

Mixed mode education: implications for library user services

Judith Peacock and Michael Middleton

Condensed version of a paper presented at *ALIA DESIG Conference 'Shifting Sands: distance education in times of change'*, Wagga Wagga, December 1997

(Preprint of item published as refereed paper: Peacock, J., & Middleton, M. (1999). Mixed mode education: implications for library user services. *New Library World*, 100(1), 11-19. [ISSN: 0307-4803])

ABSTRACT

The Faculty of Information Technology at QUT does not formally carry out distance education for any of its courses. However, it has pursued a number of initiatives that have made it possible for students to carry out an increasing proportion of their coursework off-site. These initiatives include computer-managed learning, World Wide Web and CDROM delivery of administrative and educational materials, and most recently the development of an integrated learning environment (ILE) for electronic delivery. These developments have been complemented and supported by the QUT Library by means of different avenues of access to CDROMs, a regional electronic document delivery service (REDD), and an electronic reserve (E-Reserve) service. Issues associated with the operation and evaluation of such facilities are described, and future library role in educational delivery are discussed.

KEYWORDS

Distance learning; University libraries; Library services; Library users; Librarians; Queensland University of Technology; Education

AUTHORS

Judy Peacock is a Faculty Liaison Librarian, and Michael Middleton teaches in the School of Information Systems at the Queensland University of Technology in Brisbane, Australia

*(For correspondence: Judy Peacock, QUT Gardens Point Campus Library, 2 George Street Brisbane, QLD, Australia, j.peacock@qut.edu.au +61 7 38642988)

ACKNOWLEDGEMENTS

We thank Judy Stokker, Sarah Fredline, Jane Turnbull, Steven Imber, and Selina Keogh of the QUT Library staff for assistance with procedural and statistical data.

Mixed mode education: implications for library user services

INTRODUCTION

The upheaval in tertiary education in the last decade has been influenced by many factors, one of which is the increasing role being played by information technology. Computer-assisted instruction has been implemented in a variety of ways, and has gained more prominence through delivery within telecommunications networks to support distance learning.

Distance education presents a major challenge to tertiary education, however, current technological innovations are providing an avenue by which many of previous impediments to efficient provision of distance education may be overcome. Such innovations, however, also come with their own set of obstacles.

Issues that must be tackled include the changing role to be played by academic staff in expediting the innovation, together with the role of facilities that support the production and delivery of content such as educational television, multimedia facilities and library services.

This paper focuses on the library of the Queensland University of Technology, and the manner in which services are being developed with the assistance of information technology. We look at the particular teaching area of information technology, which at QUT has not been taught in distance education mode, and consider how the delivery mechanisms in that area are nevertheless becoming distance-independent, so that teaching is in mixed mode.

REVIEW

Use of information technology in teaching has been the subject of extensive academic analysis, particularly since the widespread availability of personal computers. The need for computer literacy in an information society has meant that learning to use computers is generally accepted as an educational imperative - one of the generic attributes. Using computers to learn is not embraced by educators with the same felicity.

Proponents point to the ability to present simulations that would not otherwise be possible, the ability to self-test, the ability to turn to associated resources to widen horizons, and the ability to review material repeatedly from different angles of analysis. The Cassandras are able to point to the reliance on electronic power, the depersonalisation of learning, the

misconception that learning should always be entertainment, and the inability to consolidate models with reality.

Nevertheless, a generation that has come through the schooling system with computers in the classroom (to a greater or lesser extent) and, with numerous studies supporting the learning outcomes (Crook, 1994, p. 7), has an expectation of integrated technological support for education. Social study of early computer-intensive campuses (Kiesler & Sproull, 1987) has presaged the support at administrative, resource support and instructional levels that we now approach.

This is not to say that the instructional support has been embraced wholeheartedly. A recent study (Hesketh *et al.*, 1996) found that though there are examples throughout the tertiary sector of creative and interesting ways in which technology has been used for teaching, there was little evidence of a consistent move toward informed use of new technologies. Most developments have been related to individual enthusiasts or small groups with expertise. Stedman (1995) also noted that development of teaching technology had been largely driven by interested individuals, but with relatively little penetration into mainstream delivery.

