



Universities Online

**A survey of online education and
services in Australia**

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02-A
Occasional Paper Series

Higher Education Group
March 2002

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ISBN 0 642 77255 X

ISBN 0 642 77256 8 (Internet copy)

DETYA No. 6872.HERC02A

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Acknowledgements

The Department of Education, Science and Training is most grateful for the work of a number of individuals who were involved in the establishment and revision of the survey instrument:

Professor Shirley Alexander, Director of the Institute for Interactive Media and Learning, University of Technology, Sydney

Professor Ronald Oliver, Communications, Health and Science, Edith Cowan University

Professor Jim Taylor, Deputy Vice-Chancellor, University of Southern Queensland

Associate Professor David Rich, Director, Centre for Flexible Learning, Macquarie University

Dr Michael Crock, Director, Griffith Flexible Learning Services, Griffith University

Dr Ian Barnard, Pro-Vice-Chancellor, Learning and Student Support, Charles Sturt University

Mr John Chan, Director, Resource Analysis, Australian Vice-Chancellors' Committee

Professor Richard Johnson, Centre for Continuing Education, The Australian National University

Professor Don Anderson, Centre for Continuing Education, The Australian National University

Mr Michael Gallagher, First Assistant Secretary, Higher Education Division, Department of Education, Science and Training

Mr Peter Nicholson, Director, Educational Developments Unit, Department of Education, Science and Training

Ms Margot Bell, Director, Educational Developments Unit, Department of Education, Science and Training

Mr David McCann, Assistant Director, Educational Developments Unit, Department of Education, Science and Training

Thanks are expressed to Mr John Mullarvey, Chief Executive Officer of the Australian Vice-Chancellors' Committee, for his comments and suggestions on the survey instrument.

Sincere appreciation is also expressed for comments on the draft report provided by Professor Philip Candy, 2001-02 DEST Research Fellow, and the many staff in the Higher Education Division, DEST, who provided assistance with data preparation and analysis, and the editing and preparation of this report for publication.

Finally, the survey could not have been completed without the work of a large number of individuals within the universities, who collated the information on courses and units and prepared responses to the survey questions.

Abbreviations

ABS	Australian Bureau of Statistics
CIT	Communication and Information Technology
DEST	Department of Education, Science and Training (formerly DETYA)
DETYA	Department of Education, Training and Youth Affairs
ICT	Information and Communication Technology
NCES	National Center for Education Statistics
NOIE	National Office for the Information Economy
OECD	Organisation for Economic Co-operation and Development

Executive Summary

This study was commissioned by the Department of Education, Science and Training (DEST) in order to ascertain the current extent of online education in Australian universities. Over the past five to seven years there has been considerable activity within universities in the use of Internet technologies for research, teaching, learning and administrative services. This survey was designed as a first stage of enquiry into the ways in which universities are employing the Internet, in teaching and learning and services that support university education. Data were collected from 40 out of the 43 universities in Australia between August and December 2001.

The main findings of the survey into online courses, units and services as at December 2001 are presented below:

Online courses

Online courses are university award courses in which all units or subjects are delivered and all interactions between staff and students are conducted via the Internet.

Key findings

- The survey found that there were 207 fully online courses offered by 23 Australian universities. Sixty-five of these courses (31 per cent) are delivered only by online mode.
- The majority (90 per cent) of online courses are at postgraduate level. In general, postgraduate online courses show a tendency towards specialised courses rather than generalist qualifications.
- Over a quarter of online courses are in the field of Management and Commerce (55 courses). Education represents a further 35 courses and Health 32 courses. The remaining 85 courses are spread across (1) Natural and Physical Sciences, (2) Information Technology, (3) Engineering and Related Technologies, (4) Agriculture, Environmental and Related Studies, (5) Society and Culture, (6) Creative Arts and (7) Mixed Programs.
- There is little duplication reported of online courses offered. The only duplication of courses is as follows: five universities offer online Graduate Diplomas in e-Commerce or e-Business and four universities offer online Graduate Certificates in Online Learning or Flexible Learning.

Online units

Online units are subjects or course components, in which at least some of the content is delivered and/or some of the interaction is conducted via the Internet. This may be optional or compulsory.

Web supplemented units are units in which participation online is optional for the student. Web dependent refers to units in which some online participation is compulsory. Fully online units contain no face-to-face component.

Key findings

- The use of the Internet in university units ranges from a high of 99 or 100 per cent of units in seven universities to a low of 9 per cent in one university. All universities are employing the web to some extent for teaching and learning purposes.
- Universities reported that 50 704 of their units (54 per cent) have content available on the web.
- The most prevalent form of online delivery was web supplemented with 46 per cent of units. Fully online units represent a small percentage of units, i.e. 1.4 per cent, (0.8 per cent of undergraduate units, 2.7 per cent of postgraduate units).
- The discipline areas that have the highest percentage of fully online units are: Management and Commerce with 2.6 per cent fully online units, Education 2.5 per cent, Information Technology 2.3 per cent and Health 2.2 per cent.
- The discipline areas that make least use of the web are Food, Hospitality and Personal Services (56.6 per cent make No Use of the Web), Creative Arts (55.7 per cent), and Society and Culture (52.1 per cent).
- Information and Technology (IT) units appear to make the highest use of the web, compared with other discipline areas; 40.5 per cent of IT units are either fully online or web dependent.

Online services

Online services consist of university services and information, which students can access via the Internet.

Key findings

- Most universities (87.5 per cent) provide an Intranet, which can be accessed by all students, with 70 per cent providing access to the Intranet from off campus.
- A high percentage of universities (92.5 per cent) have made their university handbook and/or calendar available online.
- Online access to university libraries is high. Ninety-five per cent of universities provide access to their university library catalogue via the Internet, 90 per cent provide access to online journals and monographs and 82.5 per cent provide online reservation of books.

- Universities use a number of commercial and in-house courseware management systems, sometimes several systems within the same institution, the most frequently used of which are: WebCT (29 universities), in-house systems (20 universities) and Blackboard (17 universities).
- Online registration and enrolment services are not widespread. Forty per cent of universities offer online registration or enrolment for existing students; only 27.5 per cent offer this service for new students and 30 per cent provide online variation of enrolment.
- Online payment of fees is also not yet widely available, with only 30 per cent of universities offering this facility to all students.
- Online learning support for students is available in 57 per cent of universities and 45 per cent provide online training in ICT skills.

Discipline areas such as Management and Commerce, Education, Health and Information Technology are more likely to have developed fully online units and courses. This may be due to the fact that, at postgraduate level, many of these students are 'earner-learners' who combine full-time work with study. In addition, discipline areas that require more practical and laboratory work, such as Creative Arts or the physical sciences, are less likely to provide online education, possibly because these discipline areas do not lend themselves as easily to online learning or because students do not have ready access to the necessary technology.

Universities seem to have made significant progress in providing online services and information to students, especially in library services. However, there is a time lag in the availability of online services in areas such as online student registration and payment of fees.

1 Introduction

The growth of the digital economy has been accompanied worldwide by the promise of improved education and training through the development of online learning, i.e. learning that is available through the technologies of the Internet.

For developed nations, online learning was claimed to provide the answer to dealing with the growth of postsecondary education, in terms of better pedagogy and the prospect of reduced costs. It was also thought to offer increased flexibility in meeting the needs of students for learning, independent of time, place or circumstances, and to be a solution for the increasing demand for lifelong learning.

For developing nations, online learning was to provide learning to improve basic literacy, numeracy and skills acquisition, lessening the need for expensive bricks and mortar infrastructure.

Corporations, particularly in the dot com or Internet-based industries, were early adopters of online education and training solutions. Online provision, especially in dispersed multinational corporations, has undoubtedly provided savings for the education, training and professional development budgets of many corporations. For example, IBM, which employed 330 000 people across the globe in 1998, 'took 30% of its training and put it online and in doing so saved US\$120 million off the bottom line' (Wong 2000, p.23).

Universities, the world over, have attempted to keep pace with these developments. In the United States and Europe, the rush to develop courses has reawakened the debate about differing levels of quality between face-to-face and distance education. However, this has not stopped many universities, including a number at the prestige end of the market, from developing online course offerings, or investing in start-up companies established primarily to operate in the online learning market.

Online learning is bringing about fundamental changes to the delivery of education and training and has even affected the way people learn. For many, it contributes to an enriched learning experience, while for the "time poor", the availability of online learning is of enormous benefit. However, online learning is not the complete panacea that many originally envisaged.

It is important to note that online learning varies from minimalist to highly interactive use of the web and that the costs and pedagogical issues vary correspondingly. In terms of the highly interactive use of the web, the costs of provision currently appear to be high but this may change over time. Pedagogical issues are more complex and it is not yet clear whether the new technology is moving education towards a new form of pedagogy.

The development of online learning has been plotted in a number of previous DEST publications. *The Business of Borderless Education*, in particular, described the growth of corporate universities and other providers of online education. The study concluded that there are barriers to the wholesale adoption of online

learning, because it is suitable for some student groups but not others. Online learning was found to have wider applicability and acceptance among postgraduate students, perhaps because of the learning skills and self-discipline acquired in their first degree. A follow-up study, *The Business of Borderless Education: 2001 Update* (forthcoming), which examines the impact of the post-dot com crash of 2000 on online learning provision, tends to confirm this view. It also highlights the inherent risks for early adopters of online education by documenting start-up company failures.

What is apparent worldwide is that online learning solutions, which are developed without proper regard to appropriate pedagogies and the needs of students, are destined to failure. Similarly, online education institutions, whose business plans and predictions of growth are inflated, will also fail. Online learning does not necessarily offer a cheaper alternative to more traditional forms of learning, as had been anticipated by some. That said, it is also true that online support for learning can enrich the learning experience for many students.

