

# Choosing and Using Technologies in Education and Training

## ***Resources in Organisation Management and Change***

### Further Reading

#### **Bates, A. W.**

1997, 'The impact of technological change on open and distance learning', *Distance Education*, Vol. 18, No. 1, pp. 93-109.

Bates is a leading writer about technology-mediated education. Here he outlines the major structural and conceptual changes required in both dual mode and dedicated open learning institutions to achieve the most cost effective use of the new technologies.

#### **Boalch, Greg**

1996. ['WWW as an educational support medium: an Australian case study'](http://www.scu.edu.au/sponsored/ausweb/ausweb96/educn/boalch/). Paper presented at AusWeb96 conference, Southern Cross University. <http://www.scu.edu.au/sponsored/ausweb/ausweb96/educn/boalch/> Site accessed July 1997.

The paper describes the use of the Web as a support medium for an undergraduate Information Systems unit taken by over 1000 commerce students at Curtin University of Technology, in a 15 week semester. Students are given online access to their support material from any machine on campus or from home (some live over 2000 km away from the home campus in Perth). The study examined whether and how students used the Web material (a majority preferred to access information via the Web than to use paper-based sources), and implications for reduction in costs of running the unit (course administration improved).

#### **Browell, Sue**

1997, 'Open learning and multimedia - the legal issues', *Open Learning*, Vol. 12, No. 1, February, pp. 52-57.

Australia has a statutory licensing system which simplifies copyright clearance for most types of resource-based learning materials, but there are many complex issues of copyright and intellectual property in multimedia and online teaching which have not yet been solved. While its emphasis is the British legal situation, this article describes very well many of the issues managers and teachers in Australia should take into account in technology-mediated teaching.

#### **Brown, Stephen (ed.)**

1997, *Open and Distance Learning: Case Studies from Industry and Education*, London, Routledge.

A book aimed at educators and managers considering how to introduce forms of technology-based flexible learning into a conventional, face-to-face

setting, or grappling with the problems of doing so. It comprises 14 case studies from industry, commerce and education in Britain and Australia which show that the main issues tend to be related to human and educational factors rather than technical ones or even cost.

The case studies cover topics such as: costing models and investment strategies; user expectations and reactions; role of the tutor/trainer; methods of integration of technologies and flexible learning; leadership and the role of champions in introducing flexible learning; dissemination of expertise; staff development and student learning support systems; cultural change and vested interests; scalability and rates of change; evaluation strategies and techniques; collaboration and competition; and models for priority setting, planning and resource allocation. They also cover a range of old and new technologies, including print-based materials and video, stand-alone computer-based learning, and a variety of electronic and Web-based approaches.

The final chapter, by Stephen Brown, is a useful synthesis of the lessons learned in the diverse settings of the case studies, especially in relation to technology, human factors, and institutional cultural change. He argues that there is no one best practice, but each proposed innovation must take into account issues such as whether to set up an internal design and development team or outsource the specialist services; centralised versus distributed models of development and support; growth and integration of the innovation into the mainstream; learning support; and costing models.

### **Chambers, Ellie**

1994, 'Collaborative publishing in distance education: economics and  
*Economics of Distance Education*, eds. G. Dhanarajan, P. K. Ip,  
K. S. Yuen, & C. Swales, Hong Kong: Open Learning Institute Press.

Co-publishing of learning resources by institutions and commercial publishers is becoming more common as a way of improving quality, achieving cost effectiveness, and opening up new markets. Chambers outlines how the British Open University is pursuing this, and the effects on internal planning and restructuring of materials.

### Commonwealth of Learning

1997, 'Remote delivery of courses: guidelines for students and institutions',  
*Distance Education*, Vol. 18, No. 1, pp. 198-203.  
<http://www.col.org/>

The Commonwealth of Learning (COL) is an international agency fostering cooperation among Commonwealth nations in course development and delivery through the use of distance education and flexible learning. These guidelines are succinct pointers for students making decisions about enrolling in courses (especially those offered internationally), and institutions collaborating in developing and offering such courses. The bottom line is the quality of the education and training provided, and ensuring successful student outcomes.

