

New Media and New Library Partnerships Downunder

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Downunder - the University of Queensland

The University of Queensland is one of the largest universities in Australia. It is a member of the group of eight so-called “sandstone” institutions in the country - as opposed to the “ivy league”. Established in 1910 in the city of Brisbane, the capital of Queensland, the University’s role for over fifty years was shaped by its responsibility as the sole provider of higher education in Queensland (one of the eight states in Australia). The more recent establishment of other universities in the city, and in the state, has changed the educational context considerably. The University has re-positioned itself from a University catering for undergraduate students, including large numbers of externally based students, to a major research and postgraduate training institution, while maintaining its commitment to undergraduate teaching and learning, reflected in its ability to attract the overwhelming majority of the State’s most able students. It has over 25,000 students, including 5,000 postgraduates, with 4,800 staff divided almost equally between research and teaching staff, and general staff. The main University campus is at St Lucia in the western suburbs of Brisbane, with several smaller campuses scattered in hospitals and in country areas, specialising in medicine, dentistry, agriculture and veterinary science. The University’s offerings cover most disciplinary areas, but there are particular strengths in the biological sciences, and in physical sciences and engineering.

The University of Queensland Library

The University of Queensland Library consists of decentralised information delivery from fourteen branches, ranging from Law and Architecture and Music, to the Biological Sciences and Physical Sciences and Engineering, located across all campuses, coupled with centralised library administration and support. The Library’s holdings exceed 1.7 million volumes, making it the largest library in Queensland, with 22,000 serial titles, and a video collection of 9,500. There is a staff of 265, and an annual budget of almost A\$19 million, of which 54% is devoted to staffing, 38% to library materials, and 8% to maintenance and equipment. The Library provides an extensive array of services, including traditional services like interlibrary loans and inquiry services, and more innovative services such as consultancy, training and coordination of academic staff development in the use and development of multimedia, and Internet training for academic staff and students.

The present University Librarian has held the post for just over two years, her predecessor having been there for twenty seven years. An external review of the Library was conducted shortly after the arrival of the new University Librarian. Numerous recommendations addressed a variety of changes - to facilities, staffing levels, organisation structures, service delivery and communication strategies. A new matrix organisation structure is being introduced at the senior management level, with

a greater focus on service delivery, and the Library has re-vamped its strategic plan, and developed a service slogan *We link people and information*.

The Library is maintaining its role as a storehouse and repository for information but moving to a greater client focus in its service delivery, focussing on partnerships with teaching Departments and research Centres within the University. The Library is developing electronic document delivery services, provides an ERL (Electronic Reference Library) for the networking across all campuses of over 150 CD-ROM services, and is currently installing as its new integrated library management system the III system provided by Innovative Interfaces. Library staff are increasingly involved in information skills training of both undergraduate and postgraduate students. Some of these courses are integrated into the curriculum and jointly designed and delivered by academic and library staff.

The Physical Sciences and Engineering Library is one of the largest branch libraries. With a staff of 18, and a budget of approximately \$329,000 for collection development, it provides a comprehensive range of information services to 3500 students and 650 staff from ten teaching departments, and staff from a number of major research centres. There is also a Multimedia Service (formerly known as the Audiovisual Service) which operates across the library system in a coordinating role, while focussing on services to the humanities and social sciences areas.

New Learning Environments

Learning environments have changed and are changing substantially within universities. Information technology is being used in new ways in teaching and learning; a customer orientation is being emphasised in the teaching and learning process, particularly in Australia with the increasing numbers of fee-based programs; the use of problem based learning and self-directed learning has increased, with less chalk and talk; the student population is very different from its counterpart ten years ago, and has vastly different school and college experiences; suggestions of common undergraduate/first year curricula are emerging, with post-graduate professional degrees being introduced; quality in the delivery of education programs is much touted; and life-long learning rather than initial career preparation is also a theme. Each of these factors is changing the delivery of educational programs, and the nature of the support services to be provided.

One might well argue who the customer is within the University. Is it the student who receives an education? The parent or other person footing the bill (in Australia this is very frequently the government)? The employing authority who is the recipient of the graduate? The professional group of whom the graduate becomes a part? The community at large? No matter how this question is answered, the application of total quality management, which is becoming more widely practiced in universities, has emphasised the learner, with an increasing demand for more effective educational experiences.

The learners themselves are changing, with increasing percentages of mature age students, women, and international students. Traditionally, undergraduate teaching has been delivered through lectures, tutorials, and where appropriate supported by practical exercises or laboratory experiences. A focus on the learner has seen the

introduction of resource-based, problem-based, self-directed and peer-assisted approaches, leading to a greater degree of learner control, a recognition of students' prior knowledge, and the active involvement of learners in problem identification and evaluation of outcomes. Students come to university with a variety of previous experiences, including their school education. While only a few schools in Australia currently mandate the use of personal computers, it is a growing trend. The growing availability of multimedia in schools, particularly with a number of government initiated programs to integrate information technology into all levels of education, together with the prevalence of computer games at home and in recreational facilities, means that students now come to university with a sophisticated range of educational experiences, and changing demands.

Today's graduates will be employed in jobs where high levels of computer literacy and the ability to use information intelligently are essential requirements. Federal and State governments in Australia are emphasising the need for a highly skilled workforce. Documents identifying key skills continue to emphasise information skills. An employee, in his/her chosen field, and therefore the student also, must be aware of the existence of information, be able to evaluate it, respond to it and in turn contribute to the creation of information. Universities must change, and indeed are changing, their teaching practices in relation to customer expectations.

The Growth of Information Technology

The significant changes occurring in the production of information need no explanation in this forum. There is steady movement away from print production, although no significant diminution as yet in the availability of printed outcomes. POP (Plain Old Print) is giving way to SNAITA (Sensitive New Age Information Technology Artefacts). The availability of CD-ROM databases and full-text databases on the Internet, particularly the World Wide Web, which include text, animation, sound, video, have added enormously to the range of offerings. Electronic journals and discussions groups on any and every subject, and the use of video-conferencing and e-mail have changed for ever the face of the information world. As the production of information changes, so too does the range of options for access and manipulation. Institutions must respond to new demands with more varied educational experiences which include student use of the new information products in all disciplines, basic information skills. These experiences must also exploit new information technologies for educational delivery.

Information Technology and the University

Many questions are being asked about the use of information technology within universities. *Why does it cost so much? Why aren't computers more widely used for teaching and learning? What kind of lecturers use computers for teaching? How effective is IT in learning? What are the major barriers to the use of IT in teaching and learning at Universities? Should the approach to IT be centralised or decentralised, mandated or voluntary?* (1),(2),(3) In general, universities have been slow to develop appropriate responses to the needs already identified in this paper. It would be fair to say that in Australia, the "sandstone" universities have been even slower.

Critical success factors for the effective and efficient integration of IT into higher education (2) have been identified as:

- formal institutional support for the adoption of IT in teaching and learning
- formal departmental support for the adoption of IT in teaching and learning
- awareness of and access to information regarding the educational potential of IT
- adequate levels of student and staff access to computing facilities
- high levels of academic staff and student information literacy skills

The findings of a study by Hirschbuhl and Faseyitan (4) to determine the requirements of faculty adoption of computers for instruction indicated that there is “no significant difference between computer adopters and non-adopters in their personal attributes of gender, rank and research commitment”. They further postulate “The bottom line is faculty should be trained in the use of computers and demonstrate willingness to adopt computers for instructional purposes before the university launches a technology project. Instructor training should include a specific focus on how to design instructional content for the intended media; this is especially true for multimedia projects as the requirements for integration video, audio, animations and graphics are fairly technical”. Short (5) has identified an approach which will enable instruction technology to realise its potential. He has suggested that core components for the curriculum should be targeted; differentiation be made between applications tools and courseware; champions of the cause be solicited; incentives provided; all participants be educated in appropriate skills; projects be modular, incremental and “doable”; and high priority be given to the production of generic modules.

A prime reason for the failure to adopt new approaches to teaching and learning is that there is often little incentive for staff to be innovative. Criteria for promotion and review and appraisal of academic staff have been based primarily on research and publishing, but increasingly are now also emphasising teaching, and also community service. Many universities have introduced awards for excellence in teaching. In Australia, CAUT (Committee for the Advancement of Teaching and Learning) has encouraged the development of new approaches to teaching, and also the implementation of IT in teaching. CAUT has funded the establishment of *Uniserve*, a set of clearinghouses for IT teaching programs in a number of subject areas. CAUT has provided travelling awards for excellent lecturers and also funded in its grants several programs which involved libraries in delivery of educational programs.

In the last three years in Australia, a Federal government initiative has been the award of additional funds to Universities on the basis of “quality”. With differing criteria each year, but with one year emphasising teaching and learning, institutions throughout the country have been assessed, and funds then awarded according to perceived levels of “quality”. Many institutions have used these funds to stimulate improvements within their own environments. The preparation for visits by teams of experts also frequently included the initiation of documents and the stimulation of internal discussion. Most Australian universities have teaching and learning committees and many have provided special funding for innovative teaching programs and the enhancement of teaching methods, particularly for the incorporation for multimedia into program delivery.

University of Queensland Responses to the New Learning Environments

The University of Queensland has completed a *Teaching and Learning Enhancement Plan* (6), which emphasises such areas as:

- exploration of non-traditional learning methods (eg problem and project based learning)
- use of innovative teaching methods
- use of new education technologies including information technology
- use of new information resources
- development and use of new resource materials
- use of innovative assessment methods
- development of evaluative process for determining quality.

The plan has been further enhanced by a *Multimedia Policy for Teaching and Learning* (7) which states that “One of the greatest impediments to successful adoption of multimedia and a low awareness among academic staff of its potential. Staff development is widely seen as necessary to raise the awareness of the majority and restrain the unrealistic expectations of an over-enthusiastic few”. The Library is not represented on the University’s Teaching and Learning Committee which was responsible for the production of the plan. Nevertheless, drafts were supplied to the University Librarian, and considerable input provided to the plan. Most of the suggestions provided were accepted. The role of the Library in terms of its involvement in the provision of training advice, consultancy and centralised provision of multimedia and electronic access facilities is outlined in this document.

Training of teaching staff to use IT in their teaching is a multi-dimensional undertaking. It is not something that can be carried out by the departments themselves or by solely those sections of universities whose responsibility is to provide for academic staff development. The skills are multi-dimensional and the planning, organisation and delivery of programs must be carried out by experts in different sections of the University. The appropriate locus of responsibility for the development of multimedia courseware can be debated. Costs of creation of multimedia materials are frequently uppermost in the minds of university administrators, and in the minds of teaching staff. Time spent on the creation of materials is time away from classroom participation and from research.

Creation of multimedia programs is analogous to the creation of textbooks. There are occasions when teaching staff write their own textbooks. More frequently, however, most academics use textbooks written by others, as well as additional readings, to support their instructional programs. So it is with multimedia. Some may wish to prepare their own materials. However, the skills and talents necessary for a successful multimedia program require a team of experts consisting of instructional designers, graphic artists, programmers, and content advisers. Teaching staff are the content experts. They will use commercially available products, others produced externally and made available on the Internet, and materials created in-house.

Involvement of Libraries in the Use and Development of Multimedia

The University of Queensland Library's mission statement is *we link people with information*. Many other libraries have similar wording in their mission statements eg *bringing people and information together*. The information may be in any format. The act of linking involves helping the clients access efficiently the information needed. In the new learning environment, the Library

- becomes “virtual”, providing resources, not just within the walls of the library, but where the client is, be it in the classroom, in office or home; “virtual universities” and “virtual degree” courses need “virtual” libraries too;
- provides access to networks, databases of electronic resources including multimedia;
- provides information, training and guidance in using the electronic resources;
- searches for, acquires and provides demonstration and evaluation copies of software;
- provides multimedia facilities in the library as central facilities for students to work independently or in groups;
- uses multimedia;
- links academic teaching, learning, research activities with the vast amount of resources available both locally and on the Internet;
- facilitates close collaboration with academic departments and service departments by undertaking joint projects for innovations in teaching, learning and research;
- collaborates with academic staff in training students to incorporate electronic resources into their learning;
- helps students and staff gain information literacy skills necessary for lifelong learning.

