Integrating New Technologies to Promote Distance Learning

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INTRODUCTION

The development and emergence of new technologies in distance learning has opened a broad range of options for promoting learning. New technologies and the latest generation of Web-based tools have been increasingly adopted in distance learning. Integrating these technologies into education has a profound impact on all areas of learning, from course management to problem-solving instruction. The new technologies have provided a valuable addition to interactivity and interactions in the process of teaching and learning. In recent years, there has been a rapid increase in the use of the latest generation of Web-based tools (Web 2.0), such as wikis, blogs, and podcasts, in distance learning. The possibilities of wikis and blogs and other new Web tools are countless. Any topic that needs to be discussed openly, quickly, or in a collaborative manner can benefit from these tools.

An extensive body of literature has accumulated over the past decade relating to the effectiveness, benefits, and changes caused by implementing distance-learning technologies. This article outlines the various technologies and Web-based tools, their implementation in distance learning, and the accumulated experience gained by the Open University of Israel in implementing them.

BACKGROUND

Computer-mediated communication (CMC) is a combination of telecommunication technologies and computer networks (Berge & Collins, 1995; Ryan, Scott, Freeman, & Patel, 2000) that enable users to transmit, store, and receive information (December, 1996; Jonassen, Davidson, Collins, Campbell, & Haag, 1995) through synchronous and asynchronous communication (Ryan et al., 2000). In recent years, there has been rapid increase in the use of the latest generation of Web-based technologies - Web 2.0 (Abram, 2005; Alexander, 2006). Web-based tools developed in the latest-generation include wikis, blogs and podcasts. *Wikis* are Web sites that can be edited by anyone who has access to them. *Blogs*, or Web logs, are information-sharing technologies in the form of an online Web journal, usually displayed in reverse chronological order. Blogs offer a rich multimedia environment with entries that may contain comments and links to other Web sites. The ease of use of these Web-based technologies offers the opportunity for information sharing and collaboration (Boulos, Maramba, & Wheeler, 2006). *Podcasts* are digital media files that are distributed over the Internet using RSS (Really Simple Syndication - an XML format for distributing content on the Web) feed and can be automatically downloaded to personal computers and synced to portable media players to support mobile learning, anytime and anywhere (Boulos et al., 2006).

MAIN FOCUS: THE LATEST GENERATION OF INTERACTIVE WEB-BASED TOOLS

Web-based tools, like wikis and blogs, have been increasingly adopted in distance learning to extend the interactive aspects of teaching and learning with the opportunity to exchange ideas, unrestricted by classroom space and time.

Wikis

wiki, the Hawaiian word for "quick," was firstly created by Ward Cunningham in 1995, and permitted users to create, edit, and organize content in a Web format (Richardson, 2006; Wagner, 2004). Wiki technology pemits group collaboration across the Internet, providing users with both author and editor privileges, with the ability to incorporate sounds, pictures, and movies. Wiki Web pages can be edited, modified, created, and saved using a Web browser by anyone who has access

to them, at any time, from anywhere (Desilets, Paquet, & Vinson, 2005; Parker & Chao, 2007; Raman, Ryan, & Olfman, 2005). Wikipedia (2007), an online encyclopedia, is one of the best-known wikis.

Wiki pages are, by default, open, but they can be configured to give selective access, or may even be entirely closed. A wiki's versioning capability can show the evolution of thought processes as contributors interact with content. Wiki technology can impact knowledge management, and can support knowledge creation and sharing (Boulos et al., 2006; Bower, Woo, Roberts, & Watters, 2006; Lamb, 2004; Leuf & Cunningham, 2001; Raman et al., 2005; Richardson, 2006; Robinson, 2006; Sauer, Bialek, Efimova, Schwartlander, Pless, & Neuhaus, 2005; Wagner, 2004).

Blogs

A blog (Web log) is a frequently updated Web site that contains dated entries in reverse chronological order. The technical backbone of blogs is content management programs, designed to be as easy to use as a word-processing application, but with additional collaboration and communication features. Functioning as an online journal, blogs can be written by one person or a group of contributors. Blogs allow people with little or no technical background to update and maintain a blog. They offer significant benefits for academia (Boulos et al., 2006; Sauer et al., 2005; Wagner, 2003; Williams & Jacobs, 2004).

Implementing Technologies in Education

An extensive body of literature that has accumulated over the past decade relates to the effectiveness, benefits, and changes caused by implementing distance-learning technologies. The new technologies provide a valuable addition to the process of teaching and learning by allowing collaboration and interaction between students and instructors (Kalman, Ravid, Raban, & Rafaeli, 2006; Muirhead & Juwah, 2004; Palloff & Pratt, 2005; Rafaeli & Raban, 2005). While traditional distance education (DE) was based mainly on individual learning models, the emerging technologies have opened opportunities for group learning models, leading to significant changes in DE methods of study. The learner-to-learner dialogue, within and between groups, makes it possible for distance learners to share in the construction of knowledge (Moore, 1993). The new

Web-based tools have been enthusiastically received by those involved in DE.

Models of DE are characterized according to technological developments. Taylor (2001) characterizes the development of DE according to the generational model that parallels developments in technology. First generation DE refers to purely print-based correspondence study; second generation to integration of print materials with broadcast TV, radio, audio- and videocassettes; third generation parallels the invention of hypertext and the rise in the use of teleconferencing; fourth generation is characterized by flexible learning through Internet-accessible courses; and the fifth generation, what could be called "post-modern CMC," is characterized by online interactive multimedia and Internet-based access to Web resources. This development represents a move away from directed, non-interactive courses to courses with greater flexibility in learning, group-oriented processes, and a high degree of two-way communication.

The potential of the new technologies as a teaching and learning medium has been much examined and discussed, and it is widely agreed that the new Web-based tools improve the effectiveness of distance learning by providing a shared environment that incorporates flexible learning and collaborative group learning. It enables geographically dispersed students to communicate with their peers and instructors, and provides opportunities for more active learning.

Synchronous vs. Asynchronous Interaction

Computer communication can be synchronous or asynchronous. Synchronous communication occurs in real time. For two or more persons to communicate synchronously, they need to be available at the same time (as in a telephone system). Synchronous communication utilizes such tools as chats and videoconferencing. In asynchronous communication, on the other hand, communication does not occur in real time and thus, the interaction is more flexible. There can be a delay between sending information and retrieving it. Responses to messages may be delayed, with each message waiting until the recipient is ready to read and/or reply. Asynchronous communication utilizes such tools as e-mail, discussion groups, wikis, and blogs. The key advantage of computer communication

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