
Chapter VIII

Beyond the Web: Leveraging Multiple Internet Technologies

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ABSTRACT

Internet technologies are changing the way we provide education and training at all levels. However, we have not yet fully utilized the power of these technologies. The focus has only been on the Web, which is only one of many Internet technologies. In this chapter, we go beyond the Web to leverage multiple Internet technologies to support in-class education. In this chapter, common problems in Web-based education are discussed, an experiment in developing and implementing a framework that seamlessly integrate various Internet technologies is presented, and the increase in learning effectiveness yielded by the new methodology is described.

INTRODUCTION

The Internet has a symbiotic relationship with academia. Academic research incubated the Internet during its first two decades of existence. After the Internet's commercialization in the past decade, academic research continues to contribute to its further development. The Internet, in return, fosters academic research activities by providing easy access to research data and a ubiquitous and around-the-clock forum for researchers with similar interests to discuss research ideas and issues. While the Internet has evolved into a worldwide channel for communication and information exchange, academia is reinventing its use to support instruction. The Internet is viewed as a preferred technology to improve instruction, increase access, and raise productivity in university education (MacArthur & Lewis, 1996).

Most educational institutions now use the World Wide Web in some way to support classroom instruction. Many instructors post lecture notes, course information, class

schedule, and assignments on their course websites. Several universities have even started utilizing commercial or in-house software to support instructors in creating and maintaining course websites. However, the experience has been somewhat unenthusiastic. We need to go beyond the Web and integrate multiple Internet technologies in education. We need to deploy the right combination of multiple Internet technologies with appropriate teaching methods and instructional material to improve education (Huang, 2001; Mahoney, 1998; Spooner et al., 1998; Sumner & Hostetler, 1999). In this chapter, a case study of such an effort made by deploying a special Internet-based education support system for traditional classroom setup at a large, urban university in the Southeast United States is presented. The primary objective is to illustrate how multiple Internet technologies can be integrated under one, unifying framework to make classroom-based education more efficient and effective. Provided is a new path that academic institutions can follow in their efforts to improve the learning process by leveraging emerging and yet-to-emerge Internet technologies. This experiment supports the notion that these technologies can revolutionize the way we learn and the way learning is supported in classrooms.

EARLY ADOPTION OF THE WEB

Wilson (1996) classified learning environments in three major categories: computer microworld, classroom-based learning environment, and virtual learning environment. Computer microworld is a self-contained computer-based learning environment, such as computer-based training and intelligent tutoring systems, in which students learn at their own pace using a computerized learning system. A classroom-based learning environment is the most widely used, traditional educational setup, in which students periodically meet face-to-face with their instructors. A virtual learning environment is a telecommunications-based learning environment (e.g., distance learning), in which the students, dispersed over a large geographic area, learn through a communication medium.

The Internet can provide valuable contributions to all three learning environments. In the computer microworld environment, it can help distribute, maintain, and update training software and educational modules. In the classroom-based learning environment, it can help distribute course material, such as lecture notes and assignments, via course websites, and provide email-based communication between the instructor and students. In the virtual learning environment, it can replace the traditional telecommunications-based videoconferencing network with a ubiquitous, multimedia network. To take advantage of these opportunities, many Internet-based, virtual universities, such as Western Governors University (WGU), Jones International University (JIU), California Virtual University, and Concord University School of Law, have emerged recently.

Fascinated by the Internet and its potential use in education, several instructors, including the author, started using the Web on an ad hoc basis to support classroom instruction in the College of Business Administration at Georgia State University (GSU) in 1996, in graduate and undergraduate and core and noncore classes. GSU is a large urban university in Atlanta, Georgia. The number of students in a typical class ranged from 25 to 35, which presented ideal conditions for using the emerging Web technology to support instruction. These individual efforts gradually improved with the availability of better Web technologies, the increased penetration of the Web at homes and offices of students, and upward progress on the learning curve. However, several problems, discussed below, started surfacing immediately after the initial adoption.

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