Education and Training Committee

Final Report

Education in the Net Age – New Needs & New Tools

Report on the Inquiry into the Effects of Television and Multimedia on Education in Victoria

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Report on the Inquiry into the Effects of
Television and Multimedia on Education in Victoria

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Education and Training Committee

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Chair’s Foreword

The Education and Training Committee has valued the opportunity to undertake this inquiry into the effects of television and multimedia on education in Victoria. From the outset, I wish to thank those who contributed submissions to this inquiry or appeared as witnesses during public hearings. I thank all these contributors for their time, effort and dedication to improving education in Victoria. I am especially thankful for the valuable and candid insights provided by the students, teachers and management of all the schools the Committee visited during this inquiry.

In my role as Chair of this Committee, as a parliamentarian, and as a parent, I am fortunate that I regularly have the opportunity to observe young Victorians engrossed in multimedia. I am impressed with how quickly and easily students familiarise themselves with new multimedia devices. Many of today’s students can also quickly recognise the potential benefits of these devices and promptly put them to good use. Today’s students are capable of complex multitasking—readily and rapidly switching from one multimedia application or device to another.

The prevalence of multimedia in young people’s lives has created new expectations, changed the dominant learning styles of many students and placed new demands on student engagement. Importantly, there is now a need for a new skill-set in a world where media literacy is just as important as numeracy or literacy and ICT is a significant catalyst for economic growth.

The Committee believes that multimedia holds enormous promise for education—providing new tools and new opportunities to meet the new needs of today’s students. The Committee saw many schools that are realising that promise, by successfully integrating multimedia into their teaching programs. In numerous schools, multimedia is now enriching student learning in ways that were previously not possible. Nevertheless, these schools have often had to overcome significant challenges along the way. The Committee believes considerable systemic gains can be made by effectively and efficiently sharing these experiences among other schools and clusters.

I am pleased to present this report to the Parliament of Victoria and I anticipate that the Committee’s recommendations will help lead to the more effective integration of ICT into schools throughout Victoria.

I thank the Members of the Education and Training Committee for their ongoing commitment to education, and the work of the Committee, throughout the term of the 55th Parliament of Victoria. The Committee also wishes to thank the Committee staff for their hard work throughout the inquiry.

Steve Herbert MP
Chair

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Introduction

The beginning of the 21st century has seen a digital revolution with multimedia now playing a central role in our lives. Multimedia is particularly prominent in the lives of children and young people. Young people are typically among the early adopters of all types of multimedia devices, which increasingly form an important part of their identity. The digital revolution has seen new and divergent multimedia technologies transform the way young people learn, socialise, communicate and engage in society.

The Committee's inquiry found that multimedia technologies also play an increasingly important role in many schools. Many students, teachers and parents are already experiencing the diverse benefits of integrating multimedia into student learning. Others, however, need continued support if the potential benefits of multimedia are to be maximised across the education system.

Part One: The Multimedia Landscape

Ownership and Patterns of Use of Multimedia Devices

The Committee found that most Victorian students are living in technology-rich households. Many households with children now have multiple television sets, computers and interactive game consoles. Many young Victorians also own a mobile phone, MP3 player or other mobile digital device. Together, these technologies have altered the social and educational landscape that young people of the net generation experience.

Young Victorians are spending an increasing amount of time on screen-based activities. Young people watch television, videos and DVDs. They play interactive games through games consoles, handheld devices, computers and the internet. They use computers and the internet for school, entertainment and social purposes. They also use an increasing array of mobile digital technologies, including mobile phones, iPods and personal digital assistants, to organise their lives and communicate with peers, family and teachers. Young people can also be frequently seen using two or more multimedia technologies simultaneously. They move seamlessly between devices to fulfill their entertainment, social and educational needs. There is no doubt that young people are leading the way in the uptake, use and familiarity of a diverse range of multimedia technologies, from an earlier age. The Committee was also pleased to hear that young Victorians still enjoy a

range of traditional sporting and leisure pursuits that have always been an important part of the lives of Victorians.

Access to and Use of Computers and the Internet

Computers and the internet are the most important multimedia platforms investigated throughout this inquiry. These two platforms were identified as being central in nearly all young people's lives and responsible to a large extent for the blurring of boundaries between young people's education and social/cultural experiences.

The Committee found that Victorian and Australian children have some of the highest levels of access to computers and the internet in the world. The Australian Bureau of Statistics reports that 84 per cent of Australian households with children have a home computer and that 72 per cent have a home internet connection. The Department of Education and Training reports that the Victorian government school system has one computer for every 3.9 government school students. Further, the Programme for International Student Assessment (PISA) reports that close to 70 per cent of 15 year-old Australian students have been using a computer for more than five years. It also reports that the proportion of Australian students who state that they are confident in performing both routine and high-level ICT tasks is far greater than the OECD average.

The Committee found that Victorian students of all ages are generally enthusiastic and highly competent users of computers and the internet. There is no doubt, however, that not all young people have the same level of access to, nor the same levels of interest and skills in using multimedia. The Committee acknowledges that there are likely to be varying levels of access to and use of computers and the internet. This is likely to be particularly true among young people from lower socioeconomic backgrounds, culturally and linguistically diverse backgrounds and rural and regional Victoria.

The Committee heard that a significant majority of students are using the internet to complete homework and school projects. The use of online communication applications such as email, instant messaging and chat rooms is also significant and many young Victorians enjoy playing online games. However, while the internet presents many valuable opportunities to young people, the Committee heard that it is becoming increasingly important for young people to be taught about using the internet safely.

Cyber Safety

Throughout the inquiry, the Committee heard of concerns regarding the safety and wellbeing of young people when using various multimedia technologies. The Committee heard that the incidence of cyber bullying has increased. Further, some teachers are becoming increasingly concerned about the web authoring activities of many young people, who are not always aware of the potentially significant consequences of inappropriately publishing personal information or images. Other potential risks faced by young people using the internet include the possibility of encountering inappropriate material, online stalkers or predators and, scams and identity theft.

The Committee found that dissemination of information about cyber safety has not kept pace with young people's use of and experience with multimedia technologies. While there is a range of resources, initiatives and strategies available to inform students, parents and teachers about issues surrounding cyber safety, the Committee found it difficult to ascertain how effective these have been in the context of a rapidly advancing multimedia environment.

The Committee found that schools are, in general, managing issues of cyber safety very well. Within school hours, access to the internet is supervised and teachers are reporting very few incidents of concern. Likewise, cyber bullying is covered within existing school policies about bullying. The Committee heard, however, that messages about cyber safety are not being received by many parents. In many instances, knowledge of and experience with advanced multimedia technologies among young people is far greater than that of their parents and families. This can make it difficult for parents to supervise and monitor their children's use of the internet and other technologies. The Committee therefore believes that community awareness campaigns about cyber safety need to be more prominent and coordinated between governments, schools and other relevant organisations.

Part Two: Multimedia in Education – New Needs, Tools, Opportunities and Challenges

New Needs for Net Age Students

The increasing prominence in multimedia technologies throughout society has resulted in changed needs among students of the net age. The Committee heard that today's students have very different learning styles to those of students in previous generations. In general, today's students prefer and expect high levels of responsiveness and interactivity with their technology and high levels of visual and audio content. They also prefer and expect high levels of internet access, processes for constant and instant communication, non-linear provision of information and opportunities for collaborative learning. The predominant view among Victorian students is that multimedia technologies are fun to use and can often make learning easier.

Central to much of the evidence received by the Committee, media literacy has emerged to become just as essential to net age students as traditional literacy and numeracy skills. In the net age, the ability to access, analyse, evaluate and create content and information across a variety of multimedia technologies, is an enabling skill-set for lifelong learning. This skill-set is also essential for active and effective participation in today's society and the workforce. The Committee heard, however, that there is considerable variability in how media literacy skills are being taught in Victorian schools. The Committee found that there needs to be a stronger focus on ensuring that all Victorian students are taught effective research, analysis and evaluation skills, within the context of a rapidly evolving multimedia environment. The Committee also heard that issues such as online intellectual property, plagiarism and copyright require a greater emphasis in many schools.

The Committee observed that Victorian students are creating increasingly sophisticated multimedia content both at school and often, in their own time. The Committee viewed many outstanding multimedia creations produced by Victorian primary and secondary school students. These included animations, multimedia presentations and displays, photo stories, digital portfolios, radio and television shows and broadcast quality music and film creations. The Committee was impressed by both the range and quality of this multimedia content and encourages all Victorian students and teachers to access opportunities to publish and showcase their creations.

The Committee also heard that industry needs for high levels of media literacy and multimedia skills among the future workforce are another driving force of the integration of multimedia across the curriculum. Innovation and technological advancement within the economy will

depend on the future workforce being able to use sophisticated multimedia technologies creatively and strategically. The Committee further heard that the integration of multimedia into schools will assist in the development of generic workplace skills, including organisational skills, team work, problem solving and decision making, as well as a range of general social competencies.

Given the levels of access to computers and the internet in Victoria, the Committee believes that Victorian schools and education systems are well positioned to capitalise on partnerships with ICT industry. In doing so, Victorian schools will be better able to maximise the benefits of multimedia in their classrooms and Victoria will be positioned to be a world leader in the use of multimedia within education.

New Tools: New Opportunities

Schools today are facing significant demands to meet the new and emerging needs of net age students. Yet evolving in tandem with these needs are new, innovative multimedia tools and exciting new opportunities for contemporary learning and teaching. Throughout the inquiry, the Committee heard of a diverse range of benefits that multimedia can bring to the classroom.

The Committee heard that multimedia technologies have significant power to engage students in their learning. The Committee found that multimedia technologies are providing opportunities for new levels of student engagement in Victorian schools, across a broad range of subject areas. The Committee heard that innovative use of new and emerging multimedia technologies, including industry standard software, mobile phones, personal digital assistants and other mobile digital devices is greatly enhancing learning and teaching in the net age. The Committee also heard that education communities can learn some important lessons about student engagement by examining the design features and principles that are embedded within successful interactive games. Young people of the net age are often readily inspired by and engaged with sophisticated multimedia and interactive software. Therefore, the Committee heard that the principles used to engage young people in this software are equally as valid in engaging students in their education. The Committee also found that multimedia has the potential to enable Victorian schools to deliver flexible, personalised learning opportunities to students, by providing them with increased levels of control over the pace, time and location of their own learning.

The importance of access to quality educational content in digital formats for teachers and students was a considerable focus of this inquiry. The Committee heard that some teachers and schools face a range of cost, copyright and technical barriers that prevent easy access to some of the high quality digital resources already available. As noted in evidence to this inquiry, there is little point in acquiring expensive,

cutting-edge multimedia facilities and equipment if they are not supported by appropriate educational content in both traditional and multimedia formats. Therefore, the Committee has identified a need for education systems to quickly implement strategies that make access to existing digital resources easier for teachers, students and parents.

The Committee found that the implementation of learning platforms has been an important development in an increasing number of schools. Learning platforms usually combine a range of functions, such as organising, mapping and delivering curriculum activities, and the facility for students and teachers to communicate and collaborate, all via ICT.

The Committee heard that learning platforms encourage analytical, divergent and creative thinking; provide flexibility to meet individual needs and abilities of students; and improve communication among teachers, students and parents. They also provide opportunities for students to access a seamless learning environment between home and school. Online learning platforms also enable teachers and students to easily access and integrate materials and learning and teaching programs from different subject areas. Learning platforms can also be used to overcome many of the barriers being faced by some schools in accessing a variety of high quality digital resources. The Committee therefore found that all Victorian schools would benefit from a learning platform that incorporates an online learning environment; communication and collaborative tools; easy access to a searchable database of digital resources; and a school administration and management system.

The Committee found that the role of television in education has changed significantly over recent years. The demand for traditional television programs in schools has decreased significantly, while there is increasing demand for interactive educational programming and shorter, more targeted and segmented video content that is delivered online. The Committee also found that digital television will provide new opportunities for delivery of high quality, interactive educational programming and opportunities for students to contribute and showcase their own multimedia content.

New Challenges

Throughout this inquiry, the Committee has observed many creative approaches to development and implementation of innovative multimedia programs in Victorian schools. It has also observed an infectious enthusiasm among students and most teachers for the use of multimedia in the classroom. Undeniably, however, many Victorian schools still face considerable challenges in implementing the multimedia programs that they strive for.

The Committee received evidence relating to a digital divide between teachers and their students. As digital natives, students are generally

very familiar with a variety of multimedia technologies; they both enjoy and expect to use them in the classroom. The Committee heard, however, that there is greater variability in teachers' experiences with multimedia technology. As such, the Committee heard that pre-service teacher education, ongoing professional learning and school leadership are of crucial importance as Victorian schools strive to integrate multimedia across the school and the curriculum.

The Committee also received much evidence that there is still a disparity in access to and familiarity with multimedia technologies among different groups in society. Such differences relate to whether students have access to computers and the internet, where they can access these resources and the relative quality of the computers, internet connections and software that they can access. The Committee heard that access to high quality computers, software and internet connections in the home is becoming increasingly important for young people's success in education.

One of the most significant challenges presented to schools and education systems is the rapid advancement of ICT and multimedia capabilities. New ICT and multimedia applications often require increased internet bandwidth, larger server capacities and increased computer processing power. This drives the need for regular and often costly infrastructure and equipment upgrades. However, it is not only the acquisition of multimedia facilities, equipment and software that is expensive. The ongoing maintenance and technical support required to keep multimedia programs operating is also a challenge for many schools.

A number of schools also highlighted some challenges that existing classroom environments present as schools seek to integrate multimedia into the curriculum. For the benefits of multimedia to be maximised within education, the Committee heard that teachers and students require access to multimedia facilities and equipment when and where they require them. The Committee heard that it is often necessary for schools to develop creative solutions that allow them to deploy multimedia technologies effectively throughout the school. The Committee also heard that many schools could benefit from further assistance in developing such strategies to help them to optimise the use of multimedia in their unique school setting.

Recommendations

Chapter 2: Ownership and Patterns of Use of Multimedia Devices

RECOMMENDATION 2.1 (PAGE 31)

That the Department of Education and Training, in collaboration with other education systems, undertake an annual survey of multimedia usage among students. The results of the annual survey should be disseminated to schools, teachers and education faculties, to facilitate better educational planning and curriculum development and implementation.

Chapter 4: Cyber Safety

RECOMMENDATION 4.1 (PAGE 80)

That the Department of Education and Training establish a dedicated departmental liaison unit that:

- monitors and reports to key stakeholders on emerging trends in the use of multimedia and concerns about cyber safety; and
- advises schools, teachers and parents about internet safety and the effective use of internet filtering software.

RECOMMENDATION 4.2 (PAGE 81)

That the Department of Education and Training begin as a matter of priority, a sustained cyber safety campaign, focussing on students and parents. This campaign should utilise the existing resources developed by governments and other agencies, using schools as the primary conduit for communication with parents and families to disseminate these materials. The campaign should provide advice and resources for schools to effectively deliver the cyber safety message to parents and should be supported by: the inclusion of ‘cyber safety at home’ advice; and resources developed specifically for culturally and linguistically diverse communities.

RECOMMENDATION 4.3 (PAGE 81)

That the Department of Education and Training review and update its cyber safety Website Toolkit on a continuous basis, to ensure it remains relevant in the context of a rapidly evolving multimedia landscape.

RECOMMENDATION 4.4 (PAGE 81)

That the Victorian Curriculum and Assessment Authority include cyber safety as a core component at each level of the Victorian Essential Learning Standards.

Chapter 5: New Needs for Net Age Students

RECOMMENDATION 5.1 (PAGE 100)

That the Victorian Curriculum and Assessment Authority monitor the success of the new Victorian Essential Learning Standards in teaching students effective research, analysis and evaluation skills.

RECOMMENDATION 5.2 (PAGE 111)

That Multimedia Victoria, in consultation with the Department of Education and Training, develop protocols for facilitating greater Australian industry involvement in the provision of multimedia in the classroom.

Chapter 6: New Tools: New Opportunities

RECOMMENDATION 6.1 (PAGE 131)

That the Department of Education and Training implement strategies to reduce cost, technical and copyright constraints that hinder access to digital resources for many Victorian students and teachers.

RECOMMENDATION 6.2 (PAGE 138)

That the Department of Education and Training and Multimedia Victoria, in collaboration with non-government education systems and authorities, support the rapid implementation of appropriate learning platforms in all Victorian schools.

RECOMMENDATION 6.3 (PAGE 149)

That the Victorian Government support the principle of a national children's digital television channel to promote greater educational television content and more opportunities to showcase multimedia content produced by Victorian students.

Chapter 7: New Challenges

RECOMMENDATION 7.1 (PAGE 176)

That the Department of Education and Training investigate and encourage community education models that facilitate greater student, parent and community access to computer and multimedia resources after school hours. The particular aim should be to help provide more equitable access to computers and the internet for disadvantaged students.

RECOMMENDATION 7.2 (PAGE 183)

That the Department of Education and Training develop a repository of online case studies of best practice to assist schools to make decisions about ICT infrastructure and equipment.

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List of Abbreviations

ABC	Australian Broadcasting Corporation
ABS	Australian Bureau of Statistics
ACFE	Adult, Community and Further Education
AIFS	Australian Institute of Family Studies
ASISTM	Australian School Innovation in Science, Technology and Mathematics
ATOM	Australian Teachers of Media
Blog	Web Log (an online journal or diary)
CAD	Computer Aided Design
CAS	Computer Algebra System
CD	Compact Disc
CD-ROM	Compact Disc Read Only Memory
CeLL	Creating eLearning Leaders
CLASS	Children's Leisure Activities Study
DET	Department of Education & Training (Victoria)
DVD	Digital Video Disc/Digital Versatile Disc
Email	Electronic mail
GIS	Geographic Information System
GPS	Global Positioning System
ICT	Information and Communications Technology
IEA	International Association for the Evaluation of Educational Achievement
iPod	iPod mobile digital device
ISP	Internet Service Provider
IT	Information Technology
LCD	Liquid Crystal Display
LSAC	Longitudinal Study of Australian Children
MCEETYA	Ministerial Council on Education, Employment, Training and Youth Affairs
MMPORG	Massively Multiplayer Online Role-Play Gaming
MP3	MPEG-1 Audio Layer 3 (a digital audio encoding and lossy compression format)
MSN	Microsoft Network Live Messenger

Nintendo DS	Nintendo Dual Screen/Developers' System
Net	Internet
OECD	Organisation for Economic Co-operation and Development
PDA	Personal Digital Assistant
PIRLS	Progress of International Reading Literacy Study
PISA	Programme for International Student Assessment
Pop-up	Pop-up advertising
PS2	PlayStation 2
PSP	PlayStation Portable
RLO	Regional Liaison Officer
SMS	Short Message Service
Text	Text message
TIMSS	Trends in International Mathematics and Science Study
TPAMS	Telecommunications Purchasing and Management Strategy
URL	Uniform Resource Locator
USB	Universal Serial Bus
VCR	Video Cassette Recorder
VELS	Victorian Educational Learning Standards
Web	World Wide Web
Xbox	Brand of video game console produced by Microsoft

1. Introduction

The early years of the 21st century have seen a digital revolution and multimedia now plays a central part in most of our lives. Multimedia is particularly prominent in the lives of children and young people and it is no longer just the techno-savvy children who are wired almost 24–7. Most homes, and indeed, children's rooms, are increasingly technology rich and the youth of today are often referred to as the net generation, or the 'screenagers'. Young people are typically among the early adopters of all types of multimedia devices, which increasingly form an important part of their identity. Young people view their mobile phones, MP3 players, computers, video games and other gadgets as central to their social wellbeing.

The digital revolution has seen new and divergent multimedia technologies transform the way young people learn, socialise, communicate and engage in society. Traditional distinctions between different forms of media have become blurred, as messages and content are increasingly delivered via multiple multimedia formats. So too, have the distinctions between students' education and social lives, as multimedia technologies are developed with a range of educational, entertainment and social related capabilities. Multimedia is increasingly affordable and new technologies have far greater capabilities than ever before. Young people quickly embrace new media and the extent of usage has grown. So too, has the way in which young people engage with these new technologies. Young people use multiple technologies to multitask and achieve their social, cultural and educational goals.

The current multimedia landscape offers exciting opportunities for students and their teachers. When utilised to its full potential in schools, multimedia can have a powerful impact on improved teaching practice and learning outcomes. It can be the key to engaging students, by better reflecting the technology-rich environment they experience outside of school. Multimedia provides learning opportunities that extend beyond the boundaries of the physical classroom and facilitates communication, collaboration and knowledge sharing in ways that have not previously been possible. Schools, teachers, students and their parents need to work together to ensure that no-one is left behind in the digital revolution, and that all Victorian youth can participate fully in this new, rapidly evolving society.

Background to the Inquiry

The following sections set out the functions of the Education and Training Committee, the context within which this inquiry was initiated and the specific terms of reference.

Functions of the Committee

The Education and Training Committee comprises seven Members of Parliament, with five drawn from the Legislative Assembly and two drawn from the Legislative Council. Mr Steve Herbert MP chairs the Committee.

The Education and Training Committee is constituted under the *Parliamentary Committees Act* 2003. The Committee's specific function under the Act is to:

> Inquire into, consider and report to the Parliament on any proposal, matter or thing concerned with education or training if the Committee is required or permitted so to do by or under the Act.

Terms of Reference

In October 2000, the Family and Community Development Committee tabled in Parliament a report on an inquiry it had conducted into the effects of television and multimedia on children and families in Victoria. That inquiry commenced in 1998 and was completed in 2000. The final report covered a broad range of issues, including multimedia and social and physical development; multimedia and education; television and multimedia violence; access and cultural issues; regulation of film, television and multimedia content; regulation of online services; television broadcasting; radio broadcasting; and electronic commerce.

The developed world has seen a technological revolution in the past five to ten years. Therefore, in February 2006, the Minister for Education and Training, the Hon. Lynne Kosky MP, requested the Education and Training Committee to investigate and report on how the role of multimedia in student learning and achievement has changed since the Family and Community Development Committee tabled its report in Parliament.

On 14 March 2006, the Education and Training Committee resolved to undertake this inquiry in accordance with Section 33(3) of the *Parliamentary Committees Act* 2003. The Committee agreed that it would consider issues identified by the Family and Community Development Committee in its chapter on Multimedia and Education and that it would report on:

- the effects of current applications and usage levels of multimedia by young people on learning styles and educational achievement within different age groups and curriculum areas; and

- whether students' media literacy needs have changed in recent years, in the context of rapidly increasing availability and use of multimedia by young people.

Family and Community Development Committee Report – Multimedia and Education

As the dominant multimedia platform of that time period, a strong theme in the Family and Community Development Committee's chapter on Multimedia and Education was the role of television in promoting learning.

The Family and Community Development Committee found that television has a role in learning, by supplying news, current affairs and general information.[1] It also reported that a large proportion of children's educational programming is created specifically to:

- enhance personal and social development, illustrating such positive social behaviours as co-operation, sharing, helping and non-violent conflict resolution;

- enhance children's self-esteem and their understanding of others' feelings and behaviour; and

- reduce unrealistic fear and acceptance of social stereotypes based on gender, ethnic group, disability and the like.[2]

The Family and Community Development Committee reported however, that television was under-utilised as an educative tool.[3] It also reported that parents viewed television as primarily entertainment, at best showing different social behaviours, giving incidental information and maybe introducing new interests, but not as a tool for intellectual or scholastic learning.[4] Others saw television as capable of error and supplying flawed, sometimes inappropriate and perhaps hazardous information.[5] It was therefore seen as a fundamental task that parents and schools ensure that the user is taught to be discriminating in television use, to verify information from alternative sources and

[1] Family and Community Development Committee 2000, *Inquiry into the Effects of Television & Multimedia on Children & Families in Victoria: Final Report*, Parliament of Victoria, Melbourne, p.33.
[2] ibid., p.37.
[3] ibid., p.33.
[4] ibid., p.34.
[5] ibid.

question the underlying values of providers of information.[6] It was also seen as important that parents are encouraged in their role as watchdogs over the use of multimedia and that television, video and computer games be monitored for content and restricted in the same way as unhealthy products.[7]

In relation to the role of television in promoting learning, the Family and Community Development Committee concluded that:

> … it appears that television can effectively teach certain topics to certain students—a limited statement challenged by some teachers and social critics who believe the medium ill suited as an educator and a negative influence in childhood development.[8]

Very little of the evidence provided to this Committee addressed issues specific to television viewing. Rather, participants in the current inquiry saw television as simply another multimedia platform that can be beneficial when used appropriately and when effectively integrated into the learning programs of children. Although some submissions and witnesses noted the potential disadvantages of excessive use of television and computer/video games, there was a general view that multimedia devices offer legitimate entertainment benefits, as well as a number of social, educational and developmental benefits when used thoughtfully.

The importance of multimedia technologies other than television, both in educational forums and to promote learning in general, was just starting to be realised at the time of the Family and Community Development Committee's report. Some educators were beginning to view technology as revolutionising teaching and learning; communications bandwidth was becoming increasingly affordable and abundant; and the internet was starting to make a large impact on conceptions and practices in educational forums. Chapter 2 reported that school students were relying less on the traditional blackboard and textbook methods of learning and were instead emphasising computer-generated technology as the most significant learning tool.[9]

However, concerns were raised about the ability of educators and teachers to keep pace with the rapid development of technology.[10] Further, it was suggested during the Family and Community Development Committee's inquiry that the emphasis on technology in schools threatens to divide society into 'knowledge elites' and 'computer illiterates', with the cost of multimedia technology determining the post-school pathways of many students.[11] Concerns

[6] ibid.
[7] ibid., p36.
[8] ibid., p.37.
[9] ibid., p.41.
[10] ibid., p.43.
[11] ibid., p.44.

regarding the unregulated nature of many media, particularly the internet, were also reported.[12] The internet as an educational tool was considered to present challenges, including the time consuming nature of accessing material online and the volume and diversity of material, which ranges vastly in quality of presentation and content.[13]

While recognising a range of benefits and applications of multimedia in school classrooms, the Family and Community Development Committee identified some barriers hindering the integration of meaningful computer experiences across the curriculum. These were: school infrastructure and priorities; teacher education and orientation; and conceptions of learning and curriculum.[14] One of the goals of this Committee's inquiry was to review whether these barriers are being addressed effectively, throughout the education system.

The final topic covered in the Family and Community Development Committee's chapter on Multimedia and Education was media literacy.[15] Concepts of media literacy have evolved significantly since 2000, and media literacy, or 'digital literacy', has emerged to become just as essential to effective participation in society as traditional literacy and numeracy skills. Chapter 5 of this report emphasises the important role of media literacy in our technology driven world.

Inquiry Methodology

Call for Submissions

In April 2006, the Committee advertised the terms of reference in *The Age*, *Herald Sun* and *The Australian* newspapers, as well as in the Victorian Department of Education and Training's fortnightly publication, *Education Times*. In May 2006, additional advertisements were placed in the education specific lift-outs of *The Age* and *Herald Sun*.

As well, over 450 targeted stakeholders and experts were invited to make submissions to the inquiry. These included government departments and agencies, media and communications organisations, education related bodies and associations and leading schools and teachers.

Thirty five written submissions were received by the Committee from a wide range of stakeholders, including education authorities, primary and secondary schools and teachers, universities, software and hardware companies, media associations and teacher associations (see Appendix A). All three education systems were represented, with

[12] ibid., p.47.
[13] ibid.
[14] ibid., p.50.
[15] ibid., pp.56–9.

submissions received from the Department of Education and Training, the Victorian Curriculum and Assessment Authority, the Catholic Education Commission of Victoria and the Association of Independent Schools of Victoria. Further, the Committee collected a large volume of supplementary material, including detailed data, past research and published reports, curriculum documents, academic papers and other materials (eg. CD-ROMs, DVDs and various online multimedia resources).

Research Undertaken by the Committee

Prior to commencing formal hearings, the Committee was briefed on the context surrounding multimedia within Victorian schools by representatives of the Department of Education and Training, the Department of Innovation, Industry and Regional Development and the Le@rning Federation.[16]

Public hearings took place in Melbourne during May, June and August 2006, involving over 40 witnesses representing multimedia producers, computer companies, infrastructure providers, teacher associations, schools and learning communities.

The Committee soon became aware of the many innovative programs operating in schools and broadened its schedule of public hearings to include direct contact with teachers and students in a diverse range of schools. These visits involved over 80 students and teachers giving formal evidence to the Committee over the period June to August 2006. Schools visited include:

- Park Ridge Primary School
- Sherbourne Primary School
- St Francis Xavier College (Beaconsfield campus)
- Presbyterian Ladies' College
- Doncaster Gardens Primary School
- Spring Valley Primary School.

A list of witnesses appearing before the Committee is contained at Appendix B.

During August 2006, the Executive Officer represented the Committee at various Leading Schools Fund open days and workshops, which

[16] The Le@rning Federation is an initiative of the state, territory and federal governments of Australia and New Zealand. It is an innovative project that employs emerging technologies to produce world-class online curriculum content to encourage student learning and support teachers in Australian and New Zealand schools. For further information, refer to the Le@rning Federation website, <www.thelearningfederation.edu.au>.

were aimed at demonstrating exemplary practice in capitalising on the capabilities of multimedia technologies across the school system. Schools visited as part of these events were:

- McKinnon Secondary College
- Koo Wee Rup Secondary College
- Mt Eliza Secondary College
- Hawthorn Secondary College
- Yarra Valley eLearning Community
  - Healesville High School
  - Lilydale Heights College
  - Pembroke Secondary College.

The above visits represented an important opportunity to view the multimedia facilities at a range of schools and to observe students working with various multimedia technologies. The open days were well attended by teachers from across Victoria, including rural and regional areas, and therefore also represented an additional opportunity for the Committee to gather information about multimedia and education from teachers with a diverse range of experiences.

The Committee also visited New Zealand, meeting with key multimedia and education experts (refer Appendix C).

During the inquiry, issues associated with the safe and effective use of the internet and other learning technologies were raised with the Committee. Prompted by concerns about cyber safety and evident variability in the research and evaluation skills of students, the Committee wrote to 155 randomly selected schools in July 2006, asking them to outline their strategies for dealing with these issues.[17] The schools were asked to respond to the following:

- whether you have any policies and guidelines regarding appropriate student and teacher use of computers and the internet;
- how prominent such policies and guidelines are within your school community (eg. how you communicate these policies and guidelines to students, teachers and parents);

[17] Every 15th school listed on a database of schools (ordered by school number) provided by the Department of Education & Training in November 2005 was selected. The sample included 110 government schools, 32 Catholic schools and 13 independent schools from across Victoria.

- any strategies you have used to communicate issues specific to internet safety to students, parents and teachers (eg. through website, newsletter, information kit/brochure, information evening, other—please specify);

- whether and how you formally teach students about effective research and evaluation skills (eg. at what year level are these skills covered, do all teachers have this responsibility or is it the responsibility of a specific position such as ICT co-ordinator or librarian etc); and

- whether and how you train teachers in cyber safety and effective research and critical evaluation skills.

A total of 32 responses were received (23 government schools, 7 Catholic Schools and 2 independent schools), with results compiled and used throughout this report.

Conference

In August 2006, two Members of the Committee, together with the Executive Officer, attended the Curriculum Corporation's national conference, *A Vision Splendid. ICT: research, pedagogy, implementation for schools*.

The conference brought together leading researchers, policy makers and practitioners to explore recent trends and crucial factors in transforming school education through the use of ICT. The three key strands of the conference were:

- Use of ICT to provide personalised learning advantage to accommodate student diversity.

- Professional development opportunities and resources to support learning.

- Effective ICT integration into teaching practice and curriculum delivery.

Time Limitations

Given the massive impact and rapidly changing nature of multimedia technologies, together with the divergent experiences and opinions of multimedia that exist, this inquiry proved to be a challenging task for the Committee. The forthcoming State Election in November 2006 meant that the Committee had very limited time to undertake this substantial inquiry and to undertake a full analysis of all the issues associated with multimedia in education.

With more time, the Committee would like to have explored in depth, the influence that the prevalence of multimedia has upon the social development, thinking patterns and physiological development of young people today. Importantly, the Committee also recognises that the evidence collected did not allow for an in-depth analysis of possible variations in the levels of access to and use of various multimedia technologies within and between different communities, including for example, communities with diverse cultural and linguistic backgrounds, different socioeconomic status and those in rural and regional areas.

The Committee recognises that further work by the Victorian Government and/or a future Parliamentary Committee is warranted, to expand on the findings contained in this report. In particular, a future inquiry should examine issues of accessibility and patterns of use of multimedia technologies within homes and schools in diverse Victorian communities.

Inquiry Definitions

Multimedia

Central to the terms of reference for this inquiry is the term multimedia. In inviting submissions, the Committee intentionally kept the definition of multimedia as broad as possible.

In its 2000 report, the Family and Community Development Committee did not define multimedia. However, the terms of reference for that Committee's inquiry did specifically include videos, video games and the internet within the scope of the term 'multimedia technology'.[18]

Some submissions and witnesses to this Committee's inquiry felt that there were inconsistencies and confusion in the use of the term 'multimedia' in the Family and Community Development Committee's report. The Friends of the ABC stated:

> The title of the investigation suggests that television and multimedia are separate animals. Nowhere is Multimedia defined in such a way as to make any form of quantification possible.[19]

[18] Family and Community Development Committee 2000, *Inquiry into the Effects of Television & Multimedia on children & families in Victoria: Final Report*, Parliament of Victoria, Melbourne, p.i.

[19] Friends of the ABC, Written Submission, May 2006, p.1.

Multimedia Victoria concisely defines multimedia as:

> Information that is presented in more than one format. Examples include text, audio, video, graphics, and images.[20]

A number of contributors to this inquiry suggested a broad definition was appropriate, so as to be inclusive of 'the entire spectrum of new technologies as an integrated whole'.[21] The Victorian Information Technology Teachers Association stated that:

> Multimedia is indistinguishable from software and hardware tools that underpin its use. Computers and digital cameras, digital video editing suites, multimedia tools like Flash animation and Claymation go together with the development of multimedia and should not be considered separately.[22]

The Australian Teachers of Media (ATOM) suggested that multimedia was a subset of information and communications technology:

> Information Communication Technology has become the umbrella term for the use of digital or new media in education. ATOM assumes that the inquiry is looking at the multimedia in that context i.e. as a sub set of ICT and an ICT strategy and not as the stand alone use of multimedia.[23]

The Committee recognises that in many circumstances, the term 'multimedia' could be interchangeable with 'Information and Communications Technologies' (ICT) as it is understood among the general community. As defined by Multimedia Victoria:

> ICT is used to describe telecommunications, computing and related areas. It is used (over information technology or IT) to indicate the dynamism that can be achieved with the convergence of computing and telecommunications. ICT makes possible the fast and worldwide exchange of information, and has the capacity to revolutionise work processes, service delivery etc.[24]

Footscray City College included in its submission a more conceptual definition of multimedia, although still broad in its interpretation. According to Footscray City College, in an educational context,

[20] Multimedia Victoria, website, <www.mmv.vic.gov.au/Glossary#M>, viewed on 20 June 2006.
[21] Faculty of Education, Queensland University of Technology, Written Submission, June 2006, p.1.
[22] Victorian Information Technology Teachers Association, Written Submission, May 2006, p.1.
[23] Australian Teachers of Media, Written Submission, May 2006, p.1.
[24] Multimedia Victoria, website, <www.mmv.vic.gov.au/Glossary#M>, viewed on 20 June 2006.

multimedia is more than a set of communication or presentation tools. It is also an art form, a research tool, a collaborative tool, a course-provision tool and a source of interactive learning objects.[25]

Throughout this report, the Committee chose to use a broad and inclusive definition of multimedia. Therefore, the Committee's definition of multimedia includes the ICT hardware, software and accessories that enable information to be presented, viewed and manipulated in various formats. These formats may include text, audio, video, graphics and images.

Media Literacy

Central to much of the evidence received by the Committee, media literacy has emerged as an essential element of contemporary education. For the purposes of this inquiry, the Committee defines media literacy as 'the ability to access, analyse, evaluate and create messages across a variety of contexts'.[26]

The concept of media literacy and its growing importance is discussed in Chapter 5 of this report.

Report Structure

The Committee has divided its report into two parts. Part one provides an overview of the current multimedia landscape of children and young people, within both a social and an educational context. As a significant multimedia platform of the current generation, the internet is featured prominently. In particular, the Committee has highlighted the potential risks facing children and young people if they engage in unsupervised or unsafe internet practices.

Part two of the report discusses multimedia in the context of education in the net age. In particular, the Committee puts the spotlight on the new needs, tools, opportunities and challenges facing education authorities, schools and individual teachers, as they seek to maximise the benefits of multimedia across the school curriculum.

[25] Footscray City College, Written Submission, June 2006, p.1.

[26] S. Livingstone 2003 'The Changing Nature and Uses of Media Literacy', in R. Gill et al. (eds) *Media@LSE Electronic Working Papers*, on the London School of Economics and Political Science website, <www.lse.ac.uk/collections/media@lse/pdf/Media@lseEWP4_july03.pdf>, viewed on 4 July 2006, p.6.

Part One:

The Multimedia Landscape

Opportunities for young people to engage with screen based media have advanced rapidly over recent years. Television viewing is still popular, but no longer the primary screen based activity for many young people: today there are computers, mobile phones, iPods, the internet and various types of games consoles and other handheld devices. Instant messaging and chat rooms, which barely existed in 2000, are now two of the most popular activities among young Victorians. Multimedia content is becoming ever more sophisticated and is increasingly being developed with the needs and preferences of young people in mind. In essence, the increased variety and capabilities of multimedia devices are reshaping the behaviour, interests, attitudes and expectations of young people, in both their educational and social lives.

Multimedia is now such an integral part of young people's lives that it may seem somewhat artificial to dissect current applications and usage patterns of individual technologies and devices. Sometimes, a particular device becomes popular in its own right, while increasingly young people are less concerned about individual technologies and more interested in what they can do with them. It is particularly difficult to separate educational from social or entertainment related products and uses. Young people switch seamlessly from one multimedia device to another, quickly adapting and advancing their skills to achieve their social, cultural and educational goals. The Committee also notes that while certain multimedia technologies are favoured today, they may quickly become obsolete as new multimedia opportunities continue to enter the market.

The internet was the most significant multimedia platform discussed throughout the inquiry. People of all ages are increasingly relying on the internet to fulfil their information, communication, social, educational and work-related needs. For young people, the attraction of the internet for social, entertainment and study purposes is particularly strong. The Committee heard that this trend has resulted in some significant concerns about privacy and copyright issues and the safety of children and young people while they are engaging in internet-based activities. Some of the dangers that they may face include online stalkers and predators, cyber bullying and harassment, inappropriate content, scams and identity theft and other security concerns. Another area of significant concern was the unchecked content of photos and information on the ever increasing number of personal student websites. The Committee heard that while these issues are generally

being addressed effectively in schools, the community is not yet sufficiently aware of the potential scope of online risks to young people. As the internet becomes increasingly accessible to more young people and through handheld technologies, adequate supervision and protection is likely to become an issue of greater concern and complexity.

2. Ownership and Patterns of Use of Multimedia Devices

Introduction

The following chapter sets the scene for the inquiry by providing a brief overview of household ownership of various multimedia devices and some trends in the use of these devices by children and young people.

There are no current Australian studies that provide a comprehensive picture of ownership of a range of multimedia devices among children, nor their patterns of use of those devices. Even if such data were available, it would become quickly outdated, as the ownership levels and usage patterns of various technologies change rapidly. Nonetheless, the Committee was able to compile some current, basic information about Australian household ownership and use of multimedia devices from various sources. It offers a picture of a media and technology-rich household environment, particularly among households with children. Notwithstanding this, data shows that children and young people remain engaged with a range of other leisure and sporting pursuits.

Three of the key multimedia platforms, television, computers and the internet, are covered extensively in a wide body of literature and research. This is due to their widespread accessibility and use, their enduring popularity and their interrelationship with a broad range of social, cultural, educational and physiological variables. The obvious educational potential of two of these platforms, computers and the internet, also made them a central theme in evidence to the Committee. However, where data is available, the Committee also outlines current ownership levels of a range of other multimedia devices, acknowledging their increasing educational potential among an ever-more technology savvy student population.

Household Ownership of Multimedia Devices

Roy Morgan Research reports that as at 2006, 90.4 per cent of households with children (aged 15 and under) have a personal computer, 84.3 per cent have a mobile phone, 66 per cent have a games console, 24.6 per cent have a MP3 player and 13.5 per cent have an iPod mobile digital device (refer Figure 2.1).[27] A 2005 NetRatings Australia[28] survey found that 23 per cent of children aged 8 to 12 owned a mobile phone.[29] Mobile phone ownership increased from nine per cent among children aged eight and nine to 37 per cent of those aged 11 and 12.[30]

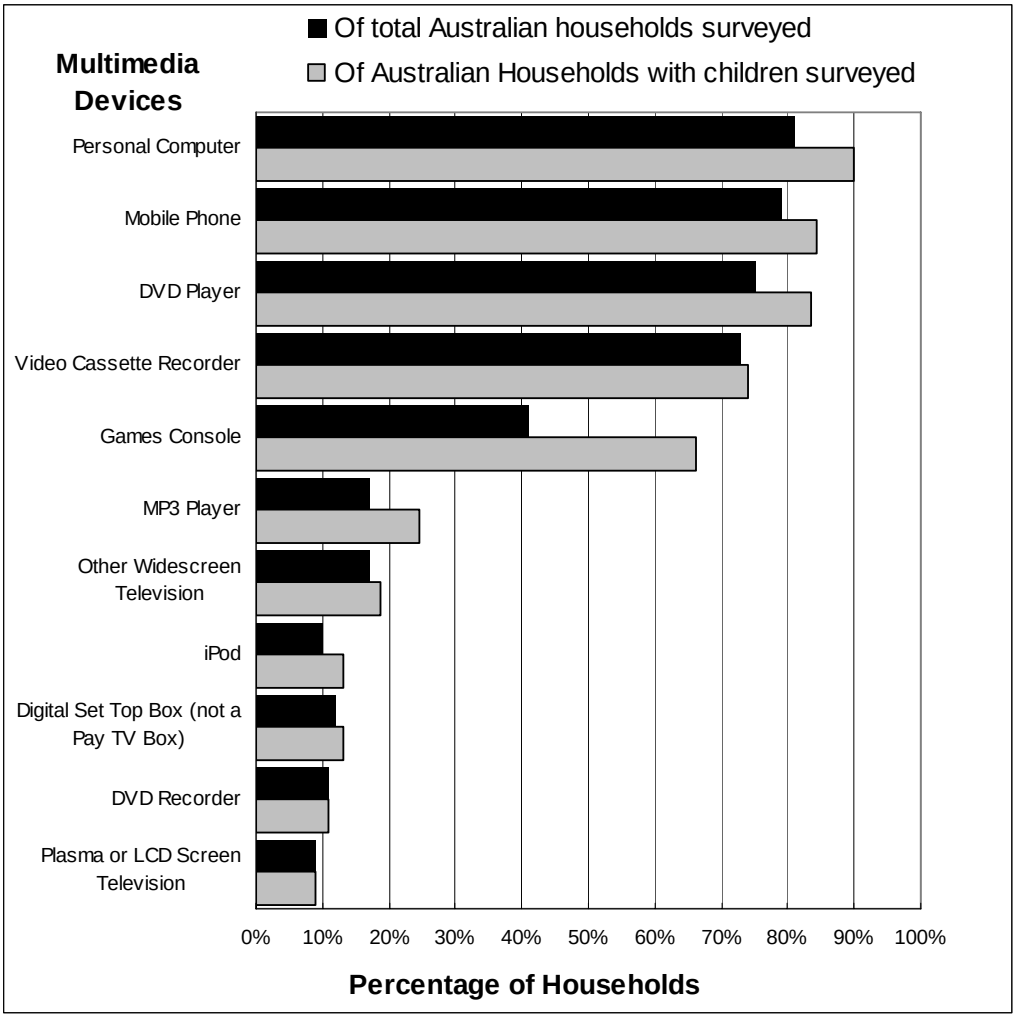
Not surprisingly, television ownership is near universal, with an increasing number of families acquiring multiple television sets, placing televisions in children's rooms and choosing televisions with increasingly advanced features. The Australian Film Commission reports that as at 2004, 67 per cent of Australian households had two or more televisions and 28 per cent of households had three or more televisions.[31] Roy Morgan Research reports that 9.0 per cent of Australian households with children own a plasma or LCD screen television, with 18.7 per cent owning another widescreen television, and 13.4 per cent have a digital set top box (not pay TV).[32]

The Australian Film Commission reports that as at June 2005, the three main pay TV operators in Australia (Foxtel, Optus and Austar) had 1.7 million subscribers, representing 22 per cent of Australian households.[33] It further reports that penetration of pay TV into Victoria in 2004 was at 28 per cent for Melbourne-based homes and 15 per cent for regional-based homes.[34]

[27] Data provided to the Committee by Roy Morgan Research on 30 June 2006, *Roy Morgan Research Single Source*, April 2005–March 2006.
[28] NetRatings Inc provides a leading source of global information on consumer and business usage of the internet. Further information about NetRatings Australia is available via the NetRatings Inc, website, <www.netratings.com/>.
[29] NetRatings Australia 2005, *kidsonline@home: Internet use in Australian homes*, report prepared for the Australian Broadcasting Authority and NetAlert Limited, Sydney, p.78.
[30] ibid.
[31] Australian Film Commission, website, <www.afc.gov.au/gtp/wftvviewtvs.html>, viewed on 25 July 2006.
[32] Data provided to the Committee by Roy Morgan Research on 30 June 2006, *Roy Morgan Research Single Source*, April 2005–March 2006.
[33] Australian Film Commission, website, <www.afc.gov.au/gtp/wptvfast.html>, viewed on 25 July 2006.
[34] ibid.

VCRs too, have made way for more advanced technologies, with Roy Morgan Research reporting that 83.5 per cent of Australian households with children have a DVD player and 11.1 per cent have a DVD recorder, compared with 74.3 per cent owning a VCR (refer Figure 2.1).[35]

Figure 2.1: Australian Household Ownership of Multimedia Devices (2005–2006)



Source: Roy Morgan Research, *Roy Morgan Research Single Source*, April 2005–March 2006.

The Australian Bureau of Statistics reports that 84 per cent of households with children under 15 years of age have a computer and 72 per cent have home internet access.[36] As the two most important multimedia platforms relevant to this inquiry, further details on ownership and use of computers and the internet is contained in the following chapter.

[35] Data provided to the Committee by Roy Morgan Research on 30 June 2006, *Roy Morgan Research Single Source*, April 2005–March 2006.

[36] Australian Bureau of Statistics 2005, *Household Use of Information Technology*, Cat. No. 8146.0, ABS, Canberra, p.4.