**Cukier, Judith,**

1997, 'Cost-benefit analysis of telelearning: developing a methodology  
*Distance Education*, Vol. 18, no. 1, pp. 137-152.

A clear, easy to read, summary of the four main methodologies for cost-benefit analysis of technology-mediated education and training - values, mathematical models, comparative studies, and return on investment approaches - and an argument for an integrated methodology for evaluation of educational technologies.

**Flexible Delivery Working Party**

1993, *A Guide to Implementing Flexible Delivery*, Flexible Delivery Working Party, Brisbane.

A Guide for practitioners and managers on the issues which should be taken into account in implementing a flexible learning program. Each section includes a 'toolbox' (checklists, references, pro-formas, inventories and so on) to assist the user. Sections cover planning and management decisions and structures, staff development, determining the market and learners' needs, developing and delivery flexible courses, and administering flexible delivery. The Guide takes the learner as the key focus for each aspect of flexible delivery. It is one of six resources developed by the National Flexible Delivery Working Party and assists implementation of the National Training Reform Agenda.

**Flexible Delivery Working Party**

1993, *Appropriate Technologies for Flexible Delivery - a Decision Making Framework*, Flexible Delivery Working Party, Brisbane.

This package of book and computer discs provides a computer-assisted decision making framework to support managers and teachers in selecting appropriate technologies for the delivery of vocational education and training. The framework comprises a process which is not bound to any particular technology or learning outcomes, so that it may be used for emerging technologies and changing goals. The user is assisted to identify and act on choices, gains, risks and goals, and to review results. The package is one of six resources developed by the National Flexible Delivery Working Party and assists implementation of the National Training Reform Agenda.

**Flexible Delivery Working Party**

1993, *Cost Benefit for Flexible Delivery - Operating Manual*, Flexible Delivery Working Party, Brisbane.

A package of text and computer disks which is designed to assist providers of vocational education and training to implement approaches to teaching/learning which are flexible, cost-effective and responsive to the needs of clients. The user is guided through a process of identifying the context within which technology choice is made - including the institutional

and learning objectives and constraints - and then using the computer program to match these with appropriate technologies. The package is one of six resources developed by the National Flexible Delivery Working Party and assists implementation of the National Training Reform Agenda.

**Hesketh, Beryl, Gosper, Maree, Andrews, John & Sabaz, Mark**

1996, *Computer-mediated Communication in University Teaching*, Evaluations & Investigations Program, Department of Employment, Education, Training & Youth Affairs, Canberra, AGPS.

Report of a project to estimate the extent to which computer-mediated communication is likely to penetrate traditional instruction in the next 3-5 years, and to identify barriers to introduction of new technologies in higher education. It shows that, despite public rhetoric, 'there is no groundswell of movement towards the use of technology; only patches of enthusiasm', and proposes ways of resolving this. It will be of particular interest to educational managers developing policy and allocating resources in relation to electronic technologies for teaching/learning.

**James, Richard, & Beattie, Kate**

1995, *Expanding Option: Delivery Technologies and Postgraduate Coursework*, Evaluations & Investigations Program, Department of Employment, Education & Training, Canberra, AGPS.

This investigation of the practicalities of using various technologies and 'delivery' methods to create flexible and effective postgraduate learning environments is equally relevant to other areas of education and training. Practitioners will find particularly useful: Chapter 5 on delivery modes and practice - classroom interactions, computer-mediated communications and instructional techniques, audiovisual and print strategies, and other techniques. Managers will also find Chapter 8 on implementation and integration useful - covering administrative structures and support, cost comparisons, and copyright. Chapter 9 deals with changing teaching roles and staff development needs

**Lewis, Justus H. & Romiszowski, Alexander**

1996, November, '[Networking and the learning organisation: networking issues and scenarios for the 21st century](#)', *Journal of Instructional Science and Technology*, Vol. 1, No. 4.