He contended that innovative methods of teaching and learning, would be essential for any university that wished to position itself as a leader in the next century. Others such as Bates (1996, 1997) have promoted the information technologies as providing a learner-centred approach with better quality interaction, although he has noted that distance learners have far greater technological obstacles to overcome than the campus-based student.

Stedman also foresees a more student-centred approach facilitated by use of learning technologies such as electronic learning support, access to learning centres, CD-ROMs, and use of broadband services, together with a reliance on traditional services such as the study package and residential school.

The role of the library as part of the infrastructure that supports distance education has long been a concern of the library profession (Slade & Kascus, 1996). As distance education begins to take advantage of improvements in telecommunications technology, and in particular, the Internet, the support factor role is being re-assessed. Wilson (1995: 22) argues that the provision of library service to all individuals directly involved with academic courses offered away from the traditional academic campus should be equivalent

to that provided for on campus students. Yet distant students are still disadvantaged with respect to library services (Besser 1996: 819; Heery, 1996: 10; Liebscher & McCaffrey, 1996: 385). Heery sees that academic libraries will face the challenge of distance learning in a spirit of positive determination, buoyed by the expectation that the parent institution is more likely to provide resources to library services when particular strategies are assisting in finding solutions to institutional problems.

DELIVERY OF EDUCATION

Earlier, we referred to the issue of using computers to learn, as opposed to learning to use computers. Much use of educational technology has been carried out as a result of a fascination for the technology, rather than applying it to improve the learning process. This has led to jaundiced views by some academics of the educational utility of IT.

However, the convergence of telecommunications and computing has made possible the delivery of information in electronic form to which the student was formerly referred in repositories, principally the library. Software has also created opportunities for substituting classroom and laboratory interaction. As a result, we have seen witnessed the development of computer-mediated communication (CMC), and promotion of ideas such as empowerment (O'Hagan, 1995, Berge & Collins, 1995) to describe the greater autonomy now available to the learner.

The question remains, does the use of convergent technology result in improved educational effectiveness. Even prior to the application of the World Wide Web, was confident that this was the case He concluded that use of communications and information technologies 'is at least as good, and in some instances better, than face-to-face programs in terms of both student satisfaction and achievement, and staff perception' (Lundin, 1993: 13)..

Since then, Internet availability has become pervasive in higher education. The CMC that it facilitates makes possible the integrated use of:

- Notes for course content using presentation and word-processing software with associated viewers
- Distribution of assignments
- Administrative information relating to courses

- Collaboration between students
- Discussion in interactive tutorial mode or in delayed form through discussion lists or email
- Simulated environments such as Multiple User Domains (MUDs)
- Graphical models that may be tested with varying parameters
- Self-testing with answer provision
- Links to relevant material at other institutions, or to databases of reference or full-text material
- Interconnection to document delivery services
- Mentoring
- Conferencing

The delivery of education, rather than the mere delivery of information, is increasingly supportable, including provision of mediated access to historical material through digital repositories. Library services in tertiary education are now working within a different educational model. They have the challenge of successfully maintaining legacy systems and embracing new systems that support learning.

PROFILE OF QUT LIBRARY SERVICES

Like many universities, QUT is a multicampus institution, supporting eight faculties across three campuses with a student base of approximately 30 000. The Library, by necessity, is also multi-campus, consisting of four branches servicing these campuses. Although unified by common policies, each library demonstrates a degree of autonomy, particularly regarding maintenance of collections specific to each campus' client-group, varying staffing and service levels, and opening hours.

The Gardens Point Branch Library, based on the city centre campus, serves as the model for this paper as it has been in this library that many of the technological initiatives have been trialed.

Library Services - a traditional perspective

QUT Library follows the pattern of most academic libraries, providing reference and lending services to staff and students of the university.

Reference & Liaison Services

QUT Library aims to promote strong, collaborative links between the Library and faculties based upon the premise that such links are essential to ensuring effective and timely responses to the needs of staff and students. To ensure open and responsive lines of communication, teams of subject-specialist reference librarians spearhead the Library's reference services. These librarians maintain close liaison with designated faculties, and constitute the support base for each faculty's undergraduate and postgraduate students needs, and the teaching and research of the academic staff. Such support includes provision of generic and specialised user education classes, representation at various committees and school meetings and individualised research support, as well as ongoing collection development and evaluation.