Australian trends in ownership of multimedia closely reflect trends in similar, developed nations. The home media environment of young Americans has been described as follows:

> … a typical US child between 8 and 18 years old is likely to live in a home equipped with three televisions, three VCRs, three radios, three CD/tape players, two video game consoles, and a personal computer. The computer probably has an internet connection and an instant messaging program; the TV probably receives a cable or satellite signal, and there is a 50/50 chance that the TV also receives a premium channel.[37]

A large scale study conducted by the UK's Office of Communications reported similar findings for children in the United Kingdom, although it found some differences in ownership levels among different population groups:

> Some 72% of children aged 8–15 have access to digital TV at home, 64% have access to the internet at home, 47% of parents say there is household access to digital radio services, and 65% of 8–15s have their own mobile phone. Just under half of 8–11s have their own mobile phone (49%) compared to 82% of 12–15s…Across most media devices, children in Northern Ireland, from minority ethnic groups, in rural areas and in low income families are less likely to own the devices.[38]

Victorian children participating in this inquiry confirmed that they are growing up within a multimedia-rich home environment.[39] In recalling the multimedia devices they have at home, most primary school children indicated that they have a home computer (often a laptop as well) with an internet connection (often broadband), most mentioned at least one or two games consoles or similar handheld devices (eg. PlayStation, PlayStation 2, PlayStation Portable, Nintendo DS, GameCube and Xbox) and many indicated they or other family members have mobile phones, digital cameras, video cameras, MP3 and MP4 players and iPod mobile digital devices:

> I have a family computer, colour printer, multifunction centre. My sister has an iPod and I have a PS2.[40]

> I have the MP3, family computer and a laptop. The games would be Xbox and a PSP. I have the walkman, too.[41]

[37] Kaiser Family Foundation 2005, *Generation M: Media in the Lives of 8–18 Year-olds*, report written by D. Roberts, U. Foehr & V. Rideout, KFF, Menlo Park, p.10.
[38] Office of Communications 2006, *Media Literacy Audit: Report on media literacy amongst children*, Ofcom, London, p.10.
[39] For privacy reasons, the Committee has agreed not to identify student names in this section.
[40] Primary School Student, Committee School Visits, June–August 2006.

> At home I have a computer with broadband, a mobile phone, an Xbox, a laptop, a printer and a fax machine.[42]

> At home we have an iPod, a laptop with broadband internet, a computer with broadband internet, a PlayStation 2 and a GameCube.[43]

In describing the multimedia environment at home, Victorian secondary school students were less likely than primary school students to focus predominantly on entertainment-based devices and applications. They spoke about their interactions with multimedia at home in a predominantly social and educational context. They noted that the number and types of computers and other hardware, internet connections and software used and their use of iPods, mobile phones and internet-based applications such as instant messaging:

> I use iPods. I have a computer at home and the internet. I use it about an hour a day, every day…[44]

> I have an iPod and mobile. I probably spend 3 hours on the computer at home [each day]… I like to play games; I play around with Flash, Photoshop and things like that.[45]

> I have got an iRiver, which is like an iPod. And I like to watch TV… we have six computers on a network at home, and most of us have laptops too. It is pretty good because we all have the internet where we need it and it all works.[46]

> I have my own laptop. My parents both have laptops because they are teachers. We have a digital camera, internet with broadband, a home computer and a printer.[47]

In summary, multimedia has been embraced by young Victorians; they are ever more reliant on new technologies to fulfil their social, entertainment, educational and communication needs.

[41] Primary School Student, Committee School Visits, June–August 2006.
[42] Primary School Student, Committee School Visits, June–August 2006.
[43] Primary School Student, Committee School Visits, June–August 2006.
[44] Secondary School Student, Committee School Visits, June–August 2006.
[45] Secondary School Student, Committee School Visits, June–August 2006.
[46] Secondary School Student, Committee School Visits, June–August 2006.
[47] Secondary School Student, Committee School Visits, June–August 2006.

Trends in the Use of Multimedia Devices

The Committee noted a number of interesting trends in the behaviour of young people that have evolved over recent years, as a consequence of the increasing availability of multimedia technologies.

One of the most noticeable trends is the changed social landscape of young people. Multimedia technologies are fulfilling the social and communication needs of young people in new and interesting ways:

> My most important piece of technology would have to be my mobile phone, because it is such an important part of how I communicate with my friends and my family… It is crucial to the way we live now, such an important part of our lives. That would probably be my personal favourite, but I love my computer with a passion. I do not think I would enjoy life without my computer, so that is also really important for me. But I use a computer partly as an extension of a mobile phone, just for communication, but also for entertainment, of course.[48]

Mr Steve Doyle, National Professional Development Manager, Apple Computer Australia, also described how young people use various multimedia technologies to fulfil their social needs:

> They will take a digital picture and upload nearly instantly on their cell phone, with iPhoto, so that they can share it with their friends and put comments and put information. 'What did you do on your holidays?' used to be the first question asked back at school. People do not ask that any more, because they have read each other's weblogs. They have passed them out via space. We have a way of connecting with them that we have never had before. Take digital movies. I was quite rudely told that digital photos were passé the other day and email is for old people. Instant messaging. Do not say to a nine year-old, 'Email me'. That is not cool at all.[49]

The trend towards multitasking with multimedia, whereby children and young people are simultaneously using two or more multimedia devices or applications, was another important behavioural change reported by participants throughout this inquiry:

> They carry mobile phones and handheld devices as essential accessories. They are comfortable with change and respond rapidly to transmitted electronic

[48] Ms R. Williams, Year 10 Student, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.23.
[49] Mr S. Doyle, National Professional Development Manager, Apple Computer Australia, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.24.

> messages on television, computers and video games. Challenging and inquisitive, they can access technology 24 hours a day, 7 days a week,[50] and are capable of listening to music, video-conferencing, texting and watching a documentary simultaneously, with almost no information loss on intake.[51]

A recent US study quantified the multitasking behaviour of young people. For example, when asked how often when watching television that they also listen to music, read or use a computer, 53 per cent of year 7 to 12 American students responded either 'most of the time' or 'some of the time'.[52] Similarly, 58 per cent reported media multitasking 'most of the time' or 'some of the time' when reading, 63 per cent when listening to music and 65 per cent when using a computer.[53]

Another trend the Committee noted was the increased tendency for children and young people to have a greater number and range of multimedia devices in their room. No longer does it seem necessary for many families to negotiate the types of television programs they will watch or how time on the family computer or various games consoles and other devices should be allocated among family members. Instead, ownership of multiple devices has seen multimedia migrate from the family room into children's rooms. This has resulted in an increasing number of children and young people having vastly increased access to multimedia devices for entertainment, social and educational purposes.

While statistics relating to the presence of multimedia in Australian children's rooms are not available, overseas studies have reported on this trend. For example, the Kaiser Family Foundation in the United States reported:

> More than two thirds of 8- to 18-year-olds have a TV in their room, more than half have their own VCR, and 49% report having a video game console that connects to a TV. Over a third receive a cable or satellite signal on their bedroom TV, 20% receive a premium channel, and 10% say that they have a DVR… Thirty-one per cent have a desktop computer in the bedroom and 12% have their own laptop computer (35% have one, the other, or both); 20% report an internet connection and 18% have instant messaging. Over 10% report owning personal digital assistants and 13% have some type of handheld device that connects to the internet (eg. a cell phone, Blackberry, etc); Finally, 40% of 8- to 18-year-

[50] Department of Education and Training, Written Submission, August 2006, p.3.
[51] S. McDougall, *One tablet or two? Opportunities for change in educational provision in the next 20 years*, Futurelab, 2006, p.4., cited in Department of Education and Training, Written Submission, August 2006, p.3.
[52] Kaiser Family Foundation 2005, *Generation M: Media in the Lives of 8–18 Year-olds*, report written by D. Roberts, U. Foehr & V. Rideout, KFF, Menlo Park, p.36.
[53] ibid.

> olds have a landline telephone in their bedroom, and 39% have their own cell phone (55% have either a landline phone, a cell phone, or both).[54]

It has been similarly reported in the United Kingdom that nearly three quarters (73%) of children aged 8-15 years have a television in their room, with this being more common for boys than for girls and for children living in a low income household.[55] The UK study also reported that of children aged 12-15 years with an internet connection in the home, 20 per cent have an internet connection in their room.[56]

The Committee notes that the trend towards children having advanced technologies in their room has a range of implications for parents and families. The Committee believes that this trend is likely to widen the divide between children and young people and their parents in levels of use, familiarity and understanding of various multimedia devices. As discussed in chapter 4, the Committee is concerned about certain aspects of cyber safety for children using the internet without adequate parental supervision. Obviously, such supervision becomes more difficult, where parents do not have an adequate understanding of the capabilities of advanced multimedia technologies, or where children and young people are using them in their rooms.

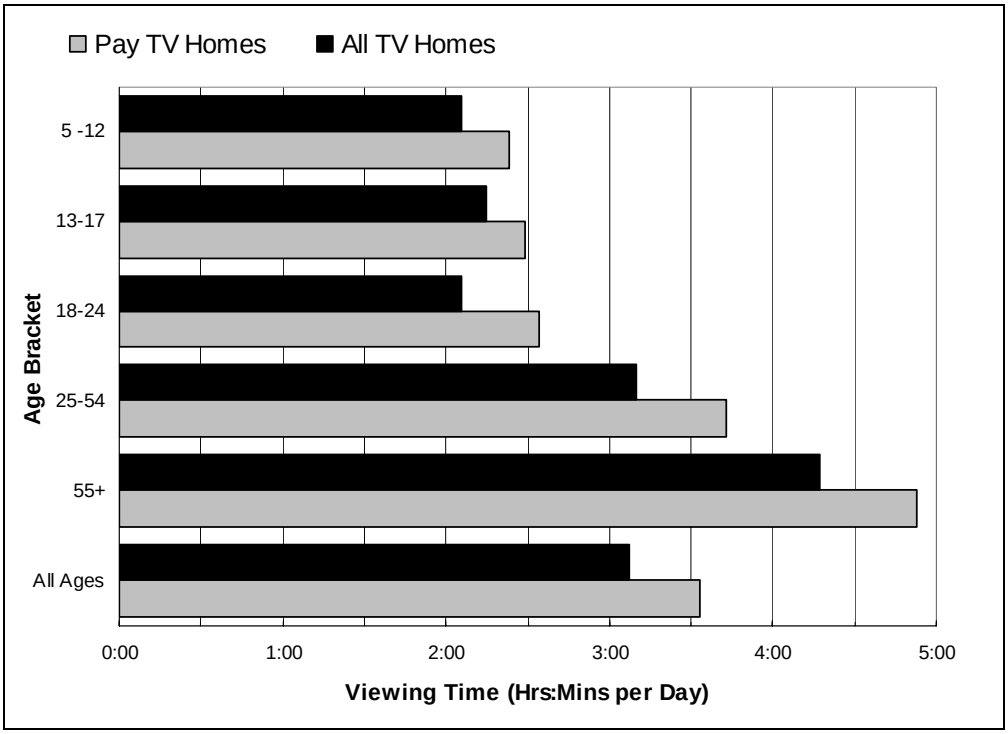
Screen Time

The overall screen activity of young people is of course impossible to measure or monitor accurately given the sheer number of multimedia devices and the various contexts within which they are used. Nonetheless, there is some data available relating to the use of various multimedia within a social/leisure context.

Figure 2.2 shows the average number of hours/minutes that Australians (in metropolitan-based households) spend watching television per day. Not surprisingly, more time is spent watching television in pay TV homes (3 hours 33 minutes) than in non-pay TV homes (3 hours 7 minutes). Figure 2.2 shows that average television viewing time increases, as people get older.

[54] ibid., p.14.
[55] Office of Communications 2006, *Media Literacy Audit: Report on media literacy amongst children*, Ofcom, London, p.16.
[56] ibid., p.37.

Figure 2.2: Hours of viewing in pay TV households compared to TV households generally, by age group (2004)



Source: *OzTAM 2004 Ratings Snapshot*, published on Australian Film Commission website, <www.afc.gov.au/gtp/wptvviewxage.html>.

A recent Australian study examined the screen time (television, cinema, computer and video games) of children aged 10–13 years. The study found that median screen time for 10–13 year-olds was 229 minutes per day.[57] For boys, the median was 264 minutes and for girls, it was 196 minutes.[58] One boy in ten spends an average of almost seven hours (412 minutes) each day in front of a screen and one in ten spends almost three hours (177 minutes) playing video games.[59] The study found that screen time increases with age, at an overall rate of around 16 minutes per year of age and that screen time is inversely related to socioeconomic status.[60]

[57] T. Olds, K. Ridley & J. Dollman 2006, 'Screenieboppers and extreme screenies: the place of screen time in the time budgets of 10–13 year-old Australian children', *Australian and New Zealand Journal of Public Health*, v 30 no.2, p.139.
[58] ibid.
[59] ibid.
[60] ibid.

The Longitudinal Study of Australian Children (LSAC)[61] provides a useful national picture of screen time for infants aged 3–19 months and children aged 4–5 years. Its 2004 annual report showed that 89.3 per cent of 4–5 year-old children watched television, a video or a DVD. Of these children, the average amount of time spent watching television/video/DVD was 2.3 hours per day.[62] In contrast, only 65.6 per cent of 4–5 year-old children spent time walking/running, riding a bike or doing other exercise. Those children were engaged in such activities for 1.9 hours, on average.[63] Watching television or videos/DVDs is obviously not such a prevalent activity for infants, but nonetheless, 45.5 per cent of infants were reported as undertaking this activity. On average, these children spent 1.4 hours per day watching television/videos/DVDs.[64]

Screen Time in the Context of other Social and Leisure Pursuits

There is often criticism and concern in the community regarding the amount of time many young people spend watching television and playing computer/video games. Concerns often stem from the poor quality of some television programs and the potentially damaging affects that exposure to violent and inappropriate content can have on the social development of children. Additional concerns stem from the tendency for television viewing and computer/video game playing to replace alternative social, sporting, cultural and educational activities. It is therefore useful to consider participation rates for television/video viewing and playing computer games, compared with other activities. The two major sources of information are the Australian Bureau of Statistics Survey of Children's Participation in Cultural and Leisure Pursuits and the Children's Leisure Activities Study, conducted by the Centre for Physical Activity and Nutrition Research at Deakin University. Useful international comparisons are also reported by the 2003 Trends in International Mathematics and Science Study (TIMSS).

[61] The Longitudinal Study of Australian Children is an Australian Government study which aims to examine the impact of Australia's unique social and cultural environment on the next generation. The study is being led by the Australian Institute of Family Studies, in partnership with the Department of Families, Community Services & Indigenous Affairs. The study has a broad, multi-disciplinary base, involving a nationally representative sample of children and examines topical issues of policy relevance. It explores family and social issues relevant to children's development and addresses a range of research questions about family functioning, health, non-parental childcare and education. For further information, refer to the *Growing Up in Australia* website, <www.aifs.gov.au/growingup/home.html>.

[62] Australian Institute of Family Studies 2005, *Growing Up in Australia: The Longitudinal Study of Australian Children: 2004 Annual Report,* AIFS, Melbourne, p.23.

[63] ibid.

[64] ibid.

Survey of Children's Participation in Cultural and Leisure Pursuits

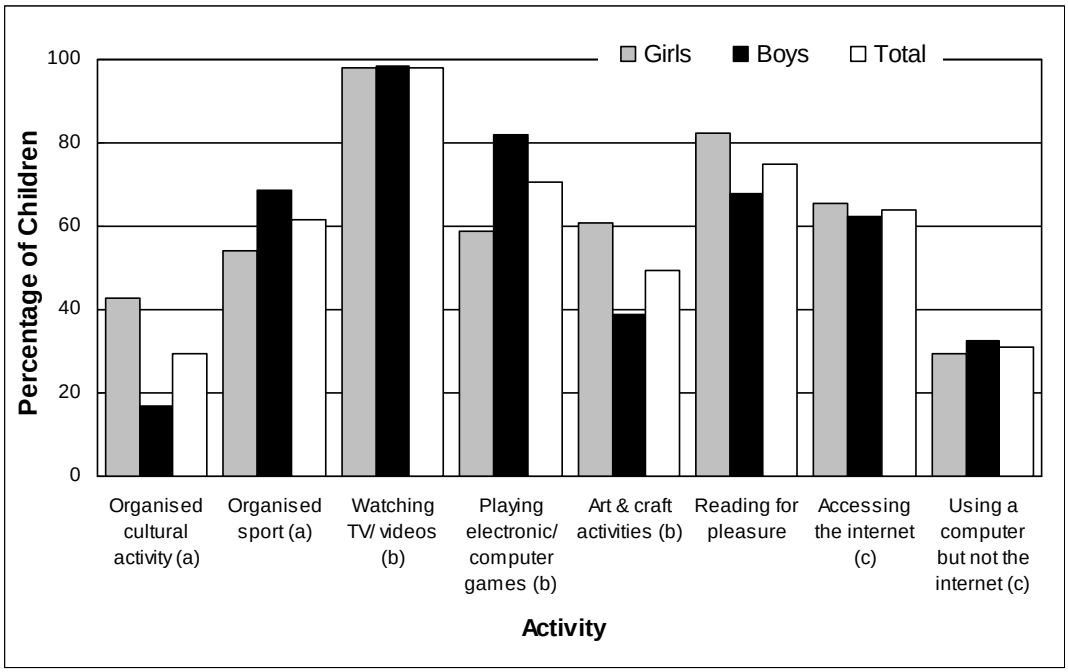
The ABS 2003 Survey of Children's Participation in Cultural and Leisure Activities is one of the key sources of information on children's television viewing and use of computer/electronic games in Australia. The survey, which was also conducted in 2000, presents information about the participation of children aged 5–14 years in cultural and leisure activities and on their use of computers and the internet.

Not surprisingly, nearly all (98.2%) Australian children had watched television or videos outside of school hours during the past two school weeks prior to interview in April 2003.[65] Television/video viewing did not vary greatly between boys (98.6%) and girls (97.9%).[66] Overall, 51.8 per cent of children (50.6% of girls and 53.0% of boys) spent 20 hours or more watching television/videos in the previous two weeks.[67]

As shown in Figure 2.3 (see over), television/video viewing is the only selected cultural or leisure activity with near universal participation by children aged 5–14 years. Computer and internet related activities are also widespread and have similar participation rates among boys and girls. Most other activities, however, have significant gender biases. For example, girls have much higher participation rates than boys in organised cultural activities, (such as playing a musical instrument, singing, dancing and drama), art and craft activities and reading for pleasure. Boys, however, have much greater participation rates in organised sports (such as swimming, martial arts, athletics, gymnastics and a range of team sports) and playing electronic or computer games.

[65] Australian Bureau of Statistics 2004, *Children's Participation in Cultural and Leisure Activities*, Cat. No. 4901.0, ABS, Canberra, p.30.
[66] ibid.
[67] ibid., p.33.

Figure 2.3: Participation of Australian children (5–14 Years Old) in selected activities (2003)



a Outside of school hours during the 12 months prior to interview in April 2003
b Outside of school hours during the past two school weeks prior to interview in April 2003
c During or outside of school hours during the 12 months prior to interview in April 2003

Source: Constructed by the Education and Training Committee from, Australian Bureau of Statistics 2004, *Children's Participation in Cultural and Leisure Activities*, Cat. No. 4901.0, pp.10–12.

Children's Leisure Activities Study

The Children's Leisure Activities Study (CLASS) was conducted in 2004 by the Centre for Physical Activity and Nutrition Research at Deakin University. It involved more than 1,200 families with children aged 5–6 years and 10–12 years, recruited from 19 government primary schools in high and low socioeconomic status areas in Melbourne.[68]

Tables 2.1 and 2.2 show the amount of time spent in a range of activities, by children in the two age groups. Consistent with the ABS findings, television viewing is the most popular activity for both boys and girls. Overall, children aged 5–6 years spent an average of 111 minutes per day watching television, with children aged 10–12 years watching 137 minutes.

[68] J. Salmon, A. Telford & D. Crawford 2004, *The Children's Leisure Activities Study: Summary Report*, report prepared for Centre for Physical Activity and Nutrition Research, Deakin University, Melbourne, p.1.

Boys aged 5–6 years spent an additional 38 minutes on interactive screen-based activities (27 minutes on electronic games and 11 minutes on the computer) while girls in this age group spent an additional 18 minutes on such activities. Interactive screen-based activity time increased among older children, with boys aged 10–12 years spending a combined 70 minutes on electronic games and the computer, compared to 39 minutes for girls.

Table 2.1: Time spent in sedentary pursuits for 5–6 year-olds in Melbourne (2004)

Children's sedentary pursuits	Boys (mins/day)	Girls (mins/day)	Overall (mins/day)
Watching TV	111	110	111
Playing indoors with toys	70	71	70
Sitting talking	35	40	37
Imaginary play	29	38	33
Reading	21	25	23
Art and craft	14	32	23
Electronic games	27	10	19
Listening to music	12	17	14
Homework	13	13	13
Travel by car/bus	13	11	12
Playing board games/cards	10	12	11
Computer	11	8	10
Talk on telephone	3	3	3
Playing a musical instrument	1	3	2

Source: J. Salmon, A. Telford & D. Crawford 2004, *Children's Leisure Activities Study: Summary Report*, p.36.

Table 2.2: Time spent in sedentary pursuits for 10–12 year-olds in Melbourne (2004)

Children's sedentary pursuits	Boys (mins/day)	Girls (mins/day)	Overall (mins/day)
Watching TV	140	134	137
Sitting talking	38	44	42
Reading	29	37	33
Listening to music	28	35	32
Electronic games	45	17	30
Homework	27	32	30
Computer	25	22	23
Playing indoors with toys	20	18	19
Travel by car/bus	12	13	12
Art and craft	9	14	12
Talk on telephone	7	12	9
Imaginary play	9	8	8
Playing board games/cards	7	9	8
Playing a musical instrument	5	7	6

Source: J. Salmon, A. Telford & D. Crawford 2004, *The Children's Leisure Activities Study: Summary Report*, p.36.

International Comparisons

The Committee found it relatively difficult to compare Australian children's experience with multimedia to that of children in other countries, due to the lack of a major, international study specifically aimed at examining this issue.

Significant nationally representative studies have, however, examined the multimedia landscape within a single country. For example, the UK's Office of Communications recently conducted a *Media Literacy Audit*, which resulted in a series of in-depth reports regarding usage of various multimedia and media literacy among various populations, including adults, children, minority ethnic groups, those with a disability and older people. In the United States, the Kaiser Family Foundation has conducted two notable studies in recent years, *The Media Family: Electronic Media in the Lives of Infants, Toddlers, Preschoolers and their Parents* (2006) and *Generation M: Media in the Lives of 8–18 Year-olds* (2005). Studies focused specifically on the internet have been conducted in Australia and Canada.[69] While together, these studies provide a useful picture of some trends in the multimedia landscape across the globe, they do not provide ready comparisons or a comprehensive picture of differences in access to various multimedia devices and patterns of use by young people in different countries.

The Trends in International Mathematics and Science Study (TIMSS) does however provide some useful international comparisons and indicators about children's use of multimedia for leisure related purposes.[70] For the purposes of this report, the Committee has compared the leisure related behaviour of Australian students to students in comparable, English-speaking countries, as well as against the international average for all countries participating in TIMSS.

Tables 2.3 and 2.4 show how year 4 and year 8 students in selected countries spend their leisure time on a normal school day. International averages reveal that the two most popular activities were watching television or videos and playing or talking with friends (each about two hours per day at year 8 and a little less at year 4).

[69] NetRatings Australia 2005, *kidsonline@home: Internet use in Australian homes*, report prepared for the Australian Broadcasting Authority and NetAlert Limited, Sydney; Media Awareness Network 2005, *Young Canadians in a Wired World*, Media Awareness Network, Ottowa.

[70] Since 1995, approximately 50 countries have been assessing trends in students' mathematics and science achievement through the Trends in International Mathematics and Science Study (TIMSS). Countries participate at year 4 and year 8 and in the final year of schooling. TIMSS collects an extensive range of background information to put student achievement in context. For more information on TIMSS, see the TIMSS & PIRLS (Progress in International Reading Literacy Study) International Study Center website, <timss.bc.edu/index.html>.

According to TIMSS 2003, Australian year 8 students spent more time than the international average watching television/videos, using the internet and playing sports on a normal school day. It is interesting to note that all of the English-speaking nations show similar trends.

Conversely, Australian students spent less than the average amount of time on a range of activities, including playing computer games, playing/talking with friends and reading for enjoyment. Further, Australian students spent less time on two of these activities, playing computer games and playing/talking with friends, than year 8 students in other English-speaking countries.

Table 2.3: How year 8 students spend their leisure time on a normal school day (average hours spent each day) (2003)

Leisure Activity	Australia	New Zealand	Scotland	United States	England	International Average (a)
Play or Talk with Friends	1.7	1.8	2.7	2.4	2.4	1.9
Watch TV/ Video	2.0	2.1	2.2	2.2	2.0	1.9
Play Sports	1.6	1.5	1.7	1.8	1.4	1.4
Do jobs at Home	1.0	1.0	0.8	1.2	0.8	1.3
Play Computer Games	0.9	1.0	1.4	1.1	1.1	1.1
Use the internet	1.3	1.3	1.4	1.8	1.4	1.0
Read a book for enjoyment	0.7	0.7	0.6	0.7	0.5	0.9
Work at paid job	0.4	0.6	0.5	0.6	0.5	0.6

a International average refers to average for all countries participating in TIMSS.

Source: Adapted by the Education and Training Committee from M. Martin, I. Mullis, E. Gonzales & S. Chrostowski 2004, *TIMSS 2003 International Science Report: Findings from IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades*, p.156.

Year 4 students in each of the English-speaking nations spent more time watching television/videos on a normal school day than average for students in all participating countries. However, Australian and New Zealand students in year 4 spent less time watching television/videos than year 4 children in other English-speaking countries. Australian year 4 students also spent slightly more time than average playing computer games and using the internet, although not as much time as children in the other English-speaking nations.

Table 2.4: How year 4 students spend their leisure time on a normal school day (average hours spent each day) (2003)

Leisure Activity	Australia	New Zealand	Scotland	United States	England	International Average (a)
Play or Talk with Friends	1.8	1.8	2.1	2.0	2.1	1.8
Watch TV/ Video	1.9	1.9	2.0	2.1	2.0	1.7
Play Sports	1.8	1.6	2.0	1.9	1.9	1.5
Do jobs at Home	1.3	1.3	1.1	1.2	1.0	1.3
Read a book for enjoyment	1.2	1.3	1.0	1.2	1.0	1.1
Play Computer Games	1.1	1.1	1.6	1.1	1.5	1.0
Use the internet	0.9	1.0	1.1	1.2	1.0	0.7

a International average refers to average for all countries participating in TIMSS.

Source: Adapted by the Education and Training Committee from M. Martin, I. Mullis, E. Gonzales & S. Chrostowski 2004, *TIMSS 2003 International Science Report: Findings from IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades*, p.157.

Conclusion

This chapter has provided an overview of the net generation's multimedia landscape. The current landscape is totally different to the one reported during 1998–2000, when the Family and Community Development Committee was conducting its inquiry into the effects of television and multimedia on children and families in Victoria. The Education and Training Committee consistently heard that the digital revolution is continuing at a rapid pace and that children are leading the way in the uptake, use and familiarity of a diverse range of multimedia technologies, from an earlier age. Increasingly, children spend more time with multimedia and digital communications than with anything else. Having grown up in this type of environment, young people are more technologically adept than ever before and they are used to rapidly accepting the introduction of new technologies in their lives. The Committee believes that education systems need to work collaboratively to fully understand and track these trends and incorporate young people's use and familiarity with multimedia technologies into educational thinking and planning.

FINDING 2.1

The digital revolution will see an increasing proportion of children and young people become reliant on multimedia technologies to fulfil their social, educational, communication and entertainment related needs, from an earlier age.

FINDING 2.2

That the digital revolution has seen the following trends emerge within the multimedia landscape:

- increasing use of multimedia as a part of the fabric of daily life even for young children and infants;
- increased preference and capacity for effective multitasking across a range of multimedia devices;
- increased use of screen-based multimedia as children get older; and
- a change in the social landscape for children and young people, who increasingly communicate and socialise across multimedia platforms.

RECOMMENDATION 2.1

That the Department of Education and Training, in collaboration with other education systems, undertake an annual survey of multimedia usage among students. The results of the annual survey should be disseminated to schools, teachers and education faculties, to facilitate better educational planning and curriculum development and implementation.

3. Access to and Use of Computers and the Internet

Introduction

Computers and the internet are the most significant multimedia platforms investigated throughout this inquiry. They featured prominently in evidence from a wide range of contributors, from students and teachers, through to the producers of educational multimedia products and a variety of other organisations. Importantly, evidence regarding computers and the internet was not restricted to their educational potential. Rather, these two multimedia platforms were identified as being central in nearly all young people's lives, and responsible to a large extent, for the blurring of boundaries between young people's educational and social/cultural experiences. The following chapter provides an overview of the current levels of access to and usage of computers and the internet by young people in both home and educational contexts. It also sets the scene for discussion in the following chapters on widespread concerns raised during this inquiry by teachers and community members, regarding appropriate and safe use of the internet by young people.

Access to Computers

In December 2005, the Australian Bureau of Statistics released a publication on household use of information technology. It reported that in 2004–05, 67 per cent of Australian households had access to a computer at home.[71] The percentage of households with home computer access was significantly higher for households in the Australian Capital Territory (79%, compared to 68% of Victorian households) and households in the highest income quintile (86%).[72] Households in metropolitan areas continued to have higher computer access (69%), but the gap between metropolitan and non-metropolitan areas has narrowed since 1998, to 6 percentage points in 2004–05.[73] Further, the percentage of households with home computer access was significantly higher for households with children under 15 years of age (84%) compared with the average for all Australian households.[74]

The 2003 Trends in International Mathematics and Science Study (TIMSS) found that on average, 60 per cent of year 8 students and 65

[71] Australian Bureau of Statistics 2005, *Household Use of Information Technology*, Cat. No. 8146.0, ABS, Canberra, p.4.
[72] ibid., pp.7 & 11.
[73] ibid., p.7.
[74] ibid.

per cent of year 4 students have a computer at home. The corresponding figures for Australian students were 96 per cent and 92 per cent, respectively.[75] The trend for more Australian students to have a home computer than children in other countries occurs even when comparing across English-speaking countries.[76]

The Department of Education and Training published a brochure in July 2005, showing that there were almost 139,000 computers available for student use (curriculum computers) in Victorian government schools.[77] This represents one computer for every 3.9 government school students. As shown in Table 3.1, the number of students per computer ranged from 3.5 in the Barwon South West, Grampians and Hume regions to 4.3 in the Southern Metropolitan region.

Table 3.1: Average number of students per curriculum computer in Victorian government schools, by school type and region (2005)

Region	Primary	Secondary	Primary & Secondary	Special	Total
Barwon South West	3.4	3.6	3.2	2.7	3.5
Gippsland	3.5	4.0	3.0	1.8	3.6
Grampians	3.5	3.6	2.7	2.8	3.5
Hume	3.4	3.7	3.3	2.5	3.5
Loddon Mallee	3.9	3.6	3.3	2.6	3.7
Eastern Metropolitan	3.9	4.0	2.9	2.8	4.0
Northern Metropolitan	4.3	4.0	3.0	2.0	4.0
Southern Metropolitan	4.3	4.4	5.1	2.4	4.3
Western Metropolitan	4.3	3.8	5.2	2.7	4.1
Total	3.9	3.9	3.5	2.4	3.9

Source: Department of Education and Training 2005, *Computer Statistics for Victorian Government Schools*, p.1.

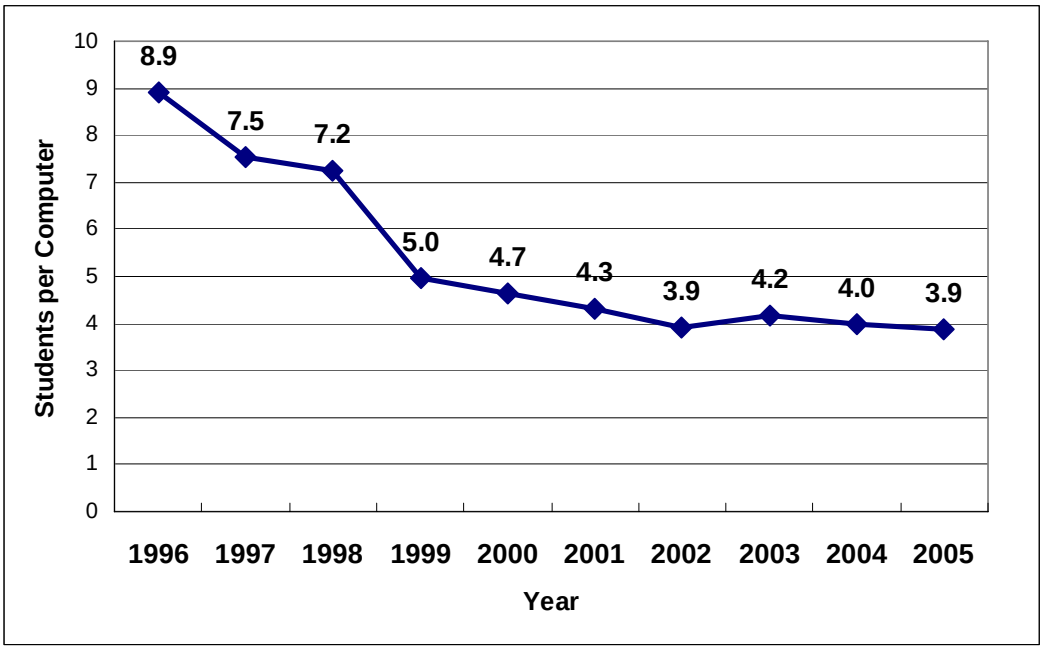
[75] M. Martin, I. Mullis, E. Gonzales & S. Chrostowski 2004, *TIMSS 2003 International Science Report: Findings from IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades*, report prepared for TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College, Boston, pp.144–5.

[76] TIMSS reported that 91 per cent of year 8 students in New Zealand and Scotland, 93 per cent in the United States and 94 per cent in England have a computer at home. Among year 4 students, 92 per cent in the United States, 91 per cent in England, 89 per cent in Scotland and 87 per cent in New Zealand have a computer. Refer M. Martin, I. Mullis, E. Gonzales & S. Chrostowski 2004, *TIMSS 2003 International Science Report: Findings from IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades*, report prepared for TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College, Boston, pp.144–5.

[77] Department of Education and Training 2005, *Computer Statistics for Victorian Government Schools*, DE&T, Melbourne, p.1.

According to the Department of Education and Training, the average number of students per computer has decreased from 8.9 in 1996 (refer Figure 3.1).

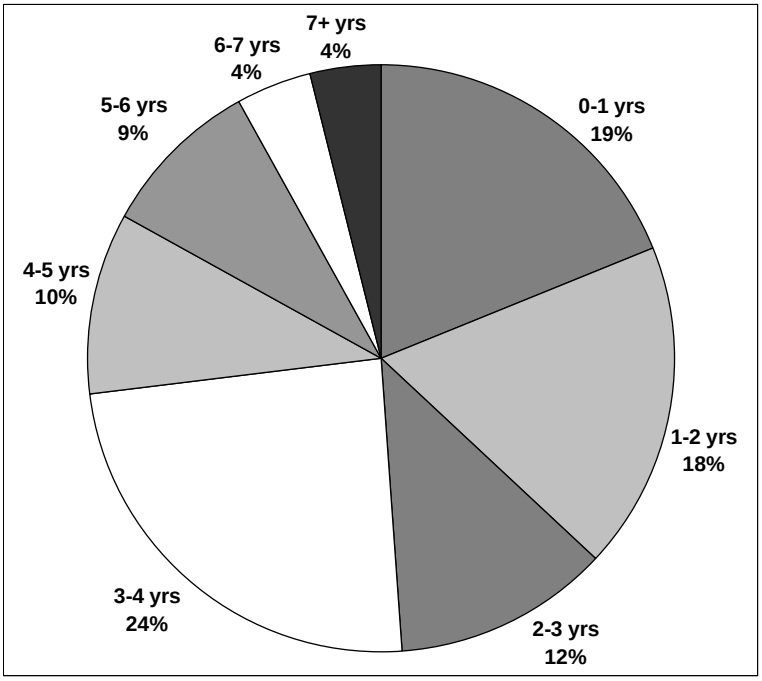
Figure 3.1: Average number of students per curriculum computer in Victorian government schools (1996–2005)



Source: Department of Education and Training 2005, *Computer Statistics for Victorian Government Schools*, p.2.

Figure 3.2 shows the age of computers used by students in Victorian government schools. It shows that in 2005, 83 per cent of computers were less than five years old and that almost half (49%) were less than three years old.

Figure 3.2: Age of current curriculum computers in Victorian government schools (2005)



Source: Department of Education and Training 2005, *Computer Statistics for Victorian Government Schools*, p.1.

Student Use of Computers

The latest ABS Survey of Children's Participation in Cultural and Leisure Activities found that in the 12 months prior to April 2003, 95 per cent of Australian children aged 5 to 14 years used a computer, either during or outside of school hours.[78] For these children, it is estimated that 94 per cent used a computer at school, 86 per cent used a computer at home, 42 per cent used a computer at somebody else's house and 12 per cent used a computer at a public library.[79] Participation in computer activities was comparable for boys and girls and increased with age, from 82 per cent for 5 year-olds to 99 per cent for children aged 11 years and older.[80]

[78] Australian Bureau of Statistics 2003, *Children's Participation in Cultural and Leisure Activities*, Cat. No. 4901.0, ABS, Canberra, p.3.
[79] ibid., p.7.
[80] ibid.

The frequency with which children used a home computer also increased with age. As shown in Table 3.2, almost one third (32.8%) of children aged 12 to 14 years typically used their home computer every day (compared to 19.2% of all children aged 5–14 years).

Table 3.2: Frequency of home computer usage by Australian children (12 Months to April 2003)

Frequency	5–8 Years (%)	9–11 Years (%)	12–14 Years (%)	Total 5–14 Years (%)
Every day	8.8	16.4	32.8	19.2
2–6 days a week	48.1	60.2	56.6	54.8
One day a week	26.6	15.5	7.4	16.7
Less than one day per week	16.4	7.7	3.1	9.2

Source: Australian Bureau of Statistics 2003, *Children's Participation in Cultural and Leisure Activities*, Catalogue No. 4901.0, p.38.

Table 3.3 shows that the activities for which children used a home computer also varied with their age. Not surprisingly, school or educational use, as well as internet-based activities increased with age, while game playing decreased with age.

Table 3.3: Activities undertaken on home computer by Australian children (12 Months to April 2003)

Computer Activity	5–8 Years (%)	9–11 Years (%)	12–14 Years (%)	Total 5–14 Years (%)
Internet, including email	24.9	52.3	69.3	48.4
Playing games	91.0	86.3	75.9	84.5
School or educational	69.7	88.6	94.4	84.0
Other	10.0	12.9	16.8	13.2

Source: Australian Bureau of Statistics 2003, *Children's Participation in Cultural and Leisure Activities*, Catalogue No. 4901.0, p.38.

Table 3.4 shows the proportion of year 4 and year 8 students participating in TIMSS who accessed computers at home, school or elsewhere, or not at all. The Committee notes that use of computers in English-speaking nations was far higher than the international average for all countries participating in TIMSS. Further, the proportion of Australian students at both year 4 and year 8 using a computer at both home and at school was greater than for all other English-speaking nations participating in TIMSS.

Table 3.4: Location of computer use for students in year 4 and year 8, by country (2003)

Country	% Use computer both at home and at school		% Use computer at home but not at school		% Use computer at school but not at home		% Use computer only at places other than home/school		% Do not use computers at all	
	Year 4	Year 8	Year 4	Year 8	Year 4	Year 8	Year 4	Year 8	Year 4	Year 8
Australia	80	83	7	10	11	5	1	1	1	1
United States	73	79	12	11	11	8	2	1	2	1
Scotland	78	77	8	12	12	9	1	1	1	1
New Zealand	71	71	12	16	13	10	3	2	2	2
England	79	81	8	10	11	7	1	1	1	1
International Average [a]	43	39	20	18	11	19	9	10	18	14

[a] The international average refers to the average for all countries participating in TIMSS. The Education and Training Committee has selected English-speaking nations as being the most comparable to Australia. Canada did not participate in the 2003 TIMSS.

Source: Adapted by the Education and Training Committee, from M. Martin, I. Mullis, E. Gonzales & S. Chrostowski 2004, TIMSS 2003 International Science Report: Findings from IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades, pp.146–9.

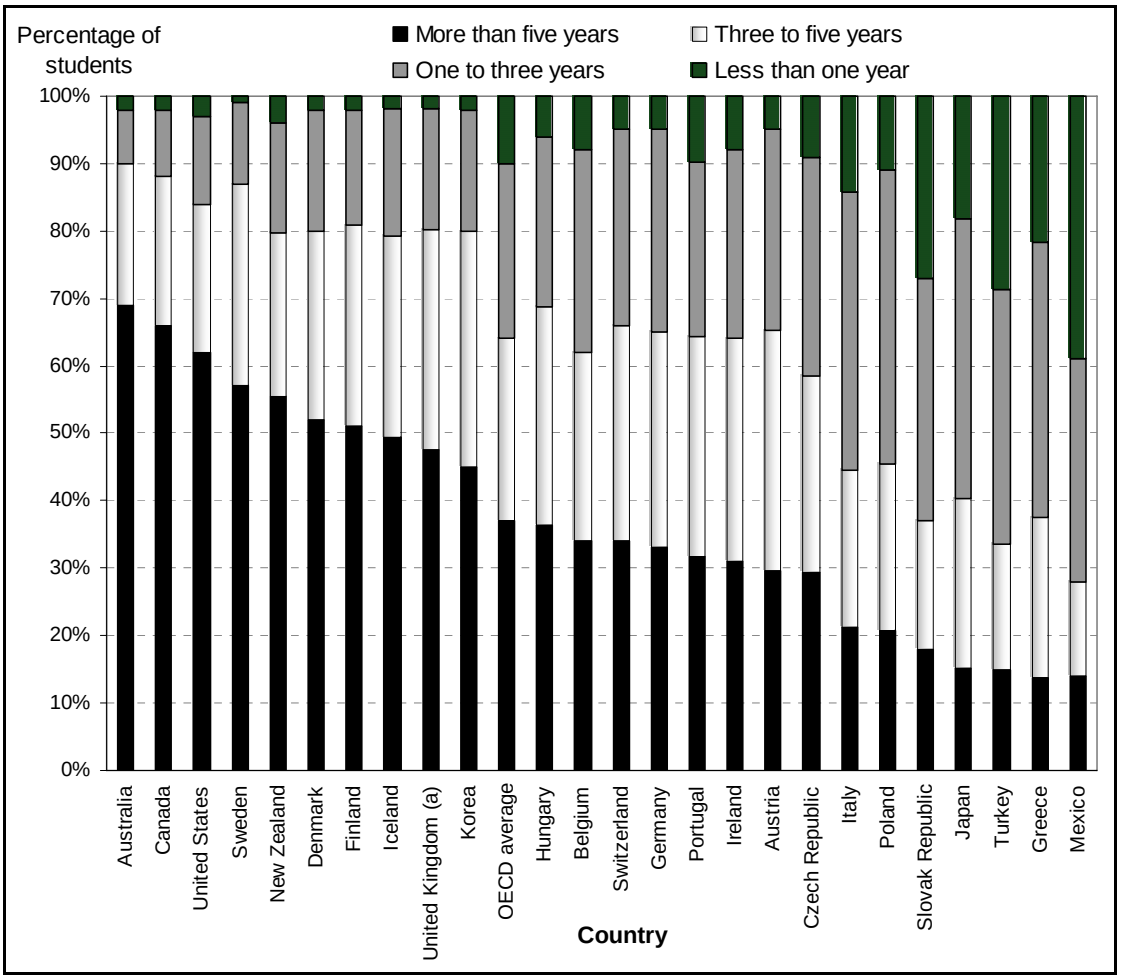
The 2003 Programme for International Student Assessment (PISA) represents a useful source of information regarding use of computers and the internet among 15 year-old students in OECD countries. It reveals that 97 per cent of 15 year-old Australian students have access to a computer at home, 100 per cent have access to a computer at school and 96 per cent have a computer available at home and at school.[81] This compares favourably with the OECD average: 85 per cent of 15 year-old students have access to a computer at home, 92 per cent at school and 79 per cent at both home and school.[82]

[81] Organisation for Economic Co-operation and Development 2005, *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*, OECD, Paris p.92.

[82] ibid.

The results of PISA 2003 show that almost all 15 year-old students in OECD countries have experience using computers, although the length of time that they have been using computers differs greatly across countries (refer Figure 3.3). Australia has the highest proportion of 15 year-old students who have been using a computer for more than five years, with close to 70 per cent falling into this category.

Figure 3.3: Length of time 15 year-old students have been using a computer, by country (2003)



a Response rate is too low to ensure comparability.

Source: Adapted by the Education and Training Committee from Organisation for Economic Co-operation and Development 2005, *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*, p.91.

PISA 2003 reported on the proportion of 15 year-old students who are confident in performing a range of routine and more advanced ICT tasks. Routine tasks include those associated with creating, editing and opening documents; navigating around documents and programs; saving and printing documents; and starting or playing a computer game. High-level ICT tasks include using software to create databases, computer programs, presentations and web pages and to detect and remove computer viruses.

The proportion of 15 year-old Australian students stating that they are confident in performing routine ICT tasks is well above average for OECD countries. It is also generally above the proportion of students in comparable English-speaking nations who state that they are confident with such tasks (refer Table 3.5).

Table 3.5: Percentage of 15 year-old students who are confident performing routine ICT tasks, by country (2003)

Task		Australia	Canada	Ireland	New Zealand	United States	United Kingdom	OECD average (a)
Start a computer game	Yes	91	90	90	89	89	90	86
	Yes with help	8	7	8	8	7	8	10
Open a file	Yes	96	96	91	93	93	95	90
	Yes with help	3	3	6	5	5	3	7
Create/edit a document	Yes	92	90	82	89	88	91	80
	Yes with help	6	7	12	7	8	7	13
Scroll a document up and down a screen	Yes	96	93	90	93	94	95	87
	Yes with help	2	5	6	4	4	3	8
Copy a file from a floppy disk	Yes	89	87	68	75	85	76	75
	Yes with help	8	9	18	15	10	16	16
Save a computer document or file	Yes	97	97	91	95	94	96	88
	Yes with help	2	3	6	4	4	3	8
Print a computer document or file	Yes	97	98	91	95	94	96	86
	Yes with help	2	2	5	3	4	3	9
Delete a computer document or file	Yes	96	97	89	93	93	94	88
	Yes with help	3	2	7	5	5	4	8
Move files from one place to another on a computer	Yes	89	88	66	84	83	84	76
	Yes with help	8	9	23	12	12	12	17
Play computer games	Yes	93	95	95	5	4	94	65
	Yes with help	6	4	4	1	1	5	5
Draw pictures using a mouse	Yes	89	89	91	88	87	91	85
	Yes with help	8	7	7	9	8	7	10

a OECD average refers to average of all countries participating in PISA

Source: Adapted by the Education and Training Committee from Organisation for Economic Co-operation and Development 2005, *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*, p.110.

