Chapter 1

Virtual Learning Environments: Design Factors and Issues

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ABSTRACT

In the information digital society, the advancement of Information and Communication Technologies (ICTs) has created a broadened scope of sharing innovations globally by digital citizens. In this global digital society, individuals can learn and work individually or as a member of a team using various ICTs without being physically face-to-face with each other. How is it possible?

INTRODUCTION

Here is a quote from Wikipedia\textsuperscript{1} that explains it well:

Internet and communication technology fostered de-coupling of space where events happen, and storage technologies facilitate de-coupling of time between a message being sent and received. These technologies build the environment for virtual work in teams, with members who may never meet each other in person. Communicating by telephone and e-mail, with work products shared electronically, virtual teams produce results without being co-located.

The term “virtual” has become synonymous with any activities done on the computer or on the Internet. It has been used in many fields to represent profession and activities. For example, lawyers who deliver legal services over the Internet may refer to themselves as “digital lawyers”, “online lawyers”, or “virtual lawyers.” With more and more people logging onto the Internet, patients are consulting with a doctor without ever going to the doctor’s office (Morales, 2002). These virtual professionals who work in virtual environments or cyberspace are capable of providing their services to more and more of their clients/patients than traditionally. Because of the 24/7 accessibility, both the providers and receivers enjoy flexible services. It is also very important to note that anyone who is interested in receiving ongoing professional development training in their fields, Virtual Learning Environ-

DOI: 10.4018/978-1-61350-516-8.ch001
Virtual Learning Environments (VLEs) are becoming increasingly available in almost all disciplines.

In this chapter, I would like to discuss the following:

- Virtual Learning Environments (VLEs)
- User Interface Design for VLEs
- Design Perspective for VLEs

**VIRTUAL LEARNING ENVIRONMENTS**

When “learning” is added to any specific delivery format or medium, it is generally expected that one can use the medium for learning. Now the question is: what does VLEs include? Does it only refer to three-dimensional (3D) environments like Second Life or games like World of Warcraft? Or does it also include the familiar two-dimensional (2D) environments of web pages and learning management systems (LMSs)? The answer is simple: it includes both 2D and 3D environments. As Russell (2010) notes VLEs are both two dimensional (2D) and three dimensional (3D) virtual spaces that include multiple interactive aspects including collaborative dialogic forums such as chat rooms, discussion boards, live audio, information dissemination, and presentation in multiple media including sound, video and animated graphics, and hyperlinks in the environment that link the learners throughout the learning experience.

However, the term “virtual environment” may be viewed differently by different people in different fields. In the Human Computer Interaction (HCI) community, it implies the use of a simulated environment, typically containing a 3D model allowing for user controlled navigation and dynamic view generation (Wann & Mon-Williams, 1996). However, Davies & Dalgarno (2008) note that VLE has increasingly become used to refer to web based learning resources that do not necessarily include any form of visual simulation (Dillenbourg, Schneider & Synteta, 2002).

The position taken in this book is that access to any digital learning content stored on servers/disks or on the Internet is a part of the VLE. Thus, Computer-Assisted Instruction (CAI), Computer-Based Training (CBT), Web-Based Instruction (WBI), and Web-Based Training (WBT) are obviously part of the VLE. All LMSs create VLEs. As we are technologically advancing into 3D environments, VLEs are becoming highly engaging to learners as they respond to interactions in virtual worlds.

In this book, a virtual learning environment (VLE) is defined as any digital learning space or environment where learning activities, opportunities, and experiences are designed based in appropriate learning theories and techniques, using various attributes of digital technologies to create meaningful environments for diverse learners where learning is fostered and supported. VLEs are open and distributed learning environments. According to Calder & McCollum (1998), “The common definition of open learning is learning in your own time, pace and place” (p. 13). Ellington (1997) notes that open and flexible learning allows learners to have some say in how, where, and when learning takes place. Saltzberg & Polyson (1995) noted that distributed learning is not synonymous with distance learning, but they do stress its close relationship with the idea of distributed resources:

* Distributed learning is an instructional model that allows instructor, students, and content to be located in different, non-centralized locations so that instruction and learning occur independent of time and place. . . . The distributed learning model can be used in combination with traditional classroom-based courses, with traditional distance learning courses, or it can be used to create wholly virtual classrooms. (p. 10)*

Because of the open and distributed nature of VLEs, learners enjoy greater flexibility in access to learning resources distributed in various loca-