The External Library Service offered by the library recognises that the remoteness of distance education students is not always due to their physical distance from the University, but may be due to commitments which prevent them from attending university on a regular basis (Brinkley & OFarrell, 1995: 540). It is dedicated to providing for the resource needs of QUT's external students who are unable to use the libraries in person for reasons of remoteness, disability or some other circumstances, and services a client group of approximately 3 000. The unit supports an independent collection of multiple resources to facilitate rapid response to requests. Materials not held by QUT Library can be obtained for external postgraduate students from other libraries via the Document Delivery Service. Requests may be faxed, mailed or emailed for any of the external library services required.

Lending Services

The Library supports a closed reserve collection in each branch library, commonly known as the Limited Access Collection (LAC). This comprises a collection of heavily used materials and includes books and other items from the Library's collection, as well as photocopied material and lecturers' notes" (QUT Library, 1997). Maintained by lending services staff, it is a collection that suffers the effects of heavy usage, involving extensive and expensive maintenance to ensure currency and availability of materials. A document delivery service is also provided for clients for materials related to QUT teaching and research which are not held by the Library.

Library Services - an evolutionary process

In recent times, traditional services have been extended and diversified with the influence

of various technological advancements. Although changes have often been reactive, and occasionally hindered the opportunity of thorough consultation with relevant stakeholders, the Library has consistently sought to engage the faculties in the decision-making processes involved in initiating new services and developing current services.

The integration of technology into established methods of operation has produced some positive and unexpected outcomes. Some of the innovations now integrated into the day-to-day operations of QUT Library have resulted in a reassessment of traditional methods and resulted in extended, decentralised services, many of which favour the distance learner.

Reference and Liaison Services

External Library Services

Current services provided by the ELS unit have been adapted accordingly, with emphasis on alterations to administrative procedures and information provision. Many of the services traditionally provided exclusively by this unit are now inadvertently provided, or supported, by those other sections within the library that have extended their services via electronic means. External students, for example, now have comprehensive access to bibliographic databases, allowing for a degree of autonomy in satisfying information needs.

Extensive use is made of email and the World Wide Web (WWW) to link clients to information and assistance. Plans for further WWW-based developments include utilisation of the Library's E-Reserve and an electronic document delivery service.

Although a relatively small number of external students currently make use of the electronic services provided by the unit, the impact of technology upon the role of the ELS and its incorporated procedures has been significant. With continued emphasis in the wider educational arena on electronic delivery of information, the Internet-based services, in tandem with traditional provision of services, will continue to dictate a focus for the service for some time to come.

Electronic Databases

Extensive use has been made of existing networks to provide a comprehensive selection of electronic databases to all Library client groups.

Access to the databases is via the Library's [WWW page](#), which provides a keyword search facility and browsable subject and alphabetical listings. Comprehensive information regarding specific Internet services provided via the WWW or telnet is also available from this source.

The services have not been immune to importunate difficulties. Legal and security issues typically have involved complications over user authentication procedures and licensing agreements. Concerns regarding equipment and networking requirements have encompassed increased costs of new and replacement hardware, both for the Library and for users; software management and maintenance; and network efficiency and maintenance. Support issues have primarily ranged from ensuring adequate levels of staff expertise and training to providing timely and effective training for, and technical support to, users. For the distance learner, some of these issues become more complex and the solutions less forthcoming.

However, potential solutions are constantly in train. Future projects comprise online tutorials, increased bandwidth, and expansion of network and server capacity. Furthermore, in order to regulate escalating access costs, QUT Library strategically participates in collective purchasing and access partnerships with other relevant universities and via the Council of Australian University Librarians (CAUL) initiatives. As this practice becomes increasingly commonplace and the processes standardised, it is clear that electronic delivery of information resources will be of a substantial and sustained benefit to non-campus based users.

Electronic Reference Service

Although opening hours are extensive, the library perceived a need for additional reference assistance to those clients who, for varying reasons, were unable to attend the library. Accordingly, the Library undertook the implementation of an Electronic Reference Service (ERS) utilising the medium of electronic mail to provide 24 hour response turnaround to posted queries. Although usage of the service has been irregular, the service is still provided to users.