The proportion of Australian students who are confident performing high-level ICT tasks is also greater than that for the OECD average (refer Table 3.6).

Table 3.6: Percentage of 15 year-old students who are confident performing high-level ICT tasks, by country (2003)

Task		Australia	Canada	Ireland	New Zealand	United States	United Kingdom	OECD average (a)
Use software to find and get rid of computer viruses	Yes	44	50	28	43	47	38	37
	Yes with help	31	27	28	26	28	32	29
Use a database to produce a list of addresses	Yes	68	64	49	66	68	77	52
	Yes with help	23	23	28	23	21	16	30
Create a computer program (e.g. in Logo, Pascal, Basic)	Yes	27	25	18	24	29	30	21
	Yes with help	34	33	30	31	33	35	35
Use a spreadsheet to plot a graph	Yes	58	51	36	64	53	60	44
	Yes with help	28	28	28	25	28	25	31
Create a presentation (e.g. using Microsoft PowerPoint®)	Yes	77	64	41	50	70	55	47
	Yes with help	17	22	25	29	19	27	27
Create a multimedia presentation (with sound, pictures, video)	Yes	48	46	28	34	51	42	35
	Yes with help	35	35	32	34	33	33	35
Construct a web page	Yes	37	42	19	36	45	36	28
	Yes with help	39	36	31	33	36	39	39

a OECD average refers to average of all countries participating in PISA

Source: Adapted by the Education and Training Committee from Organisation for Economic Cooperation and Development 2005, *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*, p.114.

However, the level of confidence in performing high-level tasks varies considerably across tasks. There are also significant gender differences among Australian students' levels of confidence in conducting high-level tasks, in line with gender differences seen across OECD countries. In particular, a significantly higher proportion of male Australian students are confident in creating a multimedia presentation (with sound, pictures and video), creating a computer program, constructing a web page and using software to find and remove computer viruses.[83] Gender differences are not as large for tasks such as creating a PowerPoint presentation and using spreadsheets and databases.[84]

[83] ibid., p.115
[84] ibid.

Table 3.7 compares the frequency of use of computers by 15 year-old students for various applications across OECD countries participating in PISA. It shows that the proportion of Australian students reporting frequent use of computer games is lower than the OECD average and the second lowest among English-speaking nations. The proportion of Australian students reporting frequent use of the computer to help learn school material is higher than the OECD average but below that in the United States and the United Kingdom. The use of educational software among Australian students is below the international average and below the proportion of students reporting such behaviour in the United Kingdom, United States and New Zealand. Significantly more Australian students report frequent use of word processing functions than the average for other OECD countries.

Table 3.7: Percentage of 15 year-old students reporting frequent use[a] of various computer related functions, by country (2003)

Task	Australia	Canada	Ireland	New Zealand	United Kingdom (b)	United States	OECD average (c)
Games on a computer	50	59	47	56	58	62	53
The computer for programming	25	29	13	25	27	33	23
The computer to help learn school material	32	29	16	30	34	36	30
Educational software such as mathematics programs	10	9	9	12	19	18	13
Drawing, painting or graphics programs on a computer	32	35	26	33	36	41	30
Spreadsheets (e.g. <Lotus 123® or Microsoft Excel®>)	22	17	15	22	31	22	21
Word processing (e.g. <Word® or WordPerfect®>)	70	62	53	54	17	62	48

[a] 'Almost every day' or 'A few times each week'

b Response rate too low to ensure comparability

c OECD average refers to average of all countries participating in PISA

Source: Chart adapted by the Education and Training Committee from data in Organisation for Economic Co-operation and Development 2005, *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*, OECD, Paris p.41.

Access to the Internet

The percentage of Australian homes with internet access has increased significantly over the past seven years, rising from 16 per cent in 1998 to 56 per cent in 2004–05.[85] Over the same period, 63 per cent of Australians aged 18 years or over accessed the internet at any location, which represented an increase of 5 percentage points from 2002.[86] In 2004–05, 36 per cent of Australian adults accessed the internet at home everyday and a further 49 per cent accessed the internet at home at least weekly.[87] Not surprisingly, the percentage of households with internet access is higher among households in the highest income quintile (78%) and households in metropolitan areas (59%).

Home internet access among children in Australia compares favourably with that for children in other countries. The Australian Bureau of Statistics reports that in 2004–05, 72 per cent of Australian households with children under 15 years of age had home internet access.[88]

According to the UK Government's recent media literacy audit, 64 per cent of UK children aged 8 to 15 have home internet access (61% of whom have broadband access).[89] In the United States, the Kaiser Family Foundation reported that 74 per cent of children aged 8 to 18 have home internet access.[90] These two overseas studies reveal that home internet access was significantly lower for children from minority ethnic groups and those in lower socioeconomic status households.[91] Such findings have equity implications, which are discussed in part two of this report.

Of the 4.4 million Australian households with home internet access in 2004–05, 28 per cent had broadband internet access and 69 per cent had dial-up access.[92] The proportion of households accessing the internet via a broadband connection was 30 per cent for households with children under 15 years of age and 27 per cent for households

[85] Australian Bureau of Statistics 2005, *Household Use of Information Technology*, Cat. No. 8146.0, ABS, Canberra, p.5.
[86] ibid., p.13.
[87] ibid., p.20.
[88] ibid., p.9.
[89] Office of Communications 2006, *Media Literacy Audit: Report on media literacy amongst children*, Ofcom, London, p.35.
[90] Kaiser Family Foundation 2005, *Generation M: Media in the Lives of 8–18 Year-olds*, report written by D. Roberts, U. Foehr & V. Rideout, KFF, Menlo Park, p.10.
[91] Office of Communications 2006, *Media Literacy Audit: Report on media literacy amongst children*, Ofcom, London, p.35; Kaiser Family Foundation 2005, *Generation M: Media in the Lives of 8–18 Year-olds*, report written by D. Roberts, U. Foehr & V. Rideout, KFF, Menlo Park, pp.11–13.
[92] Australian Bureau of Statistics 2005, *Household Use of Information Technology*, Cat. No. 8146.0, ABS, Canberra, p.5.

without children under 15.[93] The proportion of households with broadband access increased with higher annual household income and was greater in metropolitan areas (33%) than non-metropolitan areas (18%).[94]

Student Use of the Internet

The latest ABS Survey of Children's Participation in Cultural and Leisure Activities found that in the 12 months prior to April 2003, 64 per cent of Australian children aged 5 to 14 years accessed the internet, either during or outside of school hours.[95] This represented 67 per cent of children who had used a computer during that time period.[96] The proportion of females who accessed the internet was slightly higher (66%) than the proportion of males who accessed the internet (62%) and the proportion of children using the internet increased with age, from 21 per cent of children aged 5 years, to 90 per cent of 14 year-olds.[97] Not surprisingly, the usual frequency of internet usage also increases by age (refer Table 3.8).

Table 3.8: Frequency of home internet use by Australian children (12 Months to April 2003)

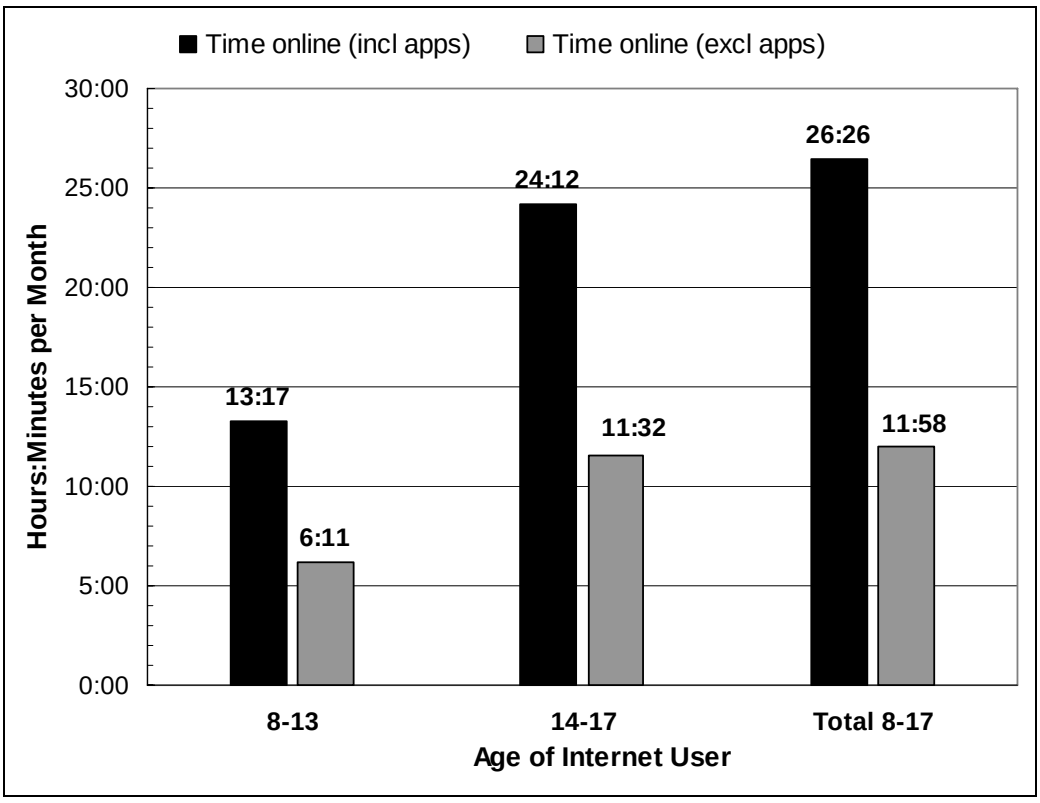
Frequency of Use	5–8 Years (%)	9–11 Years (%)	12–14 Years (%)	Total (5–14 Years) (%)
Every day	4.3	9.7	23.4	14.4
2–6 days a week	28.5	47.5	56.3	47.1
One day a week	28.8	23.8	13.4	20.4
Less than one day per week	37.8	18.7	6.5	17.6

Source: Australian Bureau of Statistics, *Children's Participation in Cultural and Leisure Activities* 2003, Cat. No. 4901.0, p.38.

[93] ibid., p.21.
[94] ibid.
[95] Australian Bureau of Statistics 2003, *Children's Participation in Cultural and Leisure Activities*, Cat. No. 4901.0, ABS, Canberra, p.3.
[96] ibid., p.7.
[97] ibid.

NetRatings Australia recently reported on the duration of internet use by children, teenagers and the total population (refer Figure 3.4). It shows that children aged 8 to 13 years spent, on average, 13 hours per month using the internet. It confirmed the findings of other studies that internet usage increases with age. It also shows that slightly more than half of the time spent using the internet among each group is spent using online communication applications such as email, instant messaging and chat room facilities.

Figure 3.4: Average time spent online by Australian children (July 2004)



Note: 'apps' refers to online communication applications, including email, instant messaging and chat.

Source: NetRatings Australia 2005, *kidsonline@home: Internet use in Australian homes*, p.22.

It should be noted, however, that the figures in the NetRatings Australia study, which are for July 2004, are somewhat dated in the context of a rapidly evolving multimedia landscape. It is likely that the amount of time spent using the internet has increased since then, as more homes have become connected or switched to broadband internet connections and as people of all ages have become increasingly dependent on the internet to meet their information, social, educational and work-related needs. The attraction of the internet to young people for social and entertainment related purposes in particular has expanded in recent years, with the rapid uptake of instant messaging and the increasing availability to purchase music and video downloads for mobile telephones, MP3 players and other multimedia devices.

The majority of children appear to be accessing the internet mainly at home and/or at school. Nonetheless, the Committee notes that a significant proportion of internet users, including very young users, are accessing the internet at other locations (refer Table 3.9), including other people's homes and various public places (such as a public library or internet café). This has implications for the safety of young people when using the internet, as effective adult supervision is often difficult when children and young people are primarily using the internet away from their home or school. Even within the home, effective supervision is difficult unless the internet connected computer is located in a family or communal area.

Table 3.9: Location of internet usage by Australian children (2003)

Location	% 5–8 Years	% 9–11 Years	% 12–14 Years	Total % 5–14 Years
Home	76.7	76.7	82.8	79.2
Someone else's home	15.4	22.4	31.0	24.4
School	49.3	73.3	78.2	69.8
Public Library	2.8	6.4	9.6	6.9
Other places	2.5	3.1	4.1	3.4

Source: Australian Bureau of Statistics, *Children's Participation in Cultural and Leisure Activities 2003*, Cat. No. 4901.0, p.38.

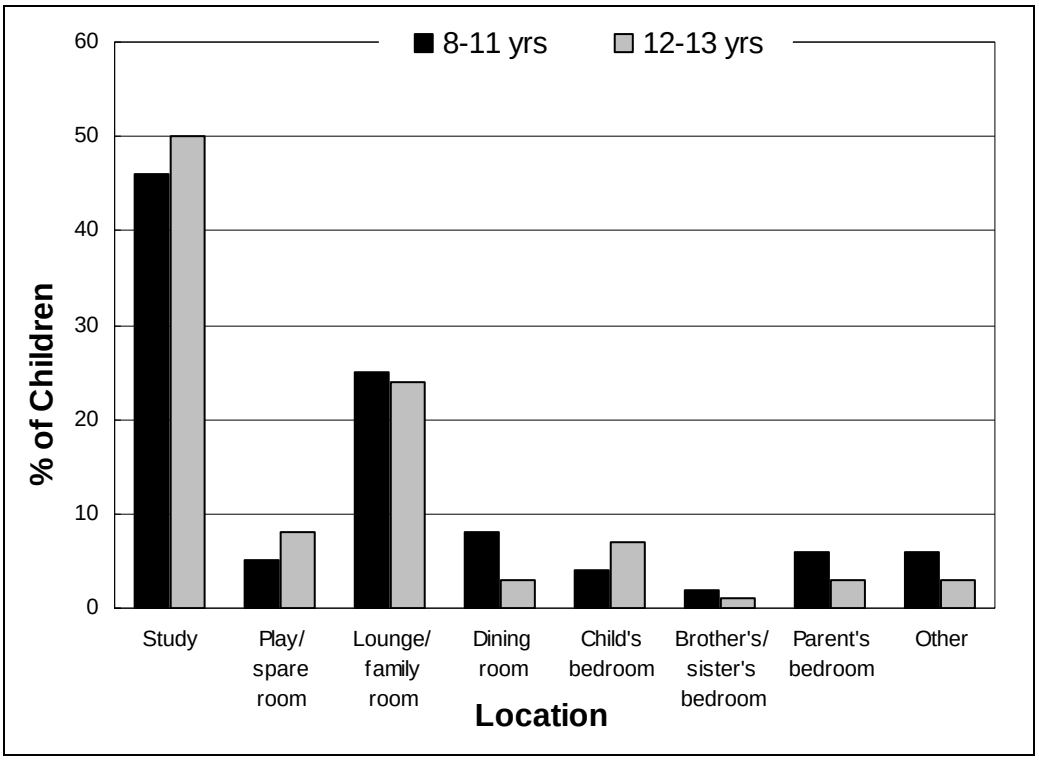
Given these concerns, the NetRatings Australia study reported on the location of internet access within the home (refer Figure 3.5). During discussion groups conducted by NetRatings Australia, parents discussed how they had decided where to locate the internet connection in their home:

> Ease of supervision had been a consideration for some parents… Places where family members commonly congregated or passed through, such as the family or lounge room, were described by some parents as being more conducive to monitoring their child's internet behaviour. This was less of a consideration for others, and issues of convenience and practicalities associated with the location of telephone lines meant that the family computer was located in a more isolated location such as the study.[98]

[98] NetRatings Australia 2005, *kidsonline@home: Internet use in Australian homes*, report prepared for the Australian Broadcasting Authority and NetAlert Limited, Sydney, p.18.

The findings of the NetRatings Australia study are of great concern to the Committee. It seems that many parents are not fully aware of the potential dangers of the internet and are therefore not locating internet connected computers within the home in an area where their use can be properly supervised. Even where parents are aware of cyber dangers, it seems that issues of convenience can sometimes override the need to protect children and teenagers from unsafe internet practices.

Figure 3.5: Location within the home that Australian children most often access the internet (2005)



Source: NetRatings Australia 2005, *kidsonline@home: Internet use in Australian homes*, p.18.

The types of activities undertaken when using the internet at home also vary across age groups. The 2003 Children's Participation in Cultural and Leisure Activities survey found that use of email or chat rooms was higher among older children, as was browsing the internet for leisure and using the internet for school or educational purposes (refer Table 3.10). Younger children had a greater propensity to use the internet for playing games.

Table 3.10: Activities undertaken by Australian children when using the internet at home (12 Months to April 2003)

Computer Activity	5–8 Years (%)	9–11 Years (%)	12–14 Years (%)	Total (5–14 Years) (%)
Using email or chat rooms	22.9	40.0	67.2	48.0
Playing games	68.2	59.8	51.6	58.1
School or educational	65.0	88.8	93.8	85.7
Browsing internet for leisure	23.8	39.3	50.0	40.5
Other	4.2	7.2	9.6	7.6

Source: Australian Bureau of Statistics, *Children's Participation in Cultural and Leisure Activities* 2003, Cat. No. 4901.0, p.39.

The NetRatings Australia report examined online activities at home among children aged 8 to 13 years in more detail. Homework and study was the most common use amongst this age group (89%), followed by playing games (80%).[99] The use of online communication applications such as email (64%), instant messaging (40%) and chat rooms (16%) was also significant.[100] It is interesting to note that children, particularly those aged 12 and 13, were more likely than parents to regard the internet as beneficial for communication: 35 per cent of 12 and 13 year-olds mentioned this benefit, compared to 22 per cent of parents of children that age.[101] Similarly, 18 per cent of eight or nine year-olds felt that contacting friends and family was a benefit of the internet, compared to seven per cent of the parents of this age group.[102]

[99] ibid., p.24.
[100] ibid.
[101] ibid., p.33.
[102] ibid.

The 2003 PISA reported on the proportion of 15 year-old students across OECD countries making frequent use of the internet for functions such as information search; collaborative work; downloading software, music and games; and for communications (including email or chat rooms). As shown in Table 3.11, a significantly higher proportion of Australian students use the internet frequently for these functions, compared with the OECD average.

Table 3.11: Percentage of 15 year-old students reporting frequent use[a] of various internet functions, by country (2003)

Task	Australia	Canada	Ireland	New Zealand	United States	United Kingdom (b)	OECD average (c)
The Internet to look up information about people, things, ideas	74	75	38	65	74	65	55
The Internet to collaborate with a group or team	43	49	17	39	42	41	31
The Internet to download software (including games)	47	58	24	47	52	49	38
The Internet to download music	58	77	33	58	64	58	49
A computer for electronic communication (e.g. email or chat)	69	83	34	69	71	69	56

[a] 'Almost every day' or 'A few times each week'
b Response rate too low to ensure comparability
c OECD average refers to average of all countries participating in PISA
Source: Adapted by the Education and Training Committee from Organisation for Economic Cooperation and Development 2005, *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*, p.39.

PISA 2003 revealed significant gender differences in the use of various internet functions. In line with results for the OECD overall, a significantly higher proportion of male Australian students frequently used the internet to download software, games and music, to look up information about people, things or ideas and to collaborate with a group or team, compared with the proportion of females using the internet for these purposes.[103] In contrast, similar proportions of males and females in Australia and across OECD countries frequently used the internet for electronic communication, such as email or chat rooms.

[103] Organisation for Economic Co-operation and Development 2005, *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*, OECD, Paris, p.104.

Table 3.12 shows the proportion of 15 year-old students across selected OECD countries who are confident in performing a range of internet tasks. Levels of confidence among Australian students are significantly higher than the OECD average and similar to or above those of most comparable English-speaking countries.

Table 3.12: Percentage of 15 year-old students who are confident performing internet tasks, by country (2003)

Task		Australia	Canada	Ireland	New Zealand	United States	United Kingdom (a)	OECD average (b)
Get onto the Internet	Yes	97	98	87	84	95	97	88
	Yes with help	2	1	8	10	3	2	7
Copy or download files from the Internet	Yes	86	91	57	66	86	77	70
	Yes with help	10	6	25	22	10	17	19
Attach a file to an e-mail message	Yes	76	81	36	51	74	70	58
	Yes with help	17	13	30	29	18	20	24
Download music from the Internet	Yes	79	91	55	57	82	74	66
	Yes with help	15	6	25	26	12	16	21
Write and send e-mails	Yes	92	96	70	68	91	90	79
	Yes with help	5	2	17	20	5	6	12

a Response rate too low to ensure comparability

b OECD average refers to average of all countries participating in PISA

Source: Adapted by the Education and Training Committee from Organisation for Economic Co-operation and Development 2005, *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*, p.112.

Conclusion

This chapter has demonstrated high levels of dependence among young Australians on computers and the internet in fulfilling both their educational and social needs. It has also demonstrated that young Australians are, in general, leading the way in terms of access to computers and the internet and their levels of skills and confidence in using these resources. School visits undertaken by Committee members and staff confirmed that Victorian students are generally enthusiastic and competent users of various multimedia technologies. The Committee believes that this makes Victoria well positioned to capitalise on partnerships with industry to maximise the advantages of multimedia in the classroom and to be a world leader in the use of multimedia within education.

There is no doubt, however, that not all children have exactly the same level of access to, nor the same levels of interest and skills in using computers and the internet. While not able to quantify the issue, the Committee acknowledges that there are likely to be varying levels of access to and use of computers and the internet among young people

from lower socioeconomic backgrounds, culturally and linguistically diverse backgrounds and rural and regional Victoria. The Committee is therefore concerned that as computers and the internet become increasingly important for young people's success in education, training and employment, the digital divide between those with high quality access and those without will widen. This issue is explored in part two of the report.

FINDING 3.1

That Australian students have some of the highest levels of access to and use of computers and the internet in the world. Further, that Victorian students of all ages are generally enthusiastic and highly competent users of computers and the internet.

FINDING 3.2

That Victoria is well positioned to capitalise on partnerships with industry to maximise the advantages of multimedia in the classroom and to be a world leader in the use of multimedia within education.

4. Cyber Safety

Introduction

Throughout this inquiry, the Committee heard of concerns about the safety and wellbeing of students in cyberspace. While there is already a range of resources, initiatives and strategies available to inform and assist students, parents and schools with cyber safety issues, the Committee found it difficult to ascertain how effective these have been to date.

As explored in Chapters 2 and 3, new technology is becoming a more significant part of the lives of young Victorians as more sophisticated, convergent technologies become more popular. The Committee anticipates that this changing multimedia landscape is likely to increase the complexity of managing cyber safety.

The Committee heard that while schools are increasingly allocating resources to managing the safety implications of multimedia technologies during school hours, they are also increasingly being asked to address issues that arise outside of school hours. Some schools are becoming concerned that not all parents and families have kept pace with young people's use of advanced technologies and the strategies recommended for ensuring the safe and appropriate use of multimedia.

The Risks in Cyberspace

One important organisation that seeks to provide a safer internet experience, particularly for young people and their families is NetAlert. NetAlert is a not-for-profit community organisation established by the Australian Government to provide independent advice and education on managing access to online content.[104] Some of the cyber safety concerns identified by NertAlert are outlined below.

Inappropriate Content

There is a risk that young people and indeed anyone using the internet may encounter inappropriate material. Often this may occur accidentally, either through inexperienced use of search engines, or through 'pop-ups'. Pop-ups are small windows that appear in the foreground of an intent browser and are often used to display advertising or other unwanted content on the screen.

[104] NetAlert, website, <www.netalert.net.au/03440-About-NetAlert.asp>, viewed on 29 August 2006.

The types of inappropriate material that children may see on the internet include:

- pornography;
- online advertising that may be inappropriate for children;
- content promoting illegal activity (eg. copyright infringement on music), security breaches (eg. unauthorised access to computers) or fraudulent online schemes;
- violence, including instructional websites (such as bomb or weapon making), vigilante or violent groups' websites and websites displaying explicit violent behaviour;
- hate groups, including for example, racial hatred, anti gay and anti Semitic groups; and
- extremist groups and cults.[105]

A 2005 study prepared by NetRatings Australia reported that online pornography was the issue of most concern commonly reported by parents in relation to their children's internet use.[106] A study in the United Kingdom similarly found that exposure to pornography was higher than exposure to other forms of inappropriate material.[107]

The Committee is also concerned that young people may encounter violent or hateful material on the internet. A significant proportion of children in the United Kingdom have encountered such material:

> 22% of 9–19 year old daily and weekly [internet] users have accidentally ended up on a site with violent or gruesome pictures and 9% on a site that is hostile or hateful to a group of people.[108]

The NetRatings Australia Study reported that violent internet content is a concern for very few parents and even fewer children.[109] This is not to say, however, that young people will not encounter such material.

However, Victorian children appearing before the Committee expressed a reasonable level of awareness regarding inappropriate

[105] NetAlert, website, <www.netalert.net.au/01583-What-type-of-inappropriate-content-is-available-on-the-Internet-for-Children.asp>, viewed on 21 August 2006.
[106] NetRatings Australia 2005, *kidsonline@home: Internet use in Australian homes*, report prepared for the Australian Broadcasting Authority and NetAlert Limited, Sydney, p.55.
[107] S. Livingstone & B. Magdalena 2005, *UK Children Go Online: Final report of key project findings*, Economic and Social Research Council, London, p.3.
[108] ibid.
[109] NetRatings Australia 2005, *kidsonline@home: Internet use in Australian homes*, report prepared for the Australian Broadcasting Authority and NetAlert Limited, Sydney, p.xi.

content on the internet, as well as some strategies for avoiding such material.[110]

Chat Rooms

Whilst there are many benefits in children using chat rooms, there are a number of issues that can cause concern. NetAlert notes that 'chatting' can displace other activities and that some children can be at risk of under-developing their social skills by relying on internet chat as their primary source of communication.[111]

NetAlert also asserts that participants in chat rooms will sometimes attempt to entice children into talking about sex in one form or another and there are instances of paedophiles using chat rooms in jurisdictions all over the world.[112]

The Committee heard that some Victorian teachers are concerned about the potential dangers to young people in unrestricted chat rooms. For example, Ms Stephanie Campbell, Head, Arts Department, Footscray City College, spoke of her concerns:

> My concern is more that they can access real people in places like chat rooms. It really worries me. I think it is a huge issue. People can disguise themselves so easily to appear to be someone who is appropriate and I think kids are pretty easily persuaded. They want to be liked. They want people to admire what they are saying. They want to be rewarded for having a good idea and all that sort of stuff. That is my worry.[113]

Of concern to the Committee is the findings of recent research in Australia, which revealed that 40 per cent of teens would potentially meet in person someone they have 'met' online and only 12 per cent would ask for parental permission to do so.[114]

More positively, many of the Victorian students who appeared before the Committee demonstrated that they are aware of stranger danger on the internet and of some strategies to help them to avoid difficult situations in chat rooms.[115]

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[110] Committee School Visits, June – August 2006.
[111] NetAlert, website, <www.netalert.net.au/01465-What-are-the-potential-dangers-of-Chat-Rooms.asp>, viewed on 21 August 2006.
[112] ibid.
[113] Ms S. Campbell, Head, Arts Department, Footscray City College, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.43.
[114] NetAlert Limited and Ninemsn, 'Parents & teens poles apart regarding online safety: Research reveals disconnect between teens' online behaviour and parents expectations', on NetAlert website <www.netalert.net.au/02799-Parents-and-Teens-Poles-Apart-Regarding-Online-Safety.asp>, viewed on 7 July 2006.
[115] Primary School Students, Committee School Visits, June–August 2006.

Cyber Bullying and Harassment

Cyber bullying is bullying that is carried out through an internet service such as email, chat room, discussion group or instant messaging. It can also include bullying through mobile phone technologies such as short messaging service (SMS).[116] Examples of cyber bullying include teasing; spreading of rumours online; sending unwanted messages; or defamation.[117]

Primary school students spoke with the Committee about their knowledge or experience of cyber bullying and harassment:

> People have sent emails to other people that are really bad and insulting. I think most of this is on MSN… I think there should be a way to stop it.[118]

> Some people start chain letters, and they really do insult you… Sometimes it is better to just ignore them, but you do not really know who started it. It just goes on and on and on like a chain.[119]

> In the second term we got a notice from the school that said there had been cyber bullying, I think it is called, where people on chat sites and on SMS send threats. They just informed parents to keep an eye on their children when they are on the computer.[120]

NetAlert suggests that cyber stalking is another threat that can be perpetrated by a child's own peers. Cyber stalking is where a person is stalked or harassed by another person using a service of the internet such as email, instant messaging or via a posting in a discussion group. Stalking behaviours can include threats, cryptic messages and sexual innuendo that occur in a frequent and intrusive manner. The usual goal for stalking is to create a sense of fear in the victim and the motivation is based on control and intimidation.[121]

As noted by NetAlert, anyone can be bullied online and, significantly, the bully can act anonymously if he or she so desires. People can also be subjected to co-ordinated online bullying by groups of people.[122]

A UK study has found that the incidence of online harassment is quite high:

[116] NetAlert, website, <www.netalert.net.au/01566-What-is-Cyber-stalking.asp>, viewed on 20 July 2006.
[117] ibid.
[118] Primary School Student, Committee School Visits, June–August 2006.
[119] Primary School Student, Committee School Visits, June–August 2006.
[120] Primary School Student, Committee School Visits, June–August 2006.
[121] NetAlert, website, <www.netalert.net.au/01566-What-is-Cyber-stalking.asp>, viewed on 20 July 2006.
[122] ibid.

> One third of 9–19 year old daily and weekly [internet] users have received unwanted sexual (31%) or nasty comments (33%) online or by text message…[123]

Interestingly, the same study found that young people were not conveying these experiences to their parents or guardians:

> …only 7% of parents are aware that their child has received sexual comments and only 4% that their child has been bullied online.[124]

The Committee heard that problems such as cyber bullying are of concern within the education community. Mrs Sue Rathbone, Assistant Principal and ICT Teacher, Doncaster Gardens Primary School, stated that while schools have considerable control over cyber bullying during school hours, home activity is a problem:

> We keep a pretty tight rein on what goes on here at school, so I do not personally know of any email bullying that has gone on from the school. It goes on after school.[125]

Other schools visited by the Committee shared this view, based on their own experiences with cyber bullying and harassment. For example, teachers at one primary school referred to a 'quite serious' case of harassment:

> We had an incident last year with kids emailing inappropriate things to each other and a child getting into a situation where he thought he was under threat and so did something terribly inappropriate … That was at home. It was not through our system.[126]

Mr Vincent Sicari, Principal, Eltham High School, also shared the perspective that cyber bullying tends to originate beyond the school grounds. He believes, however, that these issues generally end up as school problems regardless of their origin:

> The issues are also occurring extensively outside of the school setting, but the issues are then brought back within the school and the schools are consistently being asked to take them up and deal with them. Parents will ring the school and indicate, for example, 'My child has been harassed; received 15 messages of this nature

[123] S. Livingstone & B. Magdalena, *UK Children Go Online: Final report of key project findings,* Economic and Social Research Council, London, April 2005, p.3.
[124] ibid.
[125] Mrs S. Rathbone, Assistant Principal and ICT Teacher, Doncaster Gardens Primary School, Transcript of Evidence, Public Hearing, Doncaster, 4 August 2006, p.11.
[126] Primary School Teacher, Committee School Visits, June–August 2006.

> last night from someone. Can you do something about it?'[127]

The above evidence was further supported during informal discussions at both primary and secondary schools, where the Committee heard of instances of bullying by mobile phone, email and instant messaging. Despite most instances of cyber bullying occurring beyond the school grounds, schools are still spending significant amounts of time investigating and dealing with complaints.

Bullying and similar undesirable behaviour are not new problems, either within schools or the wider society. Nevertheless, the Committee consistently heard that bullying and harassment undertaken through cyberspace can amplify its impact. Bullying is easier to undertake in cyberspace, it is easier to do anonymously and it is easier for perpetrators to disregard the impacts of their bullying. For the victims, however, the effects are no less hurtful and damaging. In many cases, the effects of bullying are amplified where there are multiple bullies or where the victim is being bullied via a multitude of media including text, email and in person. Further, cyber bullying and harassment can be particularly hurtful for young people of the net generation, who are more likely to embrace new technologies as more than just tools, considering them as an important part of their identity and key facilitators of their social lives.

The peak industry body representing Australia's mobile telecommunications industry, Australian Mobile Telecommunications Association, has a website dedicated to young people's use of mobile phones, with advice targeting both parents and teenagers on preventing and responding to text bullying via mobile phones.[128]

While supporting the above measure, the Committee believes that anti-bullying messages need to be given greater prominence in the community. The Committee heard, for example, that New Zealand has a national anti-text bullying campaign that runs as a partnership between the Internet Safety Group, the major telecommunications companies and New Zealand Police.[129] As part of the campaign, these groups have partnerships designed to look at the processes that address incidents of bullying and harassment associated with mobile phones. The group is working to build on the existing services offered by the Internet Safety Group, Telecom and Vodafone for victims of text harassment, with the goal of providing additional support to both young people and adults where there are threats of harm. Notably, this partnership also seeks to find improved ways that Telecom and

[127] Mr V. Sicari, Principal, Eltham High School, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.3.
[128] Australian Mobile Telecommunications Association, *Str8tlk*, website, <www.str8tlk.amta.org.au/>, viewed on 29 August 2006.
[129] Committee Meeting with Netsafe, Wellington, New Zealand, 19 April 2006.

Vodophone can assist police investigations and prosecution in such cases.[130]

Scams and Identity Theft

Identity theft occurs when somebody steals an individual's name and other personal information for fraudulent purposes. Once the criminal has assumed another's identity, activity is usually undertaken such as opening and closing bank accounts as if the true owner was authorising it. Identity theft is a form of identity crime (where somebody uses a false identity to commit a crime) however it has the added problem that reputations may be damaged even after the criminal is caught.[131] The theft of information may occur through using insecure websites, particularly when undertaking online transactions or can be through elaborate scams. The Committee notes that given the rising popularity and importance of e-commerce, it is becoming increasingly important that children and young people are aware of the necessary precautions that should be taken to avoid scams and identify theft.

Web Authoring

The Committee identified that the increasing trend for young Victorians to develop their own websites has led to new and emerging concerns among many teachers and school principals.

Many children are developing their own websites for school projects or for personal interest. While current Australian data is not available, recent overseas studies have quantified such activity. The UK's media literacy audit reported that 20 per cent of 12–15 year-olds have set up their own website, with around half having either experience of, or interest in setting up their own website.[132] Similarly, a study in Canada found that 30 per cent of secondary school students have personal websites:

> Years ago, creating a personal website required some skill in programming and only computer enthusiasts took the trouble. Today, there are many sites where people can set up their own pages without any programming skills whatsoever. Myspace.com and Nexopia.com are popular examples. Typically, a user can restrict access to his or her personal website or leave it open to all. Young people post their favourite

[130] Internet Safety Group, website, <www.netsafe.org.nz/home/home_default.aspx>, viewed on 29 August 2006.
[131] NetAlert, website, <www.netalert.net.au/01599-What-is-Identity-Theft.asp>, viewed on 20 July 2006.
[132] Office of Communications 2006, *Media Literacy Audit: Report on media literacy amongst children*, Ofcom, London, p.6.

> pictures and their thoughts on life, comment on issues around them and carry on conversations with friends.[133]

Another form of web publishing is the web log (blog). Blogs are virtual diaries created by individuals and stored on the internet. Blogs generally consist of text and images and can appear in a calendar-type format.[134]

A newer form of blog is the video blog. With relatively little technical expertise, young people can now publish their own personal videos to what is potentially a global audience. There are instances where blog authors (bloggers), especially of video blogs, have achieved near celebrity status among online communities. However, such status has resulted in additional risks, including harassment and invasions of privacy through computer hacking.[135]

NetAlert reports that the reasons many children enjoy using the internet for displaying pictures of themselves or their friends include:

- being able to show their identity to others;
- reaching a global audience;
- displaying their personality to others;
- feeling like it is the 'in thing' to do;
- letting others know how 'unique' they really are; and
- using their picture (or part of it) as part of their broader online identity.[136]

However, while publishing on the internet has many benefits for young people, NetAlert identifies a number of safety concerns that need to be addressed. These include:

- Contacting children. Can a child be traced in real life from the information contained in the picture? Is there any other identifiable information such as full name or address which is included along side the image?
- Appropriateness of the pictures. Some pictures should never be published online as they are simply inappropriate. Sometimes children may not be able to judge what is appropriate or not.

[133] Media Awareness Network 2005, *Young Canadians in a Wired World: Phase II Student Survey*, Media Awareness Network, Ottowa, p.14.
[134] NetAlert 2005, *A Parent's Guide to Internet Safety*, p.18, viewed on NetAlert website, <www.netalert.net.au/02530-Downloads.asp>.
[135] L. Hearn, 'Tassie YouTube star calls it quits', *The Age,* website, <www.theage.com.au>, viewed on 28 August 2006.
[136] NetAlert July 2006, *Newsletter*, website, <www.netalert.net.au/print.asp?file=/03436-July-2006-Internet-Safety-Newsletter.asp#news>, viewed on 21 August 2006.

- Leaving a digital history. When a picture is published on the internet, it is there for everybody to see and use. It is very easy for somebody to gain an insight into a child's personal life by viewing their pictures online.[137]

If the above issues are not addressed effectively, children can be subjected to specific dangers such as cyber bullying and harassment, cyber stalking, identity theft, paedophiles and misuse of the picture. Further, students may be at risk of invading the privacy of their peers and family by publishing sensitive photographs or content. The prevalence of digital cameras, especially as a feature of mobile phones, means that images that in the past may have been deemed too embarrassing or humiliating to share among friends or family, can now be made readily available to a potentially global audience via the web.

The Committee heard that while web authoring is supervised effectively at school, many students are publishing inappropriate personal material outside of school hours. One school that responded to the Committee's cyber safety and media literacy survey provided a case study to the Committee, involving two students who had inadvertently compromised their own privacy and, potentially, their safety:

> Our students are taught how to create websites in years 7 and 8. But students do not create their own personal websites using the school intranet. In term 2, 2006, we did become aware that two female students in year 9 had created unsafe websites at home (hosted by the family's ISP). They had suggestive photos of themselves plus other photos that could be used to identify where they live and where they go to school.[138]

The school also explained the steps taken to deal with the incident, and avoid its recurrence among other students:

> Initially these two cases were treated as a welfare issue. The two girls were interviewed by the Student Wellbeing Coordinator and the risks were explained to them in detail. The parents were also contacted and the risks explained. We recommended to the parents that they check their children's websites regularly. We then put a notice in the School Newsletter to all parents reminding them of the risks and recommending that they check their children's websites and internet use.[139]

Mr Vincent Sicari, Principal, Eltham High School, also spoke to the Committee regarding his similar concerns about young people's web

[137] ibid.
[138] Response to cyber safety and media literacy survey conducted by the Education and Training Committee, July 2006.
[139] Response to cyber safety and media literacy survey conducted by the Education and Training Committee, July 2006.

authoring. Mr Sicari believes that while students should not be discouraged from engaging in the increasing opportunities to publish their own web content, they should be made well aware of how to avoid the associated risks:

> There are a number of opportunities for kids to engage in the creation of their own personal websites, and I have to say that from an educational perspective it is not something that we would discourage... However, it does raise some issues… [young people] see them as a form of communication rather than just a form of information, so websites are established around their own personal lives…without consideration of what the effects might be… young people are not realising that there are issues of privacy and leaving themselves open to harassment in a range of forms, because these websites gradually end up on the World Wide Web…[140]

As the above evidence attests, cyber safety issues continue to evolve, as new multimedia applications are embraced by young people. Further, the Committee heard that multimedia technologies have blurred the boundaries between home and school, as young Victorians increasingly use multimedia to simultaneously meet their educational, social and entertainment needs. Consequently, questions about the responsibility for ensuring safe internet practices have become a more complex issue.

Managing Cyber Safety @ School

The Committee heard that schools are, in general, managing issues of cyber safety very well. Certainly, within school hours, students' use of the internet is supervised and teachers report that very few incidents of safety threats are arising within the classroom.[141] The Committee heard that in addition to teacher supervision, the following common cyber safety strategies are being implemented in many schools:

- a school Internet Acceptable Use policy, which includes age appropriate codes of practice for students, teachers and parents to follow;
- the use of internet filtering and monitoring systems;
- development of publishing protocols; and
- communication strategies (including meetings, newsletters and information sessions) aimed at informing all teachers, students

[140] Mr V. Sicari, Principal, Eltham High School, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.2.
[141] Discussions with teachers, Committee School Visits, June–August 2006; Cyber safety and media literacy survey conducted by the Education and Training Committee, July 2006.

and parents of their rights and responsibilities as publishers and users of information.[142]

The following section outlines some of the resources available to schools to assist them in managing cyber safety within the school environment.

Cyber Safety Tool Kits and Resources

To assist schools in implementing cyber safety programs and strategies, the Department of Education and Training launched an online resource for schools—the Website Toolkit—in July 2006.[143] The Department of Education and Training developed the resource to provide a practical framework for schools to use when designing or re-developing websites and to support schools and teachers in developing safe internet practices for schools. The 'protecting students' section of the Toolkit discusses some of the risks to students when using the internet and makes recommendations to schools to minimise the risks. Templates and resources are available for schools to download and assist them to develop protocols and processes for minimising risks. Issues such as responsible use of email, blogs and chat rooms are also addressed.

The Committee notes that the Department of Education and Training's Website Toolkit also refers teachers to NetAlert's *CyberSafe Schools* internet safety program for additional information and assistance.

CyberSafe Schools is designed for Australian primary and secondary schools. Its intention is to teach students about the safe use of the internet, by providing teachers with appropriate curriculum support materials.[144] Curriculum support materials were provided to every school in Australia and are also available as downloads from the *CyberSafe Schools* website.[145] The materials can be used for planning classes and for teacher professional development.[146]

The *Teacher's Guide to Internet Safety* aims to provide practical information to current and trainee teachers about teaching students safe and responsible use of the internet. Published in 2004, the guide includes sections on the educational benefits of the internet; internet safety; managing risks associated with particular technologies; teaching strategies for internet safety; and a range of additional resources.

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[142] ibid.
[143] Refer to the Department of Education and Training website, <www.sofweb.vic.edu.au/toolkit/default.htm>.
[144] NetAlert, website, <www.netalert.net.au/02033-Projects.asp>, viewed on 7 July 2006.
[145] NetAlert, website, <www.netalert.net.au/03082-CyberSafe-Schools.asp>, viewed on 7 July 2006.
[146] NetAlert, website, <www.netalert.net.au/01723-Teacher-Planning-and-PD.asp>, viewed on 7 July 2006.

Through *CyberSafe Schools*, NetAlert has run a number of projects targeting specific age groups with an age-appropriate cyber safety message. Each project includes an interactive computer-based program and a range of free supporting material for parents and/or teachers. The programs include:

- *Netty's World* is NetAlert's children's website targeting 2–7 year-olds. Netty's World is designed for young children starting out on the internet. It provides an interactive and safe environment for children to play in, whilst providing important messages about internet safety.[147]

- *Cyberquoll* targets 8–12 year-olds and includes a teacher's guide, student activities, fact sheets, certificates and pledges, a glossary and a set of internet safety 'golden rules'.[148]

- *Cybernetrix* is aimed at 13–16 year-olds and also has guides for both teachers and parents and student activity sheets.[149]

- *Wise Up to IT* targets an older youth audience and does not have parent and teacher resources.[150] *Wise Up to IT* provides four dramatised case studies concentrating on online scams and identity theft, cyber bullying, grooming and luring and cyber stalking. It outlines the dangers that the victim experienced and the strategies and solutions they undertook to keep themselves safe.

Supporting the above programs by targeting the general community, is the *NetAlert Expo*. *NetAlert Expo* is an online safety training roadshow and information campaign aimed at informing parents, teachers and community members about the dangers confronting children online and measures that can be taken to make their internet experience a safer one.[151] In August 2005, the *NetAlert Expo* held workshops and events at 17 sites throughout Victoria, including schools, public libraries, Adult, Community and Further Education (ACFE) providers and various community clubs. A further two events were held in July 2006. In addition, *NetAlert Expo* has visited various conferences and festivals in Victoria.[152]

[147] NetAlert, website, <www.netalert.net.au/02033-Projects.asp>, viewed on 7 July 2006.
[148] Department of Communications, Information Technology and the Arts, *Six-Month Report on the Online Content Co-Regulatory Scheme*, Reporting Period 12 (July 2005 to December 2005), DCITA, Canberra.
[149] NetAlert, website, <www.netalert.net.au/01730-Secondary-School-Resources.asp>, viewed on 19 July 2006.
[150] Wise up to IT, website, <www.wiseuptoit.com.au/>, viewed on 7 July 2006.
[151] Further information about NetAlert Expo is available on the NetAlert website, <www.netalert.net.au/03077-NetAlert-Expo.asp>.
[152] NetAlert, website, <www.netalert.net.au/03077-NetAlert-Expo.asp>, viewed on 25 August 2006.

The Australian Communications and Media Authority also maintains a cyber safety website aimed at children and their teachers and parents.[153]

The Committee notes that the new curriculum framework in Victoria, the Victorian Essential Learning Standards (VELS), offers teachers opportunities to incorporate the range of cyber safety resources into student learning.[154] As a dedicated interdisciplinary strand of the VELS, ICT is a formal and assessed element of all discipline-based studies (subject areas) at all year levels. The Committee notes that at level 5 of the VELS (years 7 and 8) students will:

> … access appropriate websites and online forums such as blogs and chat sites, to locate information and to share ideas, applying protocols that respect other users and that protect the personal safety of students.[155]

Furthermore, the Standards at level 5 will require students to consider issues of their personal security by evaluating:

> …the merits of contemporary communication tools, taking into account their security, ease of use, speed of communication and impact on individuals.[156]

The Committee believes that the VELS are a positive development for schools in addressing issues of cyber safety. However, given the young age at which students are now engaging with multimedia, the Committee believes that there would be value in including cyber safety education earlier in the VELS framework.

[153] Teacher resources are available at the Cybersmart Kids Online website, <www.cybersmartkids.com.au/for-grown-ups_for-teachers.htm>.

[154] The Victorian Essential Learning Standards describe what is essential for students to achieve from Years Prep to 10 in Victorian schools. They provide a whole school curriculum planning framework that sets out learning standards for schools to use to plan their teaching and learning programs, including assessment and reporting of student achievement and progress.

[155] Victorian Curriculum and Assessment Authority, *Victorian Essential Learning Standards, Interdisciplinary Learning Strand – Information and Communications Technology*, Melbourne, December 2005, p.20.

[156] ibid., p.21.

Filtering and Monitoring Internet Use

Internet filters are designed to identify unsuitable or inappropriate material by comparing the content of a web page to 'allowed' and 'disallowed' content that is classified in the filtering software. Filters can do this in various ways:

- Filtering via a 'black' or 'exclusion' list, which contains the URLs of websites that have disallowed content. If a web page matches one of the sites on this list, the user cannot view the site.
- Filtering via a 'white' or 'inclusion' list, which contains the URLs of website that the user is allowed to visit. Any website that is not on this list will be blocked by the filter.
- Filtering via a list of content keywords and/or phrases that, if contained within a web page, will deny the user access to the site.
- Filtering via images. A filter is able to analyse images contained on a web page, and will block access to the site if it contains a large proportion of skin coloured images.[157]

Many filters use a combination of the above methods. Many also allow the user to edit the lists containing URLs or words that filter looks for.

The Department of Education and Training does not recommend any particular internet service provider (ISP) to Victorian schools.[158] It does, however, provide a list of ISPs that meet the Department's minimum technical requirements.[159] The suggested providers include suitable filtering technology with their services. Schools that choose to use an ISP that is not on the Department's list of suggested providers must still comply with the specified minimum filtering standards.[160] Schools are also required by the Department to review and update their 'black' and 'white' lists at least fortnightly.[161]

The Department also encourages schools to consider employing mechanisms that allow them to monitor or track individual users' behaviour on the web. Tracking facilities can be seen as a deterrent to unacceptable use on the web because they allow schools to view where users are and what they are viewing at any point in time. Due to potential implications for student privacy, schools must clearly publicise

[157] NetAlert, website, < www.netalert.net.au/02826-How-do-Filters-Work.asp>, viewed on 9 August 2006.
[158] Department of Education and Training, SOFWeb, <www.sofweb.vic.edu.au/ict/edunet/compare.htm>, viewed on 8 September 2006.
[159] Department of Education and Training, SOFWeb, <www.sofweb.vic.edu.au/ict/edunet/providers.htm>, viewed on 8 September 2006.
[160] Department of Education and Training, SOFWeb, <www.sofweb.vic.edu.au/ict/edunet/compare.htm>, viewed on 8 September 2006.
[161] ibid.

this feature so as to inform the entire school community that tracking facilities are being used. The consequences of inappropriate use would normally involve removal of access rights.[162]

The Committee heard that currently, internet filtering, while often necessary in an educational setting, does not come without significant challenges. A number of submissions and witnesses highlighted the limitations of filtering technology and the regulatory framework. As the ASISTM Computer Game Design, Programming, Multimedia and Mathematics Cluster stated:

> Internet filtering is problematic, there are always inappropriate sites that slip through and valuable sites which are banned. It seems that in the order of 20% of inappropriate sites slip through filters and in the order of 20% of benign sites are blocked.[163]

The Cluster's submission suggested that filtering can be 'anti-educational' as it may prevent students from accessing certain materials that they might find important, interesting, and relevant to their learning.[164] Importantly, filters have the potential to hinder more advanced internet research in some circumstances. Internet searching often 'requires that web pages become the stepping stones to further pages and when one door is closed, entire hallways of further doors may be closed off as well'.[165] Other valuable tools on the world wide web including language translation sites are often blacklisted because they can constitute a loophole to filtering.[166]

Some students expressed frustration about the level of filtering in their school. Ms Casey Hogan, Student, St Francis Xavier College, indicated that the filtering system at her school made it a challenge to prepare a simple PowerPoint presentation:

> At this school they have blocked a lot of sites and you cannot search for images on Google. They have blocked a lot of things to sort of close a few doors so that you cannot do as much as you used to. But it is also very difficult in that if you are in the computer rooms and doing, maybe, a PowerPoint, it is very hard to find images when they have blocked a lot of the sites. Sometimes they can block it a little bit too much, I think.[167]

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[162] Department of Education, Employment and Training, *SafetyNet: Internet Usage – Guidelines for Schools*, DEET, Melbourne, p.5, SOFWeb, <www.sofweb.vic.edu.au/internet/safety.htm#pdf>, viewed on 8 September 2006.
[163] ASISTM Computer Game Design, Programming, Multimedia and Mathematics Cluster, Written Submission, June 2006, pp. 8–9.
[164] ibid.
[165] ibid.
[166] ibid.
[167] Ms. C. Hogan, Year 11 Student, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.26.

The Australian Teachers of Media gave a number of examples of legitimate educational research being blocked by filtering software:

> At the moment it is very hard because from government schools there is an education cache which the schools can access for free, and there is all the filtering software, but it cannot work particularly well when you are going from prep to year 12, because you have year 12 kids wanting to access sites like the Museum of Modern Art, which is blocked because it has nudes in it. There is a very big difference for a year 12 art class...People quote the ridiculous example of girls searching for breast cancer [sites], and having all sites blocked because the key word, 'breast' is in there.[168]

> One of my year 12s is trying to get images of fairies, and it appears that it is a cult and it is blocked for cult reasons.[169]

The Committee also heard that internet filtering may limit opportunities for students (particularly older students) to learn the skills where they can evaluate the merits and dangers of internet content, skills difficult to acquire on a sanitised internet.[170]

Mr Tony Brandenburg, President, ICT in Education Victoria, stated:

> Teachers over many years have been able to be quite intuitive in how [the internet] is used. We all know of the pitfalls of internet pornography, we know the pitfalls of chat rooms et cetera. My own personal thought is that I am not into banning those. I would be far more interested in teachers working with the students on understanding what they are and making a conscious decision not to use them. I know that is idealistic but I think that is a sound practice…[171]

Mr Stuart Taylor, National Sales Manager for Education, Apple Computer Australia, supported an educational approach in dealing with internet risks, based on his observations and discussions in schools around Australia:

> The teachers who attempt to regulate content, purely to make it what they believe is safe and educational, usually fail in their endeavours. The schools that breed a strong culture of learning and the appropriate use of technology—and I have seen this down to years 4 and

[168] Mr R. Dunscombe, Australian Teachers of Media, Transcript of Evidence, Public Hearing, Melbourne, 22 May 2006, p.34.
[169] Ms M. Hannan, Australian Teachers of Media, Transcript of Evidence, Public Hearing, Melbourne, 22 May 2006, p.34.
[170] ASISTM Computer Game Design, Programming, Multimedia and Mathematics Cluster, Written Submission, June 2006, pp. 8–9.
[171] Mr T. Brandenburg, President, ICT in Education Victoria, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.16.

> 5—are the ones that seem to be successful. As one principal said to me, 'Sure, occasionally a kid might bring up something on a computer attached to the internet, but when I went to school I used to hide in the back of the library and look at the art books. Nothing has changed. It's just the delivery mechanism'.[172]

The Victorian Information Technology Teachers Association also emphasised a significant technical limitation of internet filters:

> Internet filters can only filter out sites that have already been accessed and found to be unsuitable. Each day thousands of new sites are released onto the internet, and many of these are unsuitable for children. Yet they will not be immediately placed on the School's Net exclusion list, nor will they be able to be detected by filtering programs in the home such as Net Nanny. It is also not correct that these filters will restrict students to accessing only suitable or relevant material.[173]

While noting that the current filtering technologies are not perfect, the Committee believes that they are an essential safeguard in schools that needs to be continually upgraded. Further, the Committee believes that schools should have a responsibility to inform parents about the range of filtering technologies available and the benefits of their use in the home (refer below). The Committee believes that responsibility should be given to a specific unit within the Department of Education and Training to monitor, evaluate and advise on advancements in filtering technologies.

[172] Mr S. Taylor, National Sales Manager for Education, Apple Computer Australia, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.31.
[173] Victorian Information Technology Teachers Association, Written Submission, May 2006, p.2.

The Role of School Intranets and Learning Platforms in Addressing Cyber Safety

The Committee also heard evidence that school intranets and secure, online learning environments offer an additional technical solution to safe cyber practices.[174] These environments enable teachers to harness the benefits of the internet and other online technologies, while effectively managing the potential risks to the students.

School intranets offer a relatively simple way of providing a safe virtual environment. Using an intranet, teachers can create a 'white list' of their own, limiting student access to only those websites and materials approved by a teacher. This not only helps to ensure a safe learning environment but, also helps students to concentrate and stay on task. Intranets also provide an environment where students can publish and display their multimedia creations.

A similar but more advanced solution is the implementation of a learning platform such as *Studywiz*, *myclasses* and *Moodle*. Learning platforms can help to address cyber safety concerns in schools because they provide:

- a secure and controlled portal to the internet;
- access to approved digital content and resources;
- safe and secure communication mediums that enable and encourage collaborative online communities within classes and schools or even between other local, interstate or overseas schools; and
- a safe and secure platform for the publishing of student content.

The capacity of the internet as a collaborative communication tool is simultaneously one of its biggest advantages and most significant risks. Public chat rooms in particular are often seen as an unsafe environment for children and therefore are often banned in schools:

> A school must ensure it provides safe and secure tools for this style of communication. Students should not be encouraged into public chat rooms and forums. Learning management systems provide this style of secure environment at a cost.[175]

The Committee heard that there are many other products available that facilitate opportunities for safe, online collaboration and communication

[174] The Committee notes that the benefits of learning platforms extend well beyond addressing issues of cyber safety. Further discussion of these other benefits and applications is contained in Chapter 6.

[175] Footscray City College, Written Submission, June 2006, pp.1–2.

between children and young people. For example, Intuitive Media[176] has developed a series of age specific online virtual environments in which students may participate in both informal and formal school- or cluster-based learning communities. Provided in these communities are avenues for children to access content, communicate live through chat rooms, participate in forums, publish their own content and build websites. Crucially, the activities of participants are monitored by a trained mediator, one for every 100–150 students. The result is an environment with enormous scope for creativity, collaboration and communication that is safe, monitored, and involving students of a similar age group.

The Committee welcomes these technological developments that facilitate beneficial, yet safe, use of online resources. The Committee encourages schools to continue experimenting with these tools within their education programs.

Managing Cyber Safety @ Home

This inquiry found that despite the role of the Australian Communications and Media Authority and NetAlert in raising community awareness about cyber safety, it seems that the message is simply not getting through to many parents. As Footscray City College states '…students are extremely skilled in what parents and teachers do not even know exists'.[177] The Committee sees this as a significant concern given the increasing opportunities for young Victorians to access the internet and other multimedia technologies and the potential, serious consequences of engaging in unsupervised or unsafe practices. The Committee believes that as with issues of similar status such as relationship and sex issues or drug education, schools, parents and teachers must adopt a co-ordinated and co-operative approach to ensure that children and young people are well educated about issues of cyber safety.

[176] Intuitive Media is an education internet consultancy dedicated to developing the creative use of technology in education and marketing. According to its website, Intuitive Media designs and leads award-winning national and global education and business initiatives through digital and traditional media. It provides online services for children, students, schools, medical practitioners, creative artists, athletes and other organisations. For further information, refer to the Intuitive Media website, <www.intuitivemedia.co.uk>.

[177] Footscray City College, Written Submission, June 2006, p.5.

Community Awareness of Cyber Safety

NetAlert has produced a vast array of information resources for schools (as outlined above), as well as for parents. NetAlert's Parent's Internet Safety Toolkit includes:

- five interactive case studies that explore the key internet safety themes of content, contact, commercialism, security and mobile internet and new technologies;
- a parent's guide to internet safety;
- an internet safety helpline (1800 880 176 or email enquiries@netalert.com.au);
- family help sheets that include resources for creating family internet safety checklists, contracts and house rules; and
- a website that contains links to a vast range of internet safety articles, fact sheets, newsletters and other materials.[178]

The NetAlert website also currently provides extensive information for parents to assist them to filter internet content in the home.

Another important resource for parents and their children is the Cybersmart Kids Online website. Cybersmart Kids Online is a community awareness project developed by the Australian Communications and Media Authority with the objective of providing parents and children with information and tools to help them have a rewarding, productive and safe experience on the internet.[179]

Recognising that existing strategies have not been fully effective in getting the cyber safety message out to parents and families, the Minister for Communications, Information Technology and the Arts, the Hon. Helen Coonan, announced a new Protecting Families Online package in June 2006. The new $117 million package over three years includes:

- the National Filter Scheme, which will offer Australian families a filtered internet service or a free filter for their home computer. The service will be available for download from a dedicated website or delivered on CD-ROM;
- child-safe computers in public libraries;
- $5 million in additional funding over three years for NetAlert to restructure and improve its effectiveness;

[178] The NetAlert *Parent's Internet Safety Toolkit* is available on the NetAlert website, <netalert.net.au/02074-Parents-Toolkit.asp>.
[179] Refer Cybersmart Kids Online website, <www.cybersmartkids.com.au/index.htm>.

- ongoing, national review of filtering technology; and
- a community information campaign, which will promote the free filter initiative and provide information about how to access the filters and further information about internet safety.[180]

The Committee notes that internet filtering is only one approach to internet safety, which only really addresses the issue of access to inappropriate content. The Committee believes that other issues of significant concern include cyber bullying, harassment, stalking and web authoring by young people, all of which need to be urgently addressed at home and throughout the education community.

The Role of Parents

In each of the school visits undertaken by the Committee, children were asked about what rules they have at home relating to their use of the internet and other multimedia technologies. Evidence from students revealed that some parents seem to be generally well informed about the potential for students to access inappropriate content on the internet and that many have implemented some strategies for addressing this issue.

One simple, yet effective way of monitoring children's online activity is ensuring computers with internet access are located in open areas of the house such as the family room:

> We have no internet in our rooms. We only have one internet access point and that is next to the family room. There are no closed-off areas into the family room so it would be very hard to do something like that.[181]

> When we first got the internet mine was in the family room, and mum used to sit next to me the whole time; she was always there! If I went into a chat room and somebody asked me how old I was, my mum would say, 'Get out of that now!'[182]

> At home we have our computer in an open space. If I am on the computer, mum can just walk up and watch what I am doing…[183]

Another strategy used by parents, is having explicit rules about the sites their children may visit:

[180] The Hon. Helen Coonan, Minister for Communications, Information Technology and the Arts, *Media Release*, 21 June 2006.
[181] Secondary School Student, Committee School Visits, June–August 2006.
[182] Secondary School Student, Committee School Visits, June–August 2006.
[183] Primary School Student, Committee School Visits, June–August 2006.

> At home I am allowed to go on the internet for only half an hour, and if I want to go on a site that my mum or dad do not know, they have to check it out first.[184]

> … I can be on the computer for whatever time I want if I do exercise outside and if mum and dad know what website I am on. If I want to go on a new website, I always ask them first.[185]

Some children also indicated that there is an awareness about internet filters in their home, although it seems that some parents may not know how to select the most appropriate filter for their family's needs or how to install and use the filter. A small number of other children identified some other home rules that have been instituted to address issues of internet safety. These included, for example, not giving out personal details over the internet and not communicating with a stranger.

The Committee found that some parents are not only aware of and responding to cyber safety issues, but that they are also concerned about general health and wellbeing of their children. This is evidenced by the presence of various family rules about screen time and balancing other important activities:

> At home I am allowed to go on the computer only for 45 minutes if I go on MSN, but if it is school related I can go on for as long as I want.[186]

> If we are doing homework, we are not allowed to play games or anything. We have to finish our homework and then play games.[187]

> …at home we have 30 minutes maximum time on the computer unless it is school related or education related. So our parents keep an eye on us.[188]

> We also have this thing at home where I can do something like watch the TV for a long time, play Xbox or go on the computer as long as I have done some exercise outside or done something creative or something like that.[189]

The Committee heard, however, that in many instances, young people's knowledge of and experience with the internet is far greater than that of their parents and families. Many submissions and witnesses therefore noted the importance of further raising parental awareness regarding cyber safety issues. For example:

[184] Primary School Student, Committee School Visits, June–August 2006.
[185] Primary School Student, Committee School Visits, June–August 2006.
[186] Primary School Student, Committee School Visits, June–August 2006.
[187] Primary School Student, Committee School Visits, June–August 2006.
[188] Primary School Student, Committee School Visits, June–August 2006.
[189] Primary School Student, Committee School Visits, June–August 2006.

> Parents need to understand the dangers of the internet and chat lines. Parents need to be skilled in the use of multimedia so that they have enough knowledge and understanding to control the interactions that children make on the internet and to understand the sites that children can gain access to. Schools and communities need to train parents in the use of computer technology and the potential dangers of inappropriate internet and chat sites.[190]

The Committee heard that the community needs far more information about how young people are using the internet and what the potential risks are. While there have been community internet safety campaigns in recent years, many participants in this inquiry suggested that far more work needs to be done to educate parents and families. It should also be noted that internet applications evolve rapidly and community awareness needs to keep pace with children's online behaviour.

Ms Jenny Buckland, CEO, Australian Children's Television Foundation, stated:

> I think the Commonwealth Department of Communications is constantly looking at this issue and the sorts of education campaigns and other things that can be done, but with the whole issue of internet safety—even just in terms of the chat rooms that children go into and who they strike up conversations with—we all need to be educating our children about those things now. A lot of parents just are not aware. Because they do not go online themselves or they do not chat online, they do not know how easy it is to get into that. You have a whole generation that are so much more familiar with these things than their parents are.[191]

Mr Vincent Sicari, Principal, Eltham High School, similarly called for community awareness campaigns to address issues of cyber safety:

> … it is information more than anything else at this point in time. I think it is really important that there is a campaign of some sort that informs parents of their responsibility to supervise and to know what the technology is able to achieve both in a positive and a negative way.[192]

[190] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.16.
[191] Ms J. Buckland, CEO, Australian Children's Television Foundation, Transcript of Evidence, Public Hearing, Melbourne, 1 May 2006, p.9.
[192] Mr V. Sicari, Principal, Eltham High School, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.5.

Mr Sicari continued by outlining the need to help parents to develop the knowledge required for them to communicate effectively with their children about cyber safety risks:

> I think there needs to be a strong encouragement about conversations happening on the home front in relation to students and parents, or young people and parents talking about what is considered to be the appropriate way of dealing with the technology and using the technology. In addition, there could perhaps be conversations about what needs to occur if these sorts of things are happening to a particular child… I believe there is a responsibility for government to inform, communicate and educate in a wider perspective, or in a systems perspective, rather than individual schools taking that responsibility on board...[193]

Parents need to be aware too, that many young people may seek to protect their privacy or deliberately hide their online activities from parents.[194] Therefore, the Committee believes that a renewed approach is required, to raise awareness of new issues that have emerged as internet and online applications have expanded.

Some simple tips for parents are outlined on the Cybersmart Kids Online website (refer Figure 4.1). Parents can also visit the Cybersmart Kids Online website to get further age-specific advice and rules for internet surfing, chat rooms and mobile phones.[195]

[193] ibid.

[194] A UK study reported that 63% of 12–19 year old home internet users have taken some action to hide their online activities from their parents. Refer S. Livingstone & B. Magdalena 2005, *UK Children Go Online: Final report of key project findings*, Economic and Social Research Council, London, p.3.

[195] Australian Communications and Media Authority, *Cybersmart Kids Online*, website, <www.cybersmartkids.com.au>.

Figure 4.1: Internet Surfing Tips for Parents

- Spend time online with your kids. Check out good sites together. The internet can be a fun family activity!
- Help your kids use the internet as an effective research tool—learn about handy homework tips for kids and also good searching ideas.
- Learn about the world out there. Kids are communicating in a diverse range of ways, from chat to instant messaging, and from message boards to blogs. Learn how these work and what tools they offer to protect your child's privacy.
- Be aware of online stranger danger, particularly in chat rooms. Set house rules about what information your children can give out and where they can go online.
- Put the internet computer in a public area of the home, such as the living room, rather than a child's bedroom.
- Talk to your kids about their internet experiences, the good and the bad. Let them know it's OK to tell you if they come across something that worries them. (It doesn't mean that they're going to get into trouble)
- Teach your kids that there are ways they can deal with disturbing material—they should not respond if someone says something inappropriate, and they should immediately exit any site if they feel uncomfortable or worried by it.
- Teach children that information on the internet is not always reliable.
- Encourage children to treat others in the same way they should in real life by giving them an understanding of Netiquette.
- Know the best ways of avoiding spam.
- Consider using filters, labels and safe zones.

Source: Australian Communications and Media Authority, *Cybersmart Kids Online*, <www.cybersmartkids.com.au/for-parents_tips.htm>, viewed on 21 August 2006.

The Role of Schools in Cyber Safety @ Home

While the Committee acknowledges the wealth of cyber safety resources that have been produced, the Committee believes that they are not reaching all parents. It is of particular concern that they are not reaching those parents who themselves have limited knowledge of and experience using the internet and other multimedia technologies. The Committee believes that schools are ideally placed to bridge this gap and to link parents and families to the high quality resources that are available.

As Ms Buckland, CEO, Australian Children's Television Foundation, stated:

> …I am loath to put an increased burden on teachers, but in terms of government getting information out to parents, I think through schools is a useful way of doing that. Those are things that you know become accessible to all parents, in the way that in grades 5 and 6 the Life Education van comes and everybody gets an opportunity to sit down and talk about sex education with their children. I think that is very effective.[196]

The Committee found that many schools have already taken the initiative to educate parents about cyber safety issues, through school newsletters, websites and information nights.[197] There are, however, often a number of challenges to effective communication between schools and parents. Often, it is the parents and families most in need of additional information and support who do not participate fully in the school community, often simply because their work or other commitments make it difficult to do so. On other occasions, there may be cultural or language barriers that prevent some parents and families from fully participating in school activities.

During its visit to Spring Valley Primary School, the Committee heard that the school is going to considerable lengths to ensure it is reaching parents from culturally and linguistically diverse backgrounds. The school runs ICT information evenings for parents, providing translators for the Vietnamese and Cambodian communities and copies of the school's internet safety policy in a number of languages.[198] Despite such efforts, the school finds that it cannot reach all parents:

[196] Ms J. Buckland, CEO, Australian Children's Television Foundation, Transcript of Evidence Public Hearing, Melbourne, 1 May 2006, p.9.

[197] Responses to cyber safety and media literacy survey conducted by the Education and Training Committee, July 2006. Also, discussions with students and teachers, Committee School Visits, June–August 2006.

[198] Mr C. Bridges, Principal, Spring Valley Primary School, Transcript of Evidence, Public Hearing, Springvale South, 18 August 2006, p.7.

> Our parent information evenings cover 60 per cent to 70 per cent of parents, perhaps, if we are lucky...[199]

Further, responses to the Committee's cyber safety survey revealed that there is considerable variation in the cyber safety programs implemented by schools, including their frequency and effectiveness. The Committee therefore believes that the Department of Education and Training should develop complementary campaigns, in partnership with the Commonwealth Government and other agencies, to disseminate relevant materials into schools. Resources could be sent home to parents via their children and serve as an impetus for discussions between parents and their children on internet safety, providing the ground work for ongoing and open communication on the subject.

The Committee emphasises that any campaign developed by the Department of Education and Training should reach all Victorian schools, not just those in the government school system. Further, the Committee believes that government schools should be required to report to the Department of Education and Training on their cyber safety programs and their efforts to distribute relevant material.

Conclusion

While multimedia technologies have a multitude of benefits, the huge increase in their use in recent years has also meant an increase in the potential for young people to have distressing experiences when using multimedia. Issues of bullying, stalking, child safety and the censorship of inappropriate material are not new problems in the community. The intersection of these issues with multimedia technologies has, however, the potential to amplify these issues and the harm that they may cause. New technologies have also made it somewhat easier for children to encounter these risks from an earlier age and harder for children to identify the potential risks and how to manage them. The Committee also heard that some parents have failed to keep pace with the online activities of their children and the potential dangers that they may face when using the internet and other multimedia technologies.

[199] ibid.

The Committee found that there are a range of cyber safety resources and initiatives available to schools, teachers and parents. However, while national community awareness campaigns have been implemented over recent years, the Committee found that the existing approach has generally been piecemeal and, therefore, key cyber safety messages have not reached all parents. The Committee therefore believes that the Department of Education and Training should implement a co-ordinated and sustained information campaign through schools, which is integrated with the school curriculum and which complements the campaigns co-ordinated by other organisations and authorities.

FINDING 4.1

That the increasing popularity and sophistication of multimedia technology warrants ongoing monitoring and co-ordination between schools, families and governments to reduce the prevalence of cyber safety risks and to better understand their nature.

FINDING 4.2

That dissemination of information about cyber safety has not kept pace with young people's use and experience of the internet.

RECOMMENDATION 4.1

That the Department of Education and Training establish a dedicated departmental liaison unit that:

- monitors and reports to key stakeholders on emerging trends in the use of multimedia and concerns about cyber safety; and
- advises schools, teachers and parents about internet safety and the effective use of internet filtering software.

RECOMMENDATION 4.2

That the Department of Education and Training begin as a matter of priority, a sustained cyber safety campaign, focussing on students and parents. This campaign should utilise the existing resources developed by governments and other agencies, using schools as the primary conduit for communication with parents and families to disseminate these materials. The campaign should provide advice and resources for schools to effectively deliver the cyber safety message to parents and should be supported by: the inclusion of 'cyber safety at home' advice; and resources developed specifically for culturally and linguistically diverse communities.

RECOMMENDATION 4.3

That the Department of Education and Training review and update its cyber safety Website Toolkit on a continuous basis, to ensure it remains relevant in the context of a rapidly evolving multimedia landscape.

RECOMMENDATION 4.4

That the Victorian Curriculum and Assessment Authority include cyber safety as a core component at each level of the Victorian Essential Learning Standards.

Part Two:

Multimedia in Education – New Needs, Tools, Opportunities and Challenges

Multimedia, especially in its interactive forms, is relatively new to education systems. Yet for most students of the net age, multimedia has had a prominent presence in their lives, all their lives.

As explored in Part One of this report, most young people enthusiastically embrace multimedia technology as a form of entertainment and as an important facilitator in their social lives. For many young people, new technologies such as mobile phones and iPods are more than just tools: they are symbols of young people's connection to the net age; their membership card for the digital revolution.

The advent of the digital revolution has placed new demands upon schools, as student needs have evolved. The learning styles and preferences of students are, in many cases, profoundly different in the net age, compared with previous generations. Students now need education systems and schools that respond to those changes. Students also need schools that prepare them for a changed world which demands high levels of media literacy among its citizens. Further, students need to be prepared for a changed workforce that has become dependant on ICT and an economy in which future growth will be heavily reliant on high-end ICT skills.

A new generation of multimedia tools is available to meet the new needs of net age education. These tools provide myriad new opportunities for students, teachers, schools and education systems. Through multimedia, students are often more engaged in their learning. They have a broader range of opportunities for exciting and deep learning experiences. They can also benefit from flexible and customised delivery. For teachers, the array of new technologies is opening new doors for the provision of more effective and engaging lessons for students. There are also new opportunities for improved communication and collaboration across learning communities. And for schools and education systems, multimedia technologies provide opportunities for delivery of more effective, efficient and engaging learning opportunities for students and teachers.

While it is easy to be optimistic about the influence that multimedia can have on education, the successful integration of ICT into schools and

learning and teaching programs is not without its challenges. The rapid evolution of ICT is itself at the heart of many of the challenges facing schools. This rapid advancement has created a digital divide between many students, who have grown up with multimedia, and their teachers, who may still be struggling to come to terms with many new technologies. Further, the rapid evolution of ICT also places pressure on supporting infrastructure both within schools and across education systems. Newer, more sophisticated technologies and applications often quickly make existing technologies obsolete. Equally, this rapid evolution has made it difficult for some families to keep pace with costly computer and infrastructure upgrades. Consequently, some students have limited or no access to high quality, up-to-date multimedia at home.

The Committee notes that this inquiry was undertaken in the midst of a transition to a new curriculum framework in Victorian schools. The new Victorian Essential Learning Standards (VELS) aim to facilitate learning *through* ICT, rather than learning *about* ICT.[200] Aiming to support students to become critical, adept and innovative users of both ICT and the information created through its use, ICT is now an interdisciplinary learning strand within the curriculum and is assessed across all disciplines (learning areas).[201]

[200] Victorian Curriculum and Assessment Authority, Written Submission, July 2006, p.4.
[201] Victorian Curriculum and Assessment Authority, Written Submission, July 2006, p.1.

5. New Needs for Net Age Students

Introduction

Multimedia is ubiquitous in the net age. Most people are heavy, or at least frequent, consumers of multimedia. More and more, however, people are also creating increasingly sophisticated multimedia content. Increasingly, governments, businesses and individuals are capitalising on the opportunities that multimedia, especially the internet, is creating. As the Victorian Curriculum and Assessment Authority stated:

> From a social perspective, ICT skills (including media literacy) are considered prerequisites for active participation in a global society and the workplace. Without these skills, citizens may be denied access to essential information, goods and services.[202]

The above trends have seen a change in the needs of students. The changing nature of student needs was presented in evidence to the Committee through three distinct themes:

- the need for education systems and schools to respond to the changing learning styles and preferences of students, given their immersion in advanced multimedia technologies;
- the need for students to develop advanced levels of media literacy in order to participate fully and successfully in society; and
- the need for students to acquire the skills and knowledge required to use multimedia to drive innovation in the economy.

The following chapter outlines evidence received in relation to the above three themes.

Characteristics of Net Age Students

The terms ‘digital natives’ and ‘digital immigrants’ have been used in discussions about the use of technology and multimedia in education for a number of years. The terms were proposed by Marc Prensky in 2001, to describe the differences between those who grew up with digital technologies such as computers and the internet, and those who have been introduced to the technologies after growing up with a different set of technologies.[203] The separation neatly divided many

[202] Victorian Curriculum and Assessment Authority, Written Submission, July 2006, p.1.
[203] Faculty of Education, University of Melbourne, Written Submission, June 2006, p.1.

students from their teachers and suggested that young people's experience with digital technologies had made the new generation of digital natives different types of learners to the previous generation.[204]

A joint submission from Southvale Primary School and GMM Training Pty Ltd made some comparisons about how adults (digital immigrants) and young people (digital natives) use new multimedia technologies:

> Students from the 'X' and 'Y' generations are very competent users of multimedia generally. This is their medium for communication and they are not frightened or intimidated by it. They tend to learn how to use any of this communication medium before any adult. Children are unafraid of 'playing' with computers/ computer technology and multimedia, adults think they can 'break' the equipment. Because children have grown up with X-boxes; PlayStations; TV etc all happening at the same time in the family home, they are able to multi-task in much the same way as a computer. They are able to multi-track lots of different programs, events and images at any one given time and know exactly what is happening on each piece of equipment. Adults are more in tune with books as their form of communication. Adults also find it hard to keep tabs on more than one image at a time.[205]

Mr Mark Walker, Principal, Elsternwick Primary School, commented on the intuitive use of multimedia by net age students:

> … we have large numbers of students who rely on the use of multimedia to understand teacher instruction, use the medium/s to analyse and synthesise data and make logical connections and generalisations and then creatively express their new understandings.[206]

There was agreement throughout the inquiry that widespread access to multimedia technologies has encouraged or created different expectations for the use of these technologies in learning. A submission from the Faculty of Education, University of Melbourne, described some of the characteristics, preferences and tendencies of net age children who:

- prefer and expect high levels of responsiveness and interactivity with their technology;
- prefer and expect high levels of visual and audio content;
- prefer and expect high levels of internet access;

[204] ibid.
[205] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.15.
[206] Mr M. Walker, Principal, Elsternwick Primary School, Correspondence to the Committee, 7 June 2006.

- use multitasking as a way of working with a range of technologies and interactions all at once;
- prefer working in groups for study related problem solving;
- expect processes for constant and instant communication with their peers or social community; and
- tend not to see computers or many other digital technologies as extra technology, but just an integrated part of the environment.[207]

The identification of the above characteristics is in contrast to previous generations (usually those over 30) who tend to:

- want or prefer to focus on a single task and work in a logical linear progression through problems;
- want or expect to work and learn individually;
- expect to have text reading and writing as a major element or requirement for learning;
- tend not to expect or see access to the internet as the first step in learning about something; and
- see computers as a major development and influence in the educational context requiring substantial adaptation in consideration of its power educationally, technically and culturally.[208]

The Victorian Curriculum and Assessment Authority has also identified that the presence of multimedia technologies, both at school and at home, affects how students learn, what they learn and how they demonstrate their learning. In addition to a number of the above points, the Authority suggests that today's students want a learning environment that involves:

- fast and non-linear provision of information to support individual navigation, and hence support preferred learning styles; and
- collaboration with known and unknown peers and experts.[209]

[207] Faculty of Education, University of Melbourne, Written Submission, June 2006, p.1.
[208] ibid.
[209] Victorian Curriculum and Assessment Authority, Written Submission, July 2006, p.2.

In its written submission, the Department of Education and Training adds that 'digitally literate learners tend to be creative, voracious and easily bored'. They:

- want to be connected because they understand they are part of a global community, and that learning is unrestricted by classroom walls;
- are discriminating and demanding of content, teaching quality and access to resources;
- are empowered because they are information seekers and navigators;
- demand interaction and believe in achieving competence and independence; and
- understand that learning and winning are often reached through trial and error.[210]

In summary, students of the net generation have very high expectations of 'their' technologies. They expect a substantial set of features, like wireless access, person to person sharing or messaging, straightforward communication to networks and visual, audio and multimedia storage enhancements.[211] Consequently, an important observation made during the inquiry is that it is the students, in particular, who have 'taken to new technology, multimedia and resources such that in many a school it is these very students who are driving innovation and change'.[212] As stated by the Australian Children's Television Foundation:

> Kids are not only *capable* of using new technologies as a means of expression and communication, they expect to.[213]

Ms Rebecca Williams, Year 10 Student, Presbyterian Ladies' College, presented her vision for technology and multimedia in schools. She commenced with an outline of how basic tools, such as computers and projectors should be used in the classroom:

> The most important part of any school is its classrooms, so it is important that we take advantage of the technology where the learning takes place. To achieve it, every classroom should have a computer installed, it should be connected to the school network and to the internet so that teachers and students can make full use of the computer. But to really take advantage of it… each room would have a projector that is permanently

[210] Department of Education and Training, Written Submission, August 2006, p.4.
[211] Faculty of Education, University of Melbourne, Written Submission, June 2006, p.2.
[212] Mr A. Kenos, Written Submission, June 2006, p.1.
[213] Australian Children's Television Foundation, Written Submission, May 2006, p.4.

> hooked up to save time, rather than hooking up a laptop or trying to control the TV video, which wastes a lot of class time and causes frustration for teachers and students. To accompany the projector should be a flip-up screen and the appropriate lighting, for example, making sure that windows can be shut to block off excess light. This way, students can give presentations, teachers can show examples, and so on, making learning much more convenient.[214]

Ms Williams continued by outlining how school laptops, student USB drives, a virtual learning platform, podcasting and communication between teachers and students via email and/or SMS could all make learning more convenient and satisfying.[215]

It is important to note upfront, that not all students have a preference for learning through multimedia. Some students are simply not interested in using advanced multimedia technologies, while others have perhaps not had the opportunity to become enthusiastic users due to lack of access to these technologies. Further, the Committee observed that some young people feel that they have been left behind because they do not have the same level of skills, interest and experience as other students in using multimedia for learning.

During school visits, Committee members asked students about their preferred modes of learning. A small number of secondary students expressed quite a strong view that their preferred learning style was to learn through traditional media. For example:

> I am in year 9. I do not watch any television, I only use a computer if it is at school, I check my email probably once a week and I do not listen to radio. I have an iPod. I am so technically advanced! I listen to my iPod, but I find that I do not need to use technology to assist me in any way.[216]

When asked whether she enjoys using multimedia technology in the classroom, this student responded:

> Not really, I am sorry… I find it a bit pointless at times doing an iMovie on whatever topic it might be. I find that does not really help me much. If we are doing research on Shakespeare or something, looking it up on Google does not teach me anything… I would prefer to be

[214] Ms R. Williams, Year 10 Student, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.18.
[215] ibid.
[216] Ms Z. Wyatt, Year 9 Student, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.19.

> doing it by referring to textbooks and by looking it up in the library. It is just what I like.[217]

Another secondary student stated that:

> I actually got told off in class for handwriting an essay—he sent it back and said it had to be typed. I do not mind handwriting.[218]

Some primary school students also expressed mixed opinions about learning with technology. While most students were generally very enthusiastic about their various experiences with multimedia, some indicated that there are both positive and negative aspects to using multimedia in the classroom:

> I am a bit fifty-fifty because with the computer, some people concentrate and some people go off track and do something else. With the books, you read and you think about the story and you imagine in your head what it would be like to be there.[219]

> I think half and half, because with some programs on computers, they help you actually learn more in life, but some programs do not help you at all.[220]

Despite such comments, the Committee found that the predominant view among students was that multimedia technologies are fun to use and can often make learning easier.

Given that Victorian students have, in general, such high expectations, it is important for the education community to recognise and respond to how the multimedia revolution has been reflected in the lives of net age students. However, the pervasiveness of multimedia in the day-to-day lives of net age students has in many instances created a divide between student experiences of multimedia in the classroom and their experiences outside of the school environment.

The Committee consistently heard that young people often experience richer learning environments outside of school than they do within and that many of the new multimedia technologies and their capabilities are being under-utilised in schools:

[217] Ms Z. Wyatt, Year 9 Student, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.20.
[218] Secondary Student, Committee School Visits, June–August 2006.
[219] Mr T. Raeputa, Student, Spring Valley Primary School, Transcript of Evidence, Public Hearing, Springvale South, 18 August 2006, p.28.
[220] Ms T. Nguyen, Student, Spring Valley Primary School, Transcript of Evidence, Public Hearing, Springvale South, 18 August 2006, p.28.

> Digital communication technologies and emerging cultural forms (internet, mobile phones, video and computer games, blogs, etc) have focused debates about learning on a range of out-of-school contexts, raising important questions about traditional schooling. The irony is that schools generally fail to see the potential in these new technologies, often banning their use, and largely ignoring the knowledge and experiences young people bring to school.[221]

A joint submission from Professor Len Unsworth, School of Education, University of New England and Dr Angela Thomas, University of Sydney, similarly stated:

> A concerning key impact of the changes is the apparent disjunction for many students between the engaging, functional and personally and socially productive literacy practices they participate in outside of school and the limiting and alienating literacy practices which seem to dominate their in-school experience.[222]

Professor Unsworth and Dr Thomas continue by noting, however, that there are notable exceptions to this, 'usually due to the commitment and innovative approaches of some individual teachers and school communities'.[223]

Indeed, the Committee observed that many teachers and schools are using multimedia as more than simply a means of capturing the attention of net age students. Many schools have identified ICT as a key priority throughout the school. Many professional learning teams and communities have been established to integrate multimedia across the curriculum and increasingly, schools are using ICT as a lever for whole school improvement. Programs such as the Victorian Government's Leading Schools Fund,[224] the Partners in Learning/Creating eLearning Leaders (CeLL) Schools Program[225] and

[221] Victorian Association for the Teaching of English, Written Submission, June 2006, p.8.
[222] Professor L. Unsworth, School of Education, University of New England and Dr A. Thomas, University of Sydney, Written Submission, April 2006, p.8.
[223] ibid.
[224] The Leading Schools Fund was developed as a school transformation and renewal initiative. Under phase three of the funding, 48 proposals involving 71 schools from across Victoria will receive over $64 million over three years. This includes funding for approximately 182 additional teachers and $24.2 million in capital. For further information, refer to the Department of Education and Training website, <http://www.sofweb.vic.edu.au/innovations/schoolsfund/>.
[225] The Partners of Learning/Creating eLearnng Leaders (CeLL) Schools Program is conducted by the Department of Education and Training, in conjunction with Microsoft. Partnerships, collaboration and ICT professional learning are central to the CeLL Program. The Program will spend $1.5 million to support 28 CeLL schools to explore and share how to embed the use of ICT to create new ways of learning and teaching.

the Intel® Teach to the Future Program,[226] together with the Australian Government's Investing in our Schools Program,[227] are all contributing to improved integration of multimedia within schools. The Committee notes however, that schools and individual teachers will continue to need support in identifying and implementing innovative applications of multimedia and ICT throughout the school system.

FINDING 5.1

The Committee finds that ICT and multimedia are important priorities for Victoria's education systems, to ensure that the contemporary learning needs and styles of net age students are addressed.

The Need for Media Literacy

Central to much of the evidence received by the Committee, media literacy has emerged to become just as essential to net age students as traditional literacy and numeracy skills. In the net age, media literacy is an enabling skill-set for life-long learning and active and effective participation in society and the workforce. Comparing today's children with the previous generation, Mr Brett McLennan, Screen Education Manager, Australian Centre for the Moving Image, noted:

> We learn different ways, we understand things differently. But the majority of information, the majority of socialisation that kids are going to go through as they grow up is mediated via a screen, via technology. How do we equip those students to come to terms with careers and jobs that we do not even have words for yet? In 10 years time they will be doing things we do not know exist. How do we equip them to cope with that

[226] The Intel® Teach to the Future Program is a modular professional development program for teachers which has a strong focus on pedagogy and integrates the use of ICT into curriculum planning. For further information, refer to the Intel® website, <http://www97.intel.com/education/teach/>.

[227] The Australian Government's Investing in Our Schools Program is a $1 billion initiative over the period 2005 to 2008. The focus of the program is on delivering small scale projects that improve and enhance the infrastructure of schools in accordance with priorities identified by school communities. While not specifically aimed at ICT or multimedia, approximately 80 Victorian schools have obtained round two funding grants ranging from $5,000 to $150,000 to upgrade or extend ICT and multimedia facilities and equipment in classrooms, the library or specialist rooms/centres. For further information on the Program, refer to the Department of Education, Science and Training website, <http://www.dest.gov.au/sectors/school_education/programmes_funding/>.

> level of change in their lives? That is a very complex process.[228]

With the explosion of multimedia technology comes the changing nature of literacy. Mr McLennan suggests:

> Kids these days are incredibly literate. We might not think they are. [The] notion of dumbing down the curriculum may have some elements of correctness to it, but in some ways there are very rich new languages being formed by this medium that have to be given their own value in society as well.[229]

Further:

> [Kids] use instant messaging, they use text on mobile phones, they use all that media congruently. I might see my 8-year-old at home playing his Gameboy, watching a video, doing his homework, and that media is linked seamlessly for him in that environment. These kids are learning differently from how we learnt. Their literacy levels are different. It is not a new literacy, it is not a stronger literacy; it is more an emergent literacy.[230]

The terminology used to describe the new literacies associated with emerging technologies is a point of considerable discussion in the education community.

In developing its terms of reference for this inquiry, the Committee resolved to investigate whether the 'media literacy' needs of students have changed in recent years. It is evident that in recent decades, experts and practitioners have defined a range of emerging new literacies. Other terminology that is either analogous or interrelated with 'media literacy' includes digital literacy, eliteracy, multimedia literacy, information literacy, computer literacy, cyber literacy, internet literacy, ICT literacy and just plain 'literacy'. Particular to television and film is also screen literacy.[231]

The term 'media literacy' was chosen by the Committee for a number of reasons, not least to be consistent with the Family and Community Development Committee's final report on its inquiry into the effects of television and multimedia on children and families in Victoria, published in October 2000. Additionally, 'media literacy' is a term well defined in the literature, it implies a 'literacy' that is independent of technology

[228] Mr B. McLennan, Screen Education Manager, Australian Centre for the Moving Image, Transcript of Evidence, Public Hearing, Melbourne, 1 May 2006, p.27–28.
[229] ibid.
[230] ibid., p.27.
[231] Mr B. McLennan, Screen Education Manager, Australian Centre for the Moving Image, Transcript of Evidence, Public Hearing, Melbourne, 1 May 2006, p.24; Ms M. Hannan, Chair, Australian Teachers of Media, Transcript of Evidence, Public Hearing, Melbourne, 22 May 2006, p.29.

platforms or delivery mechanisms and literacy that emulates advances in technology.

Media literacy was not explicitly defined by the Family and Community Development Committee. However, in its discussion of media literacy, that Committee acknowledged a need to teach appropriate skills to children that enabled them to:

> …critically view messages relayed by television and the internet and to discriminate between different viewpoints and sense contradiction between family values and morals and those espoused…[232]

The Family and Community Development Committee emphasised the importance of 'critical autonomy' as an element of media literacy. It states that critical autonomy is:

> … motivation for students to formulate their own opinions and ideas through examination of the evidence and through inquiry, reflection and response, rather than a concentration on or degeneration into the laborious accumulation of facts.[233]

Professor Sonia Livingstone, London School of Economics and Political Science, has undertaken considerable study into children, young people and the internet, as part of a broader interest in the domestic, familial and educational contexts of new media access and use.[234] The Committee agrees with the perspectives of Professor Livingstone, who when defining media literacy, decided that:

> …[r]ather than become entangled in terminological disputes and in order to facilitate dialogue between the academy and policy makers, [I] will use the term 'media literacy' to cover the use of material either broadcast or published on electronic communications networks, though my focus will be on challenges posed by the convergence of print, audiovisual and computer media, particularly since widespread public use of the internet.[235]

[232] Family and Community Development Committee 2000, *Inquiry into the effects of television & multimedia on children & families in Victoria*: *Final Report*, Parliament of Victoria, Melbourne, p.56.
[233] ibid.
[234] London School of Economics and Political Science, website, Media@LSE, <http://www.lse.ac.uk/collections/media@lse/whosWho/soniaLivingstone.htm>, viewed on 4 July 2006.
[235] S. Livingstone, 'The Changing Nature and Uses of Media Literacy', in R. Gill et al. (eds) *Media@LSE Electronic Working Papers*, on London School of Economics and Political Science website, <http://www.lse.ac.uk/collections/media@lse/whosWho/soniaLivingstone.htm> viewed on 4 July 2006.

Professor Livingstone defines media literacy as 'the ability to access, analyse, evaluate and create messages across a variety of contexts'.[236] The Committee accepts this is a relevant and useful definition of media literacy.

FINDING 5.2

That the ability to access, analyse, evaluate and create content and information across a variety of existing and future technologies is an essential, enabling skill set for today's youth.