Over recent years, there has been a tendency on the part of some institutions (and governments) to focus on the number of online courses as a measure of progress or success, with less regard for the quality of the data presented. Statistics concerning the number of online courses have been less reliable than they might have been. While this survey does not provide all the information necessary to provide a full picture of online education in Australia, it does advance the knowledge base.

Many commentators have observed that Australian universities are among the world leaders in the move to online education. As a nation, we have a strong tradition of distance education, due to our small population and vast geographic distances. The resolution of quality issues concerned with distance education courses was a matter of priority early last century in Australia, not the subject of current debate as is occurring in other parts of the world. Necessity bore innovation. The move to online learning was seen by many as a natural extension of the more traditional forms of distance education we had already perfected and widely adopted many years ago.

Australian universities have made significant investments in online education, both in terms of the development of courses and support services and the infrastructure necessary to deliver them. However, adoption of online delivery is variable across the higher education sector. Many universities have developed strong strategic business plans for online course development, while others are still evolving their business models, because they feel they cannot afford to be left behind.

In order to provide the higher education sector with reliable information about trends in online course development in Australia, DEST set about undertaking the present study. The study will also inform policy development and enable better international comparisons to be made. It should be emphasised that government policy is not about favouring any preferred form of delivery of education, but is about ensuring a diversity of offerings to meet student choice and ensuring the quality and sustainability of publicly funded higher education.

1.1 International surveys

A scan of the international environment shows that there are a number of reports on online matters, such as Internet usage, Internet access, and broadband connection. The following gives an overview of some of these statistics:

- Global Internet usage was estimated to be around 275 million in 2000 (NOIE 2001).
- Household access to the Internet was highest in the Netherlands (69 per cent), Denmark (65 per cent) and Sweden (60 per cent). Australia was listed sixth on this list at 53 per cent (OECD 2002).
- Broadband penetration is highest in Korea (9 per cent), Canada (4.5 per cent) and the US (2.2 per cent). Australia, by comparison had a broadband penetration of 0.4 per cent, as at January 1, 2001 (OECD 2001).
- The use of the Internet among US distance education providers increased ‘from 22 per cent of institutions in 1995 to 60 per cent of institutions in 1997–8’ (NCES 1999, p. vi).
- It has been estimated that there will be between 30 and 80 million online students in the world by 2025. The huge difference in estimates is due to the difficulty in defining an online student, since the majority of students will be studying at least partly online in the future (OECD 2001).

As yet there is little information on the extent of online course delivery in universities in individual countries, apart from a Canadian study, which was carried out during 1999–00 (Cuneo et al. 2000). There is therefore a need to expand the knowledge available on online education in universities.

1.2 Access to ICT and the Internet in Australia

The move to online learning in Australia has been assisted by high access levels to computers and the Internet. The National Office for the Information Economy (2000, p.5) considers that ‘Australia has emerged from the advent of the online age as one of the information economy world leaders’.

Australians are adopting and utilising the Internet as a regular part of their daily lives. In September 2001, there were 3.7 million household subscribers to the Internet in Australia (ABS 2001a). In addition, 66 per cent of Australian adults had used a computer and 50 per cent had accessed the Internet in the twelve months to November 2000 (ABS 2001b).

A recent study of Australian tertiary students found that university student access levels to technology appear to be higher than for the general population, with over 95 per cent of university students reporting that they made regular use of information and communications technology (Oliver and Towers 2000). Furthermore, according to the study, 84 per cent of university students in Australia have access to a computer in their home and 65 per cent have access to the Internet at home.

On the other hand, the study revealed that ‘almost every minority group is experiencing some degree of disadvantage in terms of ICT skills and access’. (Oliver and Towers 2000, p. 183). Barraket et al (2000) found in particular that Aboriginal and Torres Strait Islanders and students from low socioeconomic backgrounds had less access to ICT at home than their peers.

1.3 Changes in student profile

As well as an increase in access to and use of ICT, there has also been a change in the profile of students engaged in university education. Between 1994 and 1999 there was a 9 per cent increase in the proportion of full-time students in paid employment (McInnes et al. 2000). This change has been noted in other countries and has been termed the ‘learner-earner’ (i.e. the full time student who also has a paid job). There has also been a growth in the number of ‘earner-learners’ (i.e. people with a full time job, who undertake study).

These developments in the student profile mean that students are trying to cope with the demands of both work and study, and are naturally interested in increased flexibility, such as reducing or eliminating the number of hours spent on campus and the ability to fast track their education. These are all factors leading to further demand for more flexible forms of education such as online learning.

1.4 Rationale for the study

One of the first questions to arise when policy makers and university administrators focus on online education is, ‘How many students study online?’ It is a simple enough question, but the answer is extremely complex.

Many universities offer courses and individual units of study in a multi-modal format. Anecdotal evidence suggests that students move from one mode to another easily and without necessarily needing to advise university administrators of the changes.

DEST’s annual collection of higher education statistics records whether a student is on-campus or external. However, on-campus students can and do study units online, while external students do not necessarily study via online modes. Many students attend face-to-face classes yet receive significant levels of online support.

For these reasons, it was decided in the first instance to focus on the availability of online courses and units of study rather than student numbers. In consultation with experts drawn from the higher education sector, a number of definitions were developed which indicated the extent to which particular courses or units of study were web supported.

The study builds on other Government initiatives and research studies of online education and ICT trends, so that the higher education sector will be more able to meet the challenges of the developing global market (see Appendix A for a list of initiatives and previous studies).

1.5 Definitions of online delivery

The difficulty in collecting such information is that there has been no widely accepted definition of what constitutes an online course or unit. Two definitions of online courses and units, which were used in the development stage of the survey questionnaire, were those of Curtin University of Technology and The Australian National University.

As at March 2001, Curtin University of Technology's Office of Teaching and Learning classified online units under four categories:

Informational

The online unit site can be classed as informational if its main purpose is to provide information about the unit. For example, the site might only contain a unit outline and assignment descriptions. This type of online site is usually considered as an optional information source for students.

Supplemental

The online unit site can be deemed supplemental if it used to enhance other forms of instruction. For instance, the site could be used to enhance face-to-face instruction by providing lecture notes and links to useful web sites.

Dependent

In this case unit materials and resources are available from the site and it is essential that students use the site in order to complete the unit. The online unit site is designed to be a significant component of the unit

Fully Developed

The site can be classified as fully developed if it is used to deliver the unit entirely online. Delivering a unit completely online means that there is no face-to-face interaction, and that course content, assignments, and communication is [sic] dealt with online.

The Australian National University's set of definitions, produced by Chris Trebitt, <www.anu.edu.au/cedam/webrepresentation.pdf> are as follows:

Level 1: Course description

Program/course/unit title and short outline (eg minimalist descriptive information as provided in handbook)

Level 2: Course study guide

Description plus study guide, comprising, for example: key dates; study schedule; names and contact details of teaching staff; unit overview; topic outline; learning objectives/outcomes; learning plan; study requirements/expectations; assessment overview; assignments; teaching evaluation.

Level 3: Course resources – content information

Description plus study guide plus significant information resources/lecture notes/tutorial readings/short loan materials, etc. For example, online resources could include text, graphics, images, video, and sound.

Level 4: Course resources – information and interactivity

Description plus study guide plus information plus some interactivity to support learning. For example:

- *Communication tools and activities (email lists, bulletin boards, etc)*
- *Interactive tools and activities (eg visualisations, simulations, modelling, etc)*
- *Assessment tasks, formative evaluation activities, etc*

Level 5: Integrated online study package

Description plus study guide plus information plus interactivity plus all learning activities and assessment and evaluation are integrated and supported through technology to the extent that many students could be located off-campus for significant periods of time during their enrolment.

DEST, in consultation with experts drawn from the higher education sector, developed its own working definitions based on the degree of dependence on the web for delivery. In brief, the DEST survey defined online delivery under three major categories:

- *web supplemented;*
- *web dependent; and*
- *fully online.*

Because there were perceived to be different kinds of web dependency (either for content, for communication or for both content and communication), web dependency was further refined into three sub-categories (see Appendix B).

Using these categories, DEST conducted a survey of all online courses and units of study offered by Australian universities.

2 Methodology

Data was collected by means of a survey questionnaire, which was distributed to all Australian universities. The data were collated and analysed by staff at DEST before inclusion. Individual universities are not identified in this report. As discussed in more detail elsewhere (see Section 2.2), the data is somewhat raw; therefore identifying individual institutions may leave a false impression or suggest inappropriate value judgements.

2.1 The survey instrument

A draft survey, including questions about online courses and units and using a proposed classification system for online units, was prepared and submitted to a group of experts in the field (see Acknowledgements). The survey was discussed and amended, which led to the framing of five questions of concern to the group:

- What is the extent of university online education?
- How are students learning?
- How well fitted are the arrangements for students?
- How well are students learning?
- How cost effective are the arrangements?

It was agreed that the present survey would address only the first of the above questions. The second most important question was the last in relation to cost, and the group agreed that a future phase of the survey should examine the cost of online education.

The group recommended that questions on institutional online services be included in the survey, as well as a question relating to access and equity for disadvantaged students.

It was agreed that the survey document be used without a trial and that DETYA provide contact officers to field enquiries. The group also recommended that Directors of Teaching and Learning in universities be responsible for collating the information for the survey, although faculties and departments would also need to be involved.

Professors Richard Johnson and Don Anderson from the Centre for Continuing Education at The Australian National University then formalised the survey document and prepared the accompanying explanatory notes.