The increasing number of multimedia products available on the market has already been mentioned. Most of the early ones were suitable for high schools and general consumer market, but many universities are beginning to market their multimedia products designed specially for university courses, for example language teaching, statistics, microbiology, biochemistry, anatomy, and medicine. Clearing houses and coordinating centres such as CTI (Computers in Teaching Initiative in the U.K.) and the aforementioned Uniserve in Australia are aiming to coordinate these productions and advise academic staff of the availability and suitability of course related multimedia programs. Libraries are purchasing such products and making them available for use as well as providing access to resources on the World Wide Web.

It is not uncommon to find academic staff from different disciplines or within the same department being interested in the same multimedia products and using them in different ways in their curriculum. This is particularly true for interdisciplinary subjects. Librarians are in an ideal position to make the connections and provide the materials and services required. The materials are available for loan to staff and students for use on individual workstations in the library, on the library's or university's network or on the Web. Training and guidance in assisting academic staff, identify, locate and use the resources and provide the services and facilities required to deliver it to their students is the area where libraries and librarians have a major role to play.

Involvement of the University of Queensland Library in the Use and Development of Multimedia

The University of Queensland Library has assisted in the preparation of the planning documents for the University in the use of multimedia. The Library has also purchased a large range of multimedia products produced commercially. Some of these have been networked across the Library system. The availability of quality funds within the University sector in Australia has already been mentioned. Some of these funds were secured in 1995, and together with another grant, were used to construct a Multimedia Facility located within the Library, and supported by the University's Computer Centre and the university's Tertiary Education Institute, responsible for providing training to academic staff in their teaching. The facility constructed consists of a laboratory set up for training, as well as a laboratory containing PCs for use independently by students, who are using material purchased by the Library, as well as material prepared in-house for use, and material available on the Internet. Powermacs were installed, as well as authoring software for experimentation. Several other branch libraries have installed similar, but smaller installations.

Funds were also provided under "quality" for a flagship project to produce an innovative multimedia product. The Library assisted the Department of Psychology in the preparation of what proved to be a successful bid for funds for the production of an interactive multimedia program suitable for first year psychology. The Library was asked to coordinate another project from "quality" funds. This involved the preparation of a training program for faculty. This has been a highly successful three session program, and included a trade fair for the exhibition of multimedia products. An e-mail discussion group has also been formed among participants to maintain the momentum. The Library has also assisted in the preparation of applications for CAUT funds, and several other initiatives within the University, which are concerned with innovative teaching programs.

Introduction to Professional Engineering

The first year Engineering course at the University of Queensland was reviewed in 1994. A new subject, E9105, Introduction to Professional Engineering was introduced in 1995. The subject designed by staff of the five Engineering Departments, the Physical Sciences and Engineering Library staff and the Tertiary Education Institution, was designed to help bridge the transition from School to University while presenting students with an experience of what it is to be a professional engineer. It is based on a group project, in which the students work in groups of five or six under the guidance of a tutor, to conduct an investigation and report their findings. Each group works on one of five topics.

The topics in 1996 were:

- Mine water management systems for the Century Project
- What to do with Bagasse: turning a waste product into a by-product
- Water for South-East Queensland to 2050
- Innovative packaging of artificial joint components and tools
- Telecommunications services to a new suburb in Brisbane

The Library's aims for its contribution to the course were:

- to support the students in their work on their project, by enabling them to locate relevant information;
- to present the Library as a relevant and helpful place to find information.

