lateral thinkers who are accountable for their own learning. The Foundation Online project has been established as the vehicle to deliver reliable access to a range of innovative, motivating online solutions for all of Education Queensland staff's learning and development needs. Queensland is also participating in the Commonwealth-funded Quality Teacher Programme, which complements state-based programs for professional development in ICT.

### Infrastructure

The Education Queensland infrastructure which currently supports online learning is made up of three components: the Enterprise Network, School Local Area Network (LAN) Project and the Managed Internet Service (MIS). A project is in progress to coordinate the hosting, delivery and curriculum infrastructure for an E-learning centre.

Development of the E-learning centre is shared by AccessEd, the Learning and Development Foundation and Information Management Branch to ensure the delivery of equitable, cost effective and reliable online learning opportunities for teachers and students in Queensland schools. The E-learning centre supports curriculum delivery to students through the Virtual Schooling Service (<http://education.qld.gov.au/virtuelschool/html/index.htm>) as well as learning and development opportunities for all Education Queensland personnel through Foundation Online ([http://education.qld.gov.au/learning\\_ent/ldf/](http://education.qld.gov.au/learning_ent/ldf/)). This is accomplished through the use of both synchronous and asynchronous web-based applications.

### **Curriculum content**

Curriculum content and online information services are delivered through the Digital Resource Centre, including the twin services of the Curriculum Exchange ([http://education.qld.gov.au/tal/curriculum\\_exchange/](http://education.qld.gov.au/tal/curriculum_exchange/)) and the Professional Exchange ([http://education.qld.gov.au/corporate/professional\\_exchange/](http://education.qld.gov.au/corporate/professional_exchange/)) as well as a range of web sites and electronic discussion lists accessible through the Education Queensland Intranet and Internet (<http://education.qld.gov.au/>). Coordination of collaborative projects such as Project Atmosphere, Netdays 2000, Queensland Museum Magnet Schools and Eco-online are important online activities for Education Queensland.

### **Research and innovation**

Education Queensland supports a research agenda which focuses on trialing the use of ICT in classrooms to deliver learning outcomes.

#### Apple Classrooms of Tomorrow (ACOT)

The final report of the evaluation of Queensland's Apple Classrooms of Tomorrow (ACOT) school was completed in 2000. The particular objectives of the evaluation were:

- to determine the extent to which the integration of technology in the curriculum and the learning and teaching environment contributes to improved student learning especially in the area of Literacy and Numeracy;
- to determine the teaching variables with regard to the use of learning technology that enhances the opportunities for improved learning outcomes;
- to identify specific uses of technology that have led to improved home/school linkages and more meaningful involvement of the parents/community in the educative process, and to determine the extent and in which ways improved access to technology enhances the community links and further community learning.

As a result of the evaluation in 2001 the ACOT model delivery has been extended to create five Learning Development Centres for Learning Technology across the state.

### **Virtual Schooling Service Pilot Project**

Virtual Schooling Service (VSS) operations commenced January 2000 with Year 11 students in 26 schools across 20 districts accessing the service via Education Queensland's own wide area network. Students in these small and/or rural and remote secondary schools were undertaking subjects which they might otherwise have been unable to study. During 2000 four subjects were available: Economics, Maths C, Japanese and Computer Studies (Certificate Level II in Information Technology). Eight teachers were seconded to AccessEd to deliver these subjects and develop online teaching resources and support materials.

Existing students will continue their Year 12 studies with these teachers in 2001.

Feedback from study coaches and students participating in the 2000 pilot indicates that

they highly value the opportunity to interact in real time with their teacher and with students from other schools. End of year results show that VSS students are performing at a comparable or higher level than their face-to-face counterparts. An independent report completed by researchers from QUT highlighted the flexibility and long-term cost-effectiveness of the delivery mode and the enthusiasm and support from schools and students for this initiative, especially those in rural areas.

In 2001, the VSS will be expanded to trial the delivery of Economics, Maths C and Japanese using the online materials developed in 2000 at AccessEd, via trained teachers in three secondary schools to a new Year 11 cohort. The delivery schools have proven expertise and performance in the subject and a proven record of using ICT to deliver teaching and learning outcomes. In addition, two new senior secondary subjects (Modern History and Information Processing and Technology), and Year 9 Japanese will be delivered by additional seconded teachers based at AccessEd to Year 11 students attending State secondary schools.

Presentations on the VSS have been provided to state, national and international representatives. Papers and poster sessions have been presented to state and national conferences.

### **Innovative Learning Technology Trials**

Technology selected for trial had to support key criteria from the Queensland State Education 2010 document as well as being soundly supported by search and educational theory. Teachers conducted trials across year levels and curriculum needs. This included the use of collaborative software and networked knowledge building tools by students for developing higher order thinking skills as well as exploration of the specific strategies and approaches in the use of chat rooms that improve learning outcomes in educational settings.

## **Key Achievements**

### **People**

Professional Development for Education Queensland leaders, teachers and administrative staff is provided through the Learning and Development Foundation. A significant part of these activities are conducted through Foundation Online in the form of interactive tutorials and information rich websites.

Learning and Development Foundation conducts professional development activities through the Apple Classroom of Tomorrow (ACOT) School project. In 2001 the ACOT model delivery has been extended to create five Learning Development Centres for Learning Technology across the state.

### **New Basics**

The New Basics Project involves the design of a framework for curriculum, pedagogy and assessment that deals with new student identities, new economies and workplaces, new technologies, diverse communities and complex cultures. The project is a trial over four years, 2000 to 2003, with 38 volunteer schools across Queensland reorganising their curriculum delivery, examining teaching strategies and developing authentic assessment and reporting processes through the use of Rich Tasks at key junctures of schooling.

Curriculum delivery will focus on “The New Basics”, four clusters of practice that taken together, describe the interactive requirements of new life worlds and futures orientations. Work will also focus on Productive Pedagogies – classroom strategies that teacher can use to focus instruction and improve student outcomes. Included in this group of 20 strategies are high-order thinking, connectedness to the world, metalanguage, inclusively, group identity and problem-based curriculum.

The New Basics necessitate rich and authentic assessment and an important component of the trial is the development and implementation of Rich Tasks. Rich Tasks are specific activities that students undertake that have real-world value and use.

In 2000, New Basics trial schools were given the opportunity to discuss, plan and prepare for the implementation of the New Basics with students in 2001. Significant learning and development opportunities were made available to teachers in trial schools to assist them in understanding and responding to the New Basics agenda.

In 2001, students will be engaged in Rich Tasks and in working with a curriculum that has been planned around the New Basics categories. Critical friends will also be engaged by schools to assist them in the continuing work required to align teacher practices, community engagement and school organisational capacity with the New Basics Framework.

The New Basics project will be supported by a strong research program that will provide qualitative and quantitative data on student outcomes, classroom pedagogy, organisational capacity of schools, and external support needed for pedagogic change.

### **Minimum Standards for Teachers – Learning Technology**

All schools have received funds to develop, maintain and increase teachers’ skills in order to reach learning technology standards and the application of these to learning and teaching in all key-learning areas, P-12. The four key areas of the minimum standards are Information Technology skills; curriculum application including classroom planning and management; school planning; and student centred learning. At the end of 2000, 58.8% of teachers had been certificated for the Minimum Standards for Teachers – Learning Technology although the number of teachers who have achieved Minimum Standards is significantly higher than this.

### **Innovative Learning Technology Expo**

The Minimum Standards for Teachers – Learning Technology initiative aimed to provide opportunities for all teachers to develop skills in the classroom use of ICT. The Innovative Learning Technology Expo conducted in November 2000, provided an opportunity for early adopters and experienced users of ICT to explore the latest applications to help teachers move from the centre of learning and gatekeepers of information to become teachers as the managers of the learning experiences of children. Applications that scaffold critical and creative thinking and tools that support teachers in a constructivist pedagogy were showcased.