Research, Analysis and Evaluation Skills

The ability to find, analyse and evaluate information and information sources has always been a critical component of information literacy and now, media literacy. The rapid expansion of the world wide web and other multimedia technologies, however, makes it an even more pertinent and complex skill-set in the net age. Many teachers emphasised that web-based resources do not have the same clues as traditional (print) media. Therefore, students must now acquire new skills that allow them to effectively evaluate the quality of materials and potential biases of that material. For example:

> … there is a new subset of multimedia skills developing as teachers guide students in their learning—important emphasis on critical thinking for staff and students as they analyse and interpret a vast data stream downloading from the internet to sort out and interpret useful and relevant information.[237]

Mr Tony Brandenburg, President, ICT in Education Victoria, similarly outlined his view that the analysis and evaluation of media in a multimedia environment is less concrete than in print media and therefore relies on intuitive skills:

> …we are demanding an intuitiveness from our students that is much greater than what we have asked for in the past. Intuitive research and intuitive reading is really important now—in other words, watching a television show and knowing that Home and Away is not really what happens in everybody's household, or all that you read on the internet is not correct. That is something that as leaders and as educationalists is a key. We can provide iPods, we can provide mobile phones, but I

[236] ibid.
[237] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.11.

> think there is more to it … I want to talk about intuitive research and intuitive reading.[238]

While the intuition required to be a completely discerning user of the internet and other multimedia resources may develop with experience and maturity, there are many elements of information literacy that can and should be taught from an early age.

Footscray City College described part of the media literacy process that students should follow when evaluating various sources of information. It suggested that students should develop the ability to address questions such as:

- What is the message?
- Who is sending this message?
- Who is the audience?
- Why are they sending this message?

Or

- Who created this message?
- What creative techniques are used to attract my attention?
- How might different people understand this message differently than me?
- What values, lifestyles and points of view are represented in, or omitted from, this message?
- Why is this message being sent?[239]

The Committee's cyber safety and media literacy survey included a question as to whether and how schools formally teach students effective research and evaluation skills. The question asked at what year level these types of skills are taught and whether it is the classroom teacher or a specialist teacher that has the primary responsibility for teaching these skills to students. The results of the survey certainly confirm observations made by Committee members and staff that media literacy programs in schools vary considerably both in terms of their design and their effectiveness.

The survey responses indicated great variability in the age at which students are introduced to formal information literacy skills. Some primary schools indicated that they begin formal research skills, age appropriate, from the prep year. Others indicated that they introduce

[238] Mr T. Brandenburg, President, ICT in Education Victoria, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.13.
[239] Footscray City College, Written Submission, June 2006, p.1.

these skills much later in the primary years. In teaching effective research and evaluation skills, some schools indicated that teachers get students to look at various real and fake websites and evaluate the content, purpose, credibility, usability and design. Other schools indicated however, that formal teaching of effective internet research and evaluation skills is still in its infancy and suggested that some guidelines and teacher support materials would be useful.[240]

Results of the Committee's survey showed that there is also a variation in approaches to the teaching of media literacy in secondary schools. Often, students in junior secondary school are taken through formal information literacy programs by the librarian or an ICT teacher. For example, one school indicated that year 7 students are taken through a 'How to become information literate' booklet. Another indicated that year 8 students are given four lessons on effective web searching by the library staff, in addition to a lesson spent looking at some 'phoney' websites, to ensure that students are aware of how carefully they need to look at information provided on the internet.[241] Many other secondary schools indicated, however, that research and critical analysis skills are not taught as a dedicated topic but are instead left to the various subject teachers to address.

The Committee also asked teachers and students about their thoughts on media literacy during its program of school visits. Primary school students demonstrated that they are aware of at least some elementary, yet valid ways of verifying the authenticity of information on the internet. Processes identified by students included, for example, comparing information across different sites, cross-checking information that is inconsistent between sites with other reputable sources such as encyclopaedias and atlases, and asking the teacher.[242]

Teachers at Park Ridge Primary School outlined their school's media literacy programs, which are implemented across all year levels. Mr Jason Sergi, Learning Technologies Co-ordinator, outlined the process for research undertaken by students:

> …we look at ways to do researching, we look at that option: that, yes, not everything is true, so you go to different sources; you do not always use the internet as your primary source. You may use the internet, you may use an encyclopaedia. We have Encarta, Exploropedia and Websters Encyclopaedia on the computer… We have a well-equipped library… we

[240] Response to cyber safety and media literacy survey conducted by the Education and Training Committee, July 2006.
[241] ibid.
[242] Primary School Students, Transcript of Evidence, Public Hearing, Park Ridge Primary School, Rowville, 2 June 2006, pp.25–26; Primary School Students, Transcript of Evidence, Public Hearing, Sherbourne Primary School, Greensborough, 9 June 2006, pp.17–18.

> would discuss the fact that one source of information is not enough; you have to go to more sources, and if the only source is an IT source, that is probably not enough either: you need to go back to the old-fashioned books, look at data charts and come up with ideas and so forth.[243]

Ms Glenda Crawford, Year 1 Co-ordinator, further explained how students at Park Ridge Primary School are taught logical and clear ways of evaluating the validity of information from an early age:

> We start data charts formally in grade 2, and it teaches the children to scan the text, whether it is on the internet or in a book, look for the key words, and enter only the key words. The way we do it is to have them put in what they find from the first site and, if the second site has the same answers, leave the box blank because they have not learned anything new. If there were something conflicting, you would mark that and go to another site to see which site substantiated both. From this, the children are taught to take the key words and use the sentences for their PowerPoints. We are very careful about teaching the children how to look at the internet and find the key words. We are pretty good about checking when the kids take a whole chunk and put it in. You comment on their homework if it is done.[244]

Secondary students at St Francis Xavier College (Beaconsfield campus) also exhibited a good understanding of internet research and evaluation skills. One senior student noted the potential bias of information, even from apparently legitimate sources:

> I think it is a good recommendation that students should be taught research skills, but I think they should also be taught that no matter where you look, information could be subject to bias… even legitimate news sources can be subject to connotations or bias which could affect the actual message that is trying to be conveyed or the fact that is trying to be taught. Perhaps they should be taught to watch out for media research.[245]

Another student similarly noted the importance of understanding the role and influence of search engines:

> Things like Google are almost a superpower in terms of search engines. You just have to be careful when you

[243] Mr J. Sergi, Learning Technologies Co-ordinator, Park Ridge Primary School, Transcript of Evidence, Public Hearing, Rowville, 2 June 2006, p.15.
[244] Ms G. Crawford, Year 1 Co-ordinator, Park Ridge Primary School, Transcript of Evidence, Public Hearing, Rowville, 2 June 2006, p.15.
[245] Mr L. Brennan, Year 11 Student, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.24.

> are researching and the bias that there might be with regard to any media source. It is just such a huge company. You have to look around and get different viewpoints. It is very important to do that when researching.[246]

The above evidence demonstrates that many Victorian students are developing media literacy skills. The Committee heard much evidence, however, suggesting that there is 'plenty of room for improvement in terms of how we deliver information literacy skills to both staff and students'.[247] Ms Stephanie Campbell, Footscray City College, stated that many students commonly accept authors of internet-based materials as experts, without acknowledging that people 'put all sorts of ludicrous things on the internet'.[248] Teachers at Doncaster Gardens Primary School had similar views:

> I think in the last few years children have started to think that the internet is the only place you can get information and that when they are maybe doing research for a project, they just go to the internet and do not think about encyclopaedias and books.[249]

> They tend to take it for granted that it is true if they are reading it on the internet… We need to teach them to be a little bit more discerning about the stuff that they read.[250]

Footscray City College was one of a number of schools that recognised that media literacy is an area that is probably not being adequately addressed in schools and that it is something that many students just happen to learn along the way.[251] McKinnon Secondary College stated in a written submission that media literacy is taught 'on the fly', often in association with learning tasks, rather than taught explicitly as an essential skill-set.[252] It further explained this observation:

> The year 9 Bytes course at this school is providing curriculum for students to become more media literate as they produce, create and communicate in a range of media. The importance of teaching the ability to access, analyse and evaluate information in a range of media competes with the importance of providing engaging

[246] Mr J. McKendry-Dow, Student, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.24.
[247] Response to cyber safety and media literacy survey conducted by the Education and Training Committee, July 2006.
[248] Ms S. Campbell, Head, Arts Department, Footscray City College, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.41.
[249] Ms J. Vincent, Middle Years Co-ordinator and ICT Teacher, Doncaster Gardens Primary School, Transcript of Evidence, Public Hearing, Doncaster, 4 August 2006, p.12.
[250] Mrs J. Hales, Year 4 Teacher, Doncaster Gardens Primary School, Transcript of Evidence, Public Hearing, Doncaster, 4 August 2006, p.12.
[251] Ms S. Campbell, Head, Arts Department, Footscray City College, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.35.
[252] McKinnon Secondary College, Written Submission, August 2006, p.4.

> and rich tasks. Time is short so the formalising of teaching media literacy and ICT skills with particular applications is short.[253]

Other contributors similarly identified the inclusion of information literacy in teaching programs as 'hit and miss'.[254]

The Committee notes that the ICT interdisciplinary learning strand of the new Victorian Essential Learning Standards addresses research, analysis and evaluation skills. Age-appropriate standards are specified from level three onwards. The Committee believes that the Victorian Curriculum and Assessment Authority will need to continue to monitor the success of the VELS in teaching students effective research, analysis and evaluation skills.[255]

FINDING 5.3

That there needs to be stronger focus on ensuring that all Victorian students are taught effective research, analysis and evaluation skills, within the context of a rapidly evolving multimedia environment.

RECOMMENDATION 5.1

That the Victorian Curriculum and Assessment Authority monitor the success of the new Victorian Essential Learning Standards in teaching students effective research, analysis and evaluation skills.

[253] ibid.
[254] Ms M. Hannan, Chair and Mr R. Dunscombe, Deputy Chair, Australian Teachers of Media, Transcript of Evidence, Public Hearing, Melbourne, 22 May 2006, p.34.
[255] Victorian Curriculum and Assessment Authority 2005, *Victorian Essential Learning Standards: Interdisciplinary Learning Strand–Information and Communications Technology*, Revised Edition December 2005, VCAA, Melbourne.

Intellectual Property

The Committee notes that an important element of information literacy is the recognition of intellectual property, the prevention of plagiarism and the appropriate citation of sources. While not new issues, the rise of digital technology has provided unprecedented opportunities for the almost instantaneous replication and communication of data. It has also given rise to increased opportunities for abuse of intellectual property and plagiarism and cheating in education. As stated by one teacher at Doncaster Gardens Primary School, 'it is so easy to copy and paste and say, "Yes, that's mine"'.[256] A submission from Southvale Primary School and GMM Training Pty Ltd similarly stated:

> Students are very capable in using the internet and websites for research. Most are not taught about bias on these sites and most are not taught about plagiarism and copyright. [257]

While most students appearing before the Committee demonstrated a sound understanding of the issue of plagiarism, many teachers told the Committee that it remains one of their key concerns. Students themselves spoke of how easy it is to simply 'cut and paste' work from the internet, despite teachers being conscious of the practice:

> I find that it is very easy to copy and paste something, change very few things around, and have the exact same as the person sitting next to you, hand it in—one on the top, one on the bottom—and get away with it very easily.[258]

Ms Sue Nichols, English, Literature & Special Education Teacher, St Francis Xavier College, indicated that plagiarism is a major concern that has created additional work for teachers in recent years:

> They get used to getting away with that in junior secondary, then when they come to senior secondary and you really pore through their essays you realise when the syntax changes that this is not the student's work. It causes a lot of extra work for teachers: hours on the computer finding where it came from—and students try to justify it.[259]

The Committee heard that some schools are taking issues of plagiarism and copyright very seriously. For example, the Learning

[256] Mr C. Baldwin, Year 5 & 6 Teacher, Doncaster Gardens Primary School, Transcript of Evidence, Public Hearing, Doncaster, 4 August 2006, p.12.
[257] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.21.
[258] Secondary Student, Committee School Visits, June–August 2006.
[259] Ms S. Nichols, English, Literature & Special Education Teacher, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.5.

Technologies Co-ordinator, Park Ridge Primary School, outlined how these issues are addressed throughout his school:

> I also teach the kids about copyright and, when using pictures and other things from the internet, how they need basically to cite what they are doing and say exactly why they are doing it. It is a good idea—and I reinforce this with the library teacher as well—to work out the proper way to write a bibliography, and when getting pictures off the internet always to cite the internet address. When the kids move from grade 2 [through] to grade 6, they know that when they get work from the internet it is not their own work, so they must cite it. Also, when we research something off the internet we write it in our own words; we do not copy and paste directly. We look at it, write down our notes—we still use paper and pencils in class—go back and rewrite it in our own words.[260]

Issues of copyright and plagiarism were also noted as of significant importance for students publishing their own multimedia content. For example, when talking about mediated chat rooms and other multimedia publishing sites to which students contribute content, Dr Martyn Wild, Director, Intuitive Media, stated that:

> As you might imagine, there are also issues of copyright—and the mediators are sharp about copyright but so are the kids.[261]

The Committee notes that plagiarism has been a longstanding issue in education and is far from confined to information gathered from the internet. Further, the Committee notes that there are tools in the market place that enable universities, schools and teachers to more easily detect plagiarism in work submitted in digital forms. Students who routinely plagiarise slabs of uncited work will not be engaged in meaningful learning and do not acquire an in-depth understanding of the topic that they are meant to explore. As noted by Ms Sue Nichols, English, Literature & Special Education Teacher, St Francis Xavier College, the practice of copying material may also be affecting reading skills:

> I think reading skills are down because kids will have giant slabs off the computer they have not even bothered to read and evaluate, and they will submit those for work.[262]

[260] Mr J. Sergi, Learning and Technologies Co-ordinator, Park Ridge Primary School, Transcript of Evidence, Public Hearing, Rowville, 2 June 2006, p.13.
[261] Dr M. Wild, Director, Intuitive Media, Transcript of Evidence, Public Hearing, Melbourne, 22 May 2006, p.13.
[262] Ms S. Nichols, English, Literature & Special Education Teacher, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.5.

The Committee heard that protecting intellectual property and copyright is of significant interest throughout the multimedia industry. Representing Microsoft Australia and New Zealand, Mr Simon Edwards, National Manager, Government and Industry Affairs, stated:

> … copyright and the owners of creativity need to be very fully respected. Otherwise, we believe we will severely limit the extent to which the incentive to create exists.[263]

The Australian Visual Software Distributors Association emphasised the role of education systems in ensuring that students are taught about intellectual property and copyright theft:

> …the Department of Education should be teaching the wrongs of Intellectual Property and Copyright theft in the digital environment (we) all now live in—especially young people. Stealing on the internet should be no different to stealing from a retail store yet the attitude of young people sadly does not reflect this situation.[264]

The Committee notes that intellectual property and copyright are covered within the interdisciplinary strand of the Victorian Essential Learning Standards, for years 7 and 8 students:

> Students explore the distinction between legal and illegal uses of ICT and create information products that comply with ICT intellectual property law. This particularly relates to copyright.[265]

The Committee believes, however, that students should be formally introduced to the concepts of copyright theft, intellectual property and plagiarism in an age-appropriate manner, earlier in their education. The Committee believes that if such issues are taught early in education, students will be better placed to avoid breaches in the later years of their education and their future working and personal lives.

FINDING 5.4

That all Victorian children need to be taught to properly acknowledge all information and other multimedia content that they use in their schoolwork.

[263] Mr S. Edwards, National Manager, Government and Industry Affairs, Microsoft Australia and New Zealand, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.17.
[264] Australian Visual Software Distributors Association, Written Submission, April 2006, p.1.
[265] Victorian Curriculum and Assessment Authority 2005, *Victorian Essential Learning Standards: Interdisciplinary Learning Strand–Information and Communications Technology*, Revised Edition December 2005, VCAA, Melbourne, p.20.

The Need for Multimedia Content Creation Skills

Evidence to this inquiry supports an increasingly accepted view that content creation across a variety of multimedia platforms is a vital element of media literacy. The Committee heard that content creation is no longer just reserved for those with a wealth of technical expertise in multimedia. To create an environment where innovation and technological advancement is sustainable, children need to be apprenticed into the strategic and creative use of sophisticated digital resources. This will provide them with the competencies and skills required to become inventors, designers, producers and storytellers using 3D multimedia authoring resources.[266] Further, by developing their own content, students can more readily understand the nuances of effective analysis and evaluation skills.

Professor Len Unsworth and Dr Angela Thomas outlined the trend that has seen young people move from being receivers and consumers of digital information to now being producers and creators of multimedia content:

> Over the past decade, there seems to be a widespread shift from children as mere consumers and receivers of digital texts, into a new type of child, one that has become an innovative producer of multimedia digital texts. In addition to children consuming and participating within the cultural communities associated with digital texts, the most recent research has demonstrated how children are playing, experimenting, manipulating the affordances of digital texts for their own pleasures and purposes.[267]

The perspectives of Unsworth and Thomas suggest that children's interactions with multimedia and levels of content creation are increasingly sophisticated and are often beneficial to student development on a multitude of levels. For example, children are creating and managing their own online communities; participating in online fan fiction communities; creating role-playing web forums; creating, writing for and editing their own zines (web magazines); and are publishing their own multimedia weblogs, including photoblogs and podcasts. Furthermore:

> …many children spend hours helping each other to learn the discursive and social practices around texts, willingly volunteering their time and efforts to help their friends become insiders of the communities. Children are not just becoming active creators of multimedia texts, they are developing values, citizenship and ethics through their participation in the communities in which

[266] Prof L. Unsworth, School of Education, University of New England and Dr A. Thomas, University of Sydney, Written Submission, April 2006, p.5.
[267] ibid.

> such texts are produced (Lankshear and Knobel, 2005; Thomas, forthcoming).[268]

The Australian Children's Television Foundation similarly outlined the trend for an increasing number of young people to create multimedia content, noting that even very young children are doing so:

> Changes in multimedia development have meant that children no longer simply 'view' media as a passive audience but produce and create their own media. Media production is becoming a universal skill, and a new generation of 'digital natives' as young as 6 and 7, are themselves creating content on their computer, home video camera and/or mobile phone. As a result, children expect to have access to and use their choice of digital content and/or production tools in all aspects of their life, and they move from one type of media to the next with ease.[269]

According to Apple Computer Australia, many of its new technologies are allowing children to easily produce their own digital content. As indicated by Mr Stuart Taylor, National Sales Manager for Education, Apple Computer Australia, this is highly beneficial, allowing children to demonstrate their learning in new and engaging ways:

> One of the things that we like about our technology is that the kids do the creation. Sometimes they make their own content. If they need to deliver an assignment on what an earthquake looks like or Pythagoras's theorem, they make their own content… Our ability to allow children to create content and to show their view of the world or their understanding of what you are trying to teach them—isn't that the best way? When they can deliver it back to me and it is exactly right, then I know we have taught them the right way and they are able to explain that. If they can explain it to me in iMovie or GarageBand or a podcast or whatever, then they can explain it anywhere. I do not think content is the issue. I think it is empowering children to use the tools. [270]

The Victorian Information Technology Teachers Association explained that by producing their own multimedia content, students are becoming more aware of television as a powerful medium. It proposed that as television is generally viewed as an entertainment medium, the public is generally unaware of the sophistication and level of psychological impact of content in advertising and in television scripts. According to the Association, the editing process joins a multitude of distinct

[268] ibid.
[269] Australian Children's Television Foundation, Written Submission, May 2006, p.4.
[270] Mr S. Taylor, National Sales Manager for Education, Apple Computer Australia, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.31.

elements into a perceptual 'contiguous' story. Involving students in the creating and editing process can therefore provide them with:

> …many valuable educational lessons which can be drawn from this process, from idea and design to the entirety of perceptions and interpretations that are made by the viewer. Students need to be provided with the opportunity to understand and analyse the motivations of the producers of television advertising and mainstream shows.[271]

Certainly, the Committee saw many examples of sophisticated multimedia content created by Victorian students, across all age groups and a broad range of curriculum areas. Just some of the many examples seen by Committee members and staff include animations and PowerPoint displays created by primary students at Spring Valley Primary School, Park Ridge Primary School and Doncaster Gardens Primary School; photo stories created by students across the Yarra Valley eLearning Community; digital portfolios created by middle years students at McKinnon Secondary College; radio and television shows produced by Park Ridge Primary School students; and broadcast quality music and film creations by senior students at St Francis Xavier College and Hawthorn Secondary College. Sophisticated multimedia content produced by Victorian students was also showcased at the Curriculum Corporation's national conference in 2006.

The Committee notes that as students develop increasingly sophisticated multimedia publishing skills, there will be an increasing need for students to have more opportunities to publish and showcase their work to a broad audience.

The Committee heard that the Australian Children's Television Foundation has been championing for some time the idea that young Australians could benefit immensely from having a dedicated Australian children's television channel (refer Chapter 6). The Committee supports this exciting opportunity for Victorian children, having observed that Victorian students are already 'stretching the boundaries' of current multimedia authoring and animation software. The Committee therefore believes that Victorian children are well placed to lead the nation in multimedia content developed for the children's channel.

The Victorian Information Technology Teachers Association outlined in its submission one of the key opportunities it offers Victorian students to publish their multimedia creations. It runs an annual video competition in which participants have 6 hours to create a 3 minute video, or 1 minute animation. The competition, 3in6, provides impetus for students to design and construct video elements as important multimedia components. The Victorian Information Technology

[271] Victorian Information Technology Teachers Association, Written Submission, May 2006, p.1.

Teachers Association believes 'there is more value in the creation of multimedia, than generally accepted by the public'.[272]

Another of the many opportunities available to Victorian students to produce and showcase their multimedia creations is the Wakakirri National Story Festival. This festival introduced a new Story-Film category in 2005. The Story-Film category allows students to produce any film style (for example, animation, documentary, music clip, drama) to deliver a 5-minute original work on video (MiniDV tape format). Entries to the Festival are featured on national television and an online showcase.[273]

The Committee notes that there are a number of valuable opportunities for Victorian students to showcase their multimedia creations. The Committee encourages all Victorian schools and teachers to become more aware of these opportunities and to help Victorian students to access and participate in them.

FINDING 5.5

That Victorian students are creating increasingly sophisticated multimedia content both at school and often, in their own time. Further, that it will become increasingly important for Victorian students to understand and to have access to a range of opportunities to publish and showcase their multimedia content.

[272] ibid.
[273] Refer to the Wakakirri National Story Festival website, <http://www.wakakirri.com/default.htm>.

Industry Needs as a Driver of Multimedia in Schools

Underlying much of the evidence to the Committee was the importance of ICT and multimedia to continued innovation and productivity growth in the Victorian economy. Submissions and witnesses noted that schools must equip an increasing proportion of students to help drive innovation in, and through, ICT. The Victorian Department of Education and Training stated:

> The take up of technology in every industry means that all education jurisdictions must seek to harness the benefits of the digital revolution in educating future generations. If Victorian students are to maintain pace with the rest of the world, they require a full appreciation of, and familiarisation with, ICT through its application and integration across all areas of their learning at school and beyond.[274]

The Victorian Curriculum and Assessment Authority similarly recognised that there are sound economic, as well as social and pedagogical reasons, for the inclusion of multimedia within schools and education systems:

> Present and future economies require personnel with ICT knowledge and skills. Students will spend their lives in a 'multitasking, multifaceted, technology-driven, diverse and vibrant world − and they must be equipped to do so'.[275]

Innovative, highly skilled use of key multimedia resources is 'among the most crucial advanced skills that students need to develop, if Australia is to progress our international competitiveness in professional, commercial, industrial and social fields'.[276] Thus:

> To create an environment where innovation and technological advancement is sustainable, children need to be apprenticed into the strategic and creative use of sophisticated digital resources.[277]

Footscray City College similarly recognised the need for students to have access to high quality, professional standard multimedia resources:

[274] Department of Education and Training, Written Submission, August 2006, p.2.
[275] *Learning for the 21st Century*, <http://www.medialit.org/reading_room/article580.html>, cited by Victorian Curriculum and Assessment Authority, Written Submission, July 2006, p.1.
[276] Prof L. Unsworth, School of Education, University of New England and Dr A. Thomas, University of Sydney, Written Submission, April 2006, p.4.
[277] ibid.

> It is not appropriate for students to be offered, as the only alternative, lesser programs than the professionals use. Programs have many levels, a primary school student can engage with Photoshop, if they have access to Photoshop they are engaging with a real life tool… Flash is pretty sophisticated, it is conceptually difficult, but Director uses the analogy to the theatre, it is very accessible to students of all ages. We should not be offering PowerPoint as the only presentation tool.[278]

Mr Simon Edwards National Manager, Government and Industry Affairs, Microsoft Australia and New Zealand, suggested that schools may need to investigate how students can be better prepared to deal with the workplace of the future:

> …the skills of the worker of the future may well require the ability to synthesise multiple levels of information, and the question of the depth of that information to the individual and how they use, analyse and communicate information in the future is one of those issues that we need to think about very seriously, because that is where we are going to need those students who are in that environment today to work ... it is an issue that that is the workplace of the future and we are going to have to try and find ways to help students adapt to and survive in that environment.[279]

The Committee observed that 3D multimedia authoring tools have become an increasingly important resource in many Victorian schools. This is significant, given that they have also been recognised as a significant resource for life in the 21st century. Professor Unsworth and Dr Thomas highlighted in their written submission to the inquiry, the breadth of examples of just this one facet of multimedia, 3D authoring, in current workplaces:

> 3D modeling software is used for research purposes in medicine, forensics (i.e. DMesh) and agriculture. Researchers are using such tools to advance a diverse range of fields into the future, such as: 3D modeling of scientific concepts (i.e. 3dMax), architecture and city planning (i.e. Radiance Architectural Rendering), environmental projections (i.e. TreeMagikG2), and simulations of space travel; training software for athletes (i.e. SolidWorks 3D), astronauts and race car drivers; the creation of narrative worlds of films (i.e. MovieWorks) and massively multiplayer online role-play gaming (MMORPGs) (using AC3D software, or

[278] Footscray City College, Written Submission, June 2006, p.3.
[279] Mr S. Edwards National Manager, Government and Industry Affairs, Microsoft Australia and New Zealand, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.22.

> characterFX, for example); and new media digital art forms (i.e. Bryce).[280]

The Committee notes that Victoria's economy has a specific demand for 3D authoring within its booming game making industry. Currently, the Victorian game making industry generates $100 million in export revenue each year and is expected to grow to $500 million by 2010.[281]

It should be noted here that skills in the efficient use of more basic software are equally as important. This does not mean that the role of schools and teachers is to 'train' students in the use of specific software programs:

> Training in use of specific multimedia software prepares a student only for the eventuality that they have been trained for and is quickly outmoded and irrelevant. Educating for the *process* for instance digital video editing, lasts a lifetime. No matter what editing software the student is presented with, the processes are the same and need only be nutted out for that software package.[282]

Thus, the Committee sees the responsibility of schools as being to introduce students to a broad range of software and multimedia tools and the powerful opportunities and applications they offer throughout society. As stated by the Victorian Association for the Teaching of English:

> While technologies come and go, the essential dispositions, ability, knowledge and skills young people require to succeed in their lives beyond school, and to create better futures for themselves and their communities, rest to a large extent on the strength of their communicative abilities. This is much more than being able to program the latest computer language, or to operate a variety of hardware and software. It means understanding and acting with knowledge about how technologies and digital cultures are changing the ways we interact with others, the ways we work and live, the ways we come to form communities and groups; in short, the ways we function as individuals and as societies.[283]

Importantly, the use of multimedia in schools is also assisting students to develop the more generic skills required by industry and employers. They include, for example, the ability to access, process and sort information presented in a wide variety of formats; communicate with

[280] Prof L. Unsworth, School of Education, University of New England and Dr A. Thomas, University of Sydney, Written Submission, April 2006, p.4.
[281] Multimedia Victoria, website, <http://www.mmv.vic.gov.au/Games>, viewed on 1 September 2006.
[282] Australian Teachers of Media, Written Submission, May 2006, p.1.
[283] Victorian Association for the Teaching of English, Written Submission, June 2006, p.1.

other individuals using a range of multimedia tools; integrate different kinds of information; and make multimedia presentations that integrate text, sound, voice, graphics, animation and video. These types of skills are closely related to media literacy, which was discussed above. Other generic skills facilitated through the use of multimedia include organisational skills, collaborative and co-operative team work, problem solving and decision making, as well as a range of general social competencies.

Given the levels of access to computers and the internet in Victoria (outlined in chapters 2 and 3), the Committee believes that Victorian schools and education systems are well positioned to capitalise on partnerships with ICT industry. In doing so, Victorian schools will be better able to maximise the benefits of multimedia in their classrooms and Victoria will be positioned to be a world leader in the use of multimedia within education.

FINDING 5.6

That high levels of growth in the Victorian economy will be enhanced by a future workforce that has high levels of competency in advanced multimedia technologies. Specific industry demands will include:

- high levels of media literacy;
- generic workforce skills that are increasingly being developed and enhanced through the collaborative use of multimedia; and
- sophisticated technical skills necessary to lead innovation within the ICT and other industries.

RECOMMENDATION 5.2

That Multimedia Victoria, in consultation with the Department of Education and Training, develop protocols for facilitating greater Australian industry involvement in the provision of multimedia in the classroom.

Conclusion

The Committee believes it is essential that schools respond to the new ways in which net age students approach learning and embrace multimedia. 'Digital natives' have different needs and expectations to the 'digital immigrants' of the past and have a far greater capacity to exploit the opportunities that emerging technologies present. Schools and teachers must adjust their practices and approaches to account for the characteristics, needs and expectations of the net age student. This change is not only essential on pedagogical grounds, but is also essential to respond to the new and emerging needs of industry and modern workplaces.

It is evident to the Committee that media literacy is now an essential component of modern schooling. The Committee believes that a modern definition of media literacy must incorporate the concepts of accessing, analysing, evaluating and creating content across a variety of multimedia technologies. The continued explosion of multimedia technologies means that not only have students' media literacy needs changed dramatically over the past five or six years, but that they will continue to change and advance over coming years. Students will continue to need skills to be sophisticated, yet responsible consumers and creators of information across multiple platforms from a very early age.

6. New Tools: New Opportunities

Introduction

Schools today are facing significant demands to meet the new and emerging needs of net age students. Yet evolving in tandem with these needs are new, innovative multimedia tools and exciting new opportunities for contemporary teaching and learning. Throughout the inquiry, the Committee heard of a range benefits that multimedia can deliver to teaching and learning, if used effectively. In summary, multimedia can:

- facilitate personalised, customised and independent learning experiences by allowing students to manage the timing, sequence and assessment of their work;
- cater to many different learning styles, better cater to the needs of students with learning difficulties and better meet the needs of the visual learner;
- facilitate the presentation of multiple perspectives and modes of delivery on the one issue, thereby increasing understanding of certain concepts that are difficult to communicate using text or static images alone;
- encourage students to work collaboratively in teams and to develop a broad range of generic skills (organisation, time management, decision making, communication, problem solving and social competencies);
- increase student engagement, concentration and perseverance;
- improve students' attitude to learning, increase motivation and enthusiasm and improve self-esteem;
- support higher-order thinking;
- bridge the gap for students from diverse language and cultural backgrounds, through the use of a 'hands on' environment;
- increase the breadth of possible curriculum offerings, learning resources, sources of information and the breadth and richness of learning; and

- extend learning opportunities beyond the traditional classroom boundaries.[284]

One aspect of the terms of reference for this inquiry sought to investigate the implications of multimedia for learning styles and education achievement within different curriculum areas. The Committee heard evidence that the applications and benefits of multimedia are equally valuable across the curriculum, from disciplines such as English, mathematics and science, through to curriculum areas such as home economics and physical education, which have traditionally seen less use of multimedia technologies.

A number of schools outlined their use of multimedia across the science curriculum. For example, Wonthaggi Secondary College outlined the use of multimedia for topics such as marine science and forensic science,[285] while a joint submission from Southvale Primary School and GMM Training Pty Ltd noted the applications of multimedia in the teaching and learning of biology and chemistry.[286] Mr Ross Phillips, Head of Science, Presbyterian Ladies' College, also outlined applications of multimedia in science:

> We use technology in all sorts of ways. One impact is accessing real data that is current now. We are not looking at textbooks with data from 20, 50 years ago, but we can look at what the Hubble Space Telescope did yesterday and things like that. We have that sort of currency of data which brings in attention, because we are dealing with what is now, what is in the media and what is on the computer…
>
> I am a physics teacher… I am dealing with things that are in motion or in three dimensions, and if you are stuck with a two-dimensional whiteboard or blackboard that is static, it is hard to show a lot of the concepts, whereas if you have animations from the internet or whatever you have purchased, it can be much easier to

[284] Many submissions contained discussion regarding the benefits of multimedia in the classroom. For example: Association of Independent Schools of Victoria, Written Submission, August 2006, p.5; Centre for Learning Innovation, NSW Department of Education and Training, Written Submission, June 2006, p.2; Faculty of Education, Queensland University of Technology, Written Submission, June 2006, p.3; Mr G. Gebhart, ICT/Multimedia Manager, Lowanna College, Written Submission, June 2006, p.4; Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, pp.11–13; Prof J. Arnold and Ms K. Vigo, Swinburne University of Technology, Written Submission, June 2006, pp.4–5; Victorian Curriculum and Assessment Authority, Written Submission, July 2006, p.1.

[285] Wonthaggi Secondary College, Written Submission, August 2006, p.3.

[286] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.12.

> demonstrate some of the concepts. I think that helps the students pick up information much more quickly.[287]

The joint submission from Southvale Primary School and GMM Training Pty Ltd also outlined how history teaching can be enhanced through the use of multimedia, which can capture important events through a combination of text, photographs, maps, essays, sound, voice and video.[288] Ms Helena Dunn, Head of History, Presbyterian Ladies' College, similarly stated:

> Probably the biggest [benefit of multimedia] for history is the amount of material that is out there now that students access… other wonderful things for senior history is visual material. We all acknowledge the visual nature of learning, teaching and students, but history is such a visual subject. Where once we presented our students with the old black and white versions of things, we can now access colourful screen posters, paintings and all sorts of other material for them to look at, analyse and use. The other wonderful thing is the use of blogs for history learning.[289]

Southvale Primary School and GMM Training Pty Ltd stated that the visual nature of multimedia also makes it an excellent learning, teaching and presentation tool throughout the geography curriculum, including physical, regional and cultural geography. In particular, it highlighted the use of video clips, photography, maps and statistics that all bring geography to life and make learning interesting and easier.[290] McKinnon Secondary College noted the potential of industry standard technologies such GIS[291] and GPS.[292] Mrs Pat Beeson, Head of Geography, Presbyterian Ladies' College, outlined how her school is using GIS technology in the geography curriculum:

> I have been witness to an information explosion and I think a revolution in the way that geography can and should be taught… A special program that we have put

[287] Mr R. Phillips, Head, Science, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.6.
[288] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.13.
[289] Ms H. Dunn, Head, History, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.8.
[290] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.12.
[291] A GIS is a computer system capable of capturing, storing, analysing, and displaying geographically referenced information; that is, data identified according to location. Practitioners also define a GIS as including the procedures, operating personnel, and spatial data that go into the system. GIS technology can be used for scientific investigations, resource management, and development planning. For example, a GIS might allow emergency planners to easily calculate emergency response times in the event of a natural disaster, or a GIS might be used to find wetlands that need protection from pollution. Refer to the US Geographical Survey website for further information, <erg.usgs.gov/isb/pubs/gis_poster/#toc>.
[292] McKinnon Secondary College, Written Submission, August 2006, p.3.

> in place at PLC is called GIS. It takes information and structures it to create knowledge… This has immense benefits for the spatial learner… putting GIS into the curriculum has been fantastic. Very few schools are doing it, but GIS is used quite extensively in the workplace.[293]

The benefits of multimedia for teaching languages were also noted throughout the inquiry. For example:

> Multimedia is an excellent tool for teaching foreign languages. Digital video trains learners with pronunciation and full motion video that can put students in real-life settings.[294]

Acknowledging that multimedia can have a range of benefits and applications across a broad range of curriculum areas, the following chapter examines some of the tools and opportunities currently being integrated into the curriculum.

Student Engagement

Student engagement is vital in ensuring positive student outcomes in education. The Committee received a significant body of evidence propounding the power of multimedia technologies in increasing student engagement. Such views have been well documented and accepted within the education community. As stated in the preamble to the Australian Government's Pedagogy Strategy: Learning in an Online World:

> Pedagogies that integrate information and communication technologies can engage students in ways not previously possible, enhance achievement, create new learning possibilities and extend interaction with local and global communities.[295]

The Committee heard that students are engaged by multimedia because they find it responsive, relevant, dynamic and challenging. A submission from Footscray City College explains:

> Students like multimedia because it is hard, but they can learn it and because they get immediate feedback —it works, it doesn't. Students like the fact that multimedia relates to their culture, they own it. Students commit to multimedia because it is so dynamic. Multimedia changes and develops daily. They are

[293] Mrs Pat Beeson, Head, Geography, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.8.
[294] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.12.
[295] Ministerial Council on Education, Employment, Training and Youth Affairs 2005, *Pedagogy Strategy – Learning in an Online World*, MCEETYA, Melbourne, p.2.

> interested in learning about really sophisticated digital techniques…[296]

The power of multimedia to engage students has been supported by research conducted within Victorian schools. For example, one research project considered the influence of multimedia including television and film making, music software, digital photography, mobile phone technology and other ICTs on student outcomes. Documentation from the project demonstrated that projects involving multimedia fostered greater student engagement, enthusiasm and depth of student understanding and recall of subject, while still maintaining their academic rigour.[297]

A number of schools emphasised that the increase in student engagement arising through the use of multimedia in the classroom has had a range of flow-on benefits in terms of student behaviour and the development of a more co-operative and collaborative learning environment. For example, Wonthaggi Secondary College stated in a written submission:

> We notice very little distraction from tasks when students are engaged in using or creating multimedia even when there are two classes using the Flexible Learning Centre at the same time… There hasn't been any graffiti on desks or damage to equipment. Students treat the space with respect. We experience absolute minimal behaviour problems from students. Even when working in pairs and groups, we rarely have to remind them of expectations and appropriate behaviour… Students are sharing skills and abilities and helping each other learn new things. It's rewarding to introduce a class to a new program such as ActivStudio for the Interactive WhiteBoard and see them teaming to master it… They build on each others' strengths very quickly.[298]

McKinnon Secondary College similarly highlighted the positive effects that multimedia can have on student learning and other outcomes. Its submission to the inquiry focused specifically on year 9 students:

> From observation, the ICT rich units particularly at year 9, where students use the multimedia, has facilitated students to become more independent learners; to work at their own pace; to work co-operatively; to engage with other students in a purposeful manner; [and] to engage/build relationships with staff in a more mature and purposeful manner… The use of multimedia somehow encourages more collaborative learning and peer coaching. The use of multimedia by

[296] Footscray City College, Written Submission, June 2006, p.6.
[297] Brighton Grammar School, Written Submission, June 2006, p.2.
[298] Wonthaggi Secondary College, Written Submission, August 2006, p.5.

> students in their 'classroom', creates a more co-operative and sharing learning environment.[299]

Essendon North Primary School similarly noted positive student behaviour resulting from the introduction of multimedia technologies throughout the curriculum:

> Students are excited and motivated by some of the applications that are available and are more engaged by specific open ended software where students can create new learning and assemble their own projects… We have noted less incidents of unacceptable behaviour and more discussion and collaboration in student work. The technology has turned them into thinkers and problem solvers. Multimedia connects with students and makes the learning come alive. Their concentration levels and passion for learning are ignited.[300]

The Committee heard that 'hybridity' of traditional print media and other forms of multimedia, including television, cinema, the World Wide Web and video/computer games has contributed to the power of multimedia to engage net age students. Hybridity is where a text or narrative that may have in the past been produced in a single format (for example, a book or television show) is now produced across a variety of media.

Professor Len Unsworth, School of Education, University of New England and Dr Angela Thomas, University of Sydney, provided detailed discussion of the hybridity trend in a written submission to the Committee. They describe how hybridity is not only promoting the 'consumption' of texts and narratives across a broad range of media, but also encouraging the 'creation' of media in ways that are demonstrating high levels of understanding and engagement with those texts and narratives:

> The enduring capacity of literary narratives to engage the enthusiasm of young people in the twenty first century is increasingly articulated with the integral role of digital technology in their lives. This is exemplified in the phenomenal success of J.K. Rowling's Harry Potter books and the plethora of Harry Potter websites, many of which are developed and managed by juvenile 'webmasters'. Such websites demonstrate both profound and playful engagement with the book-based narratives through online chat rooms, reviews and commentaries, as well as avid exploration of new forms of related game narratives, and the generation of 'fan

[299] McKinnon Secondary College, Written Submission, August 2006, p.1.
[300] Essendon North Primary School, Written Submission, August 2006, p.1.

> fiction' and image-focused creations elaborating interpretations of the story worlds.[301]

The Committee received evidence from the Australian Children Television's Foundation that the benefits of hybridity include providing assistance to students with learning disabilities (particularly reluctant or slow readers) to engage and perform at a new level.[302] The Committee also heard of benefits arising from the hybridity of modern texts within the secondary school environment. One school investigated whether the level of understanding and engagement of senior students in the study of a Shakespeare text would be enhanced if multimedia resources were used in conjunction with the text and other written material. The research reported measurable improvements in student results, student engagement, student understanding of the text, team work and collaboration.[303]

The Committee believes that evidence about the powers of multimedia to assist with student engagement is conclusive. Multimedia is, however, just one part of the equation.

A submission from WestOne Services, Department of Education and Training (Western Australia) recognised the role of teachers or facilitators, rather than multimedia itself, in creating effective learning experiences. Teachers still need to be conscious of different learning styles and how those learning styles will influence students' experiences with multimedia:

> It is agreed that multimedia is just another resource and that its effect on student learning will largely depend on the facilitation provided as with any other learning method… While multimedia has the potential to be interactive and fun it should be recognised that the experience will differ as do the learning styles of the students, and also according to the use of the multimedia product…[304]

Footscray City College similarly suggested that a significant responsibility rests with teachers to ensure that the curriculum and assessment strategies they develop and utilise are meaningful, challenging and require students to solve problems:

> … the availability of technology is not enough, students will engage in multimedia because the project is interesting, requiring them to think, solve problems and develop skills. Projects that offer them choices, alternatives and real life challenges and problems to

[301] Prof L. Unsworth, School of Education, University of New England and Dr A. Thomas, University of Sydney, Written Submission, April 2006, pp.2-3.
[302] Australian Children's Television Foundation, Written Submission, May 2006, p.3.
[303] Brighton Grammar School, Written Submission, June 2006, p.1.
[304] WestOne Services, Department of Education and Training (Western Australia), Written Submission, June 2006, p.1.

> solve are what they need; Multimedia is merely a very effective tool.[305]

In summary then, the Committee found that multimedia can, where used appropriately, increase levels of student engagement in their learning. Further discussion of the role of the teacher is contained in Chapter 7.

FINDING 6.1

That multimedia technologies are providing opportunities for new levels of student engagement in Victorian schools across many subject areas. Nonetheless, the role of teachers in selecting the best technologies and using appropriate pedagogies remains pivotal in the effective use of multimedia in education.

Emerging Technologies

The range of available technologies has expanded considerably in recent years. Within the Victorian Curriculum and Assessment Authority's various curriculum documents, mention is made of some or all of the following technologies: computers; digital cameras (still and moving); image and sound processing software; text and numeric processing software; modelling software; visualising thinking tools; web authoring software; simulation software; internet (blogs, websites, wikis, chat sites); MP3 players (and podcasting); public video displays; interactive television; calculators (scientific and computer algebra system [CAS]); computer aided design; global positioning systems; mobile phones; personal digital assistants (PDAs); data loggers; smartboards; robotics; and gaming consoles.[306]

Having access to a range of these types of technologies offers students important opportunities to create and publish their own multimedia content. As discussed throughout the inquiry, creating content is an essential new skill required by many people. Additionally, evidence to this inquiry noted the motivational benefits of providing students with the tools required to publish their work:

> The publication of student work is an important educational aid. Public performance is long recognised

[305] Footscray City College, Written Submission, June 2006, p.6.
[306] Victorian Curriculum and Assessment Authority, Written Submission, July 2006, p.2.

> as a motivating factor for students and is well established with school sports, concerts and plays.[307]

The modern multimedia landscape provides a multitude of opportunities for publishing of student work. Opportunities presented through a single medium, the internet, include web pages, wiki, blogging, podcasting, videocasting, Skypecast, Teamspeak, Ventrilo, Flickr and Google Video.[308]

Interactive whiteboards, overhead projectors, video cameras, digital cameras, DVD burners, printers and scanners are in an increasing number of Victorian classrooms. Further, many practitioners are now seeing an educational role for the very latest devices popular with young people including mobile phones, iPods and other handheld devices. The Committee notes, however, that further research examining the educational benefits of such devices is required:

> The use of iPods and mobile phones has become extremely popular with students and has seen significant use outside of school by students. Schools will need to prepare for these technologies as the use of podcasts and sms homework have become popular modes of delivering education on a global scale. This is an area in which schools should undertake significant research.[309]

Dr Karen Orr Vered, Director, Digital Media Studies, Flinders University similarly noted the important additions made to our media landscape by mobile phones and personal digital assistants:

> [These devices] can be central to multimedia production and distribution and they are immensely appealing to youth and central to youth culture. Multimedia education ought to embrace these media as production tools and channels for distribution.[310]

The Committee heard, however, that there may be some reluctance within schools and school systems to utilise some of the newer technologies available to them:

> Recently I had reason to ask some school leaders, principals and other senior staff, could they envision a classroom where every student had and used a mobile telephone in the classroom. Some were horrified; 'how disruptive', 'over my dead body' were two of the comments. However others saw great educational

[307] ASISTM Computer Game Design, Programming, Multimedia and Mathematics Cluster, Written Submission, June 2006, p.7.
[308] ibid.
[309] Mr G. Gebhart, ICT/Multimedia Manager, Lowanna College, Written Submission, June 2006, p.2.
[310] Dr K.O. Vered, Director, Digital Media Studies, Flinders University, Written Submission, June 2006, p.6.

> potential noting that the convergence of technology has meant that the mobile phone was not just useful to communicate but also to retrieve information including images, store information and even manipulate it. Like it or not, we are living in changing times and this needs to be reflected in the classroom. The classroom will not remain relevant if it excludes our students' technology.[311]

Nonetheless, the Committee heard that a number of Victorian schools are pursuing trials using popular new technologies in their classrooms.

The Yarra Valley eLearning Community[312] outlined for the Committee its palm pilot trial for year 9 students across seven schools:

> We had a small group of year 9 students do the same piece of work in three formats—one was on the web, working on computers in the classroom; one was with a series of palm pilots that the students were issued with that they could learn from at any time; and one was the traditional format of text book and print material… What it showed was that the learning process was improved when the students had trust in the object of technology they were working with and flexibility to be able to learn in their own time when they wanted to complete the task.[313]

The Committee notes that the Victorian Government is currently conducting a trial using iPods with prep to year 12 students in ten government schools. The schools are using the technology to improve literacy and to assist learning in English, science and technology. Students are downloading podcasts for projects, storing assignments and creating e-journals and other work.[314]

Other schools also allow students to use such devices as personal tools. For example, rather than banning the use of mobile phones in classrooms (or even banning them from school altogether), Mt Eliza Secondary College allows students to use mobile phones appropriately. This includes, for example, using the phone in the classroom as a clock, personal organiser and calculator. The

[311] Comment from Mr D. Loader in *Teacher Magazine*, November 2004, cited by Australian Children's Television Foundation, Written Submission, May 2006, p.4.