The questionnaires were delivered to universities as an attachment to their annual Profiles requests for information.

2.2 Responses and limitations

Responses were received until December 2001 by which time, 40 out of 43 universities in Australia had responded. A list of respondents is provided at Appendix B.

There were occasional difficulties with responses supplied by universities, in particular with (1) the quality of the data, (2) the completeness of the information and (3) the survey definitions.

The quality of responses was not always as high as expected. For instance, data was not divided into undergraduate and postgraduate figures; data was missing; errors in calculating percentages were common; information was not always returned in the form required. In one case, the university's system of recording units made it difficult to extract the number of units without double-counting.

There was also some difficulty with the following definitions of online units:

Mode B (i) students must use the web to interact with the education content necessary for study;

Mode B (ii) students must use the web to communicate with staff and/or other students; and

Mode B (iii) students must use the web both to interact with content and to communicate with staff and/or other students.

These categories include the phrase, 'students must use the web'; that is, use of the web is compulsory. One university commented that online interaction is never compulsory at that particular university; students can interact and communicate via a number of alternative methods. Thus, responses from this university tended to fall into the other three categories of units, which did not indicate compulsory use of the web.

A review of the definitions may be required if the survey instrument is to be used again.

Universities were asked to overcome some of the above limitations and complied wherever possible. However, some responses could only be used in part and, in other cases, data were used which included mathematical errors. Percentages in the tables of data therefore do not always total 100 per cent.

3 Survey results

There were three main parts to the survey questionnaire (see Appendix C):

1. Online courses

This part of the survey requested a list of fully online courses available at each university with an indication of the discipline area, level (undergraduate or postgraduate) and whether they were only available online.

2. Online units

This part required information on the number of units available at each university in each discipline area, the level (undergraduate/postgraduate) and the percentage of units, which fell into each of six categories, ranging from 'No Use of the Web' to 'Fully Online'.

3. Online services and support

This part asked universities to indicate whether they provide particular online services to 'All', 'Some' or 'No' Students. This was followed by a series of open-ended questions about course management systems, other online support services and access and equity policies.

In interpreting the results, it is important to understand the terminology used, which may vary in meaning in different jurisdictions and from university to university.

For the purpose of this survey, a **course** is defined by DETYA (2001a) for its statistical collection as 'a program of study formally approved or accredited by the institution or any other relevant accreditation authority and which leads to an academic award granted by the institution, or which qualifies a student to enter a course at a level higher than a bachelor's degree'. The term, 'Other courses' in this survey, refers to non-award courses offered by universities.

A **unit** is defined as 'the basic unit of a course or program, which a student may undertake and on successful completion of the unit's requirements, gain credit towards completion of the course or program'. Units of study are sometimes referred to as 'subjects' (DETYA 2001a).

A **discipline group** 'is a means of classifying units of study in terms of the subject matter being taught and/or being researched in them' (DETYA 2001a).

3.1 Online courses

Table 1 indicates the number of online courses available as at December 2001 in Australian universities.

A total of 207 fully online courses are delivered by Australian universities, of which 65 (31 per cent) are delivered only by online mode. It is clear that there are significantly more postgraduate online courses (187) than undergraduate (17), i.e. 90 per cent of online courses are postgraduate. Similarly, only five undergraduate courses are delivered only by online mode, while the number of postgraduate courses only delivered online is proportionally higher (58). Three other online courses were reported which did not fit into either undergraduate or postgraduate courses.

Table 1 Online courses

	Undergraduate	Postgraduate	Other Courses	Total
Total no. of online courses	17	187	3	207
Courses that are online only	5	58	2	65

3.1.1 Online courses by institution

In total, 23 of the 40 responding universities (57.5 per cent) offer online courses. Ten of the 23 universities offer undergraduate online courses but all 23 offer postgraduate online courses.

As can be seen from Table 2, University 1 offers the largest number of online courses in Australia, with a total of 35 online courses, or 16.9 per cent of the total number offered by Australian universities. Thirty-three of the 35 online courses at University 1 are online postgraduate courses. The second highest number of online courses offered by a single institution was 22.

Table 2 Online courses by institution

Institution	No. of Online Undergraduate Courses	No. of Online Postgraduate Courses	No. of Other Online Courses	Total No. Online Courses
1	2	33	0	35
2	2	20	0	22
3	0	18	0	18
4	2	16	0	18
5	3	14	0	17
6	0	16	0	16
7	1	9	0	10
8	2	8	0	10
9	0	9	0	9
10	1	5	0	6
11	0	6	0	6
12	0	6	0	6
13	0	6	0	6
14	2	3	0	5
15	1	2	2	5
16	0	4	0	4
17	1	2	1	4
18	0	2	0	2
19	0	2	0	2
20	0	2	0	2
21	0	2	0	2
22	0	1	0	1
23	0	1	0	1
Total	17	187	3	207

3.1.2 Online courses by discipline area

According to Table 3, the focus for online course delivery at present is in three discipline areas: Management and Commerce (55 courses), Education (35 courses) and Health (32 courses).

At the postgraduate level the discipline areas with the highest number of online courses are:

- Management and Commerce (52 online courses)
- Education (31 online courses) and
- Health (29 online courses).

In the undergraduate area, although the numbers are small, the highest areas of online course delivery are in:

- Education (4 online courses)
- Health (3 online courses)
- Management and Commerce (3 online courses) and
- Society and Culture (3 online courses).

Table 3 also indicates that two discipline areas currently do not offer online courses: Food, Hospitality and Personal Services and Architecture and Building.

Table 3 Online courses by discipline

	Undergraduate	Postgraduate	Other Courses
01 Natural and Physical Sciences	0	13	1
02 Information Technology	2	19	0
03 Engineering and Related Technologies	1	3	0
04 Architecture and Building	0	0	0
05 Agriculture, Environmental and Related Studies	0	8	0
06 Health	3	29	0
07 Education	4	31	1
08 Management and Commerce	3	52	0
09 Society and Culture	3	19	0
10 Creative Arts	1	10	0
11 Food, Hospitality and Personal Services	0	0	0
12 Mixed Field Programs	0	1	1
Unstated	0	2	0
Total	17	187	3

3.1.3 Duplication of online courses

An analysis was carried out into whether universities offer the same or similar online courses. At this stage there is little duplication of course offerings among universities. At the undergraduate level, there is no duplication at all amongst the online courses currently available.

Postgraduate online courses, on the other hand, exhibit a low level of duplication or similarity. Five universities currently offer online Graduate Diplomas in either e-Commerce or e-Business and a further four universities offer online Graduate Certificate courses in either Online Learning or Flexible Learning.

Even though the numbers above are still low, it is interesting to note that the areas of duplication are specifically in online content areas.

3.1.4 Online courses and specialisation

An analysis of the types of online courses available reveals that online courses are mostly specialised rather than generalist courses, especially at postgraduate level. However, this trend may not be exclusive to online courses but may be symptomatic of what is happening in postgraduate courses in general.

Online courses in the postgraduate Management and Commerce area cover a variety of cross-disciplinary specialisations including:

- Aged Services Management;
- Health Services Management;
- Applied Management (Nursing);
- Applied Management (Tourism);
- Applied Management (Architecture); and
- Management (Arts).

In the postgraduate Education area, universities offer the following variety of specialisations:

- Religious Education;
- Integrated Primary Development and Teaching;
- Clinical Nursing Education;
- Online Learning;
- VET in Schools;
- Tertiary Teaching;
- Flexible and Distance Learning;
- Mathematics and Mathematics Education;
- Assessment and Evaluation;
- Computer Education; and
- Educational Technology.

Online postgraduate Health courses show the broadest range of specialisations, which are listed below:

- Nursing Leadership;
- Nursing Practice;
- Clinical Nursing;
- Applied Gerontology/Gerontic Nursing;
- Advanced Nursing;
- Critical Care Nursing;
- Palliative Care Nursing;
- Nursing Studies;
- Case Management;
- Health Services Research and Evaluation;
- Computed Tomography;
- Magnetic Resonance Imaging;
- Integrative Medicine;
- Pain Management;
- E-Health;
- Computing Switches and Interface for Disability;
- Occupational Health and Safety;
- Occupational Therapy; and
- Reproductive Medicine.

3.2 Online units

Universities were asked to provide the following information on their units:

- Number of units, by discipline and level (undergraduate/postgraduate); and
- Percentage of units that fall into one of six categories of online content, ranging from No Use of the Web through various categories of online usage.

3.2.1 Definitions of online categories

The definitions for categories of online units, as employed in the survey were as follows:

Mode A – Web Supplemented (participation online is optional for the student)

Enrolled students can access information on units of study that is additional to that available in the university's calendar or handbook. The information may include course descriptions and study guides, examination information, assessment overview, reading lists and other online learning resources. The information is used to supplement traditional forms of delivery.

Mode B – Web Dependent (participation online for each activity described in (i), (ii) or (iii) below is a compulsory requirement of participation although some face-to-face component is retained):

- (i) Students must use the web to interact with the education content necessary for study (referred to in the text as ‘Web Content Dependent’).
- (ii) Students must use the web to communicate with staff and/or other students (referred to as ‘Web Communication Dependent’).
- (iii) Students must use the web both to interact with content and to communicate with staff and/or other students (referred to as ‘Web Maximum Dependent’).

Mode C – Fully Online (there is no face-to-face component)

All interactions with staff and students, education content, learning activities, assessment and support services are integrated and delivered on line.

As previously mentioned the word ‘must’ in Mode B categories caused some concern and may therefore have led to underestimation of the percentage of web dependent units.

