

# Using Emerging Technologies for Effective Pedagogy in Management Education



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## INTRODUCTION

The past decade has brought tremendous changes to higher education. Technology components that supplement teaching and learning are integrated into programs and courses in most universities. Tools, such as course management systems, portals, PDAs, wireless technology, and Web services are used to create virtual communities that provide an interactive platform for learning. Previous research (Alavi, 1994; Lake, 1998; Yip, 2004) has shown that technology-based instruction results in positive learning outcomes. Colleges and universities are trying to understand this phenomenon of digital education and restructure themselves to take advantage of emerging technologies so that students can be prepared to be leaders and managers, who not only realize the benefits of using collaborative tools in virtual space, but also have competencies in using these tools effectively. In addition, because emerging technologies make it possible to extend physical boundaries of a university, new markets could bring additional revenues and expand access to programs nationally as well as globally.

Management education with its use of problem-based learning and case study approach has been a leading candidate for integrating technology tools for scholarship and research. Business schools have been under constant pressure to provide students the skills and experience needed to effectively use emerging technologies (Alavi, Wheeler & Valacich, 1995; Hildebrand, 1995) that are used by businesses to gain competitive advantage (Leidner & Jarvenpaa, 1993). Webster and Hackley (1997) have identified previous studies of business schools adopting computer mediated distance learning for business cases and simulations. A strong community of practice (CoP) is critical for building collaboration between faculty in universities that may be separated by

space but connected using networks that can be leveraged to extend programs and provide faculty partnerships and foster student scholarship. CoP can foster the spirit of discussion and collaboration. Brown and Duguid (2000) have defined CoPs as groups of people who share a common vision or passion and work closely together within the context of a particular practice or field of study (Garrison, Hawes & Kanuka, 2003). CoP has also been defined as a group of people who share a common concern, set of problems, or interest in a topic, whose members come together to fulfill both personal and group goals. The main goals of a CoP are to generate knowledge, contribute to identification of effective practices, and definition of underlying principles. CoPs also help create common vocabularies and conceptual frameworks (NLII Virtual Communities, 2003). There are several tools that try to address virtual collaboration, but very few tools are used effectively. The purpose of this article is to look at three tools: portals, course management systems, and videoconferencing to explore how CoP can thrive by use of these tools.

The Internet has quickly evolved from merely a distribution channel to an interactive environment for collaborative learning. In what can be considered a partial response to Frost and Fukami's (1997) challenge to the profession to think in deep ways about management education and teaching, faculty have realized the tremendous potential of actively engaging students in the online environment. Students have also appreciated the benefits and convenience of e-learning. The technology component is now integrated with almost every functional area of business education. As an example of a classroom, students in a supply chain course can discuss implications of global partnerships between suppliers and manufacturers, review best practices in supply chain management,

and learn from case studies of international corporations. Lectures and discussions using streaming video and tools such as whiteboards, chat forums, and interactive audio can be used to explore cultural diversity and international business culture. To make this happen, costs associated with providing resources should be realized and budgeted. Business schools committed to research, student learning, and effective teaching have developed strategic plans that underscore significant investments in IT infrastructure, software development (such as portal technology, course management tools, and Web services).

The technology infrastructure and services that are deployed in business schools should provide a strong base for teaching, research, and community outreach and foster cross-disciplinary collaboration between units. The interaction may not necessarily be only among students, but can extend to professional exchange of ideas between students and faculty at one institution with a group of professionals at any institution. An example of a discipline-based CoP is the information systems professional Web site and listserv: ISWORLD. The Web site (<http://www.isworld.org>) provides members an opportunity to stay current on the happenings in information systems teaching, research, and service. An active listserv generates daily informational posts that include conference announcements, book/journal publications, position announcements, sharing of ideas on resources, offers of collaborative opportunities, further inquiry into research and systems implementation questions, and challenges to commonly believed hypotheses. The daily interaction, postings, responses, and response to responses provide constant and relevant information to list subscribers and also provide them an opportunity to stay active and participate in discussions.