[312] The Yarra Valley eLearning Community is a $12.8 million initiative aimed at developing a model cluster of schools, informed by current research, which fully capitalises upon the integration of ICT as a tool in every classroom. The Community comprises seven secondary schools and their 41 feeder primary schools. The Community has been funded by the Leading Schools Fund for ICT equipment and infrastructure and 13 full-time educators. It has also received funding through the Broadband Innovation Fund. Importantly, the schools themselves have made a significant financial contribution to the project. Refer to the Yarra Valley eLearning Community website for further information <web.pembrokesc.vic.edu.au/yvelc/>.

[313] Ms S. Allen, ICT Leader, Upper Yarra Secondary College, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.8.

[314] M. Rout, 'Pupils hunt in pods', *Herald Sun,* Monday 14 August 2006, p.11.

Committee sees this as an important trend, given the high incidence of mobile phone ownership among our young people.[315]

The Committee observed that advances in multimedia software are presenting new and exciting opportunities for students. For example, Hawthorn Secondary College demonstrated its use of CAD software in its Applied Design Education Centre during its Leading Schools Fund open day, while Presbyterian Ladies' College talked about the benefits of using industry standard GIS software. Further, the Committee saw a demonstration of a virtual lathe during its investigations in New Zealand.[316]

The Committee heard that the virtual lathe has proven to be a successful learning tool, particularly for disengaged students. Mr Ian Taylor, Managing Director, Taylormade Media, reports that students embrace the concept of the virtual lathe and can demonstrate that they can apply the skills they develop using this software to successfully use an actual lathe.[317] The Committee also heard that the virtual lathe has other cross-curricular applications, with mathematics teachers recognising that it can be an innovative way of teaching certain elements of their subject.[318]

While recognising that a virtual lathe cannot replace the hands-on skills and experience gained when using an actual lathe, the Committee sees the virtual lathe as a good example of the power of multimedia to complement learning, particularly where it may be expensive to set-up specialist equipment. Using these types of multimedia programs, students can gain additional knowledge and skills where opportunities for hands-on experience may be limited due to the need to share equipment among a class, school or even a school cluster.

The Committee welcomes the efforts of various teachers, schools and education systems in trialling new technologies in their classrooms. The Committee believes it is important for net generation students to use the best tools available to them, as well as to learn the appropriate use of technology from an early age. The education community needs to continue to trial, monitor and report on the experiences they have with new technologies. Effective evaluation must incorporate feedback from students and teachers and must seek to compare the relative effectiveness of various technologies, including traditional practices, in terms of student outcomes.

[315] The *CensusAtSchool* survey found that 81 per cent of primary and secondary students have access to a mobile phone. Australian Bureau of Statistics, *CensusAtSchool*, website, <www.abs.gov.au/websitedbs/cashome.nsf/Home/Home>.
[316] Meeting with Mr I. Taylor, Managing Director, Taylormade Media, Dunedin, New Zealand, 21 April 2006.
[317] ibid.
[318] ibid.

FINDING 6.2

That innovative use of new and emerging multimedia technologies, including industry standard software, mobile phones, personal digital assistants and other mobile digital devices is greatly enhancing learning and teaching in the net age.

Digital Content

While exciting new multimedia platforms were a considerable focus of this inquiry, so too was the importance of quality educational content. Submissions and witnesses noted that there is little point in acquiring expensive, cutting-edge equipment if it is not supported by appropriate educational content in both traditional and new multimedia formats:

> … the question that needs to be asked is 'is the content of the multimedia good?' The usage of multimedia is so ubiquitous that it is no longer a question of any kind of privileging of form over content.[319]

The development and dissemination of high quality, accessible, relevant and targeted educational content is one of the three core elements of the Department of Education and Training's e-learning strategy. It is the Department's aim to:

> … provide students with access to high quality multimedia and web content from the best and most innovative educational resource centres in the world.[320]

The Committee observed that there is an ever increasing body of online, digital content available to teachers. Time did not allow the Committee to undertake an extensive assessment of current digital content, however, the Committee outlines here three key sources of digital content available to Victorian teachers: the Le@rning Federation; ABC New Media and Digital Services Division; and the Education Channel.

[319] Australian Teachers of Media, Written Submission, May 2006, p.2.
[320] Department of Education and Training, Written Submission, August 2006, p.6.

The Le@rning Federation

The Department of Education and Training is a partner in the Le@rning Federation project, which is seeking to develop and deliver online curriculum content.[321] To date, the Le@rning Federation has produced over 4,500 items of online content, including learning objects in six curriculum priority areas: science; mathematics and numeracy; literacy for students at risk; studies of Australia; languages other than English (Chinese, Japanese and Indonesian); and innovation, enterprise and creativity.[322]

The Le@rning Federation's targets are to:

- Produce online curriculum materials for Australian and New Zealand schools that:
  - are developed within a framework to support distributed access;
  - represent the best education available or conceivable in the twenty-first century; and
  - will engage teachers and students in the construction of learning and in creative and critical thinking.
- Support the growing innovations, enterprise and knowledge economy priorities of the governments of Australia, the Australian states and territories, and New Zealand.
- Encourage a marketplace for high-quality public and private online curriculum materials.[323]

Importantly, the Le@rning Federation content is produced in a framework that ensures it is educationally sound and pedagogically-based.[324] Two key types of content are produced; learning objects and digital resources.

[321] The Le@rning Federation is an initiative of the state, territory and federal governments of Australia and New Zealand. It is an innovative project that employs emerging technologies to produce world-class online curriculum content to encourage student learning and support teachers in Australian and New Zealand schools. For further information, refer to the Le@rning Federation website, <www.thelearningfederation.edu.au>.

[322] The Le@rning Federation, website, <www.thelearningfederation.edu.au/tlf2/showMe.asp?md=p&nodeID=1>, viewed on 21 August 2006.

[323] ibid.

[324] The Le@rning Federation, PowerPoint Presentation to the Committee, Supplementary Material, Briefing, Melbourne, 10 April 2006.

Learning objects are chunks of digital material such as graphics, text, audio, animation and interactive tools.[325] They are based on the most recent research into how children learn and how teachers can facilitate learning. They are designed to:

- exploit the media and maximise user interactivity and creativity;
- immerse and engage the learner in the learning;
- use the power of both online and digital capacities;
- facilitate instruction of commonly taught concepts, procedures, applications, and skills: basic to more complex;
- simulate concepts and practices difficult to replicate because of safety, time and cost;
- encourage interactive exploration of new ideas in engaging multimedia contexts;
- allow for self-paced learning and opportunities to revisit and revise content and skills;
- cater for different student learning modes and abilities; and
- be used alongside a range of other non-digital and digital content and tools.[326]

A digital resource consists of a single item, such as a section of moving image footage; an image of a document, line drawing, painting, or map; a photograph; an audio file of a song or broadcast; or a set of items. Each item is presented in template form, which includes a description, an interpretation of its educational value and acknowledgement of its source.[327]

[325] The Le@rning Federation, website, <www.thelearningfederation.edu.au/tlf2/showMe.asp?md=p&nodeID=1>, viewed on 21 August 2006.
[326] The Le@rning Federation, PowerPoint Presentation to the Committee, Supplementary Material, Briefing, Melbourne, 10 April 2006.
[327] The Le@rning Federation, website, <www.thelearningfederation.edu.au/tlf2/showMe.asp?md=p&nodeID=1>, viewed on 21 August 2006.

ABC New Media and Digital Services Division

The Australian Broadcasting Corporation's New Media and Digital Services Division is a valuable source of quality, digital content identified by the Committee.

The Division provided a number of examples to the Committee that reinforce the potential for high quality Australian educational content to be delivered via multiple digital platforms such as the internet and digital television, in innovative and engaging ways. Responding to contemporary research about young people's learning styles and patterns of multimedia usage, the New Media and Digital Services Division aims to produce content that is relevant, innovative and interactive.[328]

In illustrating both the quality and the breadth of its educational programming, ABC New Media and Digital Services Division outlined four examples of its current online programming.

Dust Echoes is a children's multi-platform series revolving around five ancient Dreamtime stories, each story uniquely interpreted by contemporary animators, musicians, artists, writers and actors. Dust Echoes features a comprehensive range of materials for primary and secondary students and teachers, including lesson plans that explore a range of themes.[329]

Winged Sandals is a rich, interactive website that brings Greek mythology to students with modern interpretations of Classical Greek myths and characters. The site features a detailed history section, animated stories, games, an online version of the Delphic Oracle powered by an artificial intelligence engine and a Who's Who database of the characters of this rich literary heritage.[330]

Planetslayer provides contemporary, Australian, science-related content. Delivered across multiple platforms, the broadband animations from the site have been screened on ABC digital television and in public spaces such as Federation Square. Planetslayer DVDs have been distributed to all Australian primary and secondary schools.[331]

Behind the News has been showing on ABC for more than 30 years. The program looks at the construction of news and is aimed at an upper primary and secondary level. The program now has a companion, highly interactive website, which provides lesson ideas and worksheets suitable for learning at home or in the classroom and links

[328] New Media and Digital Services Division, Australian Broadcasting Corporation, Written Submission, May 2006, p.2.
[329] Dust Echoes, website, <www.abc.net.au/message/dustechoes/>.
[330] Winged Sandals, website, <www.wingedsandals.com.au/>.
[331] Planetslayer, website, <www.abc.net.au/science/planetslayer/>.

to useful websites for further research on the story transcript pages.[332] Students can also access a weekly online quiz, participate in the Behind the News poll and express their ideas about issues featured on the program.

The Education Channel

A third key source of online content for Victorian teachers is the Department of Education and Training's Education Channel.

According to the Department of Education and Training, the Education Channel is a sophisticated gateway for students, teachers and principals to quality, secure and educationally sound online resources.[333] It offers customised search and browse features as well as links to other key websites. The search and browse functions make use of an extensive repository of cataloguing information (metadata) gathered by Department of Education and Training staff and through alliances with other organisations. It therefore provides access to hundreds of thousands of high quality web resources from Australia and around the world.[334]

The Education Channel has prepared a separate web page for teachers, principals and secondary and primary students. Each of these web pages targets the specific needs and requirements of each group, including key resources presented by the Department of Education and Training. Importantly, teachers and principals have access to a range of password protected administrative and management tools through their respective portals. Each tailored portal also includes links to a range of ICT related resources and examples of best practice, helping students and teachers to improve their use of ICT in schools.[335]

Another content project currently being considered by the Victorian Department of Education and Training is the national Cultural Broadband Network project. According to the Department, this project is expected to offer a revolutionary way forward in terms of access to high quality educational content and curriculum developed by the state's premier cultural institutions, such as the National Gallery of Victoria and the Museum of Victoria.[336]

[332] Behind the News, website, <www.abc.net.au/tv/btn/>.
[333] Department of Education and Training, Written Submission, August 2006, p.7.
[334] ibid.
[335] Victorian Education Channel, <www.education.vic.gov.au/schools/>, viewed on 22 August 2006.
[336] Department of Education and Training, Written Submission, August 2006, p.12.

Challenges Accessing Appropriate Digital Content

While there is a substantial and increasing body of Australian digital content available, one of the challenges facing teachers is easy access to appropriate material. As outlined by the Department of Education and Training, some of the current barriers to accessing exciting digital content include cost, copyright and technical constraints.[337] The Committee also consistently heard that the sheer volume of resources also makes it difficult for many teachers to simply identify and select the best content to match the needs of a specific class, student or teacher.[338]

A number of teachers throughout this inquiry particularly noted some specific difficulties that they have experienced in accessing resources developed by the Le@rning Federation.

While acknowledging that the Le@rning Federation is providing 'terrific learning resources for teachers', Mrs Sue Rathbone, Assistant Principal and ICT Teacher, Doncaster Gardens Primary School, raised her concerns over the apparent difficulties in distributing the learning objects to schools:

> We know that there is a lot more that have been created and we are not getting them. That is the thing. We would like to have them, but they have not been released to schools… They have talked about creating a digital repository where they can be accessed by all schools, but we do not know what has happened with that.[339]

It is apparent to the Committee that there has been some variability in the take-up of the Le@rning Federation resources. There appears to be a number of technical challenges as Mrs Rathbone indicated:

> [The digital learning objects] have come out to schools on CDs, and we have put them onto our networks. We have had to fiddle around with them a bit to make them operate correctly in the school because we do not want the students to have access to all of them at the same time. We want them just to be able to access the ones that their teachers want to work with at a particular time of the year.[340]

The Le@rning Federation concedes that access to digital resources in some schools may be affected by the will or enthusiasm of ICT co-

[337] ibid.

[338] Primary and Secondary Teachers, Committee School Visits, June - August 2006; Discussions with delegates, Curriculum Corporation national conference, A Vision Splendid. ICT: research, pedagogy, implementation for schools, August 2006.

[339] Mrs S. Rathbone, Assistant Principal and ICT Teacher, Doncaster Gardens Primary School, Transcript of Evidence, Public Hearing, Doncaster, 4 August 2006, p.7.

[340] ibid.

ordinators or technicians. Ms Susan Atkins, Director, Online Initiatives suggests that while the Federation can ensure schools receive the material, there can be problems distributing the content within schools:

> Then there is the next issue at the school level as to who is in charge of the technology in a school and where the teacher can locate the stuff. If they hold on to the CD, they may have access to it in the classroom. If it gets put on to a central server then they sometimes become beholden to the powers of the technician or the head of the faculty et cetera.[341]

The above experiences reinforce the need for system wide distribution of important learning resources. The Committee notes that Education Queensland has been successful in providing easy access to a wide range of digital resources, including Le@rning Federation content, through the Learning Place. The Learning Place is Education Queensland's e-learning environment, which features four key areas: online learning; online communication; a curriculum exchange resource centre; and professional learning communities.[342]

The Yarra Valley eLearning Cluster has similarly reported that distribution of the Le@rning Federation's resources was simplified through the use of a learning platform:

> … the Le@rning Federation objects, they come to all schools but they do not get used in all schools. The reason they do not get used in all schools is because often they are difficult to deploy. One of the things that is different in the way we are working is that through Studywiz and through the structures in our schools we are able to give teachers access to these things in a very simple, easy way, and a number of resources are available that we can do that way.[343]

The Committee notes that various schools, in partnership with the Victorian Department of Education and Training, are currently trialling a range of online learning environments, as discussed in the following section.

[341] Ms S. Atkins, Director, Online Initiatives, The Le@rning Federation, Transcript of Briefing, Melbourne, 10 April 2006, p.30.
[342] Refer to the Learning Place website for further information, <education.qld.gov.au/learningplace/html/aboutus.html>.
[343] Ms B. Ahles, Project Co-ordinator, Yarra Valley eLearning Community, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.13.

FINDING 6.3

That Victorian students and teachers have access to an extensive range and quantity of high quality digital resources. However, take-up of these resources both within and between schools is variable.

RECOMMENDATION 6.1

That the Department of Education and Training implement strategies to reduce cost, technical and copyright constraints that hinder access to digital resources for many Victorian students and teachers.

Learning Platforms

This inquiry found that an important new multimedia tool being used in an increasing number of Victorian schools is the learning platform, generally referred to as a virtual learning environment. 'Learning platform' is an umbrella term that describes a broad range of ICT systems used to deliver and support learning and teaching. It usually combines several functions, such as organising, mapping and delivering curriculum activities, and the facility for students and teachers to communicate and collaborate, all via ICT.[344]

Learning platforms are becoming increasingly popular as the integration of ICT throughout the entire school system, from curriculum to administrative functions, has become more and more sophisticated. While many schools are only in the early stages of investigating, trialling or implementing learning platforms, the Committee notes that these platforms will become an essential tool for schools as they seek to develop stronger linkages between students, classrooms, teachers, school administration and the home. In essence, learning platforms can provide an integrated, online framework for:

- student–school information;
- teaching and learning, including learning programs, submission of student work, feedback and assessment;
- content management;

[344] Teachernet website, <www.teachernet.gov.uk/wholeschool/ictis/infrastructure/learningplatforms/faq/>, viewed on 18 September 2006.

- collaborative tools for communication between various stakeholders; and
- diagnostic monitoring of all the above processes.[345]

Some of the key benefits of virtual learning environments are already being realised in some schools. For example, one secondary school noted that learning platforms:

- require and encourage collaboration;
- encourage analytical, divergent and creative thinking;
- encourage teachers to take a fresh look at how they teach and the ways in which students learn;
- provide flexibility to meet individual needs and abilities of each student; and
- access skills in multimedia communication that students use at home.[346]

The following sections consider some of the main learning platforms currently being used or trialled in Victorian schools: *myclasses*; Studywiz and Ultranet.

Myclasses

Myclasses is the learning management system adopted by the Catholic education system in Victoria. *Myclasses* has been developed specifically for K-12 school communities and importantly, it is scalable to service thousands of schools.[347]

Myclasses can be both flexible and structured and provides a platform for online and offline classroom teaching and learning. It can be used by teachers to find, create, plan, organise and deliver content, resources, activities and learning experiences; monitor student activity; and assess student performance.

Having established a *myclasses* page for the class, a teacher can provide:

- student access to multimedia resources;
- interactive formats such as discussion forums, feedback for students and teachers and email communications;

[345] Department of Education and Training, 'What is Ultranet', PowerPoint presentation, SOFWeb, <www.sofweb.vic.edu.au/blueprint/fs1/s@c.htm>, viewed on 19 August 2006.
[346] Brighton Grammar School, Written Submission, June 2006, p.2.
[347] myinternet Limited, *Myclasses*: *Virtual Learning Environment for Schools*, brochure, <myinternet.com.au/products/myclasses_schools.html>, viewed on 22 August 2006.

- collaborative learning opportunities within the class, between classes in the school, and with other students or groups outside the school; and

- access to the system at home as well as in class.[348]

In 2005, the Melbourne Catholic Education Office commissioned a study of the use of *myclasses* in the classroom. The study found that trial teachers, through their professional development and practice in the use of *myclasses*:

> … have made significantly greater gains than control teachers in their use of constructivist pedagogy and in aspects of teacher collaboration. Trial teachers also showed significantly stronger development in their attitudes and in their beliefs about learning.[349]

The study further found that trial students, relative to students in the control group:

> … demonstrated significant positive change in their approaches to learning during the project. Their levels of engagement and motivation, compared with those of control students, also increased significantly.[350]

Through its many school visits, the Committee has observed similar outcomes for schools using some of the many other learning platforms available.

Studywiz

Studywiz is another popular learning platform used in many Victorian schools and learning communities.

Studywiz provides teachers with a controlled platform that enables them to use their existing resources in new and powerful ways. It supports common files types such as PowerPoint, Word, Excel and PDF and can include rich media such as movies, audio and Flash animations. Resources are controlled by teachers and published to individuals, classes, years–levels, ad hoc groups or to the entire school. Tests and question banks can be built using templates and stored for re-use and content can be shared between teachers, schools and clusters.[351] According to the company that developed Studywiz, it

[348] Catholic Education Commission of Victoria, Written Submission, May 2006, p.4.
[349] ibid.
[350] ibid.
[351] Etech Group Pty Ltd, *Studywiz*, brochure, <www.studywiz.com/>, viewed on 22 August 2006.

is the first platform to directly integrate the Victorian Essential Learning Standards.[352]

Studywiz provides a collection of online tools, including:

- an eBulletin facility for notices;
- threaded discussions that can be set up for any topic;
- personal and public calendars, for reminders and notifications of such things as test times, assignment deadlines, excursions and meeting dates; and
- assignments, tests and exams with results tracking and reporting.

According to Mr Geoff Elwood, Chief Executive Officer, Etech Group Pty Ltd (the company that has developed Studywiz), the product provides exciting opportunities in education, including:

> … a safe, managed environment for learning online. It allows teachers to fully engage all students in the learning process. So you can see instantly which students are engaged and which ones are not. Another one that I think is particularly important is reducing teacher workload.[353]

An important feature of Studywiz, like many other virtual learning environments, is the ability to customise the product. Ms Bonnie Ahles, Project Co-ordinator, Yarra Valley eLearning Community, stated:

> We did quite a bit of customisation with Studywiz, so the product that we have is one that suits our schools. That idea of one product fits all makes me very, very uncomfortable. I looked at over 35 systems and our working party looked at 10 systems in detail before we made the decision, so a great deal of thought and efforts went into the selection.[354]

Interestingly, Studywiz also provides opportunities for customisation at the individual user level. This allows students and teachers to customise the user interface and decide for themselves what level of sophistication the interface is at.[355]

[352] Mr G. Elwood, Chief Executive Officer, Etech Group Pty Ltd, Transcript of Evidence, Public Hearing, Melbourne, 22 May 2006, p.5.
[353] ibid., p.4.
[354] Ms B. Ahles, Project Co-ordinator, Yarra Valley eLearning Community, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.13.
[355] Mr G. Elwood, Chief Executive Officer, Etech Group Pty Ltd, Transcript of Evidence, Public Hearing, Melbourne, 22 May 2006, p.5.

Early experience suggests that many students are experiencing considerable benefits from the use of learning platforms such as Studywiz.

For example, Ms Sze-Min Foong, Year 12 Student and Computer Captain, Presbyterian Ladies' College, finds Studywiz to be a convenient learning tool:

> I find it very convenient, and all the teacher has to do is upload the document and tell us, 'Download this one and do it.' All you have to do is get on with your work, and the teacher just oversees it, does not have to explain it as much.[356]

Ms Foong's teacher supported her view:

> …there is a lot of potential within the online learning environment and it provides students with greater control of their learning 24–7 and with a more advanced form of communication with their teacher.[357]

Nonetheless, the Committee heard that schools can face some significant challenges in implementing systems like Studywiz. For example:

> … in order for the system to work, as with all technologies, there are two sides. Many teachers would feel pressure in terms of having to keep the material up, therefore the support structures that would need to go with it I think would need to be looked at. The other thing is that Sze-Min says all teachers have to do is put stuff up and then away you go. It links in to what I said before: probably not all teachers would be as proficient as Sze-Min is—some are, some are not—so they would need support on that.[358]

The Committee recognises that as with most new technologies that are implemented in schools, teachers are likely to need a range of professional learning opportunities to support the changed teaching and administrative practices that can be supported through the implementation of learning platforms.

[356] Ms S. Foong, Year 12 Student and Computer Captain, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.17.
[357] Dr J. Turner, Head, IT and VCE Co-ordinator, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, pp.17–18.
[358] ibid.

Ultranet

The Department of Education and Training has also recognised the value of introducing learning platforms into schools. The Department is undertaking a joint research and development initiative with the Oracle Corporation. The project aims to develop the prototype for a student-centric, learning platform that supports teaching and learning, curriculum delivery and knowledge management in Victorian schools. The prototype, Ultranet, will be developed and tested in twelve primary and secondary schools over a 12-month period. The trial aims to provide the information required for the eventual, smooth implementation and evaluation of a learning platform in a range of school settings.[359]

According to the Department, Ultranet (or its equivalent) will initially be more than just a comprehensive tool. It may also serve as a catalyst for changes in teaching culture:

> Teachers mark their roll on the Ultranet; they read bulletin notices on the Ultranet; they enter assessments on the Ultranet; they plan lessons on the Ultranet. It becomes part of 'what they do'. So when a teacher starts to experiment with 'online learning' the undertaking is clearly visible to other teachers in the school. It can be readily picked up and modified or extended. It quickly builds up a head of steam and becomes rooted in the culture.[360]

The Department of Education and Training envisages that learning platforms can benefit each of the key stakeholders is school education. The potential benefits are outlined on the Department's SOFWeb website:

- Students
  - can access classroom activities and resources anywhere, anytime.
  - have greater opportunity for collaboration, reflection and personal interaction with their teacher.
  - benefit from greater emphasis on their learning and more opportunity to reflect on progress.
- Teachers
  - better understanding of their students.
  - collaborate more effectively with colleagues.

[359] Department of Education and Training, SOFWeb, <www.sofweb.vic.edu.au/blueprint/fs1/s@c.htm>, viewed on 22 August 2006.

[360] Department of Education and Training, website, <www.eduweb.vic.gov.au/edulibrary/public/teachlearn/student/background_paper.doc>, viewed on 22 August 2006, p.3.

- greater transparency.
- fosters an environment where knowledge is captured, organised, shared and utilised.
- builds the school's knowledge base.

- Parents
  - gain a much richer and timely insight into their child's progress.
  - can receive regular feedback on how their child is progressing.
  - can follow activities and the interactions with teachers and peers that their child is undertaking at school.

- Schools
  - using data from a range of sources, has the capacity to readily identify issues and design appropriate interventions.
  - effectively monitor, measure and evaluate programs using real-time and longitudinal data.[361]

The Committee recognises the considerable benefits that learning platforms can deliver to schools, as they pursue a safer, more secure and efficient learning environment for students and teachers.

The Committee heard that some schools are likely to benefit from the freedom to choose themselves, from the range of learning platforms currently on the market. Other schools may benefit from the provision of a base model that has been tried and tested and can be employed quickly and effectively into a school or cluster without the challenges of the evaluation and selection process.

However, all schools are likely to benefit from a learning platform that provides a degree of customisation, to enable platforms to meet each school's unique approaches and needs. Additionally, all schools are likely to benefit from guidance in the implementation of learning platforms. Guidance in the areas of technical requirements and teacher professional development needs will be particularly important.

In summary, the Committee sees potential benefits for all schools in having access to a learning platform such as Ultranet. It essence, these learning platforms could:

- make it easier to achieve learning outcomes by bringing classes and electronic content together in a user-friendly way;

[361] Department of Education and Training, SOFWeb, <www.sofweb.vic.edu.au/blueprint/fs1/s@c.htm>, viewed on 19 August 2006.

- save time for teachers who can quickly access learning objects and other resources, then provide them to students without having to print or use other programs; and

- encourage collaboration and reduce the need to consistently reinvent and redevelop learning and teaching resources.

FINDING 6.4

That all Victorian schools would benefit from a learning platform that incorporates:

- An online learning environment accessible to teachers and students. This environment should allow teachers to create, manage and deliver to their students, class lesson plans, learning resources and curriculum materials, web- based activities and assessment activities.

- Communication and collaborative tools that allow sharing of information and best practice across and within learning and teaching communities.

- Easy access to a searchable database of digital resources, including learning objects, ideas and strategies for teachers, lesson plans, website links and evaluations, images, podcasts and video clips.

- A school administration and student management system.

RECOMMENDATION 6.2

That the Department of Education and Training and Multimedia Victoria, in collaboration with non-government education systems and authorities, support the rapid implementation of appropriate learning platforms in all Victorian schools.

Opportunities for Communication and Collaboration

Education at all levels is embracing the power of collaboration through the establishment of learning communities within and across schools and classrooms. Not only does collaboration enhance the learning and teaching process, but it also prepares students for a workforce that increasingly values collaborative approaches.

The Committee heard that a variety of multimedia tools are being used in schools and classrooms to enhance opportunities for communication and collaboration between:

- students and their peers;
- students, teachers and experts;
- teachers, parents and students; and
- teachers and colleagues.

The Yarra Valley eLearning Community provides an excellent example of the power of multimedia in enhancing communication, co-operation and collaboration across schools. The Community comprises seven secondary colleges and their 41 feeder primary schools. The Community currently has two core projects:

- A Leading Schools Fund project that aims to develop a model cluster of schools, informed by current research, which fully capitalises upon the integration of ICT as a tool in every classroom. The Funding provides 13 full-time staff, infrastructure improvements, equipment and research.
- The Yarra Valley eRich Learning Environment Project, which is funded through the Broadband Innovation Fund. The project includes funding for project management, a virtual private network, a laptop program and a learning management system.

The Yarra Valley eLearning Community is strongly focused on improved communication and collaboration. The Community has four full-time development managers who work to develop practical and relevant resources that can be used in schools across the Community. It also has eight learning technology coaches who run professional

development workshops and work directly with teachers to develop units of work.[362]

As described in the previous section, and evidenced through the Yarra Valley eLearning Community example, one of the most important multimedia tools emerging to enhance communication and collaboration throughout schools and learning communities is the learning platform, or virtual learning environment.

A number of schools also highlighted evidence about their use of various multimedia technologies to facilitate new models of student communication to support their learning programs. These include technologies such as internet chat rooms and blogs, which are highly favoured communication channels among young people today.

Ms Stephanie Campbell, Head, Arts Department, Footscray City College, stated:

> We also use multimedia to communicate outside of the classroom environment—chat rooms, forums, emails—and students like to communicate with each other, with mentors, and subject skill experts.[363]

Ms Helena Dunn, Head, History, Presbyterian Ladies' College, outlined her students' use of blogs in the history classroom:

> The other wonderful thing is the use of blogs for history learning. We have been doing quite a bit of this in year 12 in the last few years, some with other schools, on issues of history. There can be very lively debate, with teachers coming in now and then and presenting a very strong view in one direction and getting many responses from students, and that dialogue and argument in history makes it very interesting and meaningful for students.[364]

Mr Steve Doyle, National Professional Development Manager, Apple Computer Australia, also described how teachers can use web blogs in the classroom:

> Probably the most interesting is blogging. If we had said to teachers 10 years ago, 'You are going to have the technology that will allow students to reflect on themselves, their society, their families and share it,' the teachers would have been queuing up to have access to that technology. There are schools in Sydney that are using blogs within the classroom. You can flag

[362] Yarra Valley eLearning Community, Supplementary Material, Public Hearing, Melbourne, 11 August 2006.
[363] Ms S. Campbell, Head, Arts, Footscray City College, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.35.
[364] Ms H. Dunn, Head, History, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.8.

> a blog as private, so you can make your own comments and the teacher cannot access it, you can make it class-readable, 'So Stuart and David can read it and see what I'm saying,' or you can make it only teacher readable, 'So I can complain about Stuart and David,' and the teacher can read it and make comments about it. They have a way of engaging with our technology on their own terms rather than us giving them the different terms.[365]

Brighton Grammar School outlined how it has successfully achieved a more universal and wider engagement in reading among year 9 students, by using a 'members only' chat room to hold class forums. It reported that the following outcomes were evident:

- students were immediately engaged because of the appeal of the chat room forum, which is a medium that all students, of all abilities now feel confident using;
- students traditionally reluctant to speak up in class discussion joined in the on-line debate with confidence;
- students were able to fine tune their written ideas in a collaborative forum that allowed them to see models of written ideas from their peers and teachers;
- the discussion of ideas became more vigorous and was impersonal—disagreement was about an idea, not a person;
- each student was able to have a voice; and
- the teacher had full access to all the comments that had been posted, allowing thorough assessment of the task.[366]

The Committee notes that the above chat room activity took place within a teacher-controlled, safe, online learning environment. This is important, given rising concerns in the education community regarding issues of cyber safety for young people. As outlined in Chapter 4, there are a number of applications and web-based platforms that can provide safe, monitored virtual environments where students can collaborate in learning communities.

The Committee heard that Kahootz is one of the software tools offering collaborative benefits for Victorian students and teachers. For example, Professor Unsworth and Dr Thomas noted that in addition to the software, Kahootz is also an online global community, where teachers

[365] Mr S. Doyle, National Professional Development Manager, Apple Computer Australia, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, pp.24–5.
[366] Brighton Grammar School, Written Submission, June 2006, p.2.

and children can share and critique each other's work and collaboratively construct hypermedia texts with one another.[367]

The Committee also heard that many schools are implementing collaborative learning models to assist students and teachers to develop ICT and multimedia skills.

Southvale Primary School and GMM Training Pty Ltd made a joint submission to the Committee, outlining their Train the Trainer–Student as Teacher Project, which has been funded under the Australian School Innovation in Science, Technology and Mathematics (ASISTM) Project. The student-based training model selects small groups of students working alongside a teacher to complete ICT and multimedia training (initially in Microsoft Excel and web page design) who in turn pass on the skills they learn to others.

The student-based training uses the following approach: student helps student; teacher helps teacher; student helps teacher; and teacher helps student. This training model was selected for two reasons:

- as the students were high achieving students, once they picked up the skill taught to them, they were able to effectively teach other students; and
- the knowledge gained with the training would spread throughout the school, ensuring the skills would be retained, rather than forgotten. Teaching others the skills they learn themselves, helps to reinforce the student's own learning.[368]

Sherbourne Primary School was another of the schools to explain to the Committee how it uses a peer mentoring model for multimedia. The ICT leader introduces a small group of children to a new skill and they take those skills back into the classroom as experts and teach the skills to other children:

> They learn quickly and they are very good at it. They are great at being the teachers and they learn a lot. Many of their own skills are reinforced while they are teaching others.[369]

Significantly, Mr Peter Watson, Teacher and ICT Leader, Sherbourne Primary School further explained how peer mentoring is extended beyond the school boundary, into the wider community through a range of sophisticated ICT projects:

[367] Prof L. Unsworth, School of Education, University of New England and Dr A. Thomas, University of Sydney, Written Submission, April 2006, pp.5–6.
[368] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.4.
[369] Ms K. Paul, Teacher, Sherbourne Primary School, Transcript of Evidence, Public Hearing, Greensborough, 9 June 2006, p.3.

> … we took kids from this school to the elderly citizens' home and taught the residents IT skills. We had a guy who was 92 deliver his first email in his life… The latest project, which I am about to start next term, involves intellectually disabled kids in the Diamond Valley region. I have a core group of kids here who will be spending two months working with a group over there, doing IT stuff. The initial plan was to have my kids go there and teach the disabled kids IT but… I think it will be almost a reversal. My kids will learn so much from being in such a different environment…[370]

The Committee notes that it is not only formal models of communication and collaboration that can be enhanced through multimedia tools. The Committee observed in many schools that multimedia is creating a more enjoyable, collaborative classroom environment across age groups and skill levels. No longer are teachers locked at the front of the classroom instructing a large group of students. Rather, the students and teachers are engaging in joint learning, showing interest in each other's multimedia creations and assisting one another by readily sharing knowledge and technical skills whenever a difficulty is encountered.

FINDING 6.5

That multimedia technologies are providing new opportunities for improved communication, collaboration and sharing of best practice within and between schools and learning communities.

Opportunities for Time Shifting and Overcoming Geographic Barriers

The Committee heard that multimedia technologies are creating opportunities for students and teachers to overcome time constraints and geographic barriers facing many in the education community.

The Committee heard that 'time shifting' is a key benefit of multimedia. No longer do teachers have to arrange for classes to be located where they can watch a television program or listen to a radio transmission at a particular time. Today, the e-world is asynchronous in its nature:

> This deeply influences our students. They come from a world in which time-shifting allows you to watch the

[370] Mr P. Watson, Teacher and ICT Leader, Sherbourne Primary School, Transcript of Evidence, Public Hearing, Greensborough, 9 June 2006, pp.2–3

> transmission as you are recording it for future reference, to pause live T.V., to rewind it and to watch elements of a transmission as you wish to. Today commercial radio is developing radio with pictures, radio that can be stored and then downloaded at different times from the original presentation and radio that can be selected by the listeners at a time and place convenient to themselves.[371]

Professor Josie Arnold and Ms Kitty Vigo, Swinburne University of Technology, made a submission to the Committee, outlining the potential for multimedia technologies to further transform the education environment. While their experience is within the higher education sector, the Committee notes that the capabilities of technology outlined by Professor Arnold and Ms Vigo have the potential to be applied within schools, particularly at the senior secondary level, in the future.

Of note, Professor Arnold and Ms Vigo outline how online educational resources can be used to individualise learning, thus giving students greater flexibility and control over their learning experience.[372] This is already happening in many schools, even at the primary level. More significantly, they outline how the distinctions between the physically present and the 'virtual' or electronically present are continually blurring and may soon disappear:

> There are already programs and computer-eye cameras which enable us to interact visually in real time as well as chat rooms and discussion threads which allow us to interact synchronously or asynchronously.[373]

Professor Arnold and Ms Vigo describe how online discussion threads can be used as virtual tutorials and virtual communities of people. A website can be established with lesson outlines that students can access in their own time and see quite clearly what they are expected to do each week.[374] Virtual tutorials can include hotlinks to relevant sites and login buttons that provide evidence of a student's participation.[375] Importantly, the 'virtual tutorial' can be set up to facilitate student reflection and teacher assessment.[376]

The Committee notes that the introduction of learning platforms in some secondary schools has created opportunities for students, particularly those in the senior years, to have more convenient access to a range of learning resources. Teachers can now record a particular lesson on digital video or audio formats and distribute it via podcast,

[371] Prof J. Arnold, Professor of Writing and Ms K. Vigo, Discipline Leader, Writing, Swinburne University of Technology, June 2006, p.11.
[372] ibid.
[373] ibid, pp.4–5.
[374] ibid.
[375] ibid.
[376] ibid.

email or similar means. Students are then free to review lessons at their discretion, an especially powerful tool if students have laptops, video iPods or similar mobile digital platforms.

While not yet common in schools, the Committee heard that learning platforms are certainly the way of the future for many students. As one year 10 student stated:

> There should be a database [such as Studywiz] where students can download all their class notes and work sheets in case they missed a class, which would be handy. It would be much more convenient for catch-up for both students and teachers… If you miss a lecture, perhaps you could even download the podcast, which is taking it another step further. But it is technology that we have and that we could use.[377]

The Committee heard that some schools are already using video technologies and podcasts to assist their students. For example, the Yarra Valley eLearning Community demonstrated how multimedia platforms can assist students to acquire process based skills, such as woodworking. Teachers have produced a video demonstration that students who are absent (or who did not understand the process during the initial demonstration) can view as required. Furthermore, teachers can keep a repository or portfolio of their own video, audio and other digital resources for lessons that are repeated.[378] Administered properly, this can be a considerable timesaver for teachers and can be easily shared among colleagues.

The Committee also recognises that advancements in multimedia technologies are providing enhanced opportunities for distance education. This is particularly important for geographically isolated students and those who perhaps cannot attend school due to illness or other reasons. The Committee also notes that advanced multimedia technologies can enhance the delivery of subjects across multiple campuses or school clusters. This can be particularly beneficial to smaller schools that may not have the student demand or capacity to deliver an extensive range of subjects. By partnering with other schools, it is possible to combine face-to-face teaching with online activities.

[377] Ms R. Williams, Year 10 Student, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.19.
[378] Yarra Valley eLearning Community, Supplementary Material, Public Hearing, Melbourne, 11 August 2006.

FINDING 6.6

That multimedia has the potential to enable Victorian schools to deliver flexible, personalised learning opportunities by providing students with increased levels of control over the pace, time and location of their own learning.

The Evolving Role of Television in Net Age Education

The Committee did not receive a significant amount of evidence from schools regarding their use of television in the classroom. It seems that as newer technologies have become available, the educational potential of television has perhaps been overlooked by some teachers. Some told the Committee that television has become outdated and that the educational value of television is limited.

For example, Professor Josie Arnold and Ms Kitty Vigo, Swinburne University of Technology, indicated that the passivity of television means that it is becoming less appealing in an educational context, relative to more interactive multimedia technologies:

> … while television is still a useful means of conveying information its essentially passive nature has made it largely out-dated in this age of interactivity and immediacy offered by computer-based technologies. While students enjoy television as a mode of entertainment many have high levels of computer, gaming and internet skills which demand greater interactivity and input, transforming them from content users to content creators.[379]

There is no doubt that demand for television content in the classroom has changed. After 11 years of service to schools and the broader education community, Schools Television ceased operations in December 2005, due to a lack of demand for its services:

> Schools TV provided a valuable service in its time, however the narrowcast satellite technology does not support 'on demand' delivery, nor the interactive learning and collaboration environment being adopted by schools (eg. video conferencing, web-casting, pod-casting, etc). Given the low level usage of the Schools

[379] Prof J. Arnold, Professor of Writing and Ms K. Vigo, Discipline Leader, Writing, Swinburne University of Technology, June 2006, p.11.

> TV service, the ongoing operation and maintenance of the infrastructure is no longer considered cost effective.
>
> The improved technology available through the recently announced VicSmart broadband roll-out to all Victorian government schools will provide students and teachers with enhanced access and response to digital content.[380]

With the decline in demand for full-version television programs, however, has come a growing demand for short packages of video to complement other teaching and learning resources. Rather than switching between computers and televisions, teachers are likely to increasingly prefer video content delivered online.

ClickView was demonstrated during the Committee's school visits as an important multimedia tool that responds to the demand for short packages of video content. The Committee heard that ClickView is a reliable and easy-to-manage platform. According to its developers, ClickView provides on-demand access to relevant, DVD-quality video content.[381] Students and teachers can view any video from the school's video library, at any time, at their own pace, wherever learning is taking place. ClickView can be scaled to deliver video to hundreds of users simultaneously across an existing school network.[382] It can also seamlessly integrate with a school's other online applications, including library catalogues and learning platforms.[383]

The Committee believes that the digitising of educational television programs may present additional, new and innovative opportunities to teachers. As a basic example, the Faculty of Education, Queensland University of Technology, stated:

> [The Family and Community Development Committee report] noted that television programs for learning maths, science and grammar were screened during school hours when students were at school and never saw them. This is one area which can be addressed by digitising such programs and incorporating them into an online learning environment from which students can learn at any time and at their own pace.[384]

Further, the Committee observed that even traditional television is already becoming more interactive through new multimedia technologies. Hybridity, whereby a television program is supported by a

[380] Department of Education and Training, SOFWeb, <www.sofweb.vic.edu.au/schoolstv%5Fnotice/>, viewed on 22 August 2006.
[381] Clickview, website, <www.clickview.com.au/products/features.php>, viewed on 14 September 2006.
[382] Clickview, website, <www.clickview.com.au/products/features.php>, viewed on 14 September 2006.
[383] For further information, refer to the ClickView website, <www.clickview.co.uk/home.php>.
[384] Faculty of Education, Queensland University of Technology, Written Submission, June 2006, p.2.

website, computer game and/or other digital formats, is one example of this interactivity. There are also numerous examples here and overseas of modern television programs introducing audience interactivity through mobile texting, for example.

During its meetings in New Zealand, the Committee heard that the expansion of digital television will greatly enhance interactivity between a program and its audience. TV New Zealand demonstrated the power of interactive, educational documentaries that fully utilise the digital format. Viewers will be provided with the opportunity to interrogate the documentary for additional, optional information at any time, and then return to the 'body' of the program. Interactive programming, while complex and more costly to produce than conventional television therefore enables learning to be more effective and enjoyable.[385] The Committee believes that as the roll-out of digital television progresses, such high level interactive programming is likely to gain popularity in Australian homes and schools.

Another potential revolutionary development in the role of television in education is a new Australian Children's Channel, which has been championed by the Australian Children's Television Foundation:

> … the time has come for an Australian children's channel. A channel which is a distinctive, comprehensive, children's public service channel which is predominantly Australian, and available to every family in Australia that can receive free-to-air television. It should be a new and innovative service, which includes a diverse slate of programming including news, educational programming and material that is created by children… If an Australian Children's Channel is established, it will provide a springboard for all Australian schools to use the channel's resources in the classroom and a platform for all Australian children to showcase and develop their creativity, multimedia and media production skills. This presents an outstanding educational opportunity.[386]

The Department of Education and Training highlighted the Australian Children's Channel as an exciting development in education for Victoria.[387] It notes that of significance to education systems and schools, 20 to 30 per cent of the Channel's content will be generated by children. This means that there will be substantial potential to showcase examples of creative content and activity from each state, to a national audience.[388]

The Committee endorses the launch of an Australian Children's Channel and views this development as an exciting opportunity for

[385] Meeting with representatives of TV New Zealand, Auckland, 18 April 2006.
[386] Australian Children's Television Foundation, Written Submission, August 2006, p.7.
[387] Department of Education and Training, Written Submission, August 2006, p.12.
[388] ibid.

students to contribute to a broad range of programming. For example, children could deliver a ‘kids news program’ or ‘kids science lessons’, resulting in powerful learning and engagement of children in education. The Committee notes that through participation in the television channel, students will have the opportunity to consolidate their own learning and develop new skills in media production. Further, children watching the channel may have increased levels of engagement with educational material delivered by their peers, at a level that they may understand more readily.

The Committee notes that Victoria is well positioned to lead the way in children’s involvement in television. There is already a strong emphasis on multimedia production in many Victorian schools, which is supported through a state-wide site license for Kahootz and widespread teacher professional development in multimedia authoring.

FINDING 6.7

That the role of television in education has changed significantly over recent years. The demand for traditional television programs in schools has decreased significantly, while there is increasing demand for interactive educational programming and shorter, more targeted and segmented video content that is delivered online.

FINDING 6.8

That digital television will provide new opportunities for delivery of high quality, interactive educational television programming and opportunities for students to contribute and showcase their own multimedia content.

RECOMMENDATION 6.3

That the Victorian Government support the principle of a national children’s digital television channel to promote greater educational television content and more opportunities to showcase multimedia content produced by Victorian students.

Learning from the Principles of Game Making

Young people of the net age are often readily inspired by and engaged with sophisticated multimedia and interactive software. The Committee heard that educationalists could learn some lessons by examining the design principles that make this software so engaging for young people. This is not to suggest that students should spend time at school merely playing interactive games. Rather, the Committee emphasises that there is potential for education to be enhanced through the integration of the design principles used in commercial games, which appear to be so successful in responding to the needs of today's youth.

The potential of video games and game making to create new learning opportunities is increasingly being recognised throughout education communities. The Committee received a significant amount of evidence on this topic and video games and game making were a key theme at the Curriculum Corporation's national conference in August 2006. In essence, Professor James Gee, University of Wisconsin-Madison, United States, notes that an emerging research field relates to the hypothesis that video games are good for learning. This hypothesis amounts to two claims: (1) that good commercial games are built on sound learning principles; and (2) that video game technologies hold out great promise for moving beyond entertainment, to building new learning systems for serious purposes in and out of school.[389] Professor Gee outlined six key features of good video games that he believes facilitate effective learning:

- Video games can create an embodied empathy for various complex systems, such as those that may relate to urban planning, space exploration and global peace.
- They are simulations of an embodied experience, where players must prepare for action and accomplishment of a goal.
- They involve distributed intelligence via the creation of smart tools. The player gains competence through trial and error and instant feedback, rather than having to wade through a lot of text before being able to engage in an activity.
- They create opportunities for cross-functional teamwork.
- They provide situated experiences and meanings.

[389] J. Gee and T. Morgridge 2006, University of Wisconsin-Madison, *Are Video Games Good for Learning?* Keynote address at Curriculum Corporation 13th National Conference, *A Vision Splendid. ICT: research, pedagogy, implementation for schools*, Adelaide, August 2006.