<http://www.usq.edu.au/electpub/e-jist/vol1no4/lewis.htm> Site accessed June 1997.

The concept of the learning organisation which constantly updates the skills of its members and, in the process, is itself transformed, has become an important idea in management and planning theory in recent times. Lewis and Romiszowski apply this concept to distance and other educational institutions in Singapore, Europe and the Americas, which have taken up new technologies, especially those involving networking through computer-mediated communications (CMC). They argue that knowledge of the

technology is insufficient in itself for the kinds of organisational transformation desired, while the use of CMC in a learning environment changes the dynamics of the teaching/learning process and thence the decision-making and management processes which underpin it.

**Lundin, Roy**

1993, *Overseas Experience in Non-traditional Modes of Delivery in Higher Education using State-of-the-Art Technologies*, Occasional Paper Series, Department of Employment, Education & Training, Canberra, AGPS

A survey of best practice in North America, Europe and Asia, covering pressures leading to the projects being established, their effectiveness, the elements of 'best practice', major trends, and applicability to Australian education and training.

**Mason, Robin & Kaye, Anthony (eds.)**

1989. [Mindweave: Communication, Computers and Distance Education](#). Oxford, Pergamon Press.

<http://www-icdl.open.ac.uk/mindweave/mindweave.html>

A classic text, now out of print but available electronically for research/study purposes. The book comprises 20 chapters on a wide range of issues under the broad headings of themes and issues to do with computer-mediated communications (CMC) and distance education; computer conferencing and mass distance education; applications of CMC in education; and reflections on CMC as a medium for education.

**Moran, Louise**

1997, 'Flexible learning as university policy', in *Open and Distance Learning: Case Studies from Industry and Education*, ed. Stephen Brown, London: Routledge.

A case study of a whole-of-institution approach to converging face-to-face and distance methods. The aim is a comprehensive transformation of teaching and learning, in which the use of appropriate technologies and learning resources plays a key role. The study outlines strategies for corporate planning, quality assurance and management of the processes involved.

**National Board of Employment, Education and Training**

1995 (Nov.), *Converging Technology, Work and Learning*, Report to NBEET from Employment and Skills Formation Council, Canberra, AGPS.

A report on identification of the skills and attributes required by the workforce as a result of the growth in converging technologies. It includes a good brief review of technology developments, plus sections on the need to develop a 'learning society' and the role of the various education and training sectors in relation to technology convergence. Section 7 on linking technology with teaching and learning indicates the areas of information

literacy and professional development required by students and teachers alike.

**Oliver, Ron**

1995, *Networks Into the 21st Century: an Evaluation of the Western Australian Telecentre Network*. Report commissioned by the Western Australia Department of Training. Perth.

A comprehensive evaluation of a vibrant, highly successful organisation comprising (in 1995) 68 linked Telecentres providing enhanced access to education, training, communication and enterprise for rural communities in Western Australia. While the evaluation's purpose was to consider future organisational arrangements for the Network, the report also provides valuable data on how such access centres can/should be set up and run to support technology-mediated education and training in harmony with other entrepreneurial activities.

**Oliver, Ron & Grant, Mike**

1994, *Distance Education Technologies: a Review of Instructional Technologies for Distance Education and Open Learning*. Perth: InTech Research, Edith Cowan University.

A highly practical and very useable guide to the various instructional technologies that can be used to support distance teaching and flexible learning. Four groups of technology are outlined - telelearning (including various forms of television and teleconferencing); computer mediated communications; computer mediated instruction; and print and other 'hard copy' materials. Each section briefly describes the technology, its instructional applications and learning opportunities, its relative strengths and weaknesses as a delivery medium, the costs and equipment required to support its use, and information on groups and organisations able to provide services and assistance to providers of education and training.

