Chapter 19
Principles of Effective Learning Environment Design

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ABSTRACT

New thinking on the design and purpose of learning solutions is needed where the focus is not only on what to learn, but also the strategies and tools that enhance students' capacity to learn and construct knowledge. The vision underpinning this chapter is to extend the notion of advanced learning environments that support learners' to construct and apply knowledge to include the capacity to understand how and why they learn as individuals. Whenever conceptual change occurs as a result of active cognitive processing, higher order thinking emerges, which is further enhanced through discursive interaction with other individuals and groups. A shift in the focus of learning from the passive accumulation of information and knowledge to learning as a life changing experience that is augmented by active, collaborative engagement in the learning process provides direction as to how the complex tasks of learning and creative knowledge construction can be supported in the design of advanced learning environments. The purpose of this chapter is not to argue the need for 'virtual' learning environments – the literature abounds with positive endorsement for such applications. Instead, the strategies and factors that afford learners greater opportunities to engage in rewarding, productive learning experiences are examined with a view to laying down the groundwork and design principles to inform the development of a model for devising educationally effective, multi-modal (face-to-face and online) learning environments.

INTRODUCTION

Whilst many educational institutions throughout the world have introduced online learning as an option for delivering teaching content, little evidence exists of a predominance of innovative solutions that promote pedagogical diversity. Aside from a few notable exceptions, the design of most online learning environments is structured around the traditional instructional delivery model and

has not taken full advantage of the empowering potential of information and communications technologies (ICT) (Dreher, 2006). Rarely are university students offered the tools to organise their learning activities to suit individual needs and circumstances; collaborative online problem solving activities and group projects seldom inspire rewarding learning experiences; and, seamless collaboration with the wider online community is not consistently encouraged.

At present, many university students use version '1.0' web-based learning management systems that deliver closed, centralised, server-oriented, and distribution-oriented virtual learning environments (VLE). The widespread adoption of VLEs by colleges and universities has led to the dominance of a handful of market leaders that promote the delivery of what is touted as new, advanced modes of learning. The majority however, have opted for little more than an on-line version of the traditional delivery model and as a consequence, online delivery systems that promote pedagogical diversity are the exception, not the rule. Few online learning systems provide learners with tools to organise themselves; most do not easily permit group learning or support group or problem-based learning; many do not seamlessly integrate with the wider internet and in effect, create 'learning ghettos' (Liber, 2004, pp 137 – 38).

The current reality is that outside the campus intranet, people 'meet' each other in online chat rooms, operate Weblogs, engage in 'virtual' communities, answer questions on 'support' websites (bulletin boards and Wikis), and share resources using highly interactive and intuitive peer-to-peer systems. The Internet continually offers new tools to support such activities, but a discernible mismatch separates what is available on the Internet from what university learning delivery platforms permit. This version '2.0' of the World Wide Web has rapidly evolved to incorporate social, distributed, open, peer-to-peer, and contributive elements that permit multiple layers of communication among people who share interests and resources to dynamically connect and exchange ideas using technologies such as short messaging services (sms), chat, weblogs, wikis, and email. Typically, few of these features are available in leading VLEs. Instead of learning how to create knowledge, learners are confined to receiving information using environments that are devoid of the richness and diversity inherent in face-to-face discourse and interaction.

During collaborative discourse, participants 'build on' the contributions of others. The outcome of such exchange is that each individual re-assesses and reflects on the knowledge they have gained and in the process reconstructs previously held concepts, notions, or ideas. Collaborative learning is achieved if conceptual change is explicitly affirmed and redirected during a sequence of discussions that are guided by the goal of transforming the shared thinking into new concepts and ideas, the supreme prize (ideally) being the emergence of new and creative knowledge. When learning is collaborative, concepts, notions, or ideas are refined or transformed during a collective exchange as transpires during synchronous 'real-time' discussions or over the course of asynchronous activities conducted through sms, email, or bulletin boards.

New design concepts and strategies are required that build on the social use of the web and extend this functionality into the realm of virtual (online networked) learning communities. Active engagement in communities of learning (whether physical or virtual) exposes the learner to the perspectives, ideas, practices, interests, and connections to other knowledge domains that may otherwise not be possible through independent study. In the design approach proposed in this chapter, the learner is encouraged to negotiate pathways (either preset or self-determined) through a multiplicity of contexts whilst simultaneously 'monitored' by community members who provide feedback on the concepts and knowledge generated during the learning process. The capacity for learning and

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