3.2.2 Undergraduate units

Table 4 indicates that over half (55.6 per cent) of all undergraduate units currently contain an online component. Of that percentage, most units are web supplemented (42 per cent) rather than web dependent or fully online. Figures for Mixed Programs have been included with undergraduate figures.

Only 0.8 per cent of undergraduate units are fully online, with a further 5.6 per cent of undergraduate units classified as Mode B (iii) Web Maximum Dependent. Table 4 also indicates that 44.4 per cent of undergraduate units make No Use of the Web.

An analysis of the various categories reveals the following. In Mode C (fully online units), the highest use of the web is in Information Technology with 1.9 per cent fully online units. Mixed Programs also shows the same percentage but with very low numbers of units. Management and Commerce, with 1.7 per cent fully online units, also indicates an increasing use of the web.

Information Technology, with 22.1 per cent of units in Mode B (iii) Web Maximum Dependent, showed a significantly higher use of the web in this mode than for other discipline areas, even though these units were not fully online. The survey did not examine the reasons behind the choice of online mode but the following may provide possible explanations: 1) there may be areas of study where it is not appropriate for Information Technology units to be delivered via the web; 2) these units may be in the process of becoming fully online units or 3) lecturers are making allowance for students who do not have the required Internet access. In general, Information Technology showed a higher use of the web than other areas, with only 19.4 per cent of units making No Use of the Web.

Other discipline areas that are beginning to make more extensive use of the web in undergraduate units in Mode B (iii) Web Maximum Dependent, include Management and Commerce (7.8 per cent) and Architecture and Building (7.4 per cent).

The highest percentages in the web supplemented category (Mode A) are in the disciplines of Engineering and Related Technologies (51.8 per cent) and Management and Commerce (48.9 per cent).

Lowest use of the web in undergraduate units is demonstrated in Mixed Programs (60.2 per cent of units make No Use of the Web), Creative Arts (55.5 per cent), Food, Hospitality and Personal Services (53.2 per cent) and Society and Culture (51.8 per cent).

Table 4 Online undergraduate units by discipline

Discipline	Total Units	No Use of Web	Mode A	Mode B (i)	Mode B (ii)	Mode B (iii)	Mode C
01 Natural and Physical Sciences	7 833	41.8	44.8	8.7	1.0	3.0	0.6
02 Information Technology	2 964	19.4	38.6	13.4	4.6	22.1	1.9
03 Engineering and Related Technologies	5 815	33.6	51.8	9.2	0.9	4.0	0.5
04 Architecture and Building	1 764	40.9	44.4	5.6	0.5	7.4	1.0
05 Agriculture, Environmental and Related Studies	2 171	43.0	42.9	5.0	0.6	6.4	0.4
06 Health	5 652	41.3	44.5	5.6	0.7	6.7	1.0
07 Education	4 611	47.5	40.3	3.3	1.2	6.6	1.1
08 Management and Commerce	5 377	31.7	48.9	8.1	1.8	7.8	1.7
09 Society and Culture	18 140	51.8	37.3	4.1	1.4	4.5	0.8
10 Creative Arts	8 826	55.5	39.0	2.2	0.7	2.4	0.2
11 Food, Hospitality and Personal Services	109	53.2	32.1	9.2	1.8	1.8	0.9
12 Mixed Programs	206	60.2	31.1	5.3	0.5	1.0	1.9
Totals	63 468	44.4	42.0	5.8	1.3	5.6	0.8

3.2.3 Postgraduate units

Table 5 indicates that 50.7 per cent of postgraduate units make some use of the web. There is greater use of the web in the high use categories; for example, 2.7 per cent of units are fully online, compared with 0.8 per cent of undergraduate units. In Mode B (iii) Web Maximum Dependent, 6.4 per cent of postgraduate units fell into this category, compared with 5.6 per cent of undergraduate units. However, the inverse is also true; there is a higher percentage of units that make No Use of the Web at postgraduate level: 49.3 per cent compared with 44.4 per cent of undergraduate units.

Most discipline areas showed a higher percentage of units in the fully online (Mode C) category, compared with undergraduate units. Natural and Physical Sciences, Engineering and Related Technologies and Creative Arts have at least four times as many online postgraduate units as undergraduate units.

As with undergraduate units, Information Technology showed significantly higher percentages of units with a web component, especially in the Mode B (iii) Web

Maximum Dependent category (20.1 per cent of units). Only 25.6 per cent of postgraduate units in Information Technology make No Use of the Web.

The Mode A (web supplemented) category indicated that the highest percentages were in the same discipline areas as for undergraduates units but in reverse order—Management and Commerce (43 per cent) and Engineering and Related Technologies (40.5 per cent).

Lowest use of the web in postgraduate units is shown in Food, Hospitality and Personal Services (62.1 per cent with No Use of the Web), Natural and Physical Sciences (59.7 per cent) and Creative Arts (56.7 per cent).

Table 5 Online postgraduate units by discipline

Discipline	Total Units	No Use of Web	Mode A	Mode B (i)	Mode B (ii)	Mode B (iii)	Mode C
01 Natural and Physical Sciences	2 258	59.7	30.2	3.7	0.6	3.3	2.4
02 Information Technology	1 815	25.6	36.6	11.2	3.5	20.1	2.9
03 Engineering and Related Technologies	1 992	41.2	40.5	9.2	1.1	5.9	2.1
04 Architecture and Building	450	52.0	38.2	1.6	0.9	5.1	1.6
05 Agriculture, Environmental and Related Studies	1 033	41.9	37.7	6.5	1.1	11.3	1.5
06 Health	5 001	54.2	31.5	2.7	2.4	5.8	3.4
07 Education	3 385	53.5	31.0	1.9	1.1	8.0	4.3
08 Management and Commerce	4 492	41.2	43.0	5.0	1.5	5.7	3.6
09 Society and Culture	8 133	52.6	37.2	3.4	1.6	4.7	1.5
10 Creative Arts	1 753	56.7	34.9	2.1	1.8	2.8	1.5
11 Food, Hospitality and Personal Services	66	62.1	25.8	12.1	0.0	0.0	0.0
Totals	30 378	49.3	35.9	4.2	1.7	6.4	2.7

3.2.4 Overall results for online units

The overall picture for both undergraduate and postgraduate online units is depicted in Table 6, which shows that 54 per cent of all units have a web component. Forty per cent of units are web supplemented, while 46 per cent make no use of the web. Only a small percentage of units in Australian universities (1.4 per cent) are fully online.

The Information Technology discipline area has the highest percentage of units which include a web component, i.e. 78.2 per cent of I.T. units, significantly higher than for all other discipline areas.

Management and Commerce has the largest percentage (2.6 per cent) of fully online units, with Education (2.5 per cent), Information Technology (2.3 per cent) and Health (2.2 per cent) not far behind.

Information Technology indicates very high usage (21.4 per cent of units) of the web in Mode B (iii) Web Maximum Dependent. Education, at 7.2 per cent of units, was next highest in this category.

The highest percentages in the web supplemented (Mode A) category are in Engineering and Related Technologies (48.9 per cent of units) with Management and Commerce (46.2 per cent) close behind.

Lowest use of the web is indicated in Mixed Programs (60.2 per cent of units make No Use of the Web), Food, Hospitality and Personal Services (56.6 per cent), Creative Arts (55.7 per cent), and Society and Culture (52.1 per cent).

Table 6 Total online units by discipline

Discipline	Total Units	No Use of Web	Mode A	Mode B (i)	Mode B (ii)	Mode B (iii)	Mode C
01 Natural and Physical Sciences	10 091	45.8	41.5	7.6	0.9	3.1	1.0
02 Information Technology	4 779	21.8	37.8	12.6	4.2	21.4	2.3
03 Engineering and Related Technologies	7 807	35.5	48.9	9.2	0.9	4.5	0.9
04 Architecture and Building	2 214	43.2	43.2	4.8	0.6	7.0	1.1
05 Agriculture, Environmental and Related Studies	3204	42.7	41.2	5.5	0.7	8.0	0.8
06 Health	10 653	47.4	38.4	4.3	1.5	6.3	2.2
07 Education	7 996	50.1	36.4	2.7	1.2	7.2	2.5
08 Management and Commerce	9 869	36.0	46.2	6.7	1.7	6.8	2.6
09 Society and Culture	26 273	52.1	37.3	3.9	1.5	4.6	1.0
10 Creative Arts	10 579	55.7	38.3	2.1	0.9	2.5	0.5
11 Food, Hospitality and Personal Services	175	56.6	29.7	10.3	1.1	1.1	0.6
12 Mixed Programs	206	60.2	31.1	5.3	0.5	1.0	1.9
Totals	93 846	46.0	40.0	5.3	1.4	5.8	1.4

3.2.5 Online units by university

This section examines individual universities' use of the web. As stated previously, individual universities in this report are not identified. Table 7 indicates a number of significant results including the following:

- Fourteen universities (39 per cent) have more than 50 per cent of their units containing an online component.
- Five universities have 100 per cent of their units with an online component, and another university has 99 per cent; i.e. *16.6 per cent of universities have at least 99 per cent of their units with a web component.*
- On the other hand, four universities have less than 20 per cent of their units with an online component.

