Planning and Delivering a University Online Course: Administrative, Technological, and Educational Perspectives

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Abstract

English:

Use of the Internet for delivery of on-line courses in post secondary education is growing rapidly. On-line courses offer unique opportunities for a university department to expand offerings free of scheduling constraints with have potential to reach a geographically distant and diverse group of students. This article describes efforts of a collaborative team approach to designing and implementing an on-line course. Administrative, technological, and educational perspectives provide key issues and decisions for collaborative success.

Spanish:

El uso del Internet para la transmisióón de cursos en educacióón post-secundaria a travéés del computador estáá creciendo ráápidamente. Los cursos por computador ofrecen oportunidades úúnicas de expandir el ofrecimiento de clases en un Departamento Acadéémico en la universidad, sin tener que preocuparse por las limitaciones de horarios y con el potencial de cubrir un grupo de estudiantes diversos y localizados en distancias geográáficas dispersas. Este artíículo describe el enfoque de los esfuerzos de colaboracióón de un equipo para diseñnar e implementar un curso atravéés del computador. Las perspectivas administrativas, tecnolóógicas y educativas proveen aspectos y decisiones vitales para el ééxito de dicha colaboracióón

Keywords: Internet; On-line course; Post secondary education; Collaboration

Introduction

The use of the World Wide Web is growing at an exponential rate. Estimates of the increase of users per month range from 3% to 10% (Global Reach, 2001; Glitten, 2000). This increase in use includes educators capitalizing upon opportunities for Internet courses in postsecondary education. Through proper design and delivery, Internet courses can be an enriching educational medium (Relan & Gillani, 1997). Beyond providing increased student access to a course, many colleges and universities view online courses as a way to conserve limited resources, mitigate traffic and parking problems, and provide an efficacious alternative to the traditional classroom-based course.

Internet courses are regularly written about in scholarly and popular press. Such innovative courