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# New Designs for Web Based Learning Environments

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## Abstract

*With the continued advances in information and communication technology comes the interconnectivity of education institutions, businesses and industries. Either by default or association, the traditional education system will need to change and adapt to these new demands and opportunities. With these changes we are in danger of losing the focus of the learning process, and not recognising the importance of maintaining a balance between technology and pedagogy. This paper will review these issues, and examine an investigation of new learning designs which take advantage of the affordances of the Web and the opportunities which arise.*

## Focus for the web

In today's society, greater demands are being placed on education systems at all levels to produce citizens who can use knowledge in new domains and different situations. Members of society at every level are being asked to demonstrate advanced levels of problem-solving skills to retain their level of employment. Learning to think critically, to find, analyse and synthesise information to solve problems in a variety of contexts and to work effectively in teams are crucial skills for modern employees and thus consistently appear as attributes of the graduate in the prospectus of many universities.

Whilst these demands are being expressed in a variety of contexts, strong claims are being made for the role of information and communication technologies in supporting learners in achieving these goals. Authors such as Joo (1999) are proposing that the possibilities for improving educational practices using the Internet seem to be boundless. Higher education institutions are seeking innovative ways to provide flexible courses through new media (Barnard, 1997) and the possible era of a truly inter-connected global schoolhouse (Knight, 1996) is no longer considered to be extreme in the age of technology-mediated learning and the transmission of information at the touch of a button.

One of the difficulties for higher education institutions is to develop an understanding of the focus of their endeavours, that is, how to we balance the demands of technology against the need for strong pedagogy. The technology is not universally seen as a panacea for our current educational systems woes. As long ago as 1984 Cuban warned "there should be a page in the Guinness Book of Records on failed ..... reforms, for few ever seem to have been incorporated into teachers' repertoires". Alfred Bork (1995) has argued in his critical review of the failure of computers in universities that the effective use of new instructional paradigms, supported by technology, requires a shift in instructor's pedagogical approaches

Additionally, many authors, such as, Hutchison, (1998), fear that institutions are rushing into this technological dimension too quickly. He warns that there is a need to think carefully about the implications of technology on society and specifically on higher education.

*'All aspects must be deliberated to ensure that we get the idea of virtual universities right in order to envelope the rapid expansion of the university sector and the ever growing dependence and recognition of formal qualifications.'*

Morrison (1999) shares this fear and debates whether something essential to higher education is being sacrificed when college and university courses take place on-line rather than on-campus. Hayes (1996) argues that "a catalogue of courses is not really a university", and it is simply not possible to learn the skills of teamwork and leadership, so vital in today's employment market, at a virtual university (Hayes, 1996).

Whilst the change predicted is transformational, and according to many writers, damage may be inevitable, a focus on the impact of IT on education not being detrimental to the education process must be maintained. Additionally, the focus on the web to support learning does raise a raft of additional issues not previously faced or fully resolved by tertiary institutions. Issues such as teleworking, ownership of intellectual property, transference of student management to the instructor, technology risk management, 24 hour service and access, etc. are being often overlooked or not recognised before implementation.

As Reeves and Reeves (1997) suggest, "despite all the interest, little research evidence exists to support claims for the effectiveness of Web-based instruction" (p. 59). One of the key issues appears to be the pace of change of emerging web technologies which is so rapid that learner-centred pedagogical models are urgently needed

(Bracewell et al., 1998). Gavriel Soloman (1998) has supported this concern and has noted that for the first time in history, technologies could be outpacing pedagogical and psychological rationale.

### **Learning Design Characteristics**

The speed and rapid growth of information and communications technologies (Moores Law, 1965) has enabled many new and exciting developments in the last few years or so, opening up new possibilities in all sorts of different fields, including higher education. On-line delivery is still of an embryonic nature (Morino Institute, 1994). However, evidence suggests that the maturation of on-line delivery is starting to be realised as innovators develop realistic pedagogical models (Britain & Liber, 1999). For example, a body of literature is now starting to report on innovative tools, with strong pedagogical underpinning. Bonk (1998) has reported on interactive tools for on-line portfolio feedback, profile commenting, and Web link rating, while Oliver and McLoughlin (1999) are building tools for on-line debate, reflection, concept mapping and student surveying and discussion. There is a determined effort in the research community to investigate the key issues which we will need to address if we are to match pedagogy with technology affordances. Research agendas will need to address issues such as; design models to support development teams in re-conceptualising traditional modes of instruction for on-line delivery; academic instructional design skills which are not well represented in higher education; information about the learner's experience and their needs in on-line mode; student preparation and supported through the initial stages of using on-line environments; options for specific groups; drop-out rates for distance education; cohesion in on-line delivery; resource implications for infrastructure, personnel, professional development and administration; comprehensive costing and cost-effectiveness studies

### **A Collaboration in Developing Learning Environments**

In this information age of global competition universities, both in the UK and abroad, Universities are moving into on-line delivery. In support of the need for a better understanding of moving quality student learning into this domain, the Digital Media Centre at the University of Wollongong, Edith Cowan University and the DELTA Institute, at the University of Wolverhampton, are working on a series of ideas to develop our understanding of moving academics forward in the design of learning ie attempting to move pedagogy forward to keep pace with the technology. The collaboration will build on an Australian University Teaching Committee project, *Information and Communication Technologies and Their Role in Flexible Learning*, being developed by the University of Wollongong and Edith Cowan University. The AUTC project is seeking to construct an evaluation framework for technology based learning products that can identify and articulate underpinning learning designs which have the potential for redevelopment outside the immediate context in the form of generic learning environments which can be adapted for use in different knowledge domains.

This collaboration will make use of the outcomes from development of the WOLF web environment, at the DELTA Institute, to investigate a series of exemplars which will illustrate the application of a number of the generic designs developed in the Australian project. The exemplars will attempt to address the less traditional learning designs, and illustrate the extended range of learning environments which the affordances of the Web offer. Additionally, the project will seek to incorporate additional media elements, such as broadband signals, into the designs.

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