Table 7 Percentage of online units by university

Institution	No Use of Web	Mode A	Mode B (i)	Mode B (ii)	Mode B (iii)	Mode C	Total Units	Total Units Using Web
1	0	82	3	0	0	15	100	1077
2	0	70	0	0	29	2	100	2212
3	0	95	1	0	2	1	100	2830
4	0	83	11	1	4	1	100	4742
5	0	74	7	0	18	1	100	3927
6	0	62	21	0	17	0	100	3902
7	1	95	2	1	2	0	99	769
8	13	60	5	2	20	0	87	1838
9	17	71	10	0	2	0	83	947
10	21	60	12	1	6	1	79	7764
11	22	45	28	0	0	5	78	278
12	42	22	25	2	5	3	58	1354
13	44	43	6	1	5	1	56	4041
14	46	37	4	3	9	0	54	7008
15	51	38	5	1	3	2	49	1049
16	55	39	1	2	3	0	45	2554
17	55	39	3	1	1	1	45	4796
18	55	26	7	3	8	2	45	1814
19	58	33	1	5	1	3	42	4026
20	63	32	4	0	1	0	37	2431
21	64	25	3	1	6	1	36	1269
22	66	22	2	5	4	0	34	2117
23	69	25	3	1	1	2	31	3109
24	69	20	4	1	5	2	31	2865
25	71	28	1	0	0	0	29	1772
26	71	18	2	4	4	1	29	3736
27	73	18	2	0	4	2	27	4859
28	76	13	2	0	2	6	24	1427
29	78	9	1	2	5	5	22	812
30	78	17	2	1	1	2	22	885
31	79	13	3	0	3	2	21	2332
32	80	12	1	0	3	4	20	1264
33	82	0	0	7	7	3	18	1561
34	87	6	2	0	2	2	13	3821
35	89	9	1	0	1	0	11	903
36	91	4	4	0	0	0	8	1752

This table threw up some unexpected data from individual universities, which are described below, along with a suggested explanation.

Case study 1

University 1 and University 11 have two of the highest percentages in Mode C but zero per cent for Mode B (iii) and Mode B (ii).

Possible explanation

These two universities are likely to be universities that have made strategic decisions towards moving all their units online. They also have a flexible philosophy of education, which does not dictate to students how they should study. Students in such universities may opt for online modes of study if they wish. Therefore these two universities may not have categorised units as Mode B because the definitions in Mode B required that the web *must be used* in order to be included in Mode B (i), (ii) and (iii).

University 1 also appears among the top five percentages in Mode A and has zero percent units in No Use of the Web. University 1 appears to be a major online university as all of its units have a web component. However, the compulsory nature of Mode B categories seems to have squeezed this university into selecting Mode A and Mode C almost entirely.

University 11 has the highest percentage of units in Mode B (i), which indicates that the web must be used to interact with the content but there is no compulsion to use the web for communication. This seems to be a modified or weaker version of the squeezing process evident in University 1.

Case study 2

Universities 28, 30 and 32 have amongst the highest percentages for Mode C units but also high percentages for No Use of the Web.

Possible explanation

These universities are likely to have a small group of enthusiastic staff who are committed to providing online education, while the remainder of the university has minimal to no involvement.

Case study 3

University 2 has the highest percentage in Mode B (iii) but zero percentages in Mode B (i), Mode B (ii) and No Use of the Web.

Possible explanation

This is a university that has moved its units online, but uses the web in particular ways. Amongst web dependent units, it appears that the University expects students to interact online both with the content and with other students and staff. There is no alternative model. This may be due to the philosophy of the university or perhaps the way that units were reported from this university.

Case study 4

University 3 and 7 have 95 per cent of units in Mode A and zero or 1 per cent in No Use of the Web.

Possible explanation

Because of the extremely high percentage of units in Mode A, it would appear that university policy dictates the provision of at least minimum online information about units.

Case study 5

University 33 has the highest percentage in Mode B (ii), along with a high percentage of No Use of the Web and zero per cent in Mode A and Mode B (i).

Possible explanation

This university has not moved online in any significant way. Like Case Study 2, it probably has a small but enthusiastic band of staff involved in online provision of education. Where online teaching takes places, it is employed in a high use way.

3.2.6 Associations

A number of institutional characteristics were examined for any possible association with the number and percentage of fully online, web dependent and web supplemented units, but no associations were found. These associations were tested using the Pearson product-moment correlation coefficient, the Spearman rank correlation coefficient, one-way analysis of variance and the Wilcoxon rank-sum test as appropriate.

The characteristics examined were as follows:

- type of institution (ATN, Group of 8, Metropolitan/Regional);
- 1999 retention rate;
- 2000 undergraduate progress rate;
- higher degree coursework students as share of total students;
- higher degree research students as share of total students;
- undergraduate award course students as share of total students;
- other students as share of total students;
- part-time students as share of total students;
- external students as share of total students;
- students aged greater than 24 years as share of total students;
- female students as share of total students.

Statistically, there is no particular type of university involved in online provision of education. However, that being said, three out of the six universities identified in Table 7 as having 100 per cent of their units with an online component, were originally part of a special group of Distance Education Centres (DECs), which were designated in 1990 as main providers of distance education in Australia and funded for a period of five years (DEET 1993).

Overall, the move towards the provision of online education seems to depend on the philosophy of the university and/or the enthusiasm of individual staff members.

3.3 Online services and support

Australian universities show a considerable use of the web to provide online services, especially information on courses and access to libraries.

3.3.1 Online services

Universities were asked to indicate whether they offer particular online services to 'All', 'Some' or 'No Students'. According to Table 8, a high percentage (87.5 per cent) of universities now provide a student Intranet and 70 per cent also offer off-campus access to the Intranet to all their students.

Universities appear to provide high levels of online access to library services. For example, 95 per cent of universities offer online access to library catalogues to all students and 90 per cent of universities offer access to online journals and monographs. Similarly, a high percentage (82.5 per cent) of universities provide online reservation of books.

University handbooks are a high priority for online provision with 92.5 per cent of universities providing this facility for students.

On the other hand, only 40 per cent of universities provide online registration and enrolment to all existing students, even fewer (27.5 per cent) provide online registration and enrolment to all new students and 30 per cent provide online variation in enrolment.

Online payment of fees (30 per cent of universities) is provided at a lower rate than for many of the above services.

Online training in ICT skills (45 per cent of universities provide this to all students) and online learning support (57.5 per cent) are provided at a somewhat lower level to students than the student Intranet, online library services and the university's handbook.

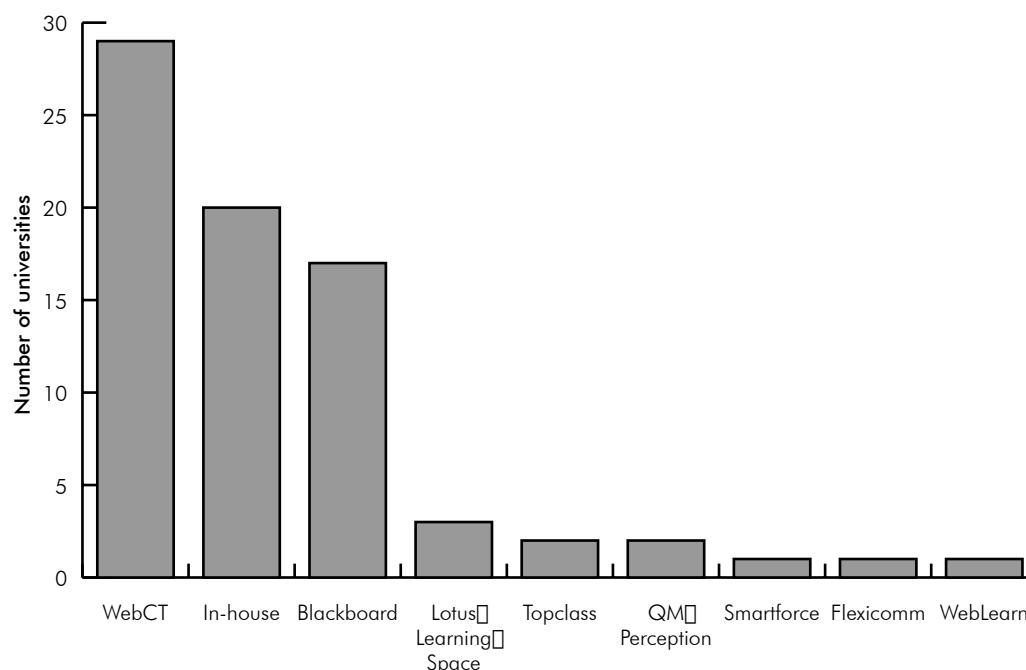
Table 8 Online administrative and learning support services, percentage

	All %	Some %	None %
The university provides a student Intranet	87.5	5.0	7.5
Students can access this Intranet from locations off campus (eg work or home)	70.0	20.0	10.0
New students can register/enrol for subjects/courses online	27.5	22.5	50.0
Existing students can register/enrol for subjects/courses online	40.0	27.5	32.5
Students can request variations in enrolment online	30.0	17.5	52.5
Students can pay university fees online	30.0	12.5	57.5
Students can view unit progress and final grades online	67.5	20.0	12.5
Students can access the library catalogue online	95.0	5.0	0.0
Students can access online journals or monographs	90.0	7.5	2.5
Students can reserve books online	82.5	7.5	10.0
Students can undertake online training to improve ICT skills	45.0	35.0	20.0
Students can access online learning support	57.5	37.5	5.0
Is the university's handbook and/or calendar available online?	Yes	92.5	No 7.5

3.3.2 Online systems

The survey asked universities to indicate which course management systems are used within their institution to support online teaching and learning. Comments supplied by respondents indicate that Web CT is the most commonly used system in Australian universities at present – 29 universities (see Figure 1), with In-house systems (20 universities) and Blackboard (17 universities) second and third respectively. In a number of cases, more than one system is in use in a particular institution.