**Rumble, Greville**

1997, *The Costs and Economics of Open and Distance Learning*, London, Kogan Page.

Rumble uses examples from around the world to dissect the costs and economics of flexible delivery, and builds on his earlier work in this area. He is one of the leading writers on distance education systems and economics, and this book will be of particular use to policy makers and program managers.

**Taylor, James, Kemp, James E., & Burgess, James V.**

1993, *Mixed-Mode Approaches to Industry Training: Staff Attitudes & Cost Effectiveness*, Evaluations & Investigations Program, Department of Employment, Education & Training, Canberra, AGPS.

An analysis of the cost effectiveness of a variety of teaching methods and

technologies in workplace-based industrial training provided by the University of Southern Queensland on contract to two organisations - the Queensland Fire Service, and Woodside Offshore Petroleum Pty. Ltd. It is one of the most comprehensive Australian cost effectiveness studies presently available.

**Taylor, Peter G., Lopez, Lucy & Quadrelli, Carol**

1996 (Dec.). [Flexibility, Technology and Academics' Practices: Tantalising Tales and Muddy Maps](#). Evaluations & Investigations Program, Department of Employment, Education, Training & Youth Affairs, Canberra, AGPS.  
<http://www.anu.edu.au/uniserve/eip/muddy/muddy.html> Site accessed August 1997.

A project which investigated the relationships between diversification in modes of delivery, use of information and communications technologies, and academics' teaching practices, and the context in which those practices are employed. The investigation used three sites in Brisbane - education and law at the Queensland University of Technology, and humanities at Griffith University. The project found that flexible modes of delivery can be educationally defensible and professionally satisfying, and that the attitudes and beliefs of academics, managers and support staff about teaching and learning can represent formidable barriers to change. The report proposes ways of creating conditions conducive to change. It also provides seven case studies drawn from the three sites.

**Tinkler, Don, Lepani, Barbara, & Mitchell, John**

1996, *Education and Technology Convergence*, Commissioned Report No. 43, National Board of Employment, Education & Training. Canberra, AGPS

NBEET commissioned this report as part of its examination of the nexus between employment, convergence of communications technologies, and the ability of the education and training systems to equip the workforce with the required knowledge and skills. The report focuses on three aspects. It provides an overview and assessment of the technological infrastructure used in the delivery of education and training, including availability and application of computing and communications technologies and technical support services. It identifies needs and opportunities for professional development and support of educators and trainers as a key priority. And it reports on strategies available and required to ensure maximum access for students, especially those in equity targeted groups. Notwithstanding rapid changes in the technological, if not the policy environment, the report is a valuable survey of what is happening 'on the ground', and the emerging problems and issues which policy makers and educators must deal with. Each area is illustrated with case studies

**Tinkler, Don, Smith, Tony, Ellyard, Peter, & Cohen, David**

1994, *Effectiveness and Potential of State-of-the-Art Technologies in the Delivery of Higher Education*, Occasional Paper Series, Department of Employment, Education and Training, Canberra, AGPS.

The technical 'state-of-the-art' has moved on since this report was published, but it continues to provide a valuable set of examples of good practice across a wide range of subjects and technology types, mainly from Australian universities. The report also canvasses at some depth the effectiveness and potential of computer-based technologies, and desirable frameworks for policy and budgetary initiatives.

**Yetton, Philip et al**

1996, *Managing the Introduction of Technology in the Delivery and Administration of Higher Education*, Evaluations & Investigations Program, Department of Employment, Education & Youth Affairs, Canberra, AGPS.

Report of a project conducted by a team coordinated by the Australian Graduate School of Management at the University of NSW. The project investigated how Australian universities are managing the introduction of technology to delivery and administer higher education, studying 12 universities in some detail, and another eight in follow-up studies. It examined five factors – strategy, developing new roles and skills in staff, management processes and evaluating IT investments, IT management structures, and managing change and IT integration, and outlines three emerging models of the university of the future.