The above example shows the use of a listserv via e-mail. In the past few years, more interactive environments have emerged to support communities of practice. Characteristics of three representative technologies (portals, course management systems, and videoconferencing) that can be considered to have potential to improve management education are given below.

## **PORTALS**

Davydov (2001) defines a portal as “an entry point or originating web site for combining a fusion of content and information dissemination services” (p. 57). A corporate portal often includes customizable start pages to help users locate information tailored to their need as well as access to applications and business intelligence tools, data warehousing, collaborative and workflow systems, EAI tools, Web publishing, and personalization tools. In educational institutions, EduPortals are developed to provide easy access to academic and administrative resources and services. The main goal of EduPortals is to connect the institution’s internal and external constituents to campus resources using a personalized interface. Some of the challenges in building such portals have been the integration of university directory services, single sign-on procedures, aggregation, organization, and delivery of information from multiple sources. Technical as well as organizational problems must be overcome to deploy university-wide portals that will be integrated with daily tasks of faculty, staff, and students. From a user perspective, the objective of an EduPortal should be to provide an attractive, easy to use gateway to navigate through the network of both public and private information, services, and business functions of the school and the university. It should provide a secure infrastructure to present Web-based applications and information to the university community. The portal should focus on tools for collaboration, research, and personal productivity. For future growth, today’s portal should take into account scalability, integration of legacy systems, and future enterprise-wide system compatibility. As a specific management education example, benefits of portals to faculty and students can be single sign-on access to e-mail and academic calendars, browser based access to networked files from remote locations, collaboration that provides the ability to do audio/video/text chat, whiteboard, file transfer, and application sharing, profile messaging (faculty, staff, student, or a combination) to receive department, course, or club messages. The single sign-on feature, although difficult to implement in most cases due to integration issues with legacy systems, pro-

vides a convenient access to course materials along with the ability to set personal bookmarks and browse Web resources. EduPortals can also integrate with course management systems described below.

## **COURSE MANAGEMENT SYSTEMS**

Several methods exist for developing and presenting Web courses. Although the basic framework of Web documents is built on HTML tags, today it is not necessary to know programming/markup languages such as HTML and PERL to develop course materials for the Web. This is due to development of software applications called Web course tools or course management systems that have a “shell” in which documents such as syllabi, schedules, instructor information, lecture materials, case studies, and so forth can be uploaded by faculty for distribution to students and interactions within the online course environment. Course management systems also allow interactivity that engages students with not only instructor developed course materials, but also provides access to other students, professionals, multimedia elements, and programs for interaction (Hazari, 1998). Developing courses using integrated features of course management systems offers advantages of a single authentication scheme, directory structure, consistent interface, and a simple way to publish and update content. HTML layout editors that were initially used to create course content produced static material which was rigid and nonconforming to different learning environments.

The new generation of Web course development tools provides features that allow instructors to adapt course components according to learning outcomes of the course. Use of such tools can promote collaborative learning, enhance critical thinking skills, and give every student an equal opportunity to participate in classroom discussions. Use of Web course development tools can piggy-back on huge investments higher education institutions have made in not only installing the hardware and software but also planning the network infrastructure to link offices, libraries, classrooms, and student dormitories for local, wide area, and Internet connectivity. Course management systems have been considered the academic equivalent of ERP Systems (Morgan, 2003). With proper implementation and sound pedagogical

design, Web-based instruction can create meaningful enterprise learning environments by empowering faculty to engage students in active application of knowledge, concepts, and provide an opportunity to control pace and monitor learning which will help them grow and evolve as the course progresses.

## **VIDEOCONFERENCING**

Course delivery and interaction can be offered in a rich interactive environment that goes beyond a purely text-based approach of previous generation distance education tools. One of the tools that have been increasingly popular in industry as well as in higher education is the use of videoconferencing for distance learning. Leveraging the power of Internet, business schools are looking to expand their programs nationally and internationally. A powerful technology tool that can be an enabler for expanding programs is videoconference technology. Videoconferencing allows synchronous (live) two-way communication using video and sound. A point-to-point (two-person) video conferencing system works like a videophone, where each party has a video camera, microphone, and speakers attached to their computers. Multipoint videoconferencing allows three or more participants to be present in a virtual conference room and communicate as if they were sitting next to each other. From a research viewpoint, use of videoconferencing has been studied in education and industry in relation to privacy, communication media choice, and systems analysis and design (Webster, 1998).

