

## Chapter 94

# E-Learning and Web 2.0: A Couple of the 21st Century Advancements in Higher Education

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### ABSTRACT

*The fundamental goal of e-learning is to provide applications to share information, knowledge, and help learners in their learning activities efficiently and effectively by involving technologies. More recently, Web 2.0 has become a buzzword in education, and academics around the world have explored the potential of Web 2.0 technologies and online classrooms. Based on a literature review, this chapter focuses on the integration of pedagogical principles of virtual learning application of these new Web 2.0 technologies. The argument is that these tools provide an opportunity to design new models for education and training.*

### INTRODUCTION

Information technology and communication allow radical changes in the traditional learning (Zhang and Nunamaker, 2003). Learning and teaching are no longer limited to traditional classes (Marold, et al, 2000; Zhang and Nunamaker, 2003). In addition to educational institutions, changes in information technology also have an impact on the learning process.

This research focuses on the use of Web technologies to facilitate teaching and learning in higher education, which further reduces the

integration of Web 2.0 technologies in the teaching units. A learner-centered approach has been formulated to integrate Web 2.0 technologies into teaching units in higher education.

This chapter is a review of the literature specifying the role of Web 2.0 technologies in e-learning. Based on the constructivist approach, this chapter presents through some Web 2.0 tools such as blogs, podcasts and MUVE, the usefulness and impact of its technology on e-learning in higher education to improve their use or integrate technology in academia.

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This chapter begins with the definition of learning followed by an overview of the various theories of learning and their implications on e-learning. The chapter then discusses the importance of the Internet to facilitate e-learning followed by an overview of the concept Web 2.0 and its impact on the practice of e-learning. An overview of Web 2.0 technologies selected are discussed in this chapter is presented with examples of their use in higher education. The chapter also draws attention to the disadvantages of the use of Web 2.0 technologies and the barriers that exist in the academic use of Web 2.0 technologies.

### **LEARNING THEORIES**

To investigate the use of e-learning technologies, it is important to understand the concept of learning through various learning theories. It is also important to understand the implications of different learning theories for the development of e-learning. These theoretical approaches are summarized around behaviorism, cognitivism, constructivism and connectivism. This chapter adopts a constructivist approach in terms of analyzing the effects of the use of Web 2.0 technologies in e-learning in the academic environment.

#### **The Behaviorism**

The behavioral approach to learning has been a dominant psychological approach in the design of curriculum and educational technology. Most behaviorists agree on the fact that education should have a specific objective (s) and how instruction should be presented sequentially starting with the presentation of simple facts followed by more complex information (Gillani, 2003). The behavioral approach asserts that learning is manifested in behavior (changed or reinforced), and behavior can be conditioned by a system of punishments and rewards (Elliott, 2009).

Behaviorism is primarily associated with Pavlov's theory of classical conditioning, Skinner's theory of operant conditioning and Thorndike's theory of connectionism (Rawlings and al., 2004). Classical conditioning refers to a learning process that occurs through associations between an environmental stimulus and natural (Gillani, 2003), while operant conditioning is another type of associative learning process that occurs if the answers operating are properly reinforced, and then they are rooted in human behavior (Skinner, 1974). Connectionism refers to learning as a process of habit formation, or by making a link between stimulus and response (Gillani, 2003). The first behaviorist approaches treat each learner as equal and learning was thought to be reactive with little or no differentiation among individuals (Wolf, 2007). Within the parameters of the class, behaviorism implies domination of the teacher who is responsible for the formation of the learner. Learning in these environments takes place in a highly controlled environment with little or no emphasis on the mental processes that take place within learners considering it as a "black box" (Elliott, 2009).

The principles of behavioral learning have been applied to several models of teaching such as Mastery Learning, Direct Instruction Model and Programmed Instruction. During the 1960s, the contributions of Patrick Suppes and his colleagues formed the basis of a learning model called drill and practice or tutorials. This model was based on the approach of Mastery Learning and formed the basis of the behaviorism application in educational technology. Applications of computer-assisted instruction conducted by Suppes in the 1960s can be seen today in the form of sophisticated multimedia courseware on CD or web sites.

#### **The Cognitivism**

Cognitivist revolution replaced behaviorism in the middle of the last century, as many theorists

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