

Forster, A., and Hewson, L. (1998). Universities learning: The lure of the net. In C. Latchem and F. Lockwood (Eds.), *Staff development in open and flexible learning* (pp. 221 – 231). London, UK.: Routledge.

# UNIVERSITIES LEARNING

## The lure of the Net

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It is ironic that universities and other educational organisations which support teaching, learning and research are so apparently resistant to change and, unlike the 'learning organisation' described by Peter Senge in his book *The Fifth Discipline*: '(where) people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together (Senge 1990: 3). In higher education, increasing differentiation has resulted in more competitive marketing of institutions and programmes with information technology identified as a core capability. Many institutions are investing heavily in upgrading their technology infrastructure and developing applications which will give them a competitive advantage.

This chapter is a response to the need for educational institutions to adapt and respond to the changing environment, in particular through developing the capacities of their staff. It focuses on the development of skills around the use of the Internet and how this process is in itself a means of developing a learning organisation, one which enables the flow of ideas and actions from all of its staff through participative management processes. Internet applications such as the Web provide both a mechanism and a metaphor for staff development strategies which will assist educational institutions in their efforts to reframe themselves for survival in the twenty-first century.

### **The lure of the Net**

The Internet has been promoted and commercialised primarily around its value as a distribution medium and publishing instrument. In education, the access to information databases, online catalogues and entire instructional programmes has been the driving application. This lure of the Net is a Potential trap, likely to reinforce the most didactic models of teaching and learning wherein information transmission, with the teacher in control, predominates.

(P)rofessors are fired up by the idea that all the world can access their ideas, their research, their wisdom through the World Wide Web - a passion to widen access to their teaching. This is not always accompanied by a similar passion to improve the quality of their teaching, as can be witnessed very easily by surfing their Web pages.

(Bates 1996: 6)

The Internet with the application of the Web provides an effective space for teaching and professional support staff to develop networked communities for sharing staff development practice and knowledge building. The inter-active features of the Internet for conferencing and collaborative learning require instructional methods such as problem-solving, games, multimedia and simulations to be developed for networked learning groups.

Knowledge communities, or communities of practice, facilitate social interaction between staff developers who are learning how to be effective agents of change. But practitioners of the new media require new metaphors - Why is it that the most common metaphor selected by designers of virtual classroom software has been the building, with rooms and doors? Negroponte (1995) makes some challenging statements which require creative responses from designers of learning spaces:

being digital allows the process, not just the product to be conveyed....

Thinking about multimedia needs to include ideas about the fluid movement from one medium to the next, saying the same thing in different ways, calling upon one human sense or another....

The harmonising effect of being digital is already apparent as previously partitioned disciplines and enterprises find themselves collaborating not competing.

(Negroponte 1995: 224, 72 and 230)

The key element of the new metaphor has to be participation, not just information or communication. It needs to be multidimensional and suggest the fluid movement from one medium to the next. The Internet itself is the metaphor, but only if it is understood and conveyed as the rich space it is. There is a new Generation of Internet interfaces and browsers under development which tries to create a new aesthetic and new metaphors for the building blocks, processes and relationships of the virtual community. SUN Microsystems (SUN 1996) have developed a network-based virtual space for learning. This distributed classroom allows several users to move about in a 2-D space (called 'Kansas'). Users can scroll their viewpoints across the vast surface, causing their rectangles to overlap in order to collaborate, or can move away from others to work alone. Similarly, Apple<sup>TM</sup>'s Hotsauce MCF and the Information Visualiser from Xerox<sup>TM</sup> (Hearst 1997) provide a 3-D space in which users develop and impose their own structures (meta content formats) on the Web according to their purposes and interests. The time will come when intelligent interfaces will do that for users by monitoring and learning user preferences and pre-empting needs - but these tools will only be possible when we can fully identify and express the processes, values and needs of the online learning community.

## **Developing knowledge communities: two examples of practice**

Ways of modelling a staff development knowledge community are illustrated by two examples: a virtual conference and a course leading to a formal qualification.