Researchers' Centre

The recent establishment of a Researchers' Centre in the Library for research staff and students provides ready access to the subject librarians and promotes extensive, individualised research assistance. Facilities in the Centre include workstations with access to electronic information sources including the Internet, lounge areas, meeting

rooms and a small collection of reference materials. Although the facility remains campus-based, it provides a quiet and supportive study space for postgraduate students visiting the campus on an intermittent or short-term basis.

Lending Services

Electronic Reserve

The Electronic Reserve Collection (E-Reserve) is a collection of non-book materials accessible via the Internet to students and staff of QUT from the Library's WWW homepage. Its purpose is to supplement the current physical Reserve Collection for most faculties. At present, the E-Reserve consists only of original material such as lecture notes and presentations, with the recent addition of past exam papers. Although original proposals incorporated strategies for inclusion of copyright material, legal constraints have determined that such material has not yet been included.

All items in this E-Reserve are converted to Portable Document Format (PDF) and are accepted in a wide variety of original formats, such as Postscript, Word Perfect and Powerpoint. The system employs current Internet technologies; mounted on a local server and with a WWW interface, it provides a forms-based approach to searching for required documents, allowing access via unit code and/or lecturer's name.

The E-Reserve Project was developed to provide simultaneous access to high use materials from multiple access points and capitalised on web-based technology developing at the time. It was perceived that there would be secondary benefits such as reductions in the physical space required to house the collection, the numbers of students located in the area at various times during semester, and staff time dedicated to general maintenance of the collection.

A critical issue for students using the E-Reserve while studying off-campus has been the issue of particular network security procedures endorsed by QUT's Computing Services. Due to security implications, external access by those students using private Internet service providers, rather than the University's QuestNet service, was limited and dictated a low incidence of external access. Additional complications include the current copyright legislation and consistent costs of hardware upgrades and increasing telecommunications charges, often excluding a proportion of students from access to the service. While these issues remain unresolved, the technology

only marginally benefits external students.

Electronic Document Delivery

QUT Library has been involved in the collaborative establishment of the Regional Document Delivery Project (REDD), an electronic document delivery system which uses email and WWW technology to send documents and document requests via the Internet.

REDD aims to facilitate research by providing the rapid request and delivery of materials in the collaborating institutions, to develop a document delivery prototype which can be used by other institutions, and to deliver scanned documents to the client's desktop via email [Stage 2] (Collins & Gurney, 1996). Requests may be lodged using standard print forms, or placed electronically using the appropriate links from the QUT Library WWW homepage.

All requestors are notified via email, internal mail or phone and delivery to the user of requested material currently varies according to the tertiary position held by the requestor. At this stage of the project, provision has not been made for delivery to students studying off-campus, unless individual arrangements within the faculties have been organised.

The service will be enhanced by Stage 2, which highlights desktop delivery to the client.

To ensure that students studying at a distance are not further disadvantaged by the implementation of such a service, the Library has endeavoured to streamline the processes involved and supplement students' existing individual knowledge and technical skills. It is also recognised that there must continue to be extensive liaison between the library and its clients, as well as comprehensive publicity concerning the technical and procedural requirements of the service. Consequently, the Document Delivery sections of each branch and the relevant liaison librarians provide extensive assistance and technical support..

Academic and student communities have enthusiastically received the electronic document delivery service. The success of the service at QUT Library has been largely due to the collaboration of the relevant parties operating with a high level of expertise and a willingness to adapt new technologies to work processes. It is hoped that the primary beneficiaries of Stage 2 will be distance education students.

FACULTY EDUCATIONAL SUPPORT

The Faculty of Information Technology (FIT) includes three, together with a number of research concentrations. FIT makes some use of university-wide computer network infrastructure; however, most computing within the Faculty is carried out on its own computing networks which include both student and staff servers.

While FIT is presently developing a professional graduate program for flexible delivery, the Faculty has not been involved in QUT's distance education programs. However, there has been a long-standing aspiration to provide a seamless interface to those teaching, learning and research materials that are accessed electronically.

