

## Chapter 8.21

# The Emerging Use of E-Learning Environments in K-12 Education: Implications for School Decision Makers

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### **ABSTRACT**

Virtual learning environments (VLEs) and managed learning environments (MLEs) are emerging as popular and useful tools in a variety of educational contexts. Since the late 1990s a number of 'off-the-shelf' solutions have been produced. These have generally been targeted at the tertiary education sector. In the early years of the new millennium, we have seen increased interest in VLEs/MLEs in the primary and secondary education sectors. In this chapter, a brief overview of e-learning in the secondary and tertiary education sectors over the period from 1994 to 2004 is provided, leading to the more recent emergence of VLEs and MLEs. Three models of e-learning are explored. Examples of solutions from around the

world are considered in light of these definitions. Through the case of one school's journey towards an e-learning strategy, we look at the decisions and dilemmas facing schools and school authorities in developing their own VLE/MLE solutions.

### **INTRODUCTION**

The history of adoption of technological innovations in schools is characterised by a mixture of enthusiasm and apprehension. The adoption of information and communications technology (ICT) in schools is no exception. Governments, educational authorities, individual schools, and educationalists have recognised the tremendous potential of ICT to transform teaching and learn-

ing. At the same time, there has been a collective intake of breath as social, financial, industrial, political, pedagogical, and logistical implications have emerged (Cuban, 2000). Increasingly, ICT literacy is a requirement in the K-12 education sector, for both staff and students.

In educational ICT, change is the one constant. For the most part, educational institutions have been on the receiving end of ICT innovation, responding to change rather than driving change. As a result, the journey towards literacy with ICT innovations in schools more often follows ad-hoc diffusion models, rather than as an outcome of specific decision-making strategies. Thus, investments by schools in products/solutions such as school administration systems, e-mail systems, local area networks, laptop programmes, intranets, virtual private networks (VPNs), and the like, can be isolated decisions rather than forming elements of some wider e-learning strategy (Jones, 2003).

Over the past 10 years, many schools have worked hard to begin integrating these disparate solutions and streamline their ICT management. With the increasing ubiquity of the World Wide Web and browser-based educational resources, the integration of various e-learning components became a possibility. In the late 1990s, early versions of integrated learning management systems emerged, predominantly targeted at the tertiary education sector. Now, in the first decade of the new millennium, a variety of solutions are being developed with the primary and secondary sector in mind (BECTA, 2001a, 2001b, 2001c).

This chapter reviews the emergence of e-learning technology components over the period from 1994 to 2004 and their implementation in the K-12 education sector, with particular reference to attempts to integrate these various components into a broader e-learning strategy. By analysing literature concerning models of e-learning in schools, it is shown that many schools, although mapping closely to these models, do so more by coincidence than design. It is suggested that school

e-learning strategies evolve to accommodate specific ICT components and capabilities as they emerge. The challenge for schools, as always, is to have the agility to respond appropriately to these innovations, while at the same time exercising wisdom and discernment in their implementation (Dowling, 2003).

## LITERATURE

The concepts of computer-based training (CBT) and computer-assisted learning (CAL) have been in circulation since the 1980s, initially in industry. The reality of distance teaching and distance learning has been with us much longer. It has only been since the ubiquity of the World Wide Web in the early 1990s that we have seen a convergence of these domains. A number of factors have assisted this convergence. Increasingly sophisticated Web browsers; increasingly sophisticated Web scripting languages; increasing bandwidth; improved data compression techniques; reducing costs; increased access to powerful personal computing devices; and increased levels of user knowledge and understanding are some of these factors.

A selective chronology of events related to e-learning innovations is shown in Table 1.

### Definitions

A variety of definitions of e-learning exist, but most have a common theme. The key distinction between definitions of e-learning and previous definitions of CAL, CBT, and the like are a focus on Web-enabled technologies. For instance:

*E-learning is online training that is delivered in a synchronous (real-time, instructor-led) or asynchronous (self-paced) format. (Jones, 2003)*

E-learning is:

*... an innovative approach for delivering electroni-*

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