Figure 1 Learning systems used by universities

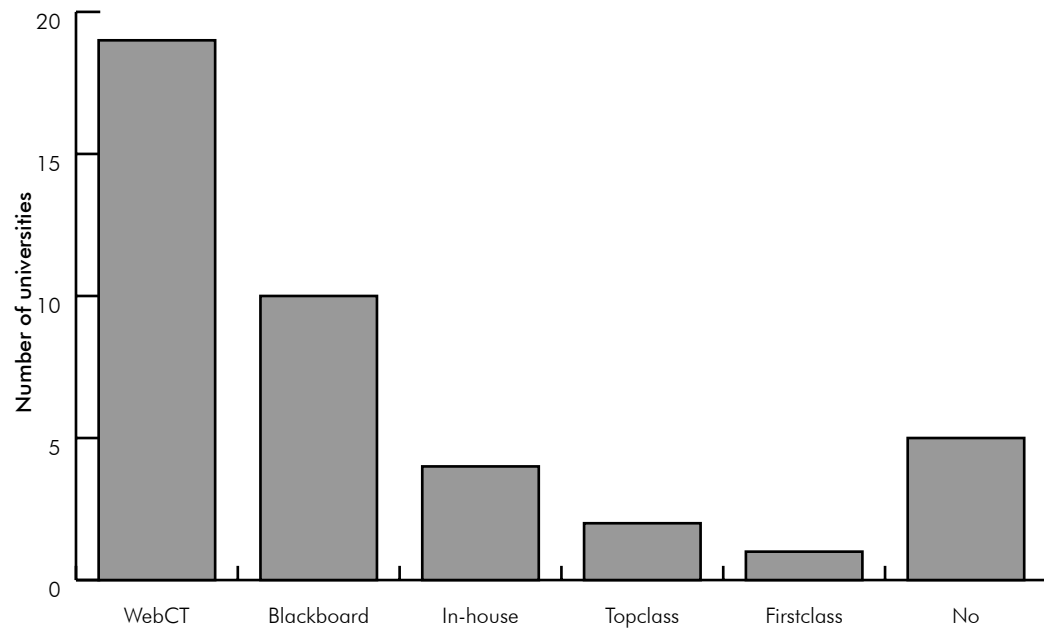
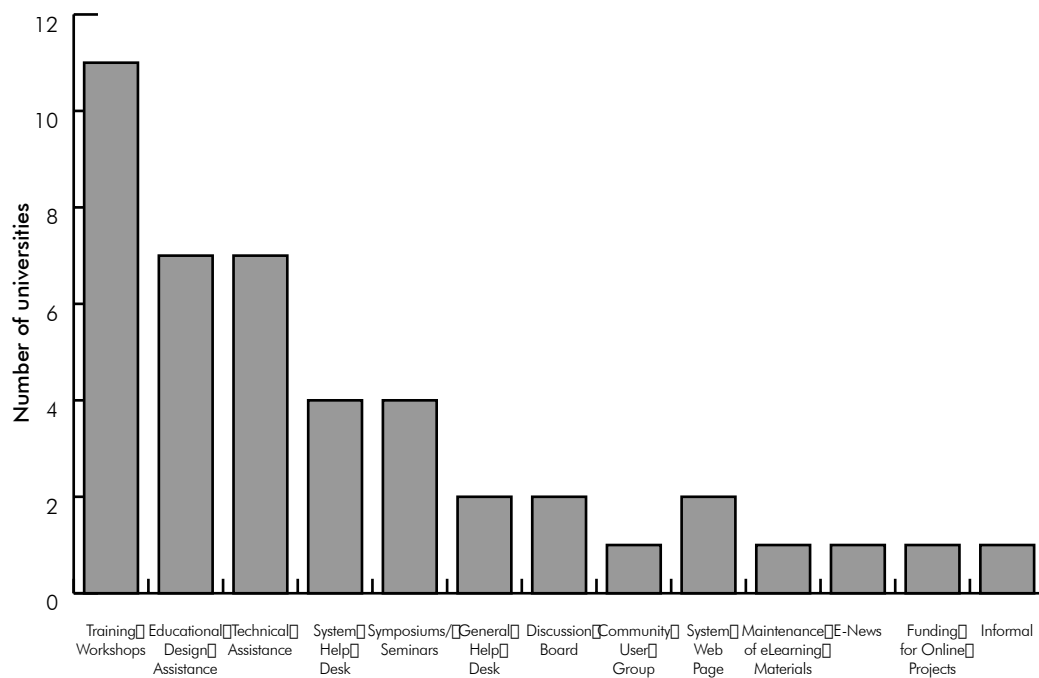


The survey also asked universities to indicate whether there was an institution-wide preferred system. WebCT, again, was clearly the system preferred by universities (19 universities or 47.5 per cent of respondents), with Blackboard preferred second and In-house systems third preference (see Figure 2).

3.3.3 Support services

Information was sought on the types of support provided to staff to assist them with the delivery of online courses and units. A wide range of answers was provided and some commonalities were drawn from the responses. Figure 3 indicates the range of support provided and the number of respondents who mentioned this support.

The most common responses were as follows. Ten universities indicated that they offer training workshops in online delivery for staff, six universities provide educational design assistance and six provide technical assistance to staff.

Figure 2 Is there an institution-wide preferred system?**Figure 3** Support services for staff

Other support mechanisms included:

- System help desk
- Symposiums or seminars
- General help desk
- Discussion board
- Community user group
- System web page

- Maintenance of e-learning materials
- E-news
- Funding for online projects and
- Informal assistance.

Universities were asked whether they provide any other online support services for students or staff. The responses to this question were too diverse to draw together many commonalities; however, there was a great deal of activity in this area and universities are providing a large number of services in response to local needs and demands. The main commonalities in 'other support services' were as follows: nine universities provide online tutorials for students, for example to use library catalogues, and five universities provide a help desk for students.

The following is a selection of other services provided by universities for students and staff:

Computers

- After hours access to computers
- Installation and maintenance of personal computers
- Computer purchase and hire
- Computerisation of major lecture theatres

Staff

- Staff training schedules
- Online staff directory
- Job vacancies
- Pay advice and timesheet approval
- Leave information
- Financial transactions with digital signatures
- Staff qualifications
- Online wizards, templates and guides to produce education resources
- University statistics
- Student results
- Enterprise bargaining agreements

Students

- Student orientation to online learning
- Induction and orientation to specific units
- Database of past exam papers
- Online submission of assignments
- Online test banks and marking
- Graduation ceremony application form
- Career guidance

- Scholarship applications
- Self-allocation to tutorials
- Casual jobs and vacation work
- Information on childcare, financial aid, counselling, disabilities, medical centre, prayer and religious meetings, clubs and societies
- Accommodation
- Ordering official documents
- Bookings for auditions and interviews

Library/Books

- Online citation guides
- Inter-campus and inter-library loans
- Ordering new books

General

- Staff and student personalised portal pages
- Class timetables
- Classifieds
- University policies and procedures

3.3.4 Needs of disadvantaged students

Universities were asked whether their institution has a policy that attempts to address the needs of disadvantaged students in terms of inclusivity and equity of access.

Thirty-six universities (90 per cent) responded that they do have a policy on 'equity and access' for disadvantaged students; four replied in the negative. However, six of the 'Yes' responses indicated that the policies were still in development or in draft form. A number of institutions referred to the W3C Content Accessibility Guidelines (5 May 1999) as the policy to which they subscribe, which may be found at <http://www.w3.org/TR/WAI-WEBCONTENT>.

Other responses to this question mentioned that institutions make the following provisions for students with a disability or disadvantage:

- 24 hour or extended access to computer laboratories
- Loan of equipment or computers for low socio-eligibility criteria students
- Text magnifier equipment and text-to-speech synthesis software
- Text versions of online resources
- Dial-in modem access to the Internet for students with disabilities
- Provision of laptop computers for students with special needs
- Software (eg JAWS for Windows and OutSPOKEN) for visually impaired students
- Voice recognition and voice control software
- Interest-free loans to purchase computers.

4 Conclusion

Australian universities are embracing the concept of online technology for teaching and administrative purposes. The fact that 54 per cent of units now contain an online component indicates a major change has occurred since the advent of Internet technology. Even though the percentage of fully online courses and units is low, the percentage of web supplemented and web dependent units seems to be a clear statement that many institutions are using online technology to add value to teaching and learning. A further study of online courses and units would provide an indication of the rate with which courses and units are going online.

It is pleasing to note that universities are making major progress in using the Internet to provide online services to students. This allows students 24 hour/7 day access to information essential for their study, such as library catalogues, university handbooks and Intranet information.

This study does not place value judgements on whether university education should or should not be provided online. Decisions about whether or not to move education online will be dictated by a range of factors, including:

- The needs and demands of the students;
- The suitability of the content to online provision;
- The bandwidth capability of the university;
- The cost effectiveness of providing courses or units online;
- The philosophy and strategic plan of the university;
- The individual academic's knowledge of the required technology and software and availability of staff development courses;
- The availability and ease of use of course management systems; and
- The ability to maintain and develop online course materials within the university.

4.1 Key issues

The key questions arising from this study relate to the need for research into other aspects of online education such as quality, cost, impact on universities, benefits/disadvantages for students and teaching methods.

There has been considerable hyperbole about the benefits of online learning. For institutions, there are supposed to be considerable cost savings after the initial establishment period, and opportunities to provide education to a larger, globalised marketplace. For students, online learning is thought to allow more flexible study options, and the opportunity to work and study at the same time. The above benefits claimed for online education are questioned by Scott and Alexander (2000) who believe that the costs of online learning are not yet established and that the benefits to students are dependent on a range of factors, including whether they

have access to the most modern equipment. This questioning of the cost effectiveness of online education is supported by evidence coming out of the United States. The Gartner study of online higher education institutions (2001) found that 42 per cent of respondents thought that online delivery increased the cost; one third believed the cost was roughly the same; and only 7 per cent believed that online delivery reduced the cost, while 17 per cent were unsure.