The virtual conference on the virtual university was run as part of TeleTeaching 96 (TT96), an IFIP conference (Forster 1996). It was designed to address the question 'Can the virtual university deliver real learning?' A panel of international experts and discussion leaders addressed this question and this initiative demonstrated how it was possible to create a 'virtual learning community', and link practitioners at various levels of expertise, across the globe. Each listserv had well over 100 members from all over the world. Most of these were silent members, receiving all postings but not participating actively, but this rate of participation mirrors the reality of large face-to-face groups. In addition, visitors to the Web site could read the archives of the discussions without subscribing. The virtual conference represented a staff development process wherein visitors could visit demonstration classrooms, read through course outlines and notes, view student projects, read position papers, explore student support services, network with other practitioners and participate in discussions ranging over a myriad issues.

For two months prior to the on-site conference, this virtual conference presented international best practice through the Virtual University Web site. Topics included strategies for change, new technologies, pedagogy and the re-engineered classroom, support services for students, research into collaborative learning and knowledge building, lessons learned and academic staff development.

Each topic was represented by a Web site developed by one of the invited presenters. Each Web site included a position paper and links to demonstration sites of online courses, resources, technologies and research. Participants were invited to explore the issues raised by the presenters by visiting the specially developed Web sites and then joining listserv discussion groups. These discussion groups were the source of questions and issues put to the panellists by the facilitators. The facilitators, like the presenters, were all invited specialists, with both research and practitioner experience. The international representation and high quality of these invited contributors was widely recognised and provided a world class event for TeleTeaching 96. The design effort and time commitment required to build the individual sites and to link relevant sites to the conference home page was supported by Opennet Pty Ltd. Opennet continues to maintain the site, which remains a rich source of pedagogical and theoretical resources for anyone searching the Web for ideas on the virtual university.

A more formalised example of the application of the Internet to staff development is found in the Information Technology for Teaching and Learning component of the Master's in Higher Education at the University of New South Wales PDC (UNSW). In this case, low student numbers, limited staff availability and a belief in the technology led to the creation of a different approach to the development of IT skills in university teachers. The Master's-level course was designed to be offered only online, and in so doing, to demonstrate the implications of this environment for both teachers and learners. The learners (all university lecturers) have to acquire the skills and attitudes to function online so that they can access the courseware. The package integrates Computer Mediated Communication (CMC) and a locally authored technology named WebTeach© which provides for Web-based distribution of course notes, resource

directories, online seminars, chats and quizzes, online submission of assignments and the publishing and sharing of projects within the group. The assignments involve a discipline-specific evaluation of Web sites for teaching, and the development and evaluation of a prototype inter-active teaching package. With student consent, all quality outcomes are archived for future groups to build a rich Web-based resource for staff development. Learners experience the medium from the perspective of both learner and teacher and are left with a dynamic resource to support them in their ongoing applications of IT to teaching. The success of this approach has led to the building and hyperlinking of similar resources in related areas of learning theory, educational technology and course review to address an increasing demand for staff development, and to model new methods of teaching.

More examples of the building of knowledge communities and their application to learning can be found at Betty Collis's site in the Netherlands and at several US sites, such as the Institute for Academic Technology and Hamline University. The distinguishing characteristic of these initiatives is their public, collaborative nature and their demonstration of networked staff development.; The universal resource locators (URLs) for these and other sites are provided at the end of this chapter.

### **Competencies for building knowledge communities**

So, what specific skills and competencies will people need in order to be effective staff developers and effective and confident members of the online learning community? Given the collective inexperience with this teaching environment, there are no proven methods for development. We can, however, begin from basics and identify the skills, knowledge and attitudes that will be necessary and recognise the prior learning of staff from which to build such competence.

Using language acquisition as an analogy, 'net literacy ' can be expressed as a continuum of skills and understandings ranging from pre-reading and reading, through to writing, and competency in authoring. Most would-be users need an agent to guide them through the acquisition of online literacy. However, it is not just the mastery of the language or the technology skills which determine effective use of the Web. These basic skills enable users to participate in a new social space. Once there, high-level competencies are required in the development of the content and the design of the communications to suit particular purposes.

Staff developers themselves must become competent authors or capable of serving in a competent authoring team if they are going to design and deliver programmes and know how to select and manage the appropriate training activities, presenters and technologies for this purpose. These specific network skills and knowledge will be in addition to the traditional instructional design skills needed to diagnose staff needs, identify competencies and prior learning, and match these to appropriate levels of training. Staff developers will also need to have the technical and pedagogical capacities to participate actively in the design and delivery of online staff development. Equally importantly, they will need to develop attitudes towards online learning that can sustain them in the dynamic of a shared, collaborative medium.