Faculty development grants

The development of the electronic delivery and mediated communication environment has been assisted by teaching, learning and technology grants that have been used to evolve:

- administration of computer-managed testing with a Learning Management System
- a multi-platform database for teaching and learning materials
- computer-mediated delivery of multimedia learning and information materials
- FRILL: the Faculty Resource Interface Link to Locations, essentially a project to develop a mode of operation for Web-based delivery of Faculty course materials.
- a compact disk that provides vocational information about information technology to potential and incoming students.
- ILE: Integrated Learning Environment project

The earlier projects, despite being carried out in a piecemeal fashion, have demonstrated the feasibility of using a variety of applications for delivery of administrative information and educational materials to students.

The current ILE project is endeavouring to bring this material together in such a way that it either supports now, or is being developed to support, the range of facilities itemised in

Section 3. It is moving towards a 'one-stop-shop' for student information needs for both learning materials and course infrastructure. It also acts as an umbrella project for a range of individual delivery mechanisms being developed independently by staff. These range from sound file delivery of taped lecture material, to development by students of personal multimedia environments as part of group projects.

ILE and Computer-Mediated Communication

The umbrella ILE environment is developed from word-processed Study Guides in standard form for Faculty subjects. These are converted to static hypertext form on the Web. The same Guides are duplicated to produce active' guides for use by FIT staff and students. These versions of the Guides incorporate links created during semester to relevant references that are on the Internet, and to other material and systems such as listservers or newsgroups initiated for the individual subjects. The same guides are also used to link to the Faculty's Student Information System database (FITSIS) that may be used to display material which changes during a semester, such as student enrolments for a class, staff consultation hours and assignment due dates.

The ILE presents both a [public interface](#) providing for perusal of static Study Guides, and a personalised interface following login. The latter is structured to allow students logging in to connect to the subjects in which they are enrolled. In addition to the Study Guide for a subject, the interface also provides for access to weekly lecture presentations from both presentation software and word-processed notes formatted for standard viewers.

Although all Study Guides are available online, the associated learning materials are being progressively developed. Most emphasis to date has been placed on first year subjects in order to provide alternative flexible delivery to large classes. This includes examination material with solutions, tutorial assignments and solutions, links to software for testing and self-instruction, and links to supporting WWW pages such as the site for PASS (Peer-Assisted Study Sessions). Email, on a one-to-one basis and a class distribution basis, is used for communication in conjunction with the ILE subject pages. However, some staff have complemented this with additional material such as online discussion groups rather than face-to-face tutorials, or threads pursued on dedicated newsgroups.

Students are currently provided with a CDROM that contains instructional as well as vocational, administrative and policy information. Equipped with appropriate communication equipment at home, students can move directly from CD to online equivalent material on the ILE.

The delivery mechanisms are many and varied and effective ways of administering them via a coherent interface are still being developed. For example, FIT staff make use of the Library's E-Reserve service that provides a simple and established method by which to convert existing material in several formats.

As the ability to deliver information becomes increasingly independent of site, the role of the Library in improving the avenues to information, rather than acting as a repository, becomes increasingly important.

CHANGING ROLE OF THE LIBRARY

Academic libraries have long pioneered integration of new technologies into existing services to address clients' needs, and will continue to do so. However, they must now consider how to best alter services to accommodate distance students (Besser; 1996: 819) and continue to remain flexible in order to adapt new technologies which will provide appropriate and comprehensive support suitable to the clients needs, regardless of students' vicinity to the physical campus.

Libraries must maintain an awareness of global changes and local trends and offer services that serve to support the decisions of the parent institution. As George & Love (1995: 131) stress, libraries "need to be conceived as part of the fabric of the educational process rather than as a service provider...[requiring]... a closer relationship between academic staff teaching in the field and librarians managing the resources." Given the diversity of students needs, and with an increasing emphasis on flexible delivery, there is also a greater need for libraries to embrace the concept that services offered to distance education students need no longer diverge from services offered to all students. In order to cement their place in the organisational processes and be included in decision making processes, libraries must provide for a "staff structure that is designed to facilitate contact between library staff and academic staff" (Heery; 1996: 13). There becomes a stronger need for libraries to develop strong alliances with staff within faculties, as demonstrated by the relationships developed between the Faculty of Information Technology and QUT Library.