Specific objectives were that students should have the following **skills**:

- understand a citation
- be able to search for known items in the catalogue
- be able to formulate a search strategy, for the online catalogue
- be able to use handbooks and reference materials
- be able to manage their own borrowing
- know how to get help
- be aware of the functions of an index, and be able to search an index successfully

and **attitudes**:

- be confident and feel competent, in using the library
- feel the library is relevant
- have a positive view of librarians

It was important to ensure that students were not frustrated in their project search. There was therefore a need to define well in advance the resources they would need, and acquire sufficient copies. Similarly, our existing CD-ROM databases, *Compendex* and *Inspec* were considered unsuitable as a relatively small proportion of material indexed is held. The level of *Applied Science and Technology Index (ASTI)* was assessed as more suitable and the percentage of indexed titles held was considerably higher. ASTI was therefore ordered and installed on the library network as an urgent priority. Some relevant references were supplied by the lecturers in charge of each topic, but many were identified by librarians.

Workbooks were written to give the students relevant information. In addition, library tours, a hands-on tutorial on the catalogue and ASTI were provided and librarians attended the student workshops during the first three weeks of the semester. Each workbook comprises a pathfinder to the particular topic, exercises in catalogue use, search strategy and index use and a copy of a relevant journal article as an example. The exercises together comprise the library assignment which must be submitted and is part of the course assessment. Some lecture time is set aside to focus students' attention on the role of information in their profession, and introduce them to electronic information resources, in particular the World Wide Web.

The Dean of Engineering gave a paper at a conference on "First Year Experience" on the new approach. His concluding remarks were, "One of the most exciting and pleasing aspects of the preparation for this subject has been the way in which it has been a collaborative effort by many academics, library staff, a senior engineering consultant, a higher education adviser and the tutors presenting the subject. This team approach mirrors the essential experience that we wish the students to have in the subject.(8)

Information Skills for Postgraduate Students

The need to teach advanced information skills to research postgraduate students had been identified as part of the University's Action Learning Program in 1994, involving staff from Biological Sciences areas and library staff. In the words of the Dean of Postgraduate Studies, the project served many purposes. It highlighted the difficulty many students face in accessing and managing enormous amounts of information that are now available electronically. It also drew attention to the need to do more across the University for all research students. The modules developed by the group were specifically designed for research students in Biological Sciences area. Based on this approach, objectives for a more general program were devised for other disciplinary areas. A team of library staff, frequently with a postgraduate student tutor plan, prepare and present the course. The sessions are all hands-on in a training facility with PCs accessing a variety of electronic resources. Printed material is provided to each participant. The modules for Engineering research students include:

- Introduction to Information skills. Organisation and dissemination of information and the types of services available to research postgraduate students;
- Databases: Compendex, ABI Inform, Inspec, Dissertation Abstracts. GeoRef or Chemical Abstracts is sometimes included, depending on the background of the students;
- Current Contents and Science Citation Index;
- Internet, World Wide Web and electronic conferences;
- use of Personal Reference databases (Papyrus and others)

The program consists of five two hour modules. It is widely advertised amongst postgraduate students by direct mail, notice boards and thesis supervisors. All courses are evaluated before and after delivery, and significant improvements in knowledge and skills have been noted.

Where to From Here?

The new learning environment being experienced at the University of Queensland and the new media now available have stimulated the development of a variety of effective partnerships between the Library and teaching departments within the University. These have ranged from the provision of additional resources to information skills programs provided by library staff and faculty which have ensured effective use of the new media, and more effective learning experiences for students. We are continuing to work with academics in the preparation of teaching materials. Projects not described in this paper include the scanning of architectural slides and the development of an appropriate interface; the development of a regional electronic document delivery program; the preparation of a problem-based postgraduate medical course; and new customer service initiatives. All partners have gained in the process. The Library has a much improved knowledge of the curriculum, leading to better service provision, academic staff have a greater knowledge of the potential use of the Library system and students have much improved learning experiences.

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Abbreviations

- CAUT** - Committee for the Advancement of Teaching and Learning
- CTI** - Computers in Teaching Initiative in the U.K.
- IT** - Information Technology