## **Infrastructure**

### **The Enterprise Network**

Education Queensland’s Enterprise Network (EdNet) was rolled-out in 1998 linking Central Office, 36 District Offices and 1330 schools with a minimum 64K link. This

rollout established a comprehensive terrestrial infrastructure throughout the state and is the corporate communication backbone for the department.

Telstra was awarded a three-year contract in October 1997 and this was extended for a further year in 2000. The schools' requirements for an integrated, baseband system (voice only or data only) have been met through the rollout of the infrastructure, the establishment of the Customer Care Centre (CCC) and Schoolsnet.

As part of the agreed contract the CCC was established by Telstra to support schools in their use of email, the Intranet and the Internet. Specifically, the CCC currently has 22 staff members that support LAN, WAN and special projects such as the Virtual Schooling Service, EduList and Listserv. Schools are relying on the CCC to meet their LAN/WAN needs and on average the CCC handles in excess of 4000 calls per month.

Ninety-five percent of schools have a 64K connection. With the exception of two schools that have frame relay the remainder of the schools have a 128K connection.

The current offering of broadband services is limited to the Brisbane metropolitan area and will not be available for a considerable length of time in other parts of the State. Another broadband service, DSL (Digital Subscriber Line), which will give Telstra's rivals some space in which they can innovate and compete will not be available from Telstra for probably another eighteen months. DSL will be a service provided to the major exchanges throughout the State but does not handle the issue of Customer Access Network (CAN) which is still a service only offered by Telstra. It will take some time for DSL to proliferate to the smaller exchanges and, therefore, to the remote and rural sites.

### **School LAN Project**

The School Local Area Network Project is a four-year project that is providing a "Network Starter Kit" to all 1300 Education Queensland Schools across the State by October 2001.

The project was established in 1997 and was given the responsibility of providing and installing Structured Cabling Systems and Active Network Equipment into all schools through a staged process over a number of years.

The Project is providing Administration and some curriculum areas with Internet and Intranet access to the department's Wide Area Network.

### **Managed Internet Service (MIS)**

Education Queensland's Managed Internet Service for all schools is delivered through a partnership with Telstra who provide the Customer Care Centre and also act as Internet service provider and Schoolsnet, the software developers who deliver the Schoolsnet Network Administrator (SINA). Schools are also supported by a SINA project officer and website (<http://education.qld.gov.au/schools/sina/index.html>).

## Content and services

Education Queensland's Digital Resource Centre delivers online content and services through two web sites the Curriculum Exchange and the Professional Exchange.

### **Curriculum Exchange**

As well as delivering significant collections of curriculum information and resources the Curriculum Exchange provides teachers and students with a range of different ways to access them. Developed to provide integrated access to online content, resources and information it also facilitates the sharing of curriculum knowledge through the Teaching Ideas and Practices (TIPS) collection, the use of electronic discussion groups and evaluations of curriculum resources.

### **Professional Exchange**

Developed in association with the Learning and Development Foundation the Professional Exchange has been developed as a web site to extend the range of professional information resources and services available to Education Queensland teachers and affiliates, including members of school councils and P&C associations. The Professional Exchange may be accessed within EQ through the Intranet, and from outside via an Internet connection. Access to selected information services require authentication. Services include customised lists of recommended resources with links to full-text journal articles and internet sites, easy to use online reference tools, Ask a librarian, databases such as AEI, ERIC, Family, and APA Full-Text, monthly new titles lists, recommended Internet search tools. Online delivery provides equitable access to users in geographically diverse locations.

### **Education Queensland Information Literacy Program (EQuIP)**

([http://education.qld.gov.au/corporate/professional\\_exchange/equip/](http://education.qld.gov.au/corporate/professional_exchange/equip/))

Delivered through the Professional Exchange and developed as a collaborative effort between Education Queensland and Queensland University of Technology, EQuIP provides a nine-module online information literacy tutorial for Education Queensland personnel. This is one of a range of curriculum and professional online learning units offered to teachers through Foundation Online.

# Education Department Of Western Australia

## Strategic Overview

The physical size and vastness of Western Australia, creates unique problems in supporting those students who, either by choice or because of necessity, must live in very isolated locations. Alternative educational delivery and learning support systems have long formed an integral part of the learning and teaching environment for such students. This process continues to be strengthened and extended to other students and learning situations as developments in information and communications technologies (ICT) occur.

The Education Department of Western Australia recognised the opportunities that ICT could provide in an educational environment in its *Plan For Government School Education 1998 – 2000*. One of the major strategies was to improve learning, teaching and management through technology. The Department's *Technology 2000 Draft Strategic Plan Overview 1999 – 2001* described how this would be achieved.

Part of the strategy for improving learning, teaching and management through technology has been the Learning Technologies Project. This project, funded for \$80 million over four years, is building on earlier initiatives and aims to achieve computer to student ratios of 1:5 for secondary students and 1:10 for primary students in 2002. The equipment is to be no more than four years old.

Provided they demonstrate an ability to meet the target ratios, schools are able to use the balance of their grants for other approved learning technologies priorities such as:

- integrating technology into teaching and learning;
- developing teacher competencies in learning technologies;
- accessing and acquiring electronic educational resources for students;
- acquiring and maintaining learning technologies for students; and
- developing school connectivity (local area networks and Internet access).

The Department has recently adopted a new strategic approach to technology and the development of online content. The new ICT strategy, e2c, seeks to exploit recent developments in information and communications technology and aims to improve access to ICT for all Western Australian government school children. Together with the development and delivery of online digital curriculum resources, methodologies and tools, this strategy will empower teachers and students to become major participants in the knowledge economy.

Western Australia's commitment to equipping students to be confident, creative and productive users of new technologies is embedded in the Western Australian Curriculum Framework. One of the overarching learning outcomes in the framework is that *students will select, use and adapt technologies*. This is reflected in student outcome statements across all learning areas.

Schools have the flexibility to implement an outcomes-focused approach to education in a manner appropriate to meet the needs of students and the school community. This can occur over several years and means that the rate of implementation of these reforms will vary from school to school.

This process is being supported by the introduction of the *School Information System*. This software provides an integrated, comprehensive information management system to support schools in managing their finances and maintaining school administration. It also supports teachers in planning monitoring, evaluating and reporting in an outcomes environment. The system will be implemented in most Western Australian government schools by the end of 2003.

Through use of the *School Information System* it will be possible for:

- the electronic recording, sharing and transfer of student data, profiles and learning programs to occur in a way that has not previously been possible;
- information to be shared and exchanged electronically with other schools, parents and the education system. This is part of the move away from paper based approaches to the electronic transfer of data;
- curriculum planning to occur on-line;
- curriculum planning, monitoring of student performance and recording of student achievement of outcomes to be shared with other teachers;
- schools to utilise common formats to record, store and transfer student information within and across schools; and
- the management and analysis of student data in relation to demographics identified at system and school level to assist in the school decision making process.

Teachers are supported with information about online resources through the Department's Curriculum Materials Information Services evaluation website and *Technology Focus* journal. As well as providing summary data and a link to the resources, the information is designed to assist Western Australian teachers in their planning by providing:

- links to the Curriculum Framework – the major curriculum document for our jurisdiction;
- information about appropriate phases of development;
- related learning areas;
- ideas for use in the classroom.

Case studies are also available online to assist teachers with the design and use of materials created by exemplary teachers.