- They can be open-ended in ways that encourage a melding of personal and social goals.[390]

Professor Gee outlined some further features of good video games, which can also relate to effective learning. These include issues of motivation; risk taking and a reduction in the price of failure; and competition and collaboration.[391] Beyond these issues, is the observation that the very ways in which games are designed, seem to give them features that promote learning and a sense of mastery. Design features that achieve this include, for example: interactivity'; customisation; strong identities; well-sequenced problems; a pleasant level of frustration; a cycle of expertise; and a construction that is both deep, but fair.[392]

A submission from Scaffold Education outlined how Mathletics, which is a web-based mathematics program covering the years P–12 curriculum, has successfully integrated many of the principles outlined by Professor Gee:

- Students are genuinely engaged. The program's statistics support the premise that strong engagement leads to increased motivation and a real desire to improve their results.

- The feedback facility allows students to see their results immediately. This feedback provides further motivation to continually improve.

- The program empowers students to become more independent in their learning by enabling them to select their level and choose their workflow.

- The program acts as a diagnostic tool and allows teachers to target and respond to individual student needs.[393]

A number of Victorian schools have recognised and responded to the opportunities presented through interactive games. For example, Footscray City College suggested that game making, aside from being highly engaging for students, can incorporate complex educational content:

> Recently a student showed me a website he uses at home—www.gamemaker.nl. This led to a conversation with the physics teacher about the physics of game making—gravity, elasticity, light and sound—and how we can integrate these into our science curriculum at

[390] ibid.
[391] ibid.
[392] ibid.
[393] Scaffold Education, Written Submission, July 2006, p.1.

> the time our students are asking the questions. Teachers need to be open and adaptable to the ideas of students.[394]

The ASISTM Computer Game Design, Programming, Multimedia and Mathematics Cluster provided a detailed submission to the Committee, outlining how computer game programming can be a powerful tool in meeting the learning needs of net age students. The Cluster suggests that game programming can be justified on three grounds:

- development of transferable cognitive skills—the idea that students are learning skills in areas such as mathematics and literacy while programming games and that these skills will transfer to the more traditional areas with measurable outcomes;
- development of metacognitive skills—the self-management skills we employ when we are learning; and
- affective benefits—refers to attitudes to school, teachers and classrooms, recognising that if students enjoy going to school, that they will learn better.[395]

Professor Josie Arnold and Ms Kitty Vigo, Swinburne University of Technology, also see value in understanding and integrating the principles of interactive games into the curriculum. They suggest that educational games can provide self-paced learning, appeal to a variety of different learning styles and capture student attention through creative design and aesthetics:

> The interactivity of multimedia can be seen as a way in which students can enter into knowledge in new and galvanizing ways. Whilst a learning game can enable students to move from level to level once they have mastered certain skills or understood certain activities, it can also do much more than that. It can facilitate students who learn kinaesthetically, by sound as well as vision, and by interactivity as well as knowledge accrual in the traditional sense of memory. Above all, it can be aesthetically arranged, its architecture can be creative, its visuals can be thought of as artistic in traditional evaluations such as colour, form, inter-relationships and appeal as well as in e aesthetics. *G21, Australia's Cultural Dreaming*, is an exemplar of this process that provides educational experiences through interactive gaming.[396]

[394] Footscray City College, Written Submission, June 2006, p.3.
[395] ASISTM Computer Game Design, Programming, Multimedia and Mathematics Cluster, Written Submission, June 2006, p.5.
[396] Prof J. Arnold, Professor of Writing and Ms K. Vigo, Discipline Leader, Writing, Swinburne University of Technology, June 2006, p.4.

Mr Greg Gebhart, ICT/Multimedia Manager, Lowanna College, similarly outlined the benefits of interactive games, including problem solving and collaboration:

> Many students play computer games which require significant problem solving skills and in some cases team work. (Skills we seek in current workplaces). There is also a large number of students who are involved in role playing games which develops many life skills essential for children.[397]

The Committee notes then, that interactive game technologies and their appropriate educational applications are rapidly gaining acceptance in the classroom.

FINDING 6.9

That education systems can learn some important lessons about student engagement and learning by examining the design features and principles embedded within successful interactive games. These principles should be incorporated into educational software, curriculum materials and classroom practice.

Conclusion

Multimedia technologies are evolving rapidly. New technologies are already providing many Victorian schools with exciting new tools and new opportunities. Many such opportunities are too significant for schools to overlook. Schools should not overlook opportunities to increase levels of student engagement. Nor should they overlook opportunities for greater and more fluid collaboration within and between learning communities of students, teachers and subject experts. Further, schools should not overlook opportunities to provide more flexible and personalised learning programs to their students. Schools must embrace these and the many other opportunities that new technologies are providing, as the alternative is for schools and their students to be left behind.

The Committee found that there is a range of technologies that help schools, teachers and students to harness the benefits of multimedia in a strategic and structured manner across the curriculum. Learning platforms, for instance, can be of enormous benefit when supported by professional learning and an extensive range of high quality digital

[397] Mr G. Gebhart, ICT/Multimedia Manager, Lowanna College, Written Submission, June 2006, p.2.

content. Learning platforms also help streamline the many administrative tasks that teachers and school management must undertake on a day-to-day basis. The Committee is supportive of the implementation of learning platforms, which are advantageous, not only in their functionality, but also as catalysts for a positive change. The Committee therefore believes that all Victorian schools should have the opportunity to benefit from learning platforms as soon as possible.

The Committee is impressed with the schools that are taking the lead and exploring new ground in the integration of multimedia into education. Popular technologies such as interactive whiteboards, iPods, mobile phones and a broad range of multimedia software are being used successfully in an increasing number of schools. These technologies are engaging students and bringing new opportunities to their education. The Committee believes that education systems must seek and promote systemic improvements by helping schools to learn from the best, most innovative practices being implemented in schools here and overseas.

7. New Challenges

Introduction

Over the past three years, Committee Members have visited numerous schools throughout Victoria, both in their role as Members of the Committee and as part of their broader role as Members of Parliament. Students and/or teachers of 35 schools participated directly in the current inquiry, either as witnesses in public hearings, through written submissions or through school visits undertaken by Members and staff. Committee Members have observed many creative approaches to developing and delivering innovative multimedia programs and an infectious enthusiasm among students and most teachers for the use of multimedia in the classroom.

The Victorian Government's Leading Schools Fund,[398] an initiative of the Blueprint for Government Schools, has been one of the key driving forces resulting in enhanced use of multimedia in schools. Many other schools have achieved similar success through the ongoing commitment, leadership and hard work by principals and their staff. Undeniably, however, many schools across all three school systems still face considerable challenges in implementing the multimedia programs that they strive for. These challenges include:

- the digital divide between teachers and students;
- the disparity in student access to ICT resources (especially in the home) and the role of schools in addressing that disparity;
- the ongoing pressures on the capacity of ICT infrastructure and resources; and
- creating an appropriate physical environment conducive to the effective use of multimedia.

As a result of the above challenges, the Committee found that the quality of multimedia facilities and programs available in schools is varied.

[398] The Leading Schools Fund was developed as a school transformation and renewal initiative. It aims to be a key driver for the Minister for Education and Training's vision of excellent outcomes for all students in government secondary schools. The initiative provides a model for whole secondary school improvement and whole of government school system development. It seeks to help the development of innovative solutions at the local level, promote a highly skilled workforce, and foster collaboration and co-operation between schools. Department of Education and Training, website, <http://www.sofweb.vic.edu.au/blueprint/fs7/default.htm>, viewed on 22 August 2006.

Digital Divide between Teachers and Students

The Committee received much evidence relating to a digital divide between teachers and their students. As digital natives, students are generally very familiar with a variety of multimedia technologies; they both enjoy and expect to use them in the classroom. There is a greater variability in teachers' experiences with multimedia technologies. While many are becoming increasingly familiar and comfortable using multimedia, most teachers are digital immigrants. As such, multimedia technologies are not necessarily a natural preference for many teachers. Consequently, the digital divide between students and teachers can be enormous. As stated by Essendon North Primary School:

> Students are natural technology experts because they are surrounded by it in daily life and bring a confidence to it. They are natural experimenters and this is evidenced by the ease in which they text in mobile phone, iPod use, downloads etc. As the multimedia technology develops they become more capable and the pressure is on teachers to keep pace with student knowledge. It can be a role reversal in the classroom.[399]

A common theme arising in submissions and public hearings was the need for teachers to be confident in the use of new technologies before they can use them effectively within an educational setting. As stated by the Australian Children's Television Foundation:

> Teachers need to feel confident about new technologies in order to be able to use these creatively in the curriculum and assist students to learn and create using the variety of tools available... The skills that children are acquiring outside of the classroom through use of the internet, chat rooms, web cams, MP3 technology, mobile texting and other interactive capabilities, must be understood in order to transfer these benefits into the classroom.[400]

More than developing just a familiarity with new multimedia, teachers need to develop appropriate pedagogical practices. Without effective pedagogies, teachers will be unable to maximise the benefits of ICT. Therefore, investment in ICT resources needs to be supported with teacher professional development to ensure those investments equate to improved student outcomes. As the Department of Education and Training stated:

[399] Essendon North Primary School, Written Submission, August 2006, p.1.
[400] Australian Children's Television Foundation, Written Submission, May 2006, p.5.

> Teachers need to respond to student needs and aspirations through appropriate and powerful pedagogies that exploit ICT. Their work is central in motivating and engaging students, personalising learning, enhancing inclusiveness and diversity and expanding student digital/ICT literacy.[401]

The Catholic Education Commission of Victoria indicated that teachers play a key role in the integration of ICT to support quality learning and teaching. Further, that the provision of sustained appropriate, targeted professional learning opportunities for leaders and teachers is essential.[402] Of concern, the Commission states:

> There are a number of teachers still reluctant to investigate and utilise available and appropriate technologies to support their programs, and others who are using ICTs but not at a level which challenges their students.[403]

The Committee heard that crucial to understanding the pedagogies associated with the use of multimedia in the classroom is an understanding of how net age students can and prefer to learn (the characteristics of net age students were outlined in Chapter 5). Teacher education therefore plays an important role in maintaining teachers' familiarity with multimedia, providing supporting pedagogies, helping teachers to understand net age students and changing teacher attitudes towards multimedia.

The Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) has established an ICT in Schools Taskforce. The Taskforce acknowledges that pre-service teacher education and continuous professional learning empower teachers and support them to critically integrate ICT into learning and teaching by:

- focussing on learning improvement and school transformation;
- addressing the multiple, interactive dimensions of ICT use;
- listening to and empowering students;
- providing tools to evaluate levels of integration of ICT in learning;
- improving personal learning plan efficiency; and

[401] Department of Education and Training, Written Submission, August 2006, p.8.
[402] Catholic Education Commission of Victoria 2005, *eLearning–Seminar 8*: November 2005, CECV, East Melbourne, p.3.
[403] ibid.

- developing collaborative networks.[404]

Therefore, pre-service teacher education and ongoing professional learning are of crucial importance to the subject of this inquiry.

Pre-Service Teacher Education

During the course of this inquiry the Committee heard some concerns that pre-service teacher education is not providing pre-service teachers with adequate opportunities to become familiar with new media. Nor is it providing pre-service teachers with a sufficient range of pedagogies that complement the use of multimedia in the classroom.

The proportion of pre-service teachers that are digital natives and therefore more likely to be comfortable using new media is steadily increasing over time. Nevertheless, it is expected that there will continue to be disparate levels of familiarity that pre-service teachers have with new media. Education faculties will therefore need to continue to provide pre-service teachers with opportunities to develop understanding, familiarity and confidence in using multimedia.

Additionally, the Committee was concerned to hear that pedagogical approaches to the effective use of multimedia are not being adequately taught throughout some education faculties. A number of witnesses raised the point that even younger pre-service teachers who are digital natives and comfortable with using new technologies, often lack complementary pedagogies and are therefore ill-equipped to utilise these technologies effectively in the classroom.

Ms Helena Dunn, Head of History, Presbyterian Ladies' College, said of the new graduates and pre-service teachers she encounters:

> …they can use the programs but they have not considered them from a learning point of view.[405]

Similarly, the Committee heard from the Australian Centre for the Moving Image that pre-service teacher education may not be properly preparing future teachers for the effective use of multimedia in the classroom. One example of the type of skill gaps that the Centre has identified is the ability of new teaches to teach film texts effectively:

> English, for example, film as text is a key part of the year 12 curriculum. It is still not being taught extensively, or maybe particularly well, at tertiary level in teacher training programs. Those teachers come to

[404] Ministerial Council on Education, Employment, Training and Youth Affairs 2005, *ICT in Schools Taskforce, Contemporary Learning–Learning in an Online World*, MCEETYA, Melbourne, p.7.

[405] Ms H. Dunn, Head, History, Presbyterian Ladies' College, Transcript of Evidence, Public Hearing, Burwood, 28 July 2006, p.14.

> us for film-as-text programs so they can skill up and then work in schools.[406]

The Committee heard that some teacher educators may themselves be unfamiliar with the new pedagogies required to engage students of the net age. Mrs Sue Rathbone, Assistant Principal and ICT Teacher, Doncaster Gardens Primary School, indicated, for example, that some teacher educators are too removed from schools and, consequently, they lack a pedagogical understanding of how net age students learn:

> I am actually doing my masters in IT in education … at the moment, so I do mix with the academics quite a bit. From my point of view, I see that they are very removed from not only what goes on in schools but how students learn these days.[407]

The Education and Training Committee has previously conducted an inquiry into the suitability of pre-service teacher training in Victoria. Tabled in February 2005, a key theme in that inquiry was the need for current and future teachers to acquire sufficient expertise in the use and integration of ICT across the school system.[408] The Committee also found that pre-service teacher education programs needed to be more closely aligned with the ICT needs and initiatives in schools. Further, the Committee stated that to assist this, teacher educators needed to 'step out' into schools more often in order to help bridge the gap between education faculties and schools.

The key conclusion that the Committee made in relation to ICT in teacher education was:

> The Committee believes that education faculties face considerable challenges in relation to preparing pre-service teachers for the ongoing and growing role of ICT throughout their teaching career. The Committee has received little evidence to suggest that university education faculties systematically and closely ally their ICT programs with programs and functions used and required in the school and other education and training sectors. Further, the Committee has not seen significant evidence of cross-faculty partnerships or sharing of ICT instruction methods and curriculum between institutions …Finally and most importantly, the variation in the breadth and quality of ICT instruction experienced by pre-service teachers is too wide. This suggests that current courses are not doing enough to

[406] Mr B. McLennan, Australian Centre for the Moving Image, Transcript of Evidence, Public Hearing, Melbourne, 1 May 2006, p.23.

[407] Mrs S. Rathbone, Assistant Principal & ICT Teacher, Doncaster Gardens Primary School, Transcript of Evidence, Public Hearing, Doncaster, 4 August 2006, p.9.

[408] Refer to Education and Training Committee 2005, Chapter 6, 'Information and Communication Technology in Teacher Education', *Step Up Step In Step Out: Report on the inquiry into the suitability of pre-service teacher training in Victoria*, Parliament of Victoria, Melbourne, pp.181–195.

> ensure not only that all pre-service teachers are ICT confident, but that all pre-service teachers have the opportunity to significantly expand their knowledge of ICT and ICT pedagogy during their teaching course, regardless of their level of expertise when they commence their studies. Universities also need to invest in ICT training for their staff, in order to achieve ICT competence and confidence for Victoria's pre-service teachers.[409]

The Committee made three recommendations relating to ICT in its report on the above inquiry:

- Recommendation 6.1: That the Victorian Institute of Teaching make ICT a compulsory and key focus of all pre-service teacher education courses through the establishment of appropriate levels of competency for new teachers. Further, that the application of ICT be included and assessed as a compulsory and formal requirement of teaching practicum.[410]

- Recommendation 6.2: That as a condition of course accreditation, Victorian universities be required to submit a detailed ICT plan, outlining:
  - how ICT is incorporated across the curriculum;
  - how the university will respond to the different needs and different levels of expertise in ICT among the pre-service teacher cohort;
  - the resources allocated to ICT; and
  - professional development for faculty staff.[411]

- Recommendation 6.3: That the Department of Education and Training explore partnership opportunities between universities and schools to access centres of ICT excellence for use in the delivery of pre-service teacher education.[412]

In its response to the Committee's report, the Victorian Government stated that it supports each of the above recommendations. Recommendations 6.1 and 6.2 have been referred to the Victorian Institute of Teaching, while the Department of Education and Training has committed to work with stakeholders to explore the appropriate partnerships proposed in Recommendation 6.3.[413]

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[409] Education and Training Committee 2005, *Step Up Step In Step Out: Report on the inquiry into the suitability of pre-service teacher training in Victoria*, Parliament of Victoria, Melbourne, p.195.
[410] ibid., p.192.
[411] ibid.
[412] ibid.
[413] Victorian Government, *Government response to the Education and Training Committee's report on the Suitability of Pre-Service Teacher Training in Victoria*, 1 September 2006,

Further, in its submission to this inquiry, the Department of Education and Training outlined its commitment to high levels of support to ensure:

> The system impacts on pre-service training of teachers to ensure new teachers begin to develop the required skills and attitudes prior to entering the classroom.[414]

While at this point in time, the Committee does not wish to make further recommendations on this matter, it does recognise that education faculties have an important opportunity to lead and encourage improved use of multimedia in schools. Given that a sizable proportion of current pre-service teachers are digital natives, capitalising on their inherent skills by focusing on effective pedagogies associated with multimedia would be of considerable benefit. The Committee will continue to monitor with great interest, how its previous recommendations pertaining to ICT in pre-service teacher education are implemented.

Professional Development and Learning

Many submissions and witnesses raised the importance of ongoing teacher professional learning and development in addressing the digital divide between teachers and their students. The rapid advancement in multimedia technologies is a significant challenge for many schools:

> Keeping abreast of innovations is a daily challenge as there are new programs, projects and developments in ICT every day! Catering for various entry levels of staff and students in ICT is also therefore a challenge… At first it is a challenge to use the new technology but it does not take long for people to realise the potential for improving the quality of instruction and engagement. Naturally, students are at the forefront of technology and much quicker on the uptake![415]

As digital immigrants, many teachers find it a challenge to become competent and confident users of new technologies given the current pace in which they are introduced into schools. The breadth of teacher professional development currently occurring at Wonthaggi Secondary College, for example, well encapsulates the scope of this challenge. Wonthaggi Secondary College stated in a written submission that it is actively modelling, promoting and assisting staff with:

- the use of data projectors with digital learning objects and interactive programs from websites to stimulate engagement and cater for visual learners;

pp.16–17. Available from Education and Training Committee website, <http://www.parliament.vic.gov.au/etc/fs_inq_pre-serv.html>.

[414] Department of Education and Training, Written Submission, August 2006, p.11.

[415] Wonthaggi Secondary College, Written Submission, August 2006, pp.3–4.

- lesson instruction on interactive whiteboards and encouraging students to use these whiteboards for their presentations;
- the use of maths software, several music software packages, Kahootz and other animation programs, and a broad range of other software used to create visual essays, reports and oral presentations;
- the use of digital portfolios as an overview of students' annual progress;
- the use of the Victorian Education Channel as a search engine and various other multimedia research tools;
- hyperlinking film clips into PowerPoint presentations, flipcharts for use on the interactive whiteboards and in digital portfolios;
- the incorporation of web quests into curriculum content to develop knowledge, understanding and research skills;
- setting up blog sites linked to the school website; and
- directing students to individualised, self-guided skills development programs on websites.[416]

The challenge is to not only develop technical skills in operating new hardware and software, but to also maximise the benefits of its use across the curriculum:

> Professional learning is not just finding out about the ICT tools and developing competencies in using them. It must focus on being able to transfer new skills to changed pedagogical practice and improvements in the classroom.[417]

Furthermore, professional learning should aspire to motivate teachers to develop innovative teaching practices that seek to maximise the benefits of multimedia.

The Committee heard that schools are adopting a variety of approaches in addressing professional development and learning needs. Over 200 schools from across Victoria have participated in the Intel® Teach to the Future Program. Each of the 482 Master Trainers trained to date have the responsibility to train at least 10 other teachers.[418] During school visits, Committee members and staff heard many positive comments about the Intel® Program

[416] ibid., pp.1–2.
[417] Department of Education and Training, Written Submission, August 2006, p.11.
[418] ibid.

Mr Jason Sergi, Learning Technologies Co-ordinator, Park Ridge Primary School, said the whole of the staff at the school undertook the Intel® Program:

> This was very beneficial, as you can see from the quality of work after this course. We had a high quality of ICT in the school, but after this course it blew out. The Intel® Teach to the Future course takes the programs that you know how to use—say, PowerPoint, Publisher, Excel and so forth—and shows you how to use them to their full potential.[419]

Another opportunity for professional learning also available to schools is IBM's Reinventing Education Program and the Guiding School Change CD-ROM. Twenty-eight Victorian schools worked with IBM trainers in a long-term project to enhance student engagement and achievement, improve teacher classroom practice and explore innovative teaching and learning approaches that integrate ICT. The final product, the Guiding School Change resource, was released for all teachers to use in April 2006.[420]

Further formal professional learning opportunities that focus on multimedia include:

- multimedia festivals and student led professional learning, co-ordinated by the regional offices of the Department of Education and Training;
- Kahootz professional learning, run by the Australian Children's Television Foundation;
- professional learning run by subject associations including the Victorian IT Teachers Association and ICT in Education Victoria; and
- both the Southern and Eastern Metropolitan Regions of the Education and Training Department have technology training centres, providing ICT training and technical support for schools in those regions.[421]

The Committee heard that many schools have capitalised on other valuable professional learning strategies. Some schools have partnered with other schools in their cluster to provide shared learning opportunities, while many others are adopting a culture of sharing their learning with colleagues within the school. For example, schools in the Montmorency Innovations and Excellence Cluster are pooling funds to provide shared training opportunities on various ICT applications:

[419] Mr J. Sergi, Learning Technologies Co-ordinator, Park Ridge Primary School, Transcript of Evidence, Public Hearing, Rowville, 2 June 2006, p.14.
[420] Department of Education and Training, Written Submission, August 2006, p.8.
[421] ibid.

> About five years ago we joined with Briar Hill [Primary School] and we paid collectively for the in-services. By ourselves we would not have the money to do it.[422]

For other professional development on multimedia the Montmorency Cluster is able to utilise the expertise already present among the member schools:

> … we found out what expertise we had within the cluster … Then we have tapped in. For example, I went to learn about digital portfolios with a couple of teachers from here and from Lower Plenty and Monty Secondary, and Cleo [Digital Learning Teacher, Montmorency Secondary College] ran that session…In terms of it costing the school, it didn't. Teachers have been kind enough to volunteer their time, the schools have volunteered the place, so we can all go along. By tapping into the expertise that is already within the cluster, we have done a huge amount of professional development.[423]

Spring Valley Primary School outlined its similar involvement in a cluster model of teacher professional development:

> Designer PD is a professional development program within our network… Its theme is 'Teachers skilling teachers'. You use teachers in your profession and other people as well. They run about 200-odd courses a year… the strength in our program is that we take into consideration what teachers want to know… It is self-funded by schools. We will put in $100 per teacher for this year…out of our PD budget… through that we have then been able to employ speakers and so on. We use our schools as the venues, and as much as possible we use our own staff and staff connections to bring necessary people to provide what people attend for.[424]

Importantly, Spring Valley Primary School has involved students in delivering professional development in the area of multimedia. This was recongised as a success by both teachers and students at Spring Valley Primary School. One of the students, Elton Chau described his experience as follows:

> Last year Turiano and I went with Ms Dawes to Cleeland Secondary College. It was a computer and electronic expo. We found really interesting things. We helped Ms Dawes to teach 20 teachers how to use

[422] Ms K. Wall, Principal, Lower Plenty Primary School, Transcript of Evidence, Public Hearing, Greensborough, 9 June 2006, p.11.
[423] Ms K. Paul, Teacher, Sherbourne Primary School, Transcript of Evidence, Public Hearing, Greensborough, 9 June 2006, p.11.
[424] Mr C. Bridges, Principal, Spring Valley Primary School Transcript of Evidence, Public Hearing, Springvale South, 18 August 2006, p.11.

> Photo Story. They were ecstatic. They thought we were in year 7 or 8, but we were only in grade 5.[425]

The above examples of cluster-based professional development are important. The Committee heard that for several reasons the delivery of professional learning in multimedia need not follow a traditional model. First, teachers' knowledge and skill gaps in multimedia are often quite specific and confined to a particular application.

As Mr Leon Bishop, Principal, Lilydale High School and member of the Yarra Valley eLearning Community, stated:

> The traditional model of PD delivery in schools has been for teachers to go out of their school for a day or half a day, go somewhere else and take part in a structured program that will take them through …We are finding that the PD model required … is people learning things in small chunks as they need them; a just in time sort of model, if you like. What we have been doing across our schools has been providing PD in very small, specific and short sessions through the learning coaches and the development managers repeated at different locations. So you can attend after school at your own school, or you can go to another of the seven schools that is on your way home…people need a little bit of help with getting on to Studywiz, they need a little bit of help in using Flash, or they need a little bit of help in using ClickView and all these sorts of things.[426]

Secondly, teachers can now access professional learning via multimedia technologies. In doing so, teachers can capitalise on the flexibility and convenience of learning via multimedia platforms. Multimedia can help teachers to more readily collaborate with their colleagues within their school, cluster or wider learning communities. Therefore, teachers can more readily access and share best practice, as demonstrated by the Knowledge Bank and Digital Stories discussed below. The Yarra Valley eLearning Community also indicated that it is using multimedia to support teacher professional learning and to model effective teaching strategies.

The Committee supports models of teacher professional learning that, where appropriate, utilise online learning or capitalise on other forms of multimedia. Further, the Committee is supportive of professional learning models that harness existing expertise in schools and school clusters and that actively engage Victorian teachers and educational leaders in becoming members of professional learning communities.

[425] Mr E. Chau, Year 6 Student, Spring Valley Primary School, Transcript of Evidence, Public Hearing, Springvale South, 18 August 2006, p.11.
[426] Mr L. Bishop, Principal, Lilydale High School, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, pp.12–13.

The Committee also supports national and local networks that share practice online and face-to-face.

The Committee notes that the Department of Education and Training is currently investigating the feasibility of a range of new professional learning initiatives to meet the ICT needs of teachers. These include:

- nurturing leading practice through a specialist multimedia research and training centre;
- creating an online, intuitive and seamless teacher resource space to enable dynamic sharing of their new knowledge and seeking assistance with peers, through which they can assess their progress, trial new ways of doing, share new knowledge of teaching in the VELS ICT domain, and reflect on and evaluate their own teaching; and
- establishing an eLearning mentor in each Victorian government school whose role as a change agent would ensure effective, supported and innovative integration of ICT and eLearning across the entire school organisation.[427]

The Committee is supportive of the investigation of the above initiatives and suggests that they are likely to significantly benefit all Victorian schools.

Leadership and Sharing Best Practice

The Committee heard that visionary leadership at all levels is critical to achieving transformation in the learning environment. A written submission from Essendon North Primary School included comments from teachers that demonstrated the role of the principal in ensuring that multimedia is strategically integrated into student centred, teacher guided approaches to learning:

> How it (the technology) is used (at this school) is insisted upon and checked upon—you are expected to use it here. There's peer pressure about that and an expectation about it by the principal.[428]

Further, the role of professional learning teams and coaches was also recognised by Essendon North Primary School:

> We have moved from a lab approach to being fully integrated. [Multimedia] applications have become integral learning tools. Coaches have shared information and modelled the use of a range of applications. Knowledge has filtered down through the

[427] Department of Education and Training, Written Submission, August 2006, p.12.
[428] Essendon North Primary School, Written Submission, August 2006, p.2.

> staff. Expertise continues to grow through the use of the professional development program.[429]

A key leadership program outlined by the Department of Education and Training is the Partners in Learning/Creating eLearning Leaders (CeLL) Schools Program. Conducted in conjunction with Microsoft, CeLL is a project in which partnerships, collaboration and ICT professional learning are central.[430] The Department is spending $1.5 million to support 28 CeLL schools to explore and share how to embed the use of ICT to create new ways of learning and teaching.[431]

The Committee notes that CeLL, Leading Schools Fund and Intel® Teach to the Future schools are leading the way in sharing best practice. They are providing valuable insights to other schools about how to achieve whole school change and about the most effective models of professional learning through, with and for ICT.

Other initiatives seeking to promote best practice in teaching and learning throughout Victorian schools include:

- Knowledge Bank, an online showcase for best practice in Victorian schools organised around case studies of exemplary and promising practice. Knowledge Bank also profiles current research, and highlights upcoming events. Currently there are 450 reports online authored by 518 teachers.

- Digital Stories, a series of movie clips showcasing teachers and students using ICT, provides models for other teachers to realise the potential of using ICT.[432]

A number of resources are also being developed to support principals and leadership teams to effectively plan the integration of ICT to support teaching and learning. These resources include:

- An e-learning planning guide. This online guide will provide support to schools to embed ICT in all e-learning activities and a template and direction for the next steps in aligning e-learning to schools' strategic plans.

- Regional Liasion Officers. All Department of Education and Training regions have an officer to support schools in the use of ICT in classrooms.[433]

Again the Committee welcomes the above initiatives, recognising that school leadership will continue to play an important role in ensuring multimedia is afforded the priority it requires within net age education.

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[429] ibid., p.3.
[430] Department of Education and Training, Written Submission, August 2006, p.9.
[431] ibid.
[432] ibid.
[433] ibid.

Access and Equity Issues Associated with Computers and the Internet

The Committee received evidence that there is currently a disparity in access to and familiarity with multimedia technologies among different groups in our society. Such differences relate to whether students have access to computers and the internet, where they can access these multimedia resources and the relative quality of the resources they can access. Further, regardless of the level of access to computers and the internet, children and young people have varying levels of skills in using these resources effectively:

> There is also concern about the expectations of educationalists that students will *all* be media savvy, when there is a small percentage that won't have any media literacy at all. The widening gap between those that are engaged in multimedia and those that are not also supports this concern.[434]

The following sections examine the role of home and school access to computers and the internet in meeting the media literacy needs of students.

The Importance of Access at Home

There was a high level of agreement among participants in the inquiry that home computer access is becoming increasingly important for success in education. For example, Mr Randall Straw, Executive Director, Multimedia Victoria, stated:

> I do not know how you do school without a PC at home… How do you participate in school if you do not have an internet connection at home? I think there is a gap widening between those people who can fully participate in technology at school because they have those things at home and the group of people who do not have those things at home.[435]

Dr Karen Orr Vered, Director, Digital Media Studies, Flinders University, shared a similar perspective, adding that home access is increasingly important given the role that computers and internet access have in day-to-day life beyond the classroom:

> When multimedia assignments and learning experiences are only accessible in school, they are effectively not part of the child's everyday life. Such a situation would hardly be tolerated if it were pencils and

[434] WestOne Services, Department of Education and Training (Western Australia), Written Submission, June 2006, p.2.
[435] Mr R. Shaw, Executive Director, Multimedia Victoria, Transcript of Briefing, Melbourne, 10 April 2006, p.18.

> books that were restricted. Moreover, in an environment where everyday activities of banking, purchasing, searching directories and a host of service interactions are delivered via computer interface, computer competency is critical. Access to media outside of classrooms assists children in developing this competency...[436]

McKinnon Secondary College stated its concerns of this issue simply:

> Students who have no access at home for a variety of reasons can also be a concern for equality reasons.[437]

Some students also noted the importance of having computer and internet technologies at home. For example, Mr Jason Dennis, Year 12 Student, St Francis Xavier College, noted the importance of having home internet access for completing school assignments:

> When it comes to computers at home, I do not know anyone who does not have one, but I know it is a great advantage. When it comes to doing assignments at school there are a lot of restrictions on the internet access. You cannot access things for research at school so you have to do it at home.[438]

However, many submissions and witnesses highlighted concerns about lack of access to home computers for many students. One school principal estimated that less than one third of the students in her school have access to computers and/or the internet at home:

> We work in Footscray, so 30 per cent of the kids maybe have access to the internet at home or computers at home. It is not happening for them. There is no such thing as a laptop program for my kids, not unless Apple wants to come out and give everyone one.[439]

Understandably, a number of submissions and witnesses raised concerns about children from low socioeconomic backgrounds who may not have computers at home. For example, a joint submission from Southvale Primary School and GMM Training Pty Ltd, stated:

> Access to multimedia is an issue—in many [low socioeconomic] homes there are no computers and/or no internet access…Students from low socioeconomic families tend to use multimedia for entertainment purposes NOT for education purposes. Therefore most

[436] Dr K.O. Vered, Director of Digital Media Studies, Flinders University, Written Submission, June 2006, p.4.
[437] McKinnon Secondary College, Written Submission, August 2006, p.4.
[438] Mr J. Dennis, Year 12 Student, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.21.
[439] Ms C. Woodhouse, Principal, Footscray City College and Executive Member, Victorian Association of State Secondary Principals, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.37.

> families in those areas would own plasma or LCD television and PlayStations but would not own a computer. In order to support the learning at home for these families it is imperative that every family in these generational poverty situations be able to access computer technology in the family home.[440]

It is not only access to computers at home that is an issue, but also the quality of the computer, whether it has an internet connection and whether the software supports up-to-date applications being used in schools and the broader community. Students appearing before the Committee highlighted the disadvantages of not having these types of resources.

Mr Tristan Vogrig, Year 11 Student, St Francis Xavier College, noted the frustrations of not having quality, broadband internet access at home:

> They got broadband in our area, except all the plugs are used—if that makes sense because I do not do computers—so they cannot get it to us, so it really slows down everything… because it is so slow we just do not bother going on it.[441]

Other students at St Francis Xavier College further noted the difficulties encountered when the software used at school is not available in the home:

> In the holidays we had to do [a maths assignment], and it is a problem when you do not have the same programs at home as you do at school, and I could not download the assignment so I had to wait until I got back. It is kind of annoying because they expect you to have the same program the school has got, but you do not, sometimes. It makes it hard.[442]

> I believe there should be a standard in computers at home so everyone has an equal chance of doing well… because some people have certain programs and sometimes they have to go to their friends to get work done, which is a lot harder… At school we have a program for our music called qbase, and I have it at home as well, which is beneficial… A lot of my friends in class do not have that ability.[443]

[440] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.15.
[441] Mr T. Vogrig, Year 11 Student, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.21.
[442] Ms T. Boekel, Year 12 Student, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.21.
[443] Mr J. Dennis, Year 12 Student, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.21.

Essendon North Primary School noted that the challenges associated with equitable access to technology will remain well into the future:

> The future will mean that all students will need to consider having a 1:1 [student to computer ratio] in primary school before the decade is out. This will be for a minimum period of about ½ hours a day (to communicate, research, create using multimedia tools) and to store and reference information. The equity challenge will be there for access. This will need to be a consideration for government in their future planning. If not addressed it will add to the digital divide and a widening gap between those who have and have not in both government and non-government schools.[444]

The Committee notes the above concerns of stakeholders and agrees that there needs to be improved, more equitable access to computers and appropriate educational software for many students. The Committee believes that schools and school systems need to work together to devise strategies for achieving this. Whether such strategies are targeted at getting more computers and software into homes is an important policy decision that must be carefully investigated. However, some of the suggestions raised throughout this inquiry are outlined below.

Bridging the Divide: Access within and beyond the school boundaries

Given concerns about the inequality of access to computers and a range of high quality software in the home, there has been some debate about whether it is fair for success in education to rely so heavily on computer literacy and having access to the latest multimedia technologies. The debate is not new, with the Family and Community Development Committee reporting in 2000 that:

> … [some are concerned] that the emphasis on technology in schools threatens to divide society into 'knowledge elites' and 'computer illiterates', with the cost of multimedia technology determining the post-school pathways of many students.[445]

One comment about this view presented in the Family and Community Development Committee's final report is that it is probably not the emphasis on technology in schools that threatens to create or widen the divide in society between 'knowledge elites' and 'computer illiterates'. Rather, this Committee believes that the appropriate emphasis placed on technology and multimedia in schools will help to

[444] Essendon North Primary School, Written Submission, August 2006, p.1.
[445] Family and Community Development Committee 2000, *Inquiry into the effects of television & multimedia on children & families in Victoria: Final Report*, Parliament of Victoria, Melbourne, p.44.

redress the divide that currently exists. Ms Atkins, Director, Online Initiatives, Le@rning Federation, presented this view:

> I would argue that schools have a responsibility to provide access to learning which engages ICTs as much as possible because there is still a percentage of the community that does not have that access. That gap will only get bigger…[446]

This view was supported in a joint submission from Southvale Primary School and GMM Training Pty Ltd, which stated:

> We believe strongly there is a high need/expectation of access at school for students with low [socioeconomic] background to counter balance their lack of access at home. It is an ACCESS and EQUITY ISSUE and one of bridging the digital divide.[447]

And further, by Ms Karen Paul, Teacher, Sherbourne Primary School, who stated:

> There are some children, particularly at primary level—I do not know about secondary—who have no access to computers at home. For those children there is a huge gap, and they need perhaps even more work at school.[448]

Students participating in the inquiry noted some frustration and unfairness in being in a situation where they do not have the same level of computer and technology skills as others in their class:

> I think it [learning with computers and multimedia] is a time waster, because I cannot use it properly and I spend a lot of time not getting anywhere, because I do not know what I am doing.[449]

> … our maths teacher expects us to get onto the school web site and print off the assignments by ourselves… We have to either at home print it off or go to the library and pay for the print-offs and get our assignment our own way. It is a struggle for me because I do not exactly know how to get onto it also.[450]

While acknowledging the challenges arising due to unequal access to multimedia technologies among students, the Committee takes the view that the debate should not be about reducing the use of or

[446] Ms S. Atkins, Director, Online Initiatives, The Le@rning Fedation, Transcript of Briefing, Melbourne, 10 April 2006, p.28.
[447] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.14.
[448] Ms K. Paul, Teacher, Sherbourne Primary School, Transcript of Evidence, Public Hearing, Greensborough, 9 June 2006, p.6.
[449] Secondary School Student, Committee School Visits, June–August 2006.
[450] Secondary School Student, Committee School Visits, June–August 2006.

reliance on current technologies within education. Rather, it is about how we ensure better access for students currently missing out on beneficial multimedia experiences. Some schools emphasised that part of the strategy must be to ensure that all students gain a basic level of understanding about various multimedia technologies. Another strategy is to ensure that the use of such technologies within an educational context is based on a common set of skills among students. This means that schools need to take account of different levels of access to computers and multimedia at home.

Mr Andrew Walsh, Deputy Principal, St Francis Xavier College, said:

> The reason why we are looking at reintroducing or having a more formalised IT-type program at the junior campus is to ensure that we have got consistency of skills from all students. We can make an assumption about how many students have got computers in the home or what use they make of them at home, but that is not to say they are using them in the correct way or they are using them in a proper educational sense…[451]

Mr Steve Grocott, Director, Nine Lanterns Pty Ltd and President, Victoria Chapter, Australian Interactive Media Industry Association, similarly stated that the 'divide will be widened if reliant on home use'.[452] He suggested:

> If the education is being subsidised by home-user multimedia then there is going to be a greater disparity between the people who have access to it and those who have not. I would have thought the assumption has to be that nobody has it and that the school system has to be able to provide access.[453]

The above debate is complex and the Committee recognises that schools and teachers cannot simply ignore the multimedia technologies that students are using and the technological skills that they may be developing beyond the classroom. Schools need to ensure that students have sufficient access to the appropriate multimedia resources required to complete projects and school work set by classroom teachers.

A variety of other programs or strategies for helping to overcome access and equity issues were also presented to the Committee. For example, the Victorian Information Technology Teachers Association (VITTA) believes that business and governments have some responsibility to assist in providing greater home access to computers:

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[451] Mr A. Walsh, Deputy Principal, St Francis Xavier College, Transcript of Evidence, Public Hearing, Beaconsfield, 6 July 2006, p.7.

[452] Mr S. Grocott, Director, Nine Lanterns Pty Ltd and President, Victorian Chapter, Australian Interactive Media Industry Association, Transcript of Evidence, Public Hearing, Melbourne, 1 May 2006, p.13.

[453] ibid.

> … there needs to be a complete analysis of computer availability, particularly in underprivileged families and economically deprived areas. VITTA believes that recycling of obsolete computers from business and governments could provide these communities with adequate technological connectivity.[454]

Dr Karen Orr Vered, Director of Digital Media Studies, Flinders University, also believes it is important for all children to have access to computers beyond the school classroom. This view is based on evidence that children tend to perform better in their studies where they have home access to a computer:

> It is important for children to have a leisurely opportunity to use information technology and multimedia because many studies have shown that children with computer access at home achieve more at school (with respect to computer and multimedia skills). One quite reasonable explanation for this greater success is that children with access outside of school have more opportunity to practice and perfect the lessons learnt in school.[455]

Dr Karen Orr Vered suggested, however, that after-school care services could help to bridge the divide between those who have a home computer and those who do not:

> With more and more children attending after-school care services and coming home in the early evening rather than directly from school, after-school care is becoming an important place for 'homework'. As this tendency increases, it is ever more important for after-school care services, where possible, to provide access to multimedia hardware and software (as well as the internet) so that children who do not have time or access at home are not disadvantaged. Providing computer and multimedia access at after-school care ensures a level of equity that is not met elsewhere.[456]

A joint submission from Southvale Primary School and GMM Training Pty Ltd similarly noted the potential for school computer facilities to be opened after hours for the local community to use:

> There needs to be some positive discrimination to provide computers and ISP support for schools that have a LSE [low socioeconomic] profile. Perhaps schools can set up out of school hours computer labs for their school community to use both for upskilling

[454] Victorian Information Technology Teachers Association, Written Submission, May 2006, p.2.
[455] Dr K.O. Vered, Director of Digital Media Studies, Flinders University, Written Submission, June 2006, pp.3–4.
[456] ibid.

> kids, parents and/or additional tuition hours for slow learners…[457]

The Committee notes that an increasing number of Victorian schools have exemplary ICT and multimedia facilities and industry standard equipment. Additionally, however, there are a range of other community facilities and centres that can help to bridge the divide between students with home computers and those without.

The Fitzroy Computer Clubhouse is one example of a partnership approach that addresses the needs of students from disadvantaged communities. As outlined on its website, the Computer Clubhouse provides a creative and safe after-school learning environment where young people from under-served communities work with adult mentors to explore their own ideas, develop skills, and build confidence in themselves through the use of technology.[458] The Fitzroy Computer Clubhouse is part of a global Computer Clubhouse Network that spans 100 Computer Clubhouses across the globe. It has 80 members from 17 different countries and numerous cultural backgrounds. The Clubhouse operates five nights a week after school and there are girls, boys, co-ed and teenagers nights.[459] In pursuing its mission, the Clubhouse is guided by four principles:

- the Clubhouse focuses on activities that encourage young people to work as designers, inventors, and creators;
- the Clubhouse encourages youth to work on projects related to their own interests;
- the Clubhouse aims to create a sense of community, where young people work together with one another with support and inspiration from adult mentors; and
- the Clubhouse is dedicated to offering resources and opportunities to those who would not otherwise have access to them, in an environment of trust and respect.[460]

The Committee believes that formal arrangements that enable students, their parents and other community members to access school ICT resources outside of school hours are worthy of investigation. Funding of supervisors and/or facilitators would clearly need to be addressed, however, the Committee would welcome the exploration of partnerships with local governments, other education and training sectors and industry to deliver such services.

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[457] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.14.
[458] Fitzroy Learning Network, website, <http://www.fitzroylearningnetwork.org.au/cclub/whatisnew.html>, viewed on 23 August 2006.
[459] ibid.
[460] ibid.

FINDING 7.1

That there is currently a disparity in access to and familiarity with multimedia technologies among different groups in our society. Such differences relate to whether students have access to computers and the internet, where they can access these multimedia resources and the relative quality of the resources that they can access. Further, regardless of the level of access to computers and the internet, children and young people have varying levels of skills in using these resources effectively.

RECOMMENDATION 7.1

That the Department of Education and Training investigate and encourage community education models that facilitate greater student, parent and community access to computer and multimedia resources after school hours. The particular aim should be to help provide more equitable access to computers and the internet for disadvantaged students.

Keeping Pace with ICT and Infrastructure Challenges

The rapidly evolving ICT environment has significant ramifications for the effective integration of multimedia in schools. In particular, the rapid evolution of ICT places significant pressure on existing ICT equipment and infrastructure. Many new applications of multimedia require increased internet bandwidth, larger server capacity or increased computer processing power. This drives the need for regular and often costly equipment and infrastructure upgrades. Thus, the Committee heard that ICT infrastructure can present a systemic and localised challenge to the effective integration of multimedia in schools.

ICT Equipment and Infrastructure

The Catholic Education Commission of Victoria provided one of a number of submissions outlining the challenges for schools and education systems in meeting ICT infrastructure needs. The acquisition of multimedia facilities, equipment and software is often expensive; so too is the ongoing maintenance and technical support required to keep multimedia programs running in schools:

> Planning for and funding the provision, upkeep and maintenance of appropriate, current and emerging

> technologies is a challenge for schools. Management and distribution of resources needs to ensure access for all students. Providing timely technical support is also a challenge in many schools, as is having enough bandwidth to be able to effectively utilise virtual learning management systems and digital content.[461]

Southvale Primary School and GMM Training Pty Ltd similarly stated:

> Cost of keeping up with the technologies and storage are major issues in using multimedia. Bandwidth needs to be updated possibly to optical fibre level before access to new interactive materials can be used confidently by teachers… One of the real disadvantages is the need for properly working hardware and enough equipment for students to use and share. Personal computers, peripherals and software are still a big budget item for schools. PCs need regular maintenance to keep them going, for if there are any breakdowns, the downtime creates chaos for the teachers and disrupts the teaching and learning process.[462]

The Committee heard that ICT infrastructure needs can be particularly challenging for smaller schools and schools in rural areas. For example:

> Technical support is always an issue, as Waubra PS is funded for 1.5 hours per week. This means that we have a computer technician at the school once a fortnight for 3 hours. Inevitably problems occur immediately after the technician has left, so unless he can talk us through problems over the phone, we need to wait a fortnight before problems can be rectified. Internet access is already reasonably reliable but generally very slow. Preparations are almost complete for the school to be switched over to broadband access, which will hopefully provide much faster and smoother access.[463]

The above challenges are similar to those presented in evidence to the Committee by a number of other schools.[464] It was reported that unreliable ICT equipment can have significant impacts upon student engagement and performance, as noted by Footscray City College:

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[461] Catholic Education Commission of Victoria, Written Submission, May 2006, p.5.
[462] Southvale Primary School and GMM Training Pty Ltd, Written Submission, June 2006, p.20.
[463] Waubra Primary School, Written Submission, August 2006, p.2.
[464] See for example, Ms C. Woodhouse, Principal, Footscray City College and Executive Member, Victorian Association of State Secondary Principals, Transcript of Evidence, Public Hearing, Melbourne, 5 June 2006, p.37; Ms M. Hannan, Chair, Australian Teachers of Media, Transcript of Evidence, Public Hearing, Melbourne, 22 May 2006, p.34; Mr G. Gebhart, ICT/Multimedia Manager, Lowanna College, Written Submission, June 2006, pp.4–5.