*Technical skills* are necessary for the implementation of teaching strategies and day-to-day functioning within the environment. Technological competency will change as the

physical form and functionality of the network evolves, and so the approach to the development of these skills needs to be flexible. In general, however, progress in hardware, software and interface design will effectively reduce the technical demands on users of the network and competency will be more easily acquired, maintained and updated.

*Pedagogical skills* represent a more fundamental set of competencies needed for the effective design of learning. With origins in instructional design, cognitive science and distance education, competencies are needed to bring learning theory to bear on the goals of achieving deep, self-directed learning and producing independent lifelong learners.

*Attitudes* that are needed to operate in such a global environment include a commitment to develop strategic networking skills, cultural awareness and reciprocal responsibility. Teachers, students and staff developers have to avoid being seen as cultural raiders or Internet pirates, out to loot the best sites and the most responsive classes. Users of the Web need to be sensitive to the issues involved in forging links with other groups and institutions, to the loads placed the learners and to the need to integrate this work with other classroom practices and schedules. Other sensitivities required in this new environment might include:

- acceptance of responsibility for a network presence ('netiquette');
- ownership of intellectual property and copyright in a collaborative system;
- issues of censorship, privacy and the right to know; and
- willingness to collaborate and contribute to group processes.

### **Progressive development strategies**

The majority of users need staff development strategies that recognise progressive levels of competence. These categories of staff technology competence have been variously labelled as novice > expert (Yetton and Associates 1997), aware > conversant > confident > competent (Tinkler *et al.* 1996) and naive > knowledgeable > *sophisticated* (Longstaffe *et al.* 1996). It can be argued that the lower end of the continuum constitutes core competencies essential for any user, while at the higher end a smaller number of users are able to author original instructional processes and be responsible leaders in the new environment. A range of staff development strategies are needed to identify and target these constituent groups and match provision to the immediate needs of each group. In her paper on resistance to computer use in tertiary institutions, McNaught (1995) suggests strategies for traditional 'institution-based' staff development that range from general awareness-raising activities, skills workshops and user groups through to detailed policy development processes. She advocates a mix of centralised, faculty-based and individual developmental activities. She also suggests the use of technology such as the Web and E-mail to provide self-access mechanisms supplementing the 'contact' strategies. These ideas suggest approaches for staff development for networked teaching.

Returning to the language acquisition metaphor, it is possible to conceive a staff development hierarchy of four levels of net literacy: awareness (pre-reading); conversance (reading); confidence (writing); and competence (authoring).

## **Awareness**

At the awareness stage, would-be users have heard about the technology and are interested in its potential application. They want to see it working and want to ask questions of others. At this stage, the staff developers seek to create interest and motivation, demonstrate the advantages of the medium and provide basic information in non-threatening and entertaining ways. Exhibitions, workshops, demonstrations, newsletters, datasheets are all appropriate strategies.

## **Conversance**

At the conversance level, the user has acquired the basic technical skills in the operation of equipment (client and server terminals), and has learned about the physical form of the network (how these units are inter-connected), the types of synchronous and asynchronous communication available to the teacher and learner (Internet, FTP, E-mail, CMC, listservs) and the functionality provided by these protocols (hyperlinking, searching, communicating, collaboration, inter-activity). The user is now familiar with the jargon.

The user requires access to the technology, guidance in the acquisition of skills to explore, navigate, store data, and examples of, and experience in, configuring browser plug-ins, FTP applications, E-mail, search engines, listservs, and Internet relay chats.

## **Confidence**

The confident user has begun to produce material for the network, design interaction with users, and integrate the network's functionality into all aspects of teaching and learning. Specifically, they have developed competencies in

- Hyper Text Markup Language (HTML) writing skills for the creation of network sites or the use of Web publishing software;
- instructional design and assessment;
- computer conferencing;
- using online audio and Video; and
- using CGIs (Common Gateway Interfaces) to link Web sites with traditional computer software, such as databases, simulations and spreadsheets.

The user requires access to 'fellow travellers' through user groups, special interest groups and newsgroups, and opportunities to collaborate with peers in sharing skills and knowledge, participate in Web-based learning, and create network products and processes within the safety of a developmental environment.

## **Competence**

At this highest level, users have been enabled to design and author total educational packages, analyse and evaluate networked products and processes and contribute critically to the processes of networked staff development. Specifically, competent users have acquired skills in

- the design and establishment of network servers;
- the operation of listservs and groupware;
- producing online audio and Video;
- inter-active authoring;
- acquisition and management of copyright;
- interface design;
- evaluation of network sources;
- project management;
- construction and specification of CGIs; and
- technical maintenance.