There is also a need to secure an equitable balance for funding between the stakeholders, and in particular those departments responsible for content (the Library) and those essentially involved in delivery, such as Computing Services.

The challenge is there to continue to reassess the viability of 'traditional' services provided

in 'traditional' modes, to reassess the nature of the client group and to pursue this shared responsibility of support. Libraries need to strengthen alliances with other libraries, including those within the public and special arena, and be prepared to extend the physical walls to encompass other support services and collections.

Library policies must reflect an understanding of the student as individual as well as an awareness of group needs, and must allow for flexibility in standard processes and procedures. They need also to actively participate in global policy decisions which may have direct impact upon provision of distance courses, monitoring trends and changes and providing active support to associated peak bodies. Libraries, in particular, will need to participate in the copyright and intellectual property debate, to ensure that changes to legislation are both workable and compatible with the goals of the academic institution. In order to raise the information competency levels of library users, libraries have long provided user education or bibliographic instruction.

User education is offered to on-campus students on an individual or class basis enhanced by the provision of print guides and electronic tools, such as CDROM tutorials. For the off-campus user, the emphasis shifts to reliance upon electronic delivery of instruction. However, it will continue to be vital to augment electronic offerings, whenever possible, with direct personal interactions. This may include such strategies as the adoption of various models of flexible delivery whereby face-to-face teaching and instruction may be provided in short blocks at strategic periods throughout the academic year, either at the home campus or at regional support centre.

Optimum use must be made of the skills and expertise of subject-specialist librarians to address users' skill levels and training needs to ensure that users make maximum use of the resources at their disposal. Likewise, libraries will also need to continue to provide appropriate levels of training using creative and adaptable methods of delivery, utilising existing technological infrastructures in order to continue to respond to the curriculum and provide course-integrated library instruction.

There remains the perennial issue of equity of access. Rising telecommunications charges, increased emphasis upon flexible delivery and a decline in print equivalents of journals and bibliographic services challenge the long-defended ideology of information freely available to all. This issue must continue to be of a primary concern and librarians must continue to monitor, and challenge if necessary, developments in the delivery of information.

Librarians committed to providing information services to all users, regardless of study mode or relative proximity to the home institution, need to adapt to local and global educational and technological trends. They must conceptualise adaptable strategies and integrate the best of traditional services with the best of the new to ensure comprehensive provision of service. They must maintain current awareness and become actively involved in the technology process, such as web page design, electronic resources design and establishing metainformation.. This may require looking beyond

current traditional continuing education.

As those interested in developing services to non-traditional users, librarians must be able to work with, and be committed to learning from, those groups who may offer various levels of knowledge and expertise in related disciplines. This role may include collaboration with academics to identify and evaluate information with the view to establishing metainformation. Traditionally a fundamental role of cataloguing, the creation of resource WWW sites specific to course curriculum will ensure valuable longstanding partnerships with the academics, along with computing services and educational technology units.

Development of cooperative partnerships must also extend beyond institutional walls to other libraries, thereby allowing for effective and productive extended support services for distance education students.

CONCLUSION

Tertiary institutions are moving with determination towards flexible delivery, ensuring an increased focus upon provision of non-traditional services. While QUT has long supported a small number of external units of study, resources have been minimal and support services inconsistent in their approach. FIT, which has no formal infrastructure in place to support distance education, is nevertheless providing a great deal of instructional material for off-campus use. Many associated library services have proved also to be highly effective and timely in their implementation, while others have required concentrated effort to ensure their continued viability. QUT Library has subsequently implemented a range of new services that attempt to extend the library beyond campus boundaries, and courses offered in flexible delivery mode will be supported irrespective of whether students are enrolled in external mode.

The library has capitalised on the technological infrastructure currently available within the institution. This has been built upon to support the specific services the library

provides, such as access to electronic databases via Internet pathways. This development has demanded a diligent approach to technical support, precipitated by an underlying belief that effective user support is that which ensures that the technology remains as transparent as possible..