In general, distance education integrates various communication technologies to bring together students, faculty, and guest speakers by using communication that is mediated by technology. Multiple sites can be connected using videoconferencing. This offers an opportunity for students and faculty to interact in real time with participants at different sites by using audio and video data. Ancillary material such as videotapes, whiteboards, and slides can be shared over videoconferencing links. The use of videoconferencing follows defined standards for video compression and audio coding to allow systems from different vendors to communicate with each other using global standards. In business and industry, most conference rooms are ISDN and IP

videoconferencing ready, and the sessions can be recorded to provide an archive for future use. Examples of educational videoconferencing session are the possibility of senior administrators in different institutions (national and international) collaborating to discuss joint projects and broadcast of classroom lectures and discussion to participants in the industry who in real time are able to interact the instructor and students. Within a community of practice, guest speakers from the industry can also be invited to discuss current projects and management concepts, thereby providing an interactive environment for students to engage in a dialogue with industry personnel.

### **FUTURE TRENDS: RECOMMENDATIONS FOR EFFECTIVE PEDAGOGY**

A mixed-model approach that combines traditional teaching with use of technology tools can offer a faculty-moderated active learning environment and prepare business management students to seamlessly integrate information technology in their work environment. To achieve this, faculty must be trained to teach using technology. Communities of practice that discuss use of technology in teaching using any of the three tools mentioned above would find applications in improving teaching and learning among faculty and students. Traditional approaches to teaching must be reengineered to repurpose existing courses and related pedagogies. Effective diffusion of technology into practice of teaching is a critical requirement for management education. Team teaching within the school or by establishing external partnerships with global universities can provide value-added instruction to students that go beyond the constraints of a local geographic area. Forming communities of practice can also provide students and faculty a vision that encourages collaboration, experimentation, and broader learning. Another strategy would be to select faculty and give incentives to demonstrate best practices in each area, so the value of using the existing state-of-the-art infrastructure can be demonstrated to other faculty. With the right strategy that emphasizes technology as an integral

part of teaching, learning, and research, as well as partnerships with industry, faculty can be recognized as leaders in management education for having successfully addressed and integrated issues that pertain to delivery of education in the digital economy.

### **CONCLUSION**

The Internet has drastically changed the way in which students and professionals interact in a dynamic environment. Communication and collaboration tools have evolved to support communities of practice that share a common goal. Use of a multimedia environment such as text, video, audio, as well as applications such as teleconferencing make it possible to disseminate and discuss information without the constraints of time and space boundaries. A thriving community of practice that uses tools such as portals, course management systems, and videoconferencing adds value to shared discussions by informing participants of diverse views and offering a common platform for exchange of ideas.

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## KEY TERMS

**Course Management Systems:** Integrated course environments (e.g., WebCT, Blackboard) that include components such as e-mail, discussion group, chat, grade book for delivery, and management of instruction.

**Distance education:** Instructional delivery to students at remote sites. Students communicate in this environment using electronic mail and discussion forums.

**EduPortal:** A portal geared toward education that provides single sign-on access to academic and administrative resources for students, staff, and faculty.

**E-Learning:** Synonymous with Web-based learning, it is instruction delivered over the Internet/intranet using a Web browser.

**PDA:** Personal Digital Assistant. A handheld device that combines computing, telephone/fax, Internet, and networking features. A typical PDA can function as a cellular phone, fax sender, Web browser, and personal organizer.

**Portals:** A Web site or service that offers a broad array of resources and services such as e-mail, forums, search engines, and personalized information.

**Videoconferencing:** A conference between two or more participants at different sites by using computer networks to transmit audio and video data.

**Web Services:** Integration of Web-based applications using common standards over an Internet protocol backbone.