The key issues requiring further research in the area of online education concern:

- (1) cost effectiveness,
- (2) quality, and
- (3) pedagogy.

4.1.1 Cost effectiveness

The issue of cost effectiveness in online learning is a clouded one and difficult to assess. Depending on the sophistication of the online course, the cost can be enormously different. If materials are merely transferred to the web so that students can download and print them at home, the cost is low and the educational experience is little different from buying a text book or being sent printed materials by mail. The possibilities of online education, on the other hand, relate to the potential complexity of the type of educational experience that can be provided. Medical students for example, could be offered simulated surgery; business management students could be offered simulated business scenarios in which they must gather information, make decisions and deal with unexpected changes in the business environment. The difference in educational quality between these types of online provision is hard to measure in dollar terms (Blurton 1999).

However, it may be possible to measure the establishment and maintenance costs of online courses and units in order to gain some idea of high, low and average costs, and possibly, to compare the cost with the type of course materials provided. It may also be possible to calculate the number of students needed in order for an online course to be viable.

On the other hand, with the increasing number of students undertaking university education throughout the world, the alternative to online courses, i.e. providing more physical classroom spaces and laboratories, may be a more costly alternative and one that can no longer be afforded (Blurton, 1999).

4.1.2 Quality

The quality of online courses is also of major concern to educators. Partly, this relates to user outcomes, i.e. student satisfaction and completion rates, and employer satisfaction with graduates; however, it also relates to structural matters such as quality audits, access and equity for disadvantaged students and sustainability (Oliver 2001). The poor quality of courses is thought to be one of the major reasons that online students currently drop out of their courses (Symonds, 2002).

One of the major difficulties with online course development is that many academic staff have no knowledge of the new technology or find it difficult to use. Many academic staff are yet to be convinced that online learning can provide a

worthwhile alternative to traditional teaching methods (Strauss 2002). There is a two-fold need to provide: (1) basic skills in the development of online course materials so that staff have the option of using online teaching, where appropriate, and (2) ongoing staff development and support, so that the quality of online courses undergoes continuous improvement.

4.1.3 Pedagogy

Advocates of online learning have suggested that online education is transforming the learning experience in a number of fundamental ways:

- It expands the range and number of resources available to the student via hyperlinks and content portals exponentially;
- It enhances the learning content through the use of simulations, multimedia and interactive content;
- It extends student and teacher discussions beyond the physical and temporal limits of the lecture theatre and tutorial room, through the wide range of new communications platforms, such as discussion groups, which allow asynchronous interaction.

The much-talked-about pedagogical benefits of the new forms of delivery and interaction lead some commentators to suggest that the shift to online teaching and learning may be heralding an entirely new pedagogical approach in higher education which, on the surface at least, is challenging traditional teaching and learning models.

The extent to which universities have already adopted web based instruction, as shown in the survey, suggests there is a need to explore a number of pedagogical issues. Among these is the question of whether the teaching model in higher education should shift from traditional didactic methods to a more discovery-based methodology, through the application of technology. Secondly, there is the question of the teacher's role. A number of commentators point out that the traditional role of the lecturer (the sage on the stage) is inappropriate for online courses and units, in which the lecturer quite naturally becomes a facilitator (the guide on the side).

However, a report from the Gartner Group suggests that, at this stage, the full potential of online education for the higher education sector is largely unknown: 'The possibilities of an Internet-centric pedagogy are under intensive theoretical discussion, but almost nothing has actually been done to create, test and refine the tools that enthusiasts imagine' (2001, p 4). To help address this information gap, DEST has commissioned research, which will investigate the shifts in patterns of teaching and learning, which are occurring as a consequence of the introduction of web based instruction.

4.2 Trends in online education

It is not anticipated that all courses in Australia will become fully online. The trend revealed in this study is that all universities are already involved in online education to some extent. Depending on their individual strategic plans, universities may decide to become high or low online providers and students can already select their

university based on these considerations. It also appears that all university students in future will need to use the Internet as a regular part of their university studies, even if only to download lecture notes or to access the library catalogue.

The major trend evident in this study is that Australian universities are becoming more flexible in their practices and are offering higher levels of service, as the technology allows. These are positive steps in remaining competitive in the global marketplace for education and are evidence of continuous improvement.

Appendices

Appendix A

In order for universities to gain a greater understanding of global developments in online teaching and learning and the use of ICT, DEST has commissioned research and produced a number of reports over the past five years and has undertaken a number of initiatives to facilitate the development of online higher education.

Government initiatives

- Financial support for the development of online technology standards; i.e. Australia participates in the IMS Global Learning Consortium and has established the Australian IMS Centre, to develop agreed technical standards for online educational content and applications, and digital rights management;
- Financial support for universities to improve their bandwidth, i.e. the Government provided \$3 million to regional universities for additional bandwidth over 2001-2002 under the Capital Development Pool and Higher Education Innovation Programs; and
- Establishment of a quality assurance framework, which accommodates online teaching and learning.

Government research and dissemination

- *Managing the Introduction of Technology in the Delivery and Administration of Higher Education* (Yetton and Associates 1997), an investigation of the management of information technology in Australian higher education institutions;
- *New Media and Borderless Education* (Cunningham et al 1998), a review of the convergence between global media networks and higher education provision;
- *Educational Technology in Higher Education* (McCann et al 1998), a report on trends in the use of CIT in the higher education sector;
- *Developing a Framework for a Useable and Useful Inventory of Computer-facilitated Learning and Support Materials in Australian Universities* (McNaught et al 1999), a survey of computer-facilitated resources available in Australian universities;
- *Assistive Technology: Meeting the Technology Needs of Students with Disabilities in Post-secondary Education* (Leung et al 1999), a survey which identified the technology needs and concerns of students with disabilities in universities and TAFE institutions;
- *Equity and the Use of Communications and Information Technology in Higher Education: a UTS Case Study* (Barraket et al 2000), an investigation of student access and equity with regard to information and communication technology;
- *Uptime: Students, Learning and Computers* (Oliver and Towers 2000), a study of ICT access and literacy among tertiary students in Australia;

- *The Business of Borderless Education* (Cunningham et al 2000), an analysis of the activities of leading corporatised providers of higher education in the United States;
- *Online Learning in a Borderless Market* (DETYA 2001a), a conference held to discuss online issues impacting on educational institutions; and
- *Fifth Generation Distance Education* (Taylor, 2001), a report describing the progressive technological advances in distance education.

Appendix B

List of respondents

New South Wales

Charles Sturt University
Southern Cross University
Macquarie University
The University of New England
The University of New South Wales
The University of Newcastle
The University of Sydney
University of Technology, Sydney
University of Western Sydney
University of Wollongong

Victoria

Deakin University
La Trobe University
Monash University
Royal Melbourne Institute of Technology
Swinburne University of Technology
The University of Melbourne
University of Ballarat
Victoria University of Technology

Queensland

Central Queensland University
Griffith University
James Cook University
Queensland University of Technology
The University of Queensland
University of Southern Queensland
University of the Sunshine Coast

Western Australia

Curtin University of Technology

Edith Cowan University

Murdoch University

The University of Notre Dame Australia

The University of Western Australia

South Australia

The Flinders University of South Australia

The University of Adelaide

University of South Australia

Tasmania

Australian Maritime College

University of Tasmania

Northern Territory

Batchelor Institute of Indigenous Tertiary Education

Northern Territory University

Australian Capital Territory

The Australian National University

University of Canberra

Multi-State

Australian Catholic University

Appendix C

Online course definitions

Mode A – Web Supplemented

(participation online is optional for the student)

Enrolled students can access information on units of study that is additional to that available in the university's calendar or handbook. The information may include course descriptions and study guides, examination information, assessment overview, reading lists and other online learning resources. The information is used to supplement traditional forms of delivery.

Mode B – Web Dependent

(participation online for each activity described in (i), (ii) or (iii) below is a compulsory requirement of participation although some face-to-face component is retained)

- i. students must use the web to interact with the education content necessary for study
- ii. students must use the web to communicate with staff and/or other students
- iii. students must use the web both to interact with content and to communicate with staff and/or other students

Mode C – Fully Online

(there is no face-to-face component)

All interactions with staff and students, education content, learning activities, assessment and support services are integrated and delivered on line.

FULLY ONLINE COURSES (Mode C)

Name of Institution:

Undergraduate Courses

Name of Course	Discipline Group	Is the course only available on-line? Yes No

Postgraduate Courses

Name of Course	Discipline Group	Is the course only available on-line? Yes No

Other Courses (eg enabling courses etc)

Name of Course	Discipline Group	Is the course only available on-line? Yes No

ONLINE UNITS OF STUDY

Name of Institution:

Please Note:

1. Where a unit of study is used in more than one discipline group, it should only be **counted only once** in its discipline group of origin.
2. Where a unit is offered in more than one Mode, please record it in its **highest level of web enhancement**. For example, a unit of study that is offered to some students on campus in traditional face-to-face format, but is also available to say distance education students as fully online, should be recorded only once as a fully online unit.

Discipline Group	Total number of units offered by institution in all courses	Percentage of units that have no use of the web	Mode A Percentage of units that are web supplemented	Mode B (i) Percentage of units that are web dependent	Mode B (ii) Percentage of units that are web dependent	Mode B (iii) Percentage of units that are web dependent	Mode C Percentage of units that are fully online	Total percentages should be 100%
01 Natural and Physical Sciences								
	Undergraduate							100%
	Postgraduate							100%
02 Information Technology								
	Undergraduate							100%
	Postgraduate							100%
03 Engineering and Related Technologies								
	Undergraduate							100%
	Postgraduate							100%

Discipline Group	Total number of units offered by institution in all courses	Percentage of units that have no use of the web	Mode A Percentage of units that are web supplemented	Mode B (i) Percentage of units that are web dependent	Mode B (ii) Percentage of units that are web dependent	Mode B (iii) Percentage of units that are web dependent	Mode C Percentage of units that are fully online	Total percentages should be 100%
04 Architecture and Building								
Undergraduate								100%
Postgraduate								100%
05 Agriculture, Environmental and Related Studies								
Undergraduate								100%
Postgraduate								100%
06 Health								
Undergraduate								100%
Postgraduate								100%
07 Education								
Undergraduate								100%
Postgraduate								100%
08 Management and Commerce								
Undergraduate								100%
Postgraduate								100%

Discipline Group	Total number of units offered by institution in all courses	Percentage of units that have no use of the web	Mode A Percentage of units that are web supplemented	Mode B (i) Percentage of units that are web dependent	Mode B (ii) Percentage of units that are web dependent	Mode B (iii) Percentage of units that are web dependent	Mode C Percentage of units that are fully online	Total percentages should be 100%
09 Society and Culture Undergraduate Postgraduate								100% 100%
10 Creative Arts Undergraduate Postgraduate								100% 100%
11 Food, Hospitality and Personal Services Undergraduate Postgraduate								100% 100%
12 Mixed Field Programs Undergraduate Postgraduate								100% 100%

Fully Online Courses (Mode C)

Institution-wide online administrative and learning support services

Name of Institution

Extent to which students can access university services and functions on-line

Service provided (please indicate which services are provided)	Proportion of students with access		
	All	Some	None
The university provides a student Intranet ²			
Students can access this Intranet* from locations off-campus (eg work or home)			
New students can register/enrol for subjects/courses online			
Existing students can register/enrol for subjects/courses online			
Students can request variations in enrolment online			
Students can pay university fees online			
Students can view unit progress and final grades online			
Students can access the library catalogue online			
Students can access on-line journals or monographs			
Students can reserve books online			
Students can undertake on-line training to improve ICT skills (eg MS Word, Excel etc)			
Students can access on-line learning support (eg to improve writing or study skills, statistical methods or numeracy)			

Is the university's handbook and/or calendar available online? Yes No

What systems are used in your institution to support on-line teaching and learning
(eg Blackboard, WebCT, in-house system etc)?

Is there an institution-wide preferred system (and if so what is it)?

What support services, including professional development, are provided to enable
staff to improve their abilities to use on-line teaching and learning effectively
(eg assistance with multimedia, educational design etc)?

What other on-line support services does your university offer to either students
or staff?

Does your university have a policy which attempts to address the needs of
disadvantaged students in terms of inclusivity and equity of access? (if yes, please
provide a brief description)

Bibliography

Australian Bureau of Statistics 2001a, *Internet Activity, Australia*,
[Online] [http://www.abs.gov.au/ausstats/abs@.nsf/0/
CFFF890DC30B473CCA256A15007A8F29?Open](http://www.abs.gov.au/ausstats/abs@.nsf/0/CFFF890DC30B473CCA256A15007A8F29?Open)

Australian Bureau of Statistics 2001b, *Use of the Internet by Householders, Australia*,
[Online] [http://www.abs.gov.au/ausstats/abs@.nsf/0/
3D08C3A38DFAF98CCA2568A900143D32?Open](http://www.abs.gov.au/ausstats/abs@.nsf/0/3D08C3A38DFAF98CCA2568A900143D32?Open)

Barraket, J., Payne, A., Scott, G. and Cameron, L. 2000, *Equity and the Use of Communications Technology in Higher Education: a UTS Case Study*. Evaluations and Investigations Programme 00/7, Higher Education Division, Department of Education, Training and Youth Affairs, Canberra.

Blurton, C. 1999, *New directions of ICT use in education*.
[Online] <http://www.unesco.org/education/educprog/lwf/dl/edict.pdf>

Cuneo, C., Herzog, J., and O'Hara, E. 2000, *The Underbelly of Online Learning in Canadian Post-Secondary Education*, Report prepared for Industry, Canada. Campus Computing International, Ontario, Canada.

Cunningham, S., Tapsall, S., Ryan, Y., Stedman, L., Bagdon, K. and Flew, T. 1998, *New Media and Borderless Education*, Evaluations and Investigations Program, Higher Education Division, Department of Employment, Education, Training and Youth Affairs, Canberra.

Cunningham, S., Ryan, Y., Stedman, L., Tapsall, S., Bagdon, K., Flew, T., and Coaldrake, P. 2000, *The Business of Borderless Education*, Department of Education, Training and Youth Affairs, Canberra.

Department of Education, Training and Youth Affairs 2000, *The Australian Higher Education Quality Assurance Framework*. DETYA Occasional Paper Series 2000, Canberra.

Department of Education, Training and Youth Affairs 2001a, *Students 2000: Selected Higher Education Statistics*. DETYA Canberra.

Department of Education, Training and Youth Affairs 2001b. *Online Learning in a Borderless Market*, Proceedings of a conference held 15-16 February 2001 at Griffith University Gold Coast Campus. Department of Education, Training and Youth Affairs. Canberra.
[Online] http://www.dest.gov.au/highered/eippubs.htm#01_7

Department of Employment, Education and Training 1993, *National Report on Australia's Higher Education Sector*. DEET Higher Education Division, Canberra.

Gartner Inc. 2001. *E-Learning: Pedagogical Revolution in Higher Education?* Research Brief, Publication date: October 12, 2001.

Karmel, T and Jones, E 2001, *The Australian Higher Education Quality Assurance Framework, 6th Biennial Conference of the International Network for Quality Assurance Agencies in Higher Education*, 19 – 22 March 2001.

- Leung, P., Owens, J., Lamb, G., Smith, K., Shaw, J. and Hauff, R. 1999, *Assistive Technology: Meeting the Needs of Students with Disabilities in Post-secondary Education*. Evaluations and Investigations Programme 99/6, Higher Education Division, Department of Education, Training and Youth Affairs, Canberra.
- McCann, D, Christmass, J, Nicholson, P, Stuparich, J 1998, *Educational Technology in Higher Education*. Department of Employment, Education and Training, Occasional Paper. Canberra.
- McInnes, C. et al 2000, *Trends in the First Year Experience in Australian Universities*. Evaluations and Investigations Program 2000/6, Department of Employment, Education, Training and Youth Affairs, Canberra.
- McNaught C., Phillips, R., Rossiter, D. and Winn, J. 1999, *Developing a Framework for a Useable and Useful Inventory of Computer-facilitated Learning and Support Materials in Australian Universities*. Evaluations and Investigations Programme 99/11 Department of Education, Training and Youth Affairs, Canberra.
- National Center for Education Statistics (NCES), 1999. *Distance education at postsecondary education institutions:1997-98*.
[Online] <http://nces.ed.gov/pubs2000/2000013.pdf>
- National Office for the Information Economy (NOIE), 2000, *Current state of play, November 2000*.
[Online] http://www.noie.gov.au/projects/information_economy/research&analysis/ie_stats/StateofPlayNov2000/csp_november2000.pdf
- National Office for the Information Economy (NOIE), 2001, *Current state of play*.
[Online] http://www.noie.gov.au/projects/information_economy/research&analysis/ie_stats/CSOP_June2001/index.htm
- OECD report 2001, *Drivers of growth: information technology, innovation and entrepreneurship*.
[Online] <http://www1.oecd.org/publications/e-book/9201131e.pdf>
- OECD report 2002, *OECD Science, technology and industry scoreboard 2001 – towards a knowledge-based economy*.
[Online] <http://www1.oecd.org/publications/e-book/92-2001-04-1-2987/htm>
- Oliver, R. and Towers, S. 2000, *Uptime: Students, Learning and Computers*, Department of Education, Training, and Youth Affairs, Canberra.
- Oliver, Ron 2001. 'Assuring the quality of online learning in Australian higher education', paper presented at the *Moving online* conference held at the Gold Coast, 2 – 4 September 2001 [Online] <http://www.scu.edu.au/schools/sawd/moconf/>
- Scott, Geoff and Alexander, Shirley 2000. Online learning: rhetoric or reality? *Online Opinion February/March 2000* [Online] <http://www.onlineopinion.com.au/Feb00/scott.htm>
- Strauss, Howard 2002, 'Getting all our courses online', *eLearn magazine*, [Online] http://www.elearnmad.org/subpage/sub_page.cfm?section=3&list_item=4&page=1

Symonds, William C. 2001, 'Giving it the old online try', *BusinessWeek online* December 3 2001 [Online} http://www.businessweek.com/magazine/content/01_49/b3760072.htm

Taylor, J.C. 2001, *Fifth Generation Distance Education*, Higher Education Series, Report No. 40, Department of Education, Training and Youth Affairs, June 2001, Canberra.

University of Illinois 1999, *Teaching at an Internet distance: the pedagogy of online teaching and learning*.

[Online] <http://www.vpaa.uillinois.edu/tid/report/>

Wong, Daniel 2000, transcript of speech in *Putting the Knowledge into our E-conomy*, ed. by Burdon, Steve. TELCAM Asia Pacific Industry Forum, University of Technology Sydney, Sydney.

Yetton, Philip and Associates 1997, *Managing the Introduction of Technology in the Delivery and Administration of Higher Education*. Evaluations and Investigations Program 97/3, Higher Education Division, Department of Employment, Education, Training and Youth Affairs, Canberra.