The user is afforded appropriate support for the design, creation, development, management and implementation of networked teaching and learning.

Competency can be at the individual or at the group level (a team of people with complementary expertise). The Web is a complex electronic and social domain employing multimedia, and so specialist skills such as interface design are not expected of staff developers. However, awareness of the characteristics of interface design, and the ways in which it can improve or impede effective interaction with the site, is a necessary understanding for competent authoring. Competence to judge when a specialist skill is required is one of the highest levels of achievement and, as with all published material, a team approach to Web development is the most likely to result in marketable, error-free and accessible documents and interactions and so competencies in teamwork are also called for.

## **Managing change**

The 'learning organisation' has the capacity to adapt to lead, and benefit from change, because its management processes assist all staff to have the necessary competencies. By contrast, while the application of technology to teaching and staff development can be driven by enthusiasts at the grassroots level, this will achieve little if management does not provide the vision, leadership and commitment. Staff development can target and address staff needs using a variety of traditional and online strategies, but there is a need simultaneously to influence the mind-set of managers to create the necessary policies and procedures and facilitate corporate moves into this networked model of staff development. The managers must be convinced of the imperative to transform the organisation and the ways in which it prepares its staff for their enterprise. Staff developers must begin by interpreting the institution's vision and its implications for the staff. The lure of the Net and its effective use as a component of institutional change

can be much more powerful if there are rewards and incentives to motivate people to participate in staff development programmes.

## **Conclusion**

The Internet and the Web are a powerful mechanism and a vital metaphor for transformation. Through these, universities and other institutions can learn how to adapt to the changing external and internal environments. They can empower intra-organisational communication and knowledge communities a interorganisational exchange and alliances. Universities which learn how to develop a 'collective aspiration' will achieve the results they desire. Understanding, how to harness this new technology as a tool for organisational transformation", requires that individuals are assisted, encouraged and eventually obliged to act. However, widespread literacy and application will not occur without substantial commitment, resources and support to address the currently high percentage of IT-illiterate and resistant individuals. Investing in staff development strategies which enable the powerful application of the Internet and the Web to teaching and in organisational growth and development is a low-risk strategy.

There is still much that we do not understand about the new technologies. The Internet is a new medium which requires analysis, reflection, trial and retrial. TV, was first described as radio with pictures; the Web has been described as a distribution medium for multimedia. More importantly, it is a new space for a new community wherein new-kinds of relationships and interactions are possible. It offers a vast range of resources and opportunities which must be managed within a framework that values the learning intention, defines the proposed outcomes and provides the design blueprint.

The lure of this technology lies in the fact that it is so easy to use. Its technical brilliance and Potential can certainty lead to superficiality and inefficiency, but used well, the technology can provide the means of transforming staff development, creating previously unachievable relationships and activities and helping universities and colleges not only to be great places to learn, but also great learning organisations.

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#### **Universal Resource Locators (URLs)**

HEPROC	<a href="http://trpubs.com/heproc/index.html">http://trpubs.com/heproc/index.html</a>
IFIP	<a href="http://www.acs.org.au/ifip96/tele.html">http://www.acs.org.au/ifip96/tele.html</a>
ISWorld Net	<a href="http://www.isworld.org/isworld.html">http://www.isworld.org/isworld.html</a>
Hotsauce MCF	<a href="http://mcf.research.apple.com/">http://mcf.research.apple.com/</a>
Kansas (SUN)	<a href="http://www.sun.com/edu/events/progs/kanas.html">http://www.sun.com/edu/events/progs/kanas.html</a>
Virtual University	<a href="http://www.openweb.net.au/TT96University/">http://www.openweb.net.au/TT96University/</a>
PDC(UNSW)	<a href="http://www.Pdc.unsw.edu.au/pg/">http://www.Pdc.unsw.edu.au/pg/</a>
Betty Collis's site	<a href="http://www.to.utwente.nl/user/ism/collis/home.htm">http://www.to.utwente.nl/user/ism/collis/home.htm</a>
Institute for Academic Technology	<a href="http://www.iat.unc.edu/">http://www.iat.unc.edu/</a>
Hamline University	<a href="http://www.hamline.edu/">http://www.hamline.edu/</a>