> In offering multimedia technology we must be extremely careful that hardware and software is current and offers students the possibility of learning a variety of skills. Issues such as student file server files being too small are extremely frustrating for students. Students disengage when the technology they are relying upon doesn't work.[465]

ICT infrastructure is the first strand of the Department of Education and Training's e-Learning Strategy. According to the Victorian Government, 'Victoria has over $2 billion invested in ICT infrastructure in Victorian government schools, with the Victorian Government investing on average more than $100 million per year for ICT in schools'.[466]

As outlined by the Department of Education and Training, the Victorian Government has committed $19.5 million in 2006–07 for schools to purchase new computers and equipment. The Department also stated that it is investing in the following ICT initiatives:

- provision of broadband Wide Area Network Connections;
- the Technical Support to Schools Program;
- provision of notebooks to teachers and principals;
- software grants to schools for ICT infrastructure; and
- provision of Microsoft software licenses for schools.[467]

The Committee anticipates that pressure on the capacity of ICT infrastructure and equipment will be an ongoing challenge for schools and education systems. The Committee is aware of a number of innovative approaches that some schools and clusters are taking to acquire up-to-date ICT equipment and resources. For example, a number of the schools visited by the Committee had lease arrangements that seek to minimise investment in infrastructure that may quickly become obsolete. Others are partnering with industry and other organisations (such as higher education institutions or education authorities) to trial innovative uses of new technologies.

[465] Footscray City College, Written Submission, June 2006, p.2.
[466] Department of Education and Training, Written Submission, August 2006, p.4.
[467] ibid., p.5.

Broadband Internet

Increasing reliance on and innovative use of the internet in schools has meant that the provision of broadband internet has become an essential element of ICT infrastructure. Greater internet bandwidth provides schools with increased educational opportunities, including video streaming and video conferencing and the ability to share large files and applications within and between schools throughout the world.

The Victorian Government has been active in the provision of broadband infrastructure for delivery of government services. Through the Telecommunications Purchasing and Management Strategy (TPAMS), the Victorian Government has adopted a procurement strategy for telecommunications infrastructure that pools demand across government departments and agencies. A key component of the TPAMS is the $89.3 million VicSmart Broadband Initiative. Delivered through Telstra, this initiative will provide all government schools with a four megabit broadband connection.[468]

Importantly, the VicSmart initiative provides the infrastructure to easily allow an expansion of bandwidth, either permanently or upon demand. This facility is already utilised frequently by various government departments and agencies. For example:

> … the Department of Sustainability and Environment that currently runs a videoconferencing operation with its 80 or 90 regional offices, I think, can just quickly up the bandwidth and run videoconferencing. When they do not need it, they can turn it back.[469]

This facility will similarly allow schools to temporarily increase their bandwidth capacity to match the day-to-day demands on the school's network.

The Committee notes, however, that in the non-government school sector, there remains considerable variability in the quality of internet access available to students and teachers, often based on the relative wealth of the school community. The Committee has heard concerns that some non-government schools may therefore be unable to capitalise on the growing educational opportunities provided by broadband internet access.

As stated by the Association of Independent Schools of Victoria:

> In practice, this means that, although rural communities now have fast internet connection to the local government schools, [for] all other education providers

[468] Department of Education and Training 2005, *Annual Report 2004–05*, DE&T, Melbourne, p.20.

[469] Mr M. Consolo, Manager, Enterprise and Government (Victoria), Telstra, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.30.

> in those areas …[c]ommercial access rates would apply...[470]

The issues of equity in access to telecommunications infrastructure for homes in rural and regional areas has been a significant challenge and of importance to governments at all levels over many years. Multimedia Victoria reports that while current ICT infrastructure makes broadband access available to 91 per cent of Victorians, only 72 per cent of Victorians in regional Victoria can get such access if they wish to:

> Some of the larger regional centres have good coverage but there are pockets that cannot get access to any broadband unless it is satellite-based broadband, which we would say is less than adequate, and it is certainly very expensive as well.[471]

According to Telstra, however, wireless broadband will soon be an option for most Australians:

> Certainly the 3G network, which will deliver fast broadband through the air, will plug a lot of the gaps that exist in certain parts …It is a $1 billion investment by Telstra. It is a really aggressive build of a network … It basically means that 98 per cent of Australians will have access to broadband internet through our mobile network.[472]

It is not within the scope of this inquiry to re-examine issues associated with overall access to telecommunications infrastructure, nor to make recommendations about the technical requirements for ICT infrastructure. According to the Department of Education and Training, the VicSmart roll-out will mean for some rural schools a 60-fold increase in their capacity to access online learning materials.[473] It is important to acknowledge, however, that equity of access to multimedia in Victorian homes remains a problem for some students. The Committee will therefore continue to observe with interest, future technical and regulatory developments that seek to address the digital divide between metropolitan and non-metropolitan areas.

[470] Association of Independent Schools of Victoria, Written Submission, August 2006, p.11.
[471] Mr R. Shaw, Executive Director, Multimedia Victoria, Transcript of Briefing, Melbourne, 10 April 2006, p.12.
[472] Mr M. Consolo, Manager of Enterprise and Government (Victoria), Telstra, Transcript of Evidence, Public Hearing, Melbourne, 11 August 2006, p.29.
[473] Department of Education and Training 2005, *Annual Report* 2004–05, DE&T, Melbourne, p.20.

Classrooms and the Physical Environment

Another of the challenges associated with effectively integrating multimedia into schools is the actual physical classroom environment. Truly integrating ICTs and multimedia into the curriculum requires that students and teachers have access to the appropriate technologies when and where they require them, not merely when the class has been timetabled to access the required resources. Thus, there was some discussion throughout the inquiry regarding the relative advantages and disadvantages of different approaches to the physical set-up of ICT and multimedia facilities in schools.

Professor Josie Arnold and Ms Kitty Vigo, Swinburne University of Technology, were concerned that the set-up of dedicated computer rooms in many schools creates an environment where ICT seemingly becomes the focus of the education, rather than a supporting tool. They stated that in many schools:

> The computers are set up as though the room is an electronic shrine. In this configuration, there is no sense that they are an incidental teaching and learning tool like books, pens and notepaper. This architectural/room design domination leads students to see computers themselves as THE major way of communicating. That is, as somehow separate from all other ways of interacting. It encourages a sense of de-personalisation and the isolation of the individual. Within this furniture arrangement, too, there is no space for face to face discussions as the computers are higher than eye level between people. A more satisfactory arrangement would be to have a central circle of tables and chairs and an outside circle of computers.[474]

The Committee heard, however, that alternatives to dedicated computer labs may also present challenges for teachers. For example, Mr Greg Gebhart, ICT/Multimedia Manager, Lowanna College, suggested that placement of computers within general classrooms can have both advantages and disadvantages for student learning:

> The growing trend of schools who are distributing computers into classrooms instead of computer labs, allows for personalised learning, however it reduces teachers' ability to work with class groups on multimedia creation and to teach students how to use higher end multimedia.[475]

[474] Prof J. Arnold, Professor of Writing and Ms K. Vigo, Discipline Leader, Writing, Swinburne University of Technology, Written Submission, June 2006, p.10.
[475] Mr G. Gebhart, ICT/Multimedia Manager, Lowanna College, Written Submission, June 2006, p.5.

Mr Gebhart outlined some further limitations associated with the physical set-up of multimedia facilities in many schools:

> …many of these rooms are not conducive to the use of multimedia. In particular they do not allow for the use of sound as it is intended in multimedia (open areas with limited sound proofing). They often have poor lighting for Multimedia (open spaces with lots of windows), poor positioning of computers (often in locations that cannot be supervised by teachers) and in small groups that are designed for group work (limiting one on one learning and teaching).[476]

The Committee investigated the multimedia facilities in a range of schools and notes that school principals, teachers and ICT practitioners are generally very positive about the use of the facilities that they have. The Committee heard that facilities have often been developed over time, using a strategic approach that aims to respond to the unique learning philosophies and styles at each school. Nonetheless, the Committee recognises that appropriate design of major multimedia facilities that enable effective integration of multimedia throughout the curriculum presents challenges for many schools.

Further, the Committee recognises that not all schools have the level of expertise required to respond to such design challenges. McKinnon Secondary College stated, for example:

> There is a degree of reinventing the wheel when purchasing and assessing possible new resources. Individual schools currently have to draw on their own expertise and spend considerable time to assess products. It would be useful to have a DET 'expert' to refer to as a starting point when looking at new hardware and software. Some sort of user network would be useful to appraise new products.[477]

The Committee acknowledges that some schools see the existing physical environment as a significant challenge. However, the Committee notes that many schools have been able to overcome such challenges through a variety of relatively simple strategies. Such strategies include:

- Minimising the movement of students by adjusting school timetables. In some cases this involves minimising the movement of students and equipment between different classrooms, while other times it involves extending class time so that there are fewer change over periods.

- Minimising the movement of teachers by adjusting timetables. Some schools are keeping pairs or groups of teachers in the

[476] ibid.
[477] McKinnon Secondary College, Written Submission, August 2006, p.3.

same area, enabling easier negotiation for the use of both fixed and portable multimedia resources.

- Utilising mobile ICT resources such as laptops and ICT resource trolleys.
- Creating flexible learning environments that enable learning spaces to be easily used for diverse multiple purposes.

The Committee believes, however, that some schools may require additional assistance to identify and implement innovative solutions that enhance the deployment of multimedia resources throughout the school. These schools can access such assistance in a variety of ways. For example, there are already a number of leading schools that hold open days or invite other schools to view their facilities and talk with their leading teachers. Additional information may also be found on the Victorian Education Channel, which dedicates a substantial section covering ICT in education. Further, the Committee notes that the Department of Education and Training is currently investigating the feasibility of creating a new online, intuitive and seamless teacher resource space for sharing of new knowledge. The Committee believes that the inclusion within this resource of teacher discussion boards and detailed comparative information outlining the various advantages and disadvantages of different multimedia equipment would be beneficial.

RECOMMENDATION 7.2

That the Department of Education and Training develop a repository of online case studies of best practice to assist schools to make decisions about ICT infrastructure and equipment.

Conclusion

A characteristic inherent to multimedia technologies is their constant and rapid evolution. In an educational context, this evolution simultaneously presents both enormous promise and, often, considerable challenges to education systems and schools. Challenges include the need to address the various digital divides arising within education communities. These digital divides include, for example, a digital divide between students and many of their teachers, as well as a divide between students with high quality access to multimedia resources in the home and those without such access. Other challenges presented to education communities are the pressure to keep pace with rapidly advancing multimedia equipment and

infrastructure and the need to deploy innovative multimedia technologies into existing school environments.

While some of the above challenges are undoubtedly complex, particularly on a systemic level, the Committee has seen first hand examples of schools that have successfully responded to these challenges. It is therefore clear that the capacity and expertise to successfully integrate multimedia into schools and teaching programs already exist in Victoria. Importantly, however, the Committee recognises that the successful integration of new technologies into schools is an ongoing challenge and needs to be met with strategies and approaches that continue to evolve in tandem with those technologies.

Adopted by the Education and Training Committee

Level 3, 157, Spring Street

Melbourne, 3000

21 September 2006

Extracts from the Committee's Minutes of Proceedings

The Minutes of the Proceedings of the Committee show the following Divisions which took place during consideration of the Draft Report.

Thursday 21 September 2006

Chapter 4, page 80

Mr Kotsiras moved, as an amendment, the following proposed new Finding—

> There has been an increase in recent times in text, MSN and email bullying. A few young people are experiencing an increase in text and MSN bullying. Cyber bullying has many forms. It is targeted, negative, carried out repeatedly and very aggressive. There needs to be a co-ordinated and managed approach between school, families and government to ensure that this problem is tackled head-on.

Question—That the proposed new Finding be agreed to—put.

The Committee divided.

AYES: 2	NOES: 4
Mr Kotsiras	Mrs Buckingham
Mr Perton	Ms Eckstein
	Mr Herbert
	Ms Munt

Amendment negatived.

Chapter 4, page 80

Mr Kotsiras moved, as an amendment, the following proposed new Recommendation—

> The Victorian Government should introduce an ‘e-bullying line’, a toll free number for young people at school who have been victims of e-bullying.

Question— that the proposed new Recommendation be agreed to—put.

The Committee divided.

AYES: 2	NOES: 4
Mr Kotsiras	Mrs Buckingham
Mr Perton	Ms Eckstein
	Mr Herbert
	Ms Munt

Amendment negatived.

Chapter 5, page 111, Recommendation 5.1

Mr Perton moved, after "greater" to insert *"Victorian"*, so that Recommendation 5.1 would read as follows—

> That Multimedia Victoria, in consultation with the Department of Education and Training, develop protocols for facilitating greater Victorian industry involvement in the provision of multimedia in the classroom.

Question—that the amendment be agreed to—put.

The Committee divided.

AYES: 2	NOES: 4
Mr Kotsiras	Mrs Buckingham
Mr Perton	Ms Eckstein
	Mr Herbert
	Ms Munt

Amendment negatived.

Appendix A

List of Written Submissions

Name of Individual/Organisation	Date Received
Australian Visual Software Distributors Association	4 April 2006
Mr Terry Wooltoron, Retired Teacher	5 April 2006
Professor Len Unsworth, School of Education, University of New England and Dr Angela Thomas, University of Sydney	27 April 2006
Catholic Education Commission of Victoria	9 May 2006
Friends of the ABC (Vic) Inc.	10 May 2006
Australian Children's Television Foundation	11 May 2006
Museum Victoria	11 May 2006
Victorian Information Technology Teachers Association	11 May 2006
New Media and Digital Services Division, Australian Broadcasting Corporation	11 May 2006
Young Media Australia	19 May 2006
Australian Teachers of Media	22 May 2006
Footscray City College	5 June 2006
ASISTM Computer Game Design, Programming, Multimedia and Mathematics Cluster	6 June 2006
Marcom Projects Pty Ltd	6 June 2006
Professor Josie Arnold and Ms Kitty Vigo, Swinburne University of Technology	9 June 2006
Brighton Grammar School	9 June 2006
Mr Greg Gebhart, ICT/Multimedia Manager, Lowanna College	13 June 2006
Southvale Primary School and GMM Training Pty Ltd	13 June 2006
Dr Karen Orr Vered, Director of Studies, Digital Media Studies and Honours Coordinator, Screen Studies, Flinders University	13 June 2006
WestOne Services, Department of Education and Training, WA	14 June 2006
Faculty of Education, Queensland University of Technology	14 June 2006
Department of International Communication, Macquarie University	14 June 2006
Faculty of Education, University of Melbourne	14 June 2006
Centre for Learning Innovation, Department of Education and Training, NSW	16 June 2006
Mr Ange Kenos, Teacher	15 June 2006

Name of Individual/Organisation	Date Received
Victorian Association for the Teaching of English	16 June 2006
Scaffold Education	17 July 2006
Victorian Curriculum and Assessment Authority	1 August 2006
Essendon North Primary School	10 August 2006
Microsoft Australia and New Zealand	11 August 2006
Wonthaggi Secondary College	11 August 2006
Waubra Primary School	11 August 2006
Department of Education and Training (Victoria)	14 August 2006
McKinnon Secondary College	23 August 2006
Association of Independent Schools of Victoria	25 August 2006

Appendix B

List of Witnesses – Public Hearings and Briefings

Briefing- Spring Street, Melbourne
10 April 2006

Name	Position	Organisation
Mr John Sullivan	General Manager	Department of Education and Training
Ms Lynne Davie	Manager	Department of Education and Training
Mr Randall Straw	Executive Director	Multimedia Victoria, Department of Infrastructure
Ms Shelagh Ryan	Senior Policy Officer	Multimedia Victoria, Department of Infrastructure
Ms Danni Jarrett	Manager	Multimedia Victoria, Department of Infrastructure
Ms Susan Atkins	Director	The Le@rning Federation

Public Hearing- Spring Street, Melbourne
1 May 2006

Name	Position	Organisation
Ms Jenny Buckland	Chief Executive Officer	Australian Children's Television Foundation
Mr Peter Maggs	Head, New Media	Australian Children's Television Foundation
Mr Steve Grocott	Director	Nine Lanterns Pty Ltd
	President, Victorian Chapter	Australian Interactive Media Industry Association
Mr Brett McLennan	Screen Education Manager	Australian Centre for the Moving Image

Public Hearing- Spring Street, Melbourne 22 May 2006

Name	Position	Organisation
Mr Geoff Elwood	Chief Executive Officer	Etech Group Pty Ltd
Dr Martyn Wild	Director	Intuitive Media
Dr John Ainley	Deputy Chief Executive Officer (Research)	Australian Council for Educational Research
Ms Meg Hannan	Chair	Australian Teachers of Media
Mr Roger Dunscombe	Deputy Chair	Australian Teachers of Media
Ms Amber Nelson	Education Officer	Australian Teachers of Media

Public Hearing- Park Ridge Primary School (Rowville) 2 June 2006

Name	Position	Organisation
Mr Alan Terrens	Principal	Park Ridge Primary School
Ms Glenda Crawford	Year 1 Co-ordinator	Park Ridge Primary School
Ms Kathy Ferguson	Years 3 & 4 and Co-ordinator	Park Ridge Primary School
Ms Erin Scott	Year 5 Teacher	Park Ridge Primary School
Ms Chris Hossack	Year 6 Co-ordinator	Park Ridge Primary School
Mr Jason Sergi	Learning Technologies Co-ordinator	Park Ridge Primary School
Emmanuel Baria	Year 6 Student	Park Ridge Primary School
Kirsty Brooks	Year 5 Student	Park Ridge Primary School
Mihidum Hettiyandi	Year 6 Student	Park Ridge Primary School
Jessie Kocsis	Year 3 Student	Park Ridge Primary School
Yakoob Zainal	Year 3 Student	Park Ridge Primary School
Zakaria Zainal	Year 5 Student	Park Ridge Primary School

Public Hearing- Melbourne 5 June 2006

Name	Position	Organisation
Ms Fiona Gordon	Head of Teaching and Learning	Beaconhills College
Mr Tony Brandenburg	President	ICT in Education Victoria
Mr Steve Doyle	National Professional Development Manager	Apple Computer Australia

Name	Position	Organisation
Mr David Patrao	Victorian Account Representative for Apple Education K12	Apple Computer Australia
Mr Stuart Taylor	National Sales Manager for Education	Apple Computer Australia
Ms Carolyn Woodhouse	Executive	Victorian Association of State Secondary Principals
	Principal	Footscray City College
Ms Stephanie Campbell	Head, Arts Department	Footscray City College

Public Hearing- Sherbourne Primary School (Greensborough) 9 June 2006

Name	Position	Organisation
Ms Kerry Wall	Principal	Lower Plenty Primary School
Ms Cleo Ndalianis	Digital Learning Teacher	Montmorency Secondary College
Mr Michael Otway	Principal	Montmorency Primary School
Mr Ray Kaso	Principal	Sherbourne Primary School
Ms Maree Seymour	Assistant Principal	Sherbourne Primary School
Mr Peter Watson	Teacher	Sherbourne Primary School
Ms Karen Paul	Teacher	Sherbourne Primary School
Amy Hauser	Year 5 Student	Lower Plenty Primary School
Grace O'Neil-Paterson	Year 5 Student	Lower Plenty Primary School
Jacqueline Pepper	Year 5 Student	Lower Plenty Primary School
Caitlin Sutterby	Year 5 Student	Lower Plenty Primary School
Hayden Read	Year 9 Student	Montmorency Secondary College
Kelly Russell	Year 9 Student	Montmorency Secondary College
Celeste Ward	Year 9 Student	Montmorency Secondary College
Georgia Bishop	Year 5 Student	Montmorency Primary School
Luke Brisbane	Year 5 Student	Montmorency Primary School
Cal Walker	Year 6 Student	Montmorency Primary School
Sarah Abdurazak	Year 5 Student	Sherbourne Primary School
Anila Agnew	Year 6 Student	Sherbourne Primary School
Ben Algie	Year 5 Student	Sherbourne Primary School
Dean Carroll	Year 6 Student	Sherbourne Primary School
Rebecca Cherubin	Year 6 Student	Sherbourne Primary School
Michael Oliver	Year 6 Student	Sherbourne Primary School
Joel Pritchard	Year 6 Student	Sherbourne Primary School
Daniel Seymour	Year 6 Student	Sherbourne Primary School

Public Hearing- St Francis Xavier College (Beaconsfield) 6 July 2006

Name	Position	Organisation
Mr Bruce Norton	Teacher, Studio Arts & Multimedia	St Francis Xavier College
Ms Sue Nichols	Teacher, English, Literature & Special Education	St Francis Xavier College
Mr Jon Mol	Teacher, Music	St Francis Xavier College
Mr Phil Apperley	Careers Counsellor and VET Co-ordinator	St Francis Xavier College
Ms Karen O'Gorman	Teacher, Mathematics	St Francis Xavier College
Mr Andrew Walsh	Deputy Principal	St Francis Xavier College
Mr Troy Coggins	Head, Technology	St Francis Xavier College
Mr Mark Garland	Teacher	St Francis Xavier College
Leigh Agnello	Year 11 Student	St Francis Xavier College
Tracey Boekel	Year 12 Student	St Francis Xavier College
Luke Brennan	Year 11 Student	St Francis Xavier College
Adam Brock	Year 11 Student	St Francis Xavier College
Sean Carney	Year 11 Student	St Francis Xavier College
Jason Dennis	Year 12 Student	St Francis Xavier College
Bethany Dukes	Year 11 Student	St Francis Xavier College
Nina Estaris	Year 11 Student	St Francis Xavier College
Casey Hogan	Year 11 Student	St Francis Xavier College
Joshua McKendry-Dow	Year 11 Student	St Francis Xavier College
Kate McLaren	Year 11 Student	St Francis Xavier College
Peta Sherwin	Year 11 Student	St Francis Xavier College
Tristan Vogrig	Year 11 Student	St Francis Xavier College
Peter Wellman	Year 11 Student	St Francis Xavier College

Public Hearing- Presbyterian Ladies' College (Burwood) 28 July 2006

Name	Position	Organisation
Dr John Turner	Head, IT and VCE Co-ordinator	Presbyterian Ladies' College
Mr Mark Hennessy	Head, IT (Junior School)	Presbyterian Ladies' College
Mrs Pat Beeson	Head, Geography	Presbyterian Ladies' College
Ms Helena Dunn	Head, History	Presbyterian Ladies' College
Mrs Nicky Smith	Head, LOTE	Presbyterian Ladies' College
Mr Ross Phillips	Head, Science	Presbyterian Ladies' College

Name	Position	Organisation
Ms Sandi Taylor	Art Teacher, Multimedia Arts	Presbyterian Ladies' College
Romily Faulkner	Year 12 Student and School Captain	Presbyterian Ladies' College
Sze-Min Foong	Year 12 Student and Computer Captain	Presbyterian Ladies' College
Erin Hutchinson	Year 11 Student	Presbyterian Ladies' College
Rachael Morris	Year 8 Student	Presbyterian Ladies' College
Rebecca Williams	Year 10 Student	Presbyterian Ladies' College
Chloe Wong	Year 6 Student and Junior School Computer Captain	Presbyterian Ladies' College
Zoe Wyatt	Year 9 Student	Presbyterian Ladies' College

Public Hearing- Doncaster Gardens Primary School (Doncaster) 4 August 2006

Name	Position	Organisation
Ms Belinda Appleby	Year 2 Teacher	Doncaster Gardens Primary School
Ms Jan Vincent	Middle Years Co-ordinator and ICT Teacher	Doncaster Gardens Primary School
Mrs Jo Hales	Year 4 Teacher	Doncaster Gardens Primary School
Mr Carey Baldwin	Year 5/6 Teacher	Doncaster Gardens Primary School
Mrs Sue Rathbone	Assistant Principal and ICT Teacher	Doncaster Gardens Primary School
Omro Al Ansari	Year 6 Student	Doncaster Gardens Primary School
David Boin	Year 6 Student and School Vice-Captain	Doncaster Gardens Primary School
Alexia Brehas	Year 5 Student	Doncaster Gardens Primary School
Vafi Cheng	Year 6 Student	Doncaster Gardens Primary School
Stephanie Dickson	Year 6 Student and School Captain	Doncaster Gardens Primary School
Veronica Lee	Year 6 Student	Doncaster Gardens Primary School
Darcy McMahon	Year 6 Student and School Captain	Doncaster Gardens Primary School
Mikayla Pashias	Year 6 Student and School Vice-Captain	Doncaster Gardens Primary School
Sophia Tsang	Year 5 Student	Doncaster Gardens Primary School

Public Hearing- Melbourne 11 August 2006

Name	Position	Organisation
Mr Vincent Sicari	Principal	Eltham High School

Name	Position	Organisation
Mr Geoffrey Flett	Principal	Mooroolbark College
Mr Leon Bishop	Principal	Lilydale High School
Ms Sheryl Allen	ICT Leader	Upper Yarra Secondary College
Ms Bonnie Ahles	Project Co-ordinator	Yarra Valley eLearning Community
Mr Michael Consolo	Manager, Enterprise and Government (Victoria)	Telstra
Mr Patrick O' Beirne	Manager, Corporate Affairs (Victoria and Tasmania)	Telstra
Mr Simon Edwards	National Manager, Government and Industry Affairs	Microsoft Australia and New Zealand
Ms Felicia Brown	National Manager, Education Program	Microsoft Australia and New Zealand

Public Hearing- Spring Valley Primary School (Springvale South) 18 August 2006

Name	Position	Organisation
Mr Clive Bridges	Principal	Spring Valley Primary School
Ms Jo Dawes	IT Co-ordinator	Spring Valley Primary School
Ms Monique Sweep	Prep Teacher and IT Assistant	Spring Valley Primary School
Ms Anne Madden	Years 3 & 4 Teacher	Spring Valley Primary School
Elton Chau	Year 6 Student	Spring Valley Primary School
Kawsar Harun	Year 5 Student	Spring Valley Primary School
Nicole Hawley	Year 4 Student	Spring Valley Primary School
Rachel Hawley	Year 5 Student	Spring Valley Primary School
David Lam	Year 6 Student	Spring Valley Primary School
Kieu Luong	Year 4 Student	Spring Valley Primary School
Alex Nguyen	Year 6 Student	Spring Valley Primary School
Annie Nguyen	Year 5 Student	Spring Valley Primary School
Tony Nguyen	Year 4 Student	Spring Valley Primary School
Tracy Nguyen	Year 4 Student	Spring Valley Primary School
Turiano Raeputa	Year 6 Student	Spring Valley Primary School
Jasmine Seng	Year 4 Student	Spring Valley Primary School
Phuong Tran	Year 6 Student	Spring Valley Primary School

Appendix C

Meeting Schedule – New Zealand, 18-24 April 2006

Auckland- Tuesday 18 April 2006

Name	Position	Organisation
Ms Liz Butterfield	Executive Director	Internet Safety Group
Mr Martin Cocker	Executive Director	Internet Safety Group
Ms Clair Balfour	Netsafe Programme Manager	Internet Safety Group
Ms Miranda Cook	Education Portfolio Manager and Consumer Marketing Manager, Wired Division	Telecom New Zealand (Auckland)
Ms Avon Adams	Head of Public Affairs	TV New Zealand
Ms Diana Schnauer	Corporate Marketing Manager	TV New Zealand
Ms Annie Murray	Assistant Commissioner Documentary	TV New Zealand
Ms Michaela Blackman	Senior Channels Producer	TV New Zealand
Mr Shaun Drummond	Digital Strategy Analyst	TV New Zealand

Wellington- Wednesday 19 April 2006

Name	Position	Organisation
Mr David Copeland	Director	CWA New Media
Ms Jill Wilson	Director	CWA New Media
Mr Paul Leslie	Community Relations Manager, Government & Industry Relations	Telecom New Zealand (Wellington)
Mr Dean Schmidt	Senior Executive Government Relations	Telecom New Zealand (Wellington)
Mr Shaun Sheldrake	eLearning Solution Leader	Inspire Group
Mr Murray Brown	Manager, ICT Unit	National Office of Ministry of Education
Mr David Stuart	Senior Research Analyst	National Office of Ministry of Education
Ms Melanie Chapman	Senior Advisor	National Office of Ministry of Education
Ms Eleanor Brooker	Senior Advisor	New Zealand Health Information Service

Dunedin- Thursday 20 April 2006

Name	Position	Organisation
Dr Rober Hancox	Deputy Director, Multidisciplinary Health and Development Research Unit	University of Otago (Dunedin)
Associate Prof Kwok-Wing Lai	Co-ordinator, Distance Education Programmes Faculty of Education	University of Otago (Dunedin)
Mr Ian Taylor	Managing Director	Taylormade Media
Professor Dennis Davis	Head, School of Communication Studies	University of Otago (Dunedin)
Dr Chris Rudd	Senior Lecturer in Politics	University of Otago (Dunedin)
Professor Marian Simms	Head, Department of Political Studies	University of Otago (Dunedin)

Christchurch- Monday 24 April 2006

Name	Position	Organisation
Dr Ruth Zanker	Research Leader	Christchurch Polytechnic Institute of Technology – New Zealand Broadcasting School
Ms Bindy Barclay	Researcher	Mediascape
Mr Derek Wenmoth	Director, eLearning	CORE Education Ltd
Dr Mary Allan	Lecturer Faculty of Education Faculty of Sociology and Anthropology	University of Canterbury

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Australian Communications and Media Authority <www.acma.gov.au>
Australian Film Commission <www.afc.gov.au>
Australian Mobile Telecommunications Association Homepage <www.amta.org.au>
Behind the News <www.abc.net.au/tv/btn>
Centre for Media Literacy <www.medialit.org>
Clickview <www.clickview.co.uk>
Cybersmart: Kids Online <www.cybersmartkids.com.au>
Department of Communication, Information Technology and The Arts <www.dcita.gov.au>
Department of Education and Training <www.education.vic.gov.au>
Department of Education, Science and Training <www.dest.gov.au>
Dust Echoes <www.abc.net.au/message/dustechoes>
Etech Group®, <www.etechgroup.com.au>
Fitzroy Learning Network, Computer Clubhouse <www.fitzroylearningnetwork.org.au/cclub>
Insafe <www.saferinternet.org>
Intel® Teach to the Future <www97.intel.com/education/teach>
International Clearinghouse on Children, Youth and Media
<www.nordicom.gu.se/clearinghouse>
Internet Safety Group (New Zealand) <www.netsafe.org.nz>
Intuitive Media <www.intuitivemedia.co.uk>
lab.3000 <lab.3000.com.au>
Leading Schools Fund <www.sofweb.vic.edu.au/innovations/schoolsfund>
The Le@rning Federation <www.thelearningfederation.edu.au>
The Learning Place (Queensland) <education.qld.gov.au/learningplace>
Multimedia Victoria <www.mmv.vic.gov.au>
MyClasses <myinternet.com.au/products/myclasses_schools.html>
NetAlert Limited <www.netalert.net.au>
NetRatings Australia <www.netratings.com>
Netty's World <www.nettysworld.com.au>
Office of Communications (United Kingdom) <www.ofcom.org.uk>
Planetslayer <www.abc.net.au/science/planetslayer>
Str8tlk <www.str8tlk.amta.org.au>
Studywiz <www.studywiz.com>
Victorian Curriculum and Assessment Authority <www.vcaa.vic.edu.au>
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Website Toolkit <www.sofweb.vic.edu.au/toolkit>
Wikipedia <en.wikipedia.org/wiki/Main_Page>
Winged Sandals <www.wingedsandals.com.au>
Yarra Valley eLearning Community <web.pembrokesc.vic.edu.au/yvelc>
Young Media Australia <www.youngmedia.org.au>
YouTube <www.youtube.com>

Glossary of Terms

3D computer graphics	Works of graphic art created with the aid of digital computers and specialised 3D software.
3G (Third-Generation)	Type of technology used in the context of mobile phone standards. Services associated with 3G provide the ability to transfer simultaneously both voice data (a telephone call) and non-voice data (such as downloading information, exchanging email, and instant messaging).
ACTIVstudio	Software application designed for use with an interactive whiteboard.
Blackberry	A wireless handheld device that supports e-mail, mobile telephone, text messaging, internet faxing, web browsing and other wireless information services.
Blacklist	Access control mechanism that means, ‘allow everybody, except members of the blacklist’.
Blog (Web Log)	Online journal or diary that is published on the world wide web on a personal website or a diary hosting website.
Blogger	The author of a blog.
Broadband	Class of telecommunications access services, such as ADSL, [hybrid fibre coaxial cable] and Wi-Fi, offering a data rate greater than narrowband services. These services are usually ‘always-on’ and do not tie up a telephone line exclusively for data. Technically, broadband is any internet connection with an access data rate greater than 200 kbps [kilobits per second].
Bryce	Type of texture-based rendering and ray tracing program for creating 3D landscapes, space scenes, buildings and other objects.
Chat (Internet Relay Chat, IRC)	Form of instant communication over the internet. Enables group and one-to-one communication.
Chat Room	Online site in which people can talk by broadcasting messages to other people on the same site in real time. Sometimes moderated either by limiting who is allowed to speak, or by having moderation volunteers patrol the venue watching for disruptive or otherwise undesirable behaviour.
Claymation (Clay Animation)	Form of stop motion animation, where each animated piece, either character or background, is "deformable" via a malleable substance, usually plasticine.
ClickView	Network-centred video delivery platform which enables delivery of video to hundreds of users at the same time across an existing network. Also allows schools to manage and serve other types of digital media including audio, images and learning objects and to add programs captured from free-to-air and cable TV.
Cubase	Series of Musical Instrument Digital Interface, music sequencer and digital audio editing computer applications.

Cyber bullying (online bullying)	Use of electronic information and communication devices such as e-mail, instant messaging, text messages, blogs, mobile phones, pagers, instant messages and defamatory websites to bully or otherwise harass an individual or group through personal attacks or other means.
Cyber stalking (online harassment)	Use of the internet or other electronic means to stalk someone. A cyber stalker follows the victim's online activity to gather information, initiate contact, make threats, or engage in other forms of verbal intimidation.
Cyberspace	Notional realm in which electronic information exists or is exchanged.
Data Logger	Electronic instrument that records digital, analogue, frequency or smart protocol based measurements over time.
Digital Camera	Camera that captures and stores photographs electronically instead of using photographic film like conventional cameras.
Digital Divide	The gap between those with regular, effective access to digital technologies and those without.
Digital Immigrants	Term coined by Marc Prensky in 2001 to describe those who have been introduced to digital technologies such as computers and the internet after growing up with a different set of technologies.
Digital Movie	Movie made with an electronic device, rather than with film.
Digital Natives	Term coined by Marc Prensky in 2001 to describe those who grew up with digital technologies such as computers and the internet.
Digital Portfolio (e-portfolio)	Collection of electronic documents that demonstrate skills, education and professional development. Type of learning record that provides evidence of achievement.
Digital Resource	Any resource available in a digital format, generally in reference to digital content produced for use in the classroom. One of the types of content produced by the Le@rning Federation. A single item, such as a section of moving image footage, an image of a document, line drawing, painting, map, photograph, audio file, or a set of items. Each item is presented with a description, an interpretation of its educational value and an acknowledgement of its source.
Digital Revolution	A term describing the phenomenon of the rapid drop in cost and rapid expansion of power and prevalence of digital devices such as computers and telecommunications. These devices have progressed from providing passive mass-media linear communications, like radio and television, to personal interactive non-linear communications like internet forums and web pages.
Digital Stories	A series of movie clips showcasing teachers and students using ICT, provides models for other teachers to realise the potential of using ICT.
Director (Macromedia Director, Adobe Director)	Media application created by Macromedia—now part of Adobe Systems. It allows users to build applications built on a movie metaphor, with the user as the "director" of the movie.
Discussion Group (Internet forum)	Facility on the world wide web for holding discussions. Participants do not have to be online at the same time as they do with chat rooms.

The Education Channel (Victorian Education Channel)	A Department of Education and Training gateway for students, teachers and principals to quality, secure and educationally sound online resources. Offers customised search and browse features and links to other key websites.
e-journal	See ‘blog’.
Email	Electronic mail.
Filter (Internet filter, content-control software, censorware, web filtering)	Software used to filter content delivered over the web. Determines the content available on a particular machine or network; the motive is often to prevent persons from viewing content which the computer's owner(s) or other authorities may consider objectionable.
Flash (Adobe Flash, formerly Macromedia Flash)	Multimedia authoring program used to create content for web applications, games and movies. Commonly used to: create animation, various web-page components, integrate video into web pages, and more recently, develop rich internet applications such as portals.
Flickr	Photo sharing website, web services suite, online community platform.
Game Boy	Handheld game console developed and manufactured by Nintendo, released in 1989.
GameCube	Brand of video game console produced by Nintendo.
GarageBand	Apple Computer music production software application.
Geographic Information System	System for creating, storing, analysing and managing spatial data and associated attributes.
Global Positioning System (GPS)	Satellite navigation system. GPS satellites broadcast precise timing signals by radio to GPS receivers, allowing them to accurately determine their location (longitude, latitude, and altitude).
Google	Google Inc. is an American public corporation that designed and manages an internet search engine. The verb ‘google’ means ‘to use the Google search engine to obtain information on the internet’.
Google Video	Free Google service that allows users to upload video clips and make their own media. Users can search and play videos, as well as download video files and embed them on their web pages.
Hardware	Part of a computer that is fixed and cannot be altered without replacement or physical modification; eg. motherboard, expansion cards.
Hybridity	Where a text or narrative is produced across a variety of media where it may have in the past been produced in a single format (eg. book or television show).
Hyperlink	Link from one world wide web page or world wide website to another.
ICT	Information and Communications Technology.
Identity theft	Deliberate assumption of another person's identity, usually to gain access to that person's finances or to frame a person for a crime.
iMovie	Video editing software application, by Apple Computer, which allows users to edit their own home movies.

Instant Messaging	Computer program that allows near-instantaneous (synchronous) communication between computer users. Can take a variety of forms, but most commonly refers to text format.
Intel® Teach to the Future	Modular professional development program for teachers that has a strong focus on pedagogy and integrates the use of ICT into curriculum planning.
Interactive Television	Television involving viewer interaction. Examples include: enabling viewers to pause, rewind, and fast forward, skip commercials, influence plot details and endings, participate in polls, contribute questions and comments to programs and access additional information about content.
Interactive Whiteboard	Whiteboard writing surface that can capture writing electronically and allows interaction with a projected computer image.
Internet	Worldwide network of computer systems and networks that share information and data using a standard communication protocol (Internet Protocol).
Intranet	Private network of computers that share information and data using a standard communication protocol.
Investing in Our Schools Program	Australian Government initiative focused on delivering small scale projects that improve and enhance the infrastructure of schools in accordance with priorities identified by school communities.
iPhoto	Apple Computer software application used to import, organise, edit, print and share digital photos.
iPod	A mobile digital device from Apple Computer.
iRiver	Brand of mobile digital device.
Kahootz	Education multimedia construction toolset created by the Australian Children's Television Foundation and distributed by Edsoft, used to make 3D animations using pre-made objects and backgrounds.
Knowledge Bank	An online showcase for best practice in Victorian schools organised around case studies of exemplary and promising practice. Knowledge Bank also profiles current research, and highlights upcoming events. Currently there are 450 reports online authored by 518 teachers.
LCD Television (Liquid Crystal Display Television)	Television with a thin, flat display device made up of color or monochrome pixels arrayed in front of a light source or reflector.
Le@rning Federation	An initiative commissioned by Governments of Australia and New Zealand in partnership with the State and Territory Governments of Australia. Its aim is to develop online curriculum content for all Australian and New Zealand schools. It has produced over 4,500 items of online content including learning objects and digital resources.
Leading Schools Fund	Department of Education and Training (Victoria) school transformation and renewal initiative.

Learning Object	Refers to any interactive, digital content that assists learning. The Le@rning Federation uses the term specifically in reference to one of the types of content it produces. In this instance it is a discrete package of digital material such as graphics, text, audio, animation and interactive tools based on recent research into how children learn and how teachers can facilitate learning.
Learning Platform (Virtual Learning Environment)	A term that describes a broad range of ICT systems used to deliver and support learning and teaching. Learning platforms usually combine several functions, such as organising, mapping and delivering curriculum activities, and the facility for students and teachers to communicate and collaborate, all via ICT. Also, learning platforms can help teachers and students track and monitor learning progress. Often they include templates for content pages, discussion forums, chat, quizzes and exercises. New features in these systems include blogs and podcasting.
Mathletics	Web-based mathematics program covering the years P-12 curriculum.
Media Literacy	The ability to access, analyse, evaluate and create messages across a variety of contexts.
Ministerial Council for Education, Employment, Training and Youth Affairs (MCEEYTA)	An inter-governmental council comprising of State, Territory, Australian Government and New Zealand Ministers with responsibility for the portfolios of education, employment, training and youth affairs, with Papua New Guinea and Norfolk Island having observer status.
Mobile Digital Device (Portable Media Player)	Hard disk or flash memory based electronic device, such as an "MP3 player", which is capable of storing and playing files in one or more media formats.
Moodle	Free software package for producing internet-based courses and websites.
MP3	MPEG-1 Audio Layer 3 (a digital audio encoding and lossy compression format).
MSN	Microsoft Network- often used to refer to MSN Messenger, the free instant messaging client developed and distributed by Microsoft.
Multimedia	ICT hardware, software and accessories that enable information to be presented, viewed and manipulated in various formats including text, audio, video, graphics and images.
Multimedia Platforms	Operating system or environment for running multimedia software.
Myclasses	A learning platform that establishes a virtual environment within the classroom. Developed specifically for K-12 school communities. Scalable to service thousands of schools.
Net Generation	Generation that has grown up with the internet.
Net Nanny	Brand of filter/content-control software.
Nintendo DS	Nintendo Handheld Games Console.
Palm Pilot	Brand of Personal Digital Assistant.

Pay Television	Subscription-based television services, usually provided by both analogue and digital cable and satellite, but also increasingly by digital terrestrial methods.
Peer to Peer	A network of two or more computers connected as equal partners and able to share processing, control and access to data and peripherals.
Peripheral	Type of hardware that is added to a host computer in order to expand its abilities. Tends to be applied to devices that are hooked up externally, such as printers and scanners.
Personal Digital Assistant	Hand-held electronic organiser or computer.
Photo Story (Microsoft Photo Story)	Type of freeware software that allows presentations to be created using digital photos. Once a photo story has been made it can be played on Windows Media Player or burned to a DVD or CD.
Photoblog	Type of blog designed primarily to showcase photographs.
Photoshop (Adobe Photoshop)	Graphics editor by Adobe Systems. Verb 'to photoshop' popularly used to mean to digitally edit or alter a picture or photograph.
Plasma Television	Television with an emissive flat panel display where visible light is created via a plasma discharge between two flat panels of glass.
PlayStation	First video game console from Sony Corporation.
PlayStation 2	Second video game console from Sony Corporation.
PlayStation Portable	Handheld PlayStation.
Podcast	Audio program in a compressed digital format, delivered over the internet to a subscriber via a variety of web feed formats and designed for playback on computers or portable digital audio players, such as the iPod. Also used as verb: to podcast.
Pop-up advertising (pop-up)	Form of online advertising intended to increase web traffic or capture email addresses by opening a new web browser window to display advertisements.
PowerPoint	Presentation graphics package from Microsoft.
Role-playing Game	Game in which participants assume roles of characters and collaboratively create stories. Participants determine the actions of their characters based on their characterisation, and the actions succeed or fail according to a formal system of rules and guidelines.
Server	Computer that provides services to other programs or users, either in the same computer or over a computer network.
Skype	A Voice Over Internet Protocol network (see Voice Over Internet Protocol).
SMART Board	Brand of interactive whiteboard.
SMS	Short Message Service (on mobile phone).
Software	Encoded computer instructions.

Studywiz	Learning platform that supports common file types and enables teachers to publish resources, tests and question banks to individuals, classes, years/levels, adhoc groups or the entire school.
Teamspeak	Voice Over Internet Protocol software that allows users to speak on a chat channel with other users, mostly used by gamers to communicate with other players on the same team of a multiplayer game.
Text	In mobile phone communication, a text (or text message) is a short digital message between devices, typically using SMS. The act of sending such a message is commonly referred to as texting.
Ultranet	Prototype for a student-centric learning platform that supports teaching and learning, curriculum delivery and knowledge management in Victorian schools. Developed by the Department of Education and Training (Victoria) in partnership with the Oracle Corporation.
Uniform Resource Locator (URL)	Address of a web page, ftp site, audio stream or other internet resource.
Universal Serial Bus (USB)	Serial bus standard for connecting devices.
Ventrilo	Voice Over Internet Protocol program for Microsoft Windows.
Victorian Essential Learning Standards (VELS)	A new curriculum framework in Victorian Schools, outlining what is important for students to learn so that they progress in their learning.
Video game console	Dedicated electronic device designed to play video games, especially in accompaniment with a television.
Videoblog (Vlog)	Blog that includes video.
Videocast (Video podcast, Vodcast)	Online delivery of video content.
Video-conference	Video phone call between more than two parties.
Visualising Thinking Tools	ICT tools that assist students with thinking processes and help them reflect on the thinking strategies they use to develop understanding.
Voice Over Internet Protocol (VoIP)	Telecommunications system that uses the internet or other internet Protocol network to transmit telephone calls. Most users of VoIP use a headset or microphone and use the program to talk to each other.
Web Authoring (Website Creation, Web Design)	Design/creation of web pages, websites and web applications using HTML, CSS and images.
Web Quest	Research activity in which students collect information, where most of the information comes from the world wide web.
Whitelist	Access control mechanism that means, ‘allow nobody, except members of the white list’.
Widescreen Television	A TV with a screen that has a wider aspect ratio than usual, aiming to more effectively use the human field of view and produce a more immersive view experience.

Wiki	A website or similar online resource that allows users to add and edit content collectively. Can refer to specific wiki sites such as WikiWikiWeb and Wikipedia or to the software (wiki engine) that facilitates the operation of such a website.
Wikipedia	Web-based free-content multilingual encyclopedia project written collaboratively by volunteers, allowing most articles to be changed by almost anyone with access to the website.
Wireless	Communication without cables or cords, chiefly using radio frequency and infrared waves. Commonly used when referring to the wireless networking of computers and cellular mobile phones.
Xbox	Brand of video game console from Microsoft.
Zine	Low-circulation, non-commercial publication of original or appropriated texts and images, especially one of minority interest.