In order to maximise the benefits of new technologies to schools through collaboration, the Department identifies and evaluates appropriate curriculum content and links and submits this information to EdNA Online. It has also participated in the development of the EdNA standards and framework, and markets EdNA to schools through professional development seminars and Department websites.

The Education Department of Western Australia is developing the use of technology in the delivery of professional development to support technology in teaching and learning programs for students and to provide professional support for staff. The Department will seek to expand the use of technology to provide greater opportunities and access to professional development, particularly to country teachers.

Funding for teacher professional development is devolved to schools and priorities determined at the school level. Many schools also use part of their Learning Technologies Project grant to fund learning technologies related professional development for staff.

## Key Achievements

### People

- During the 2000 school year, \$7.1M was allocated to schools through the School Development Grant. Teacher professional development is funded from these grants and priorities are determined at the school level. Schools may also use part of their Learning Technologies Project grant for professional development;
- rollout of a \$1.5 million program to provide notebook computers and professional development for teachers is being linked to the Curriculum Improvement Program and School Information System initiatives in country schools;
- in excess of 20,000 teacher professional development days were provided by the Open Learning Technology Training Centre (OLTTC) at the Schools of Isolated and Distance Education in 2000 for staff from across the Western Australian primary and secondary education system. Many of these users were engaged in professional development associated with new technologies;
- throughout 2000, Schools of Isolated and Distance Education staff, and in particular Schools of the Air staff, have been involved in extensive professional development in the use of electronic learning materials;
- the Education Department supported 100 teachers to undertake a Graduate Certificate in Learning Technologies program developed by the Science and Mathematics Centre for School Science and Mathematics at Curtin University of Technology (SMEC). The Department covered course costs and provided notebook computers for participants;
- the Education Department supported 19 teachers with an on-line Mathematics retraining course. This course commenced in 1999 and was developed to support teachers who are teaching lower secondary mathematics out of their area of teaching expertise;
- the Quality Teacher Program in Western Australia is using technology to develop teachers' understanding of how to teach with technology and their capacity to deliver effective curriculum. All Quality Teacher Program system-wide strategic initiatives have an online content and focus;
- the Graduate Support Program provides a virtual helpdesk that offers confidential support on professional issues or questions. It provides an opportunity to be mentored by an experienced teacher and on-line networking with a chat room facility and bulletin board for first-year teachers;
- the Education Department in partnership with Edith Cowan University is providing 20 professionals with an innovative teacher training program in Technology and Enterprise. This course has a significant online component and all participants are being provided with a notebook computer; and
- implementation of the Department's Human Resource Management Information System (HRMIS) has been a key initiative in advancing local school-based management of staff. Many schools have implemented the "self service" kiosk that allows employees to view their entitlements on-line and update personal information.

## Infrastructure

- At the end of 2000, computer to student ratios were 1:5 for secondary students and 1:9 for primary students;
- an enterprise software agreement with Microsoft is being funded by the Learning Technologies Project;
- a prototype of a new Education Portal has been developed and demonstrated;
- pilot projects are underway at a number of schools to evaluate various e-learning management and publication tools;
- an RFP for key infrastructure components, including voice, data and video communications, has been released to the marketplace; and
- all schools have been provided with the resources to establish an Internet connection, however, a number of schools have difficulty maintaining a reliable connection.

## Content and services

- Extensive use of the Internet and web management tools has been made with the gifted and talented, primary extension and Challenge programs delivered from the Schools of Isolated and Distance Education;
- video conferencing is being used increasingly at the Schools of Isolated and Distance Education and in the Pilbara Education District;
- extensive use is made of the Westlink television network by the Schools of Isolated and Distance Education. Programs and video taped materials supporting the entire K-12 distance learning program are provided;
- telematics support has been provided at over 180 sites for LOTE students, gifted and talented, primary extension and 'Challenge' students in distance education programs;
- a successful trial has been conducted with School of the Air students returning work to teachers via email; and
- As part of the Department's Monitoring Standards in Education program, a study of the Technology and Enterprise learning area was undertaken for the first time.

# Department Of Education, Training and Employment - South Australia

## Strategic Overview

In late 1995, the Department developed a draft Information Technology Plan 1996–2001, *Creating the information society*. Responsibility for the implementation of the Plan was allocated to the DECS*tech* 2001 Project, a five-year, \$85.6 million government sponsored initiative, the major focus of which is to amplify, extend and transform student learning.

The key curriculum strategy is the three-year Learning Technologies Project which encompasses

- Discovery Program
  - 6 Discovery Schools
  - 3 Global Discovery Schools
  - 20 Discovery Network Teachers each year
  - Early Discovery program
- Leading edge professional development
- Principals' leadership program
- Research into the impact of ICT on student learning
- Development of resources for teachers.

Teaching methods and curriculum delivery are being enhanced by the availability of appropriate infrastructure. This includes the provision of one computer for every five students; connecting schools to the Internet; and linking classrooms, administration areas and resource centres within each school. To achieve this, the focus is on the installation of local area networks (LANs) in all schools and the provision of high speed telecommunications to link schools, regardless of their geographic location in the state, to the outside world.

For the past two years, the South Australian government has been implementing a major information and communication technologies driven project, IE 2002, which aims to ensure that all South Australians are encouraged and enabled to participate in the Information Economy, locally, nationally and globally. Within the 21 IE2002 strategies, DETE has responsibility for the education related projects: South Australia as a global brand, Global education for global business, IT cadets, ICT competencies and Online careers. The last three initiatives have particular relevance for school technology.

Towards the end of 2000 the South Australian government released two key statements about student competencies in information and communication technologies.

*All students will have the opportunity to learn about information technology and telecommunications. They can then leave school with an industry recognised information technology qualification. No matter what career they decide to pursue, this knowledge will make them better equipped for the workforce, where computer literacy has become a prerequisite for employment (Directions for South Australia October 2000).*

*Through the Department of Education, Training and Employment the Government will introduce a mandatory IT curriculum within schools leading to a TAFE level equivalent qualification with industry certification (IE2002).*

The implementation of this policy is beginning in 2001 in a three phase strategy which addresses the ICT competencies of students from early childhood to senior secondary.

The ICT strategy provides:

- a structured developmental pathway in ICT studies;
- accountability;
- pathways to industry irrespective of career choice;
- encouragement for all South Australians to participate in and contribute to the Information Economy;
- assurance that all children have an opportunity to leave school as confident, creative and productive users of ICT.

## Key Achievements

### People

#### **Student ICT Competencies**

Following extensive industry consultation, student ICT competencies are being developed in the following way:

- Reception to Year 9: in the new South Australian Curriculum Standards and Accountability (SACSA) Framework within the Essential Learning, Communication, along with Literacy and Numeracy. The implementation of the SACSA Framework began in 2001.
- By the end of Year 10: all students will achieve an industry accredited ICT qualification eg Information Industry Training Advisory Body (IITAB) national training package Certificate I with opportunities for selected students to undertake Certificate II. This program will begin during 2001.
- Year 11/12: students progress to a range of options eg IITAB or Multimedia Certificate II or III; SACE IT Stage 1 and 2; vendor programs such as Microsoft, Novell, 3Com Netprep, Cisco Academy program.

#### **Discovery Program**

The role of the *Discovery Schools* is to influence other schools on how to use learning technologies. They are doing this by reflecting on, researching and further developing the exemplary ways in which they embed learning technologies in their school curriculum. Discovery Schools share their models of best practice with others by providing professional development programs, developing teacher resources and hosting visits by other schools. They receive targeted funding and a full-time Project Manager through the DEC*Stech* Project to achieve this. The Discovery Schools are located in the metropolitan area and include four primary schools and two high schools.