The extension of existing services comes at a financial cost. It remains the responsibility of the parent institution to ensure that the increased expense of providing additional and extended services does not outweigh the advantages of providing courses off-campus. If units of study are to be provided in external and/or flexible modes, various strategies must be implemented to offset the additional costs to the library and to students. The institution needs also to be conscious of global changes which may impact economically upon service provision, such as proposed changes to telecommunications charging for Internet access, and prepare accordingly.

A crucial strategy in the future will be to continue to secure and develop partnerships with faculties, addressing their differing needs in order to ensure that optimum services are provided to the appropriate clients at appropriate times. There also needs to be closer relationships forged with other libraries to enable students to access physical materials and assistance as required, and with electronic database vendors to ensure renegotiation of vendor contracts to allow for comprehensive delivery of commercial electronic services.

Libraries play a crucial role in curriculum design and delivery and must continue to take a flexible approach to provision of information resources to all clients. They are positioned to ensure that off-campus study can be a viable alternative to attending a campus and to demonstrate that location is not necessarily a distinct barrier to access. Ultimately, however, the onus remains upon parent institutions to ensure that new initiatives are given adequate support, both financial and infrastructural, to ensure that all students, regardless of study mode receive equal and timely access to the resources required to successfully complete their selected courses of study.

BIBLIOGRAPHY

- Bates, A. W. (1996, December), *The Impact of Technological Change on Open and Distance Learning*, <http://bates.cstudies.ubc.ca/brisbane.html>
- Bates, A. W. (1997, May), *Technology, Distance Education and National Development*, <http://bates.cstudies.ubc.ca/icde/icde.html>
- Berge, Z.L. & Collins, M.P. (Eds) (1995), *Computer Mediated Communication and the Online Classroom, Vols I-III*, Hampton Press, Cresskill, NJ.

- Besser, H. (1996), "Issues and challenges for the distance independent environment", *Journal of the American Society for Information Science*, Vol. 47 No.11, pp. 817-20.
- Brinkley, M. & OFarrell, J. (1995), "Delivery of library services to distance education students: the BIBDEL research project at Dublin City University Library, *Electronic Library*, Vol. 13 No. 6, pp. 539-546.
- Collins, G. & Gurney, K. (1996), *REDD: an electronic document delivery model for Australia*. AusWeb 96 poster, <http://130.102.42.183/reddlook/ausweb.htm>
- Crook, C. (1994), *Computers and the Collaborative Experience of Learning*, Routledge, London.
- George, R. & Love, A.(1995), "The culture of the library in open and distance education contexts", *Australian Academic and Research Libraries*, Vol. 26 No. 2, pp. 129-136.
- Heery, M. (1996), "Academic library services to non-traditional students", *Library Management*, Vol. 17 No. 5, pp. 3-13.
- Hesketh, B. et al (1996), *Computer-mediated Communication in University Teaching*, DEETYA, AGPS, Canberra. <http://www.deetya.gov.au/divisions/hed/operations/eip9611/front.htm>
- Kiesler, S. & Sproull, S.B. (Eds) (1987), *Computing and Change on Campus*, Cambridge University Press, Cambridge, UK
- Liebscher, P. & McCaffrey, N. (1996), "The visible college: library education at a Distance", *Journal of Education for Library and Information Science*, Vol. 37 No. 4, pp. 384-388.
- Lundin, R. (1993), *Overseas Experience in Non-traditional Modes of Delivery in Higher Education Using State-of-the-art Technologies*, AGPS, Canberra.
- O'Hagan, C. (1995), *Empowering Teachers and Learners through Technology*, SEDA, Birmingham. (SEDA Paper 90)
- QUT Library (1997) *Electronic Reserve Homepage*, <http://wwwlib.qut.edu.au/services/e-reserve/>
- Slade, A. L. & Kascus, M. A. (1996), *Library Services for Off-campus and Distance Education: the second annotated bibliography*, Libraries Unlimited, Englewood, CO.
- Stedman, L. (1995, August) *Technology in Teaching*, <http://www.qut.edu.au/ltd/qut/chan/dvc/tt/title.html>
- Wilson, A. (1995), "Education from a distance", *PNLA Quarterly*, Vol. 59 No. 2/3, pp. 22.