In 2000, the first full year of the program, more than 600 teachers and 200 principals attended courses at the Discovery Schools. 98% of participants indicated that they would recommend other teachers to attend the courses.

The *Global Discovery Schools* have been established to explore and share with other country schools, the creative uses of online technologies to bridge barriers to learning caused by isolation and distance, and to build on the strong sense of community in country areas.

The *Discovery Network* is designed to encourage and broaden the impact of 20 teachers each year who are already extending learning outcomes through exemplary practices with learning technologies. The project provides 0.2 teacher release time, additional funding and mentor support from previous Network teacher to extend and share their practice with others. Network teachers are identified annually to share good practice by hosting classroom visits, conducting workshops, speaking at conferences, providing online peer support and developing online teaching resources.

In 2000, 700 professional development sessions for teachers were provided by Discovery Network teachers. 95% of those attending indicated that their knowledge of how to use learning technologies was increased as a result, 69% indicated that they would change their practice, and 72% indicated that they would attend follow up sessions.

DETE is proud of its unique position in Australia for providing education and care from birth to vocational education. The *Early Discovery* program explores and shares new understandings about the role of technology in supporting learning in the early years.

In order to challenge and inspire those at the forefront of learning through technology, the project offers a program of leading edge professional development known as *Masterclasses*. Esteemed national and international speakers form the basis of this program. Short overseas study tours are conducted from time to time to renew personal and corporate visions, benchmark DETE practices and broaden the base of leading edge knowledge about technology across the department.

Principals as curriculum leaders and decision-makers are critical to how learning technologies are implemented in their schools. The *Principals Leadership* program has been developed by the Technology School of the Future and will be delivered from Term 2 2001. Four practising principals will provide a consultancy to the program. The program has been designed to equip principals and other school leaders as:

- technology users;
- leaders of curriculum in which technologies are embedded;
- managers and decision makers about technology and related resources in their schools.

### **Technology School of the Future**

The major centre for teacher development in learning technologies in SA is the Technology School of the Future (TSOF). TSOF provides opportunities for student groups and their teachers to trial and develop best practice in the use of learning technologies. Teacher work placement in IT industries is being explored under the auspices of partnerships with a wide range of companies, particularly those in the Digital Precinct in which TSOF is located.

### **Research**

The outcomes of the wide-ranging research program inform professional development offered in the Discovery Program and the Technology School of the Future. Three questions underpin formal research in the Discovery Schools:

- Are learning technologies making a difference? If so, in what ways?
- Which teaching strategies facilitate the effective inclusion of technology to transform student learning?

- Which school infrastructures support the effective embedding of learning technologies?

The following school-based research projects are in place for the year 2001:

*Across all Discovery Schools*

- What constructivist methodologies best embed learning technologies, what is an effective professional development model to transfer these practices to other teachers and what are the cognitive and affective learning outcomes for students?
- Why are Mathematics teachers low technology users (Realtime Report)? What are effective embedding practices and software tools? How are R-3 students using the Web to construct their learning? What teaching practices effectively embed learning technologies in the curriculum? What are teacher and student perceptions about learning events through technology?

*At individual Discovery Schools*

- What is the impact of learning technologies on curriculum design, delivery and assessment; on student attendance, participation, retention, achievement and career pathways; on ATSI students and students with negotiated curriculum plans?
- Is an information literacy skills matrix an effective tool for a whole school approach to embedding technology in the curriculum and for teachers developing student information literacy through learning technologies?

*At a cluster inclusive of child care, preschool and junior primary school*

- Action based research to explore the role technologies can play in early years' learning—a study of 3 to 8 year old children with a greater focus on 3-6 year olds.

In addition, baseline data about Discovery School teachers' practices with technology and students' attitudes is collected annually 1999-2001.

## Infrastructure

Underlying all the decisions relating to infrastructure is the government's objective of one computer for every five students.

### **Computers**

To meet the immediate needs of schools to increase the number of desktop computers, the DECS*tech* Computer Subsidy Scheme began operation at the beginning of 1997, with corporate funding for hardware complementing input from schools. At the end of January 2001 schools had used 18 000 subsidies. Both Apple Macintosh and IBM compatible platforms are supported for curriculum use; IBM compatibles are mandated for administration. The amount of the subsidies is calculated on a needs basis depending on the number of School Card students in the school.

A survey undertaken in Term 4 2000 indicated that the objective of one computer to every five students had been achieved.

### **Internet access**

In September 2000 a contract was signed with Telstra to provide all DETE sites with the highest quality Internet access service available in Australia. This service, called sa.edu, ensures that South Australian students are well positioned to take advantage of the

Internet's vast information resources and communication opportunities. Bandwidth of 128K is provided to all schools, and schools with more than 675 students receive 256K. The results of a trial of 2Mg in six large secondary schools are currently being analysed.

sa.edu is built upon the most comprehensive broad-bandwidth network in Australia. The guarantee is that access speeds to the Internet equal to those available in any other Australian capital city are provided to 20 regional South Australian centres as well as Adelaide. The network connecting the 20 regional POPs, known as Pathway SA, is a world class broadband multimedia network, designed to cater for the growth of Internet use by all DETE sites in the years ahead. In addition to fast access speeds, sa.edu provides education specific Internet services developed by Schoolsnet. These tools have dramatically improved the schools' capacity to support and appropriately manage student Internet access.

By the end of 2000 all schools and preschools were connected to the Internet through sa.edu, with four remote locations using a satellite service.

### **School computer networks**

The first phase of the *DECStech* project to support the establishment of computer networks in schools was the distribution in two instalments in 1999 and 2000 of cash grants for cabling. Accompanying the grants was a series of documents to assist schools with the installation of the cabling.

The Department has now completed the process of defining the computer network requirements for schools, ie file server systems and associated network equipment and management services. The implementation of this aspect of the *DECStech* strategy complements the cabling grants, and provides sites with quality and consistent IT infrastructure, and associated ongoing support services. Subject to funding, the installation and commissioning of equipment is expected to be completed by the end of 2001.

To provide onsite assistance to preschools and schools for the operation of their information technology infrastructure, 17 District Support Officers are employed across the state.

### **Content and services**

The successful implementation of the Student ICT Competencies Strategy described above requires the availability of curriculum support resources for teachers. Units of work which model the integration of ICT into classroom practice have been developed in all areas of the curriculum and for every level of schooling. Discovery Schools are contributing units of work for online delivery.

As host to the secretariat for the Schools Online Curriculum Content Initiative, DETE was heavily involved in 2000 in establishing the project prior to the appointment of the Director and is continuing to work in this area.

Software is being developed for the recording of student achievement through the LAS Project. Student ICT competencies will be recorded in electronic format in the Transition Portfolio assembled by students to use in the transition between school and the world of work.

# Department of Education Tasmania

## Strategic Overview

The Tasmania Government has released the document *Learning Together* <http://www.doe.tased.edu.au/learningtogether/> which outlines “a shared vision of having a world-class education, training and information system that matches the best anywhere” through addressing the five goals of:

- responsive and continually improving services;
- enriching and fulfilling learning opportunities;
- safe and inclusive learning environments;
- an information-rich community with access to global and local resources;
- a valued and supported education workforce.

To progress these goals a range of initiatives have been identified, many of which complement and support the objectives and intent of *Learning in an Online World*.

The Department of Education’s integrated framework of information and communications technology (ICT) initiatives is based around the nine components of:

- building a communications network;
- access to information;
- building schools infrastructure;
- providing professional development;
- creating content;
- online learning;
- developing school management systems;
- providing corporate information and business systems;
- information standards and policies.

Significant progress has been made in addressing all nine components.

Based upon a school’s educational need, acceptable levels of telecommunications services are now provided to all schools to allow, through their internal network, access to the Internet and other networked services.

A range of services and initiatives are in place to support access to information and the utilisation of online learning resources. These include schools having access to a statewide library system linked to the public library system and a number of central services for advice and provision of access to online content such as web resources and educational software.

A contemporary and sustainable IT infrastructure now exists within schools. IT Grants are provided to schools on an ongoing basis for the acquisition of computers and related infrastructure items through bulk contracts. IT support is provided through the Managed Network Program where the local IT industry is contracted to provide higher level technical support and advice through a centrally managed regime.

Such initiatives have led to the development of an IT infrastructure which is stable, easy to manage and cost-effective across all schools. This, in turn, results in the effective use of information technology in the classroom, leading to improved learning outcomes.

Professional development is provided to schools to enable them to use new technologies through a statewide team of dedicated officers that have responsibility for implementation of a range of strategies such as the facilitation of courses for the development of basic IT skills, and a program of direct support through in-school resource teachers. More than two thirds of teachers have now reached a significant level of competency in the use of computers in their classrooms.

A number of diverse initiatives have been progressed to create, acquire and access online digital content. These initiatives include the *Discover* web site (<http://www.discover.tased.edu.au>) as a central point for the facilitation on online forums, development of online courses and acting as a digital databank for educators to contribute quality learning resources, and also the OPEN-IT Project that is working with the local IT industry to develop curriculum specific online learning resources.

A major initiative is the creation of a Centre for Excellence in Online Learning to:

- lead and support online learning throughout the state;
- provide professional learning for all schools;
- link to Innovation Schools throughout the State;
- deliver a range of programs for all Government schools, teachers and students;
- develop educational content; and
- provide services related to the use of ICT in education.

The Centre of Excellence will also:

- have a research role;
- establish partnerships with local IT firms and the University of Tasmania; and
- create new opportunities for firms in Tasmania to develop online educational content for the Tasmanian, national and global markets.

Innovation Schools are a network of schools that have been established to develop innovative practices in the integration of online services and online learning modules into classroom practice.

A school management system is now in place in all schools for the management of school, student and financial details, with information transferred electronically between schools using the Department's Data Warehouse. The emphasis is now to consolidate and leverage this position through the development of a knowledge base of common school management business processes.

A solid base of corporate information systems has been established and a number of initiatives are now underway to promote more efficient electronic service delivery to schools. A policy framework for the use of ICT in schools has been established to ensure effective management of issues such as acceptable use of the Internet by students.

## Key Achievements

### People

- The Educational Computing Professional Development Project (ECPD) comprises a comprehensive range of professional development opportunities in educational computing for all teachers in state schools.
- A set of five units has been developed: Introduction to Computers in Education; Introduction to Word Processing & Publishing in Education; Internet and e-mail in Education; Multimedia and Web publishing in Education; and Integrating ICT into Teaching and Learning.
- At the end of July 2000, approximately 6,700 teachers and support personnel had completed over 12,300 units. Overall, 38% of all Tasmania's teachers have satisfied the learning outcomes for the first three units.
- An In-school Resource teacher program has been established and in every school one or two people have been identified with the appropriate skills to assist other teachers to use educational ICT resources.
- There is a statewide team of seven full-time education officers whose role is to facilitate learning workshops, share effective planning strategies to assist school staff in the use of ICT in teaching and learning, and provide support for the In-School Resource Teacher Program.
- A program is in place that provides teachers with opportunities to gain competency-based, post-graduate qualifications from their workplace practice in the use of ICT for teaching and learning, through participation in 'The Graduate Certificate in Education- Computing for Teaching and Learning'. The Certificate consists of a series of nine modules that include outcomes and evidences.
- An Online Professional Development Program has been advertised for 2001 that includes on-site and online options for all schools and colleges. Modules include: Introduction to Online Learning; Design an Online Module; and Online Teaching and Learning. There are currently over 3000 online modules under development and over 150 teachers have enrolled in the online PD modules.
- From the beginning of 2001, 30 schools have been provided with additional funding to develop innovative means of utilising ICT in Teaching and Learning. An Online Curriculum Research project will be conducted in these schools to provide records of outcomes.
- Through the Online School concept approximately 60 schools have commenced from the beginning of 2001, delivering or receiving online curriculum, both within Tasmania and in one International location.
- The Online Mentor Program and the Integrated Online Environment Workshops support the development of new teacher skills in online teaching and learning where teachers in schools, acting as mentors skilled in online teaching, are delivering professional development to classes of their peers as part of the Online School.
- The Schools Administrative Computer System (SACS) has been implemented in all schools and provides a range of modules that support teachers and administration staff. A Business Support Service provides a Help Desk service for schools.

### Infrastructure

- The IT Grants program was established in late 1998 to assist in the acquisition and support of new computers and networks with 80 schools allocated funding. This was

extended to all schools in 1999-00 with the provision of \$9.6M. The program continued for 2000-01 with \$7.65M being provided. Over the last two years in particular more than 10,500 computers have been acquired to achieve a computer to student ratio of 1:6.5

- The Managed Networks Program in schools provides specialist IT support to clusters of schools through local IT support firms. This Program also addresses the need to develop an IT support infrastructure in regional Tasmania, as Tasmania is poorly served with IT infrastructure support outside Hobart and its suburbs.
- All schools have now been provided with telecommunications services allowing access to the Internet and other resources. Schools are provided with higher speed lines as the need for extra bandwidth increases with bandwidth capped at a level based upon a school's enrolment. Schools are permitted to purchase additional bandwidth. Currently 19 schools have dial-up connections, 151 have 64Kbs, 13 have 256Kbs, 4 have 512Kbs, 4 have 640Kbs and 1 has 1Mbs.
- Suitable second hand computers are being passed onto schools. These come from various State and Commonwealth government agencies.
- An IT consultancy service is in place which provides schools with information and advice on IT products and support services. The consultancy also liaises with local IT vendors to ensure schools have access to quality IT goods and services. Each school in the state has been allocated an IT School Consultant to assist them with planning and implementation of IT infrastructure strategies.
- All school staff are being provided with an e-mail system that will be managed and supported centrally. E-mail access will be available from the workplace and via the Internet.
- The Department has statewide licenses for Microsoft, Semantic Ghost and Norton Anti-virus software. Each of the software agreements provides schools with quality software at affordable prices.
- SchoolsNet is being rolled out throughout the Department with over 60 schools having expressed interest, and 22 schools are already online.

## Content and services

- The Centre of Excellence for Online Learning is being established to bring together the expertise from a number of areas from within the Department (eg *Discover* web site and the Open-IT Project) and partnerships with local IT firms and the University of Tasmania in the development and delivery of online learning.
- Best practice advice and facilitation of access to educational resources is provided to schools by a central service through advice on utilisation of facilities such as EdNA Online and SchoolsNet and also through purchasing arrangements such as the Educational Software Acquisition Program (ESAP).
- All schools and libraries throughout the state are connected via a common on-line library system called TALIS (Tasmanian Automated Library Information System).
- The *Discover* web site hosts services for schools seeking to get involved with online learning. The digital resource databank is a dynamic repository for online content, teaching and learning resources, events, contacts, and examples of classroom strategies and good practice. The Netlearners part of the site houses all the on-line learning courses and provides the vehicle for students and teachers to enrol in courses and undertake study. WebCT has been adopted as the software most suitable for developing and managing courses. Forum and chat facilities are also available for all teachers to use with their students.

- The Open-IT Project, through funding obtained from the Regional Telecommunications Infrastructure Fund (RTIF), has created educational multimedia materials, and converted other selected cultural, natural and scientific heritage of Tasmania into digital multimedia. At least 100 online learning units have been developed across K-12 learning areas.
- The Data Warehouse Project enables the Department to effectively manage critical information resources, particularly those relating to student educational outcomes. It is a large central database of information that: allows the Department to comply with Commonwealth Government reporting requirements; provides a framework for information analysis; and allows for the sharing of information between schools.

# Department Of Education and Community Services Australian Capital Territory

## Strategic Overview

The ACT Department of Education & Community Services is working to provide fast and reliable online services to its staff, students and the community within the Australian Capital Territory. Our strategy builds on the ACT Government's considerable investment in IT infrastructure for our schools. Our priorities are to seek innovation, to sponsor change and to deliver client services.

This proactive focus on local ICT innovation is informed by national initiatives designed to support the growth of a knowledge nation and the information economy. Our department is placed to fully participate in national programs and their identified action areas: people, infrastructure, content and services, supporting policies, and enabling regulations and to support the achievement of the goals of *Learning in an Online World*.

### Goal One

**All students will leave school as confident, creative and productive users of new technologies, including information and communication technologies.**

ACT schools have a long culture of school based curriculum design and delivery. The convergence of education and the internet offers opportunities for schools to manipulate and manage content that is dynamic, engaging and connected.

Schools develop their individual ICT Strategic Plans that account for local and national imperatives. In general the plans:

- acknowledge the pace of change in a complex age where information is driving change and altering the way we live, work and play;
- accept the challenge of effectively preparing all students for full and rewarding participation in the information age;
- describe how the new ICT imperatives can be harnessed to improve and transform the way teaching and learning can take place.

### Year 10 ICT competencies

Throughout the 2000 school year ACTDECS trialed a system-wide monitoring of Year 10 ICT competencies. Full implementation of the program will take place in all ACT Government high schools in 2001.

The five IT competencies are: **Accessing Information** processes and tools; **Communication and Collaboration** processes and tools; **Organisational** processes and tools; **Authoring** processes and tools; and **Presentation and Visual Display** processes and tools.

An alternative assessment program has been developed which will provide an opportunity for students with identified learning needs to participate in the ICT Competencies program.

### **Quality Teaching Program**

A strong culture of innovative programming is evident throughout all sectors of schooling. The **Quality Teaching Program** has assisted all ACT High Schools with the renewal and development of teacher skills in ICT integration. An impressive array of curriculum integration models (CIMs) for ICT have been developed under the program to date.

In the post compulsory years of schooling our college students (Years 11 and 12) are provided with high-speed access to online content and services. To this end Multi-Media Centres have been established within the ACT Colleges these facilities provide innovative technologies along side industry standard vocational training.

### **VET In Schools**

Courses offered at the senior secondary level encompass both Computer Applications and Information Technology. The Information Technology Course is offered in six colleges at University entrance level, where it can contribute to the UAI, and also as a contribution to a National Vocational Certificate. Courses are designed by colleges and accredited through a panel process with representation from industry, universities and TAFE.

### **CISCO Systems Networking - Academy Programs**

Two colleges have adapted an Information Technology Course to meet the requirements for Microsoft Certification. This web-based program, backed up by practical lab environment experience educates senior high school, TAFE and university students to design, build and maintain computer networks. All Government colleges can choose to offer the CISCO Certified Network Associate from 2001 as part of a Certificate III Network Administration course.

### **Online focussed programs**

An array of online focussed programs exist or are in development across the sectors of schooling. Forty-nine school projects, valued at \$232,000, have been funded from the DECS IT Innovative Projects Fund over the past five years. The fund promotes IT innovation in teaching and learning as well as rewarding and recognising excellence. Schools share their initiatives with other schools and showcase their achievements each year.

The integrated nature of the Primary School curriculum enables teachers to quite easily weave online activities into many areas of teaching and learning. Our students feature in many web based collaborative projects, competitions and are active online publishers.

## Goal Two

**All schools will seek to integrate ICTs into their operations, to improve student learning, to offer flexible learning opportunities, and to improve the efficiency of their business practices.**

ACTDECS in line with whole of government initiatives is committed to delivering most of its transactions online by 2001. Through a newly appointed Chief Information Officer the department will develop an online service strategy. This initiative will reflect the most recent and significant ICT developments and directions in the department,

schools, and the ACT government environment. This over-arching strategy will underpin future web based developments affecting our education system. ACTDECS has invested heavily in establishing requisite ICT infrastructures and resources. Key investments over the past three years have included: a roll-out of computers for teacher usage, grants to schools for ICT management, Wide Area Networking, and computer software licensing agreements

Over the next few years extranet, intranet and internet environments are being established and tailored to meet the needs of the ACT school system. Establishing a robust **infrastructure** capable of supporting teaching, learning and administrative purposes continues to be an ACTDECS priority:

### **Internet Access**

100 percent of government schools are using Canberra Schools on the Net (CSN) either by the wide area network or dial-in access. All Government preschools have been connected to the internet since early 2000.

Considerable enhancements have been made to the CSN infrastructure and tools to improve internet access for ACT schools. To support the increased use of the internet for curriculum by schools, the CSN pipe to the internet was doubled and internet traffic costs have been reduced.

New management tools have been employed to allow schools to track internet usage to user level and efficiently manage their internet connections. Student labs are being connected to the network to allow internet access via the ISDN lines using a Proxy. This development is providing considerable savings to schools by allowing Internet access via existing bandwidth. Schools will also reap the benefits of any future upgrades to this network link.

### **Administrative Efficiencies**

Schools have used the MAZE school administrative system for well over two years and new features continue to be added. Enhancements scheduled for 2001 include an Assets Management module, a Staff Extras module, Outcomes Based Recording and Reporting and an Exam Timetable module. Other applications developed in-house that access Maze or complement the Maze functions include the College Absence system, a new High School Absence system and the Student Selection Program.

New applications for the recording of Work Experience and the registration of Casual Relief information have also been developed, are deployed across the schools Wide Area Network, and are being used successfully by schools.

### **Teacher Computers**

All 2,800 full time teachers now have access to a Pentium computer at no cost to schools. The rollout was completed in June 1999 and a progressive renewal of these computers begins in the 2001 school year.

## Key Achievements

### People

E-Learning Curriculum Officer and coaches – appointed to support schools as they adopt innovative e-learning and online curriculum strategies, guide curriculum change that integrates ICTs into a range of learning environments, to establish online forums for sharing and dissemination purposes, and to develop and activate networks in all education sectors (including the promotion and marketing of EdNA as a school portal for Australian content and collaboration).

### Professional Development

In 1999, over 3000 hours of professional development were provided to 1,000 teachers in 151 ICT courses run by the ACT's Training Centre. Approximately 3,900 hours of IT training to over 950 teachers was also provided directly by schools during their stand-down professional development days. Training is also being delivered directly within schools, via ICT networks, system coordinated coaching, and through professional associations.

**Year 10 ICT Competencies** – following trialing in 2000, full implementation of the program will take place in all ACT Government high schools in 2001.

### Quality Teacher Program

Outcomes of the Quality Teacher Program to date form an impressive array of curriculum integration models (CIMs) that include:

- creation of an extensive virtual library for use within a school Intranet;
- integration of Year 10 ICT Competencies with drug education and four KLAs;
- scaffolding for a Year 9 unit of work that centres on a journey across Asia;
- production of a CD-Rom containing an integrated "drug awareness" program;
- webquest creations on themes of salinity, careers, and reconciliation;
- powerpoint presentations on local points of heritage interest;
- a virtual student exchange to Spain or China that supports LOTE programming;
- an information base of materials that foster students' visual and critical literacy;
- a financial package that interactively teaches the concepts of compound interest and its application to saving and borrowing;
- a "friendship" theme for transition (special education) students including use of the "intellipics" application;
- Electronic Portfolios for use in student assessment and reporting processes; and
- a guide to literature on the internet.

### Infrastructure

- The inDECS Intranet was introduced in January 2000. It has been progressively upgraded to provide enhanced features to improve functionality and serviceability. Government schools gained access to inDECS in May 2000 and the homepage has become widely accepted as the corporate information and communication portal. The goal is to provide seamless connectivity to content within inDECS and the DECS Web Site as well as providing links to relevant sites.

- Canberra Schools on the Net was upgraded to increase functionality of tools for web development and management of email.

## Content and services

- The Information and Library Management Section of ACTDECS has begun to establish an e-learning unit dedicated to the support and promotion of quality e-learning practices, establishment of schools learning technology action plans, dissemination of curriculum research and trends, and management of a web-based online learning environment.
- **ParentLink** is a joint project of the Department of Education and Community Services, ACT Community Care and Lifeline. Sponsored by the NRMA, it is an electronic parenting service comprising a Website and an extended hours telephone service. Its role is to connect parents with the network of advice, referral and support services for families in the ACT.
- **Sportnet** is an online tool for sport which includes an intranet as well as the internet site, web wizard to create an organisation's own site, membership database, events/function database and email access. It is an online management tool for sport and will help create links and improve communication from the club level through to national sporting organisations.
- **New Apprenticeship Centres** (NAC online) will enable the two New Apprenticeships centres in the ACT to be connected to the Office of Training and Adult Education (OTAE) central database. This direct connection will enable a more efficient registration of clients by reducing the multiple collection and recording of trainee and apprentice information.
- **International Students** program information and application forms are available online to assist overseas students, their family or agent, in accessing information about the International Students Unit, the services provided and the range of programs offered to international students.

# Department of Education Northern Territory

## Strategic Overview

### School Education Goals for the Information Economy

In May 2000 the Northern Territory Government allocated approximately \$7 m / year in recurrent funding to introduce standardised computer and communications systems to enhance student learning in Northern Territory Schools.

The recently established Learning and Technology in Schools (LATIS) program is the framework for coordinated delivery of professional development and training, on-line curriculum, wide area communications and internal school infrastructure and infrastructure support.

### Strategies For School Leaders And Teachers

#### **Professional Development and Training**

The Northern Territory recognises the importance of professional development and training of school leaders and teachers in order to achieve outcomes for students. A high priority is being placed on the implementation of a range of strategies to address professional development opportunities. These include:

- a professional development centre that will work with tertiary institutions, teacher professional associations, other education departments and systems, and schools and commercial organisations to meet the needs of teachers through on-line courses and events;
- technology focus schools to provide training for a range of ICT activities including teaching and learning, classroom and school management, operation of equipment, curriculum planning, assessment and reporting;
- a leadership program in collaboration with the NT Principal's Association to build a learning community for the development and maintenance of IT skills, for planning and management of LATIS, and an understanding of curriculum and pedagogical impacts of ICT in schools.

### Strategies For Students And Teachers

#### **On line Curriculum Delivery**

Northern Territory students and teachers will have access to an on-line curriculum bank for quality on-line curriculum material sourced from

- The Northern Territory Curriculum Framework which is due for release in July 2001;
- South Australian Department of Education curricula for Years 11 and 12 material;
- On-line directory services from Education Network of Australia (EdNA).

In addition, teams from the Curriculum Services Branch will work extensively with schools on on-line curriculum.

### **Strategies For School Communities**

Twenty-four schools including five remote community schools have participated in the Commonwealth funded "Facilitating Community Access to Information Technology in Schools" project administered by the NT Department of Education.

With the implementation of the LATIS program in all Northern Territory Schools, it is envisaged that school community access will be an ongoing activity and will be widespread.

### Strategies For Infrastructure

#### **Northern Territory Schools Network**

This strategy will see the establishment of a schools network to deliver a range of services including:

- Internet based information for students and teachers (including electronic mail);
- access to professional development programs;
- access to on-line curriculum material;
- access to software banks; and,
- access to the NT Government network through the appropriate security protocols.

All schools, where practical, will be connected to the Internet using an asymmetric satellite solution. This technology has already been installed in several Northern Territory Schools and is considered ideal for fast internet downloads particularly in the remote and rural parts of the NT.

#### **Infrastructure Support**

A three-tier support model will be in place to ensure that teachers and students have confidence in the facilities and the infrastructure operates to its full potential. Up to 18 technical support positions would be created in the private sector to provide support on a regional basis.

### **Key Achievements**

The key achievement for the Northern Territory has been the establishment of the Learning Technology in Schools (LATIS) project outlined above.

In addition, in 2000, a focus for Northern Territory Schools has been the development of on-line content for classroom activities. Several on-line projects including the highly successful 'Great Olympic Virtual Adventure' were undertaken in 2000.

The 'Virtual Olympic Games' Project was devised in an attempt to make using the Internet as a resource an easy and enjoyable experience for both teachers and students. It aimed to make the use of the Internet relevant to a major event, and to the Northern Territory School curriculum.

The project covered a number of curriculum areas including Maths, Studies of Society and Environment, English and Technology.

The project was an immense success generating 25,500 hits. It has been archived by the Australian National Library as part of the Pandora Collection, a collection of resources of national cultural significance associated with the Olympic Games.

In planning for the new NT Curriculum Framework, additional on-line-projects have been developed. These include 'The Potter Project' and 'Arafura Alive! Our Nearest Neighbours'.

The first of these projects utilises the popularity of the Harry Potter series of books by J K Rowlings. There are 54 tasks for students to choose from, with downloadable templates, links to the new Curriculum Framework including Essential Learnings, Outcomes and Indicators and other resources for NT teachers. The main emphasis is on the English KLA but there are a range of activities addressing other KLAs.

The Arafura Alive project offers units of work incorporating several KLAs, including English, Mathematics and The Arts.

These and future on-line projects are to be used as a springboard into all Key Learning Areas of the curriculum and to advance the use of technology to enhance students' learning experience and work outcomes.

Material relating to the development of the NT Curriculum Framework has been provided on a special purpose web site with opportunities for on feedback from schools. The interactive pilot version of the NT Curriculum Framework is also available on-line and many teachers are choosing to use this method to access the documentation.

# National Catholic Education Commission

## Strategic Overview

Catholic Education conducts schools in 26 dioceses throughout Australia with coordinating assistance from 8 State/Territory based Education Commissions. As a consequence, Australian Catholic schools have adopted a variety of approaches to the skilling of students in the use of Information and Communication Technology depending upon availability of financial resources, geography and internal organization.

In the broadest terms Catholic schools in Australia are addressing the school education goals for the information economy through the development of appropriate frameworks often in collaboration with relevant state education authorities.

For example, Catholic Education, SA, in collaboration with the Department of Education, Training and Employment, the Association of Independent Schools of South Australia and the South Australian Senior Secondary Assessment Board have been engaged over the past few years in developing a new curriculum framework. This framework recognises “the shift to a knowledge and service-based society with an accompanying;

- acceleration in the rate of development and transfer of knowledge;
- development of new technologies and forms of communication;
- growth of knowledge mediated industries.”

Recently the South Australian Commission for Catholic Schools (SACCS) drew up the major goals in relation to Information Communications Technology.

The 8 major goals of the SACCS ICT plan are:

- promote excellence in contemporary teaching and learning;
- ensure access to relevant professional development that values individualised learning;
- enable authentic, contemporary approaches to leadership;
- meet accountability requirements;
- enable the development of scalable systems to provide reliable infrastructure and support;
- accommodate future technologies and needs;
- articulate vision, policy and development plans;
- ensure equitable access to resources.

It is clear that the above goals are conducive with the goals of the *Learning in an Online World*.

To support such frameworks and overarching ICT plans, dioceses across states and territories are addressing issues of ICT infrastructure and teacher professional development. Schools are expected to develop Learning Technology Plans to guide and support implementation.

In some states, (Western Australian and Victoria) Catholic schools have benefited from initiatives that covered both government and non-government education. For example,

the “Computers in Schools (WA - CIS)” program was designed to improve access to ICT for all students. To access these funds allocated from the program, Catholic schools were required to develop comprehensive Learning Technology Plans.

In the larger states, more diversity exists in the development of frameworks and Learning Technology Plans. In Victoria, for example, acknowledging the need for clear guidelines for the use of ICT both in schools and in Catholic Education Offices, guidelines have been developed to assist schools to create their own individual school’s policy. Within these guidelines are recommendations for schools with regard to privacy and intellectual property rights. It is in this sensitive area of appropriate use that the Catholic school has a special role to play in protecting the rights of citizens while informing them of the potential for misuse of any modern technology.

Throughout NSW there is a commitment to the “Integration by school staffs of Information and Communication Technology in all curriculum areas to develop both the learning outcomes of students, and the higher order skills of evaluating, analysing and synthesising”.

The Commonwealth Government’s Quality Teaching Program (QTP) is currently funding professional renewal in the Learning Technologies area throughout the Catholic sector. Teachers’ skills are being upgraded, professional development opportunities expanded and new methodologies for the enrichment of teaching through the use of ICT are being explored and implemented.

Nationally, Catholic Education has continued the process of evaluating appropriate technologies for their advantages in improving student learning in schools. A broad strategy for sharing research and experiences in improving access and learning opportunities for students in Catholic schools has been developed through the work of the National Catholic Education Commission’s Working Party on Technology

The National Catholic Education Commission’s Working Party on Technology has been a significant institution for increasing collaboration between Catholic schools in the area of ICT. EdNA provides the Catholic Education community with a useful means of extending this collaborative effort. The EdNA framework assists all Catholic teachers in linking to other teaching professionals especially in the areas of online collaboration.

## **Key Achievements**

- NCEC Technology Working Party - instrumental in increasing national sharing of developments in ICT and schools.
- An annual national conference for professional development of IT advisors.
- Creation of a Religious Education database for improving the quality of Religious Education in Catholic and other schools and inducting teachers of Religious Education into the value and use of online materials. When completed this will be added to the Values section of EdNA Online.
- The establishment of a virtual private networks (Catholic Education Victoria Network – CEVN, CEO Wollongong – CASTNET, CEO South Australia, CEO Canberra Goulburn) that links Catholic Education Offices and schools across

respective dioceses. WA, Tasmania, Brisbane and Parramatta have committed themselves to diocesan wide WAN's. NT working in conjunction with Territory authorities to establish a satellite network. (However, smaller dioceses have had problems in implementing such infrastructure developments).

- Electronic transfer of data and crucial information between Catholic Education offices and school administration staff expedited via these infrastructure developments.
- Along with the infrastructure that supports the various networks has been a huge upsurge in the number of computers installed in Catholic primary and secondary schools, (often with the assistance of the EdNA Computers for Schools program) and a corresponding lowering of the pupil to computer ratio.
- Continuation of an initiative of the Catholic Education Office, Melbourne, the LaTTiCE (Learning and Teaching Technology in Catholic Education) project, commenced in 1996 and was developed to establish models of best practice in learning and teaching; to develop skills and confidence of teachers and parents as they help students in the use of information and communication technologies; and to share learnings for the benefit of other teachers and schools.
- In the Parramatta diocese (NSW), provision has been made over the next three years for an 0.2 full time employee equivalent for every school in the system, to support implementation of information technology initiatives in the school. Each school will also have available four teacher development days annually for information technology.
- The Catholic Education Office, Parramatta has also opened the Ann D Clark Centre which provides professional development time and research opportunities for teachers in the system. The centre offers a range of technology courses ranging from specific software applications through to strategic technology planning school leadership teams. The learning technology staff are also involved in the research and development in educational applications of technology.
- Many Catholic Education Offices have launched the 'notebook/desktop for teachers' project which gives teachers the opportunity to purchase a multimedia notebook computer on time-payment at a reduced cost or through undertaking a commitment to training.
- In the ACT, quality laptops have been given to Principals in exchange for a commitment to training.
- The Catholic Education Commission, NSW has begun trialing Online instruction in ancient history and LOTE. Delivery is both synchronous and asynchronous using Active Server Pages and SQL server.

- All dioceses are preparing students to access, evaluate and use information from around the world in order to enhance formal linkages between the school and the community. One skill that is frequently mentioned in these preparations is the reflective adaptation of appropriate models and interactions in the teaching and learning interface. The innovative use of technology in the curriculum is encouraged by pilot projects within and between schools. Teachers are also provided with classroom assistance and support.
- Partnerships have been established with State department/instrumentalities, such as OPEN-IT in Tasmania which aims to improve education and training opportunities in regional and remote Tasmania.

# National Council of Independent Schools' Associations

## Strategic Overview

Independent schools are constituted and governed *independently* on an individual-school basis, unlike government schools and most Catholic schools that are governed and administered as part of a school system. Independent schools include those affiliated with larger and smaller Christian denominations, Islamic and Jewish faiths, encompassing varying interpretations of mainstream school education, and schools that promote a particular philosophy of education such as Montessori or Rudolf Steiner. Other independent schools, such as Aboriginal community schools, co-operative schools or special schools, cater for particular community groups. Many schools that share a common church affiliation are governed on an independent single-school basis, although several groups of schools with common aims and educational philosophies are governed and administered as small systems.

Independent schools represent a diverse group of educators and education methods. The Independent schools' Associations in each State and Territory are able to inform, advise and encourage schools with regard to their obligations and responsibilities, government initiatives and policy directions. This includes initiatives and directions related to information and communication technologies (ICT) and the relationship of schooling to the information economy.

## Key Achievements

The first goal states that “all students will leave school as confident, creative and productive users of new technologies, including information and communication technologies”. In the disparate independent schools sector, many schools have moved swiftly and steadily into incorporating ICT into many aspects of students' learning, through the provision of on-line learning and services and also through the use of ICT as a pedagogical tool to improve learning outcomes. This shift varies according to several factors such as the availability of resources, including competent human resources, and the need to be consistent with each schools' education philosophy. Even for those schools that have not moved as fully into this area as others, there is an emerging recognition of the value and need for access to ICT in classrooms.

It is very difficult for some schools to afford even the most basic of IT equipment and services, particularly in rural areas. Where systems are able to subsidise costs for their schools, this option is not available to independent sector, making access costs prohibitive in some areas. Other schools in the independent sector who are better placed to take advantage of new technologies and competitive pricing have embarked on ambitious programs for the development of infrastructure with regard to ICT. It is not possible to say that there is an even uptake of new technologies in the independent schools' sector, but many of the reasons for this are issues that relate to questions of access and equity in rural and remote areas, and questions of resources and funding issues.

With regard to the second goal, that schools “will seek to integrate information and communication technologies into their operations, to improve student learning, to offer flexible learning opportunities and to improve the efficiency of their business practice”, much incentive for this move has been provided over the last few years through Government and particularly through DETYA’s moves towards on-line reporting and service provision for independent schools. This has required schools to examine, for operational purposes at least, their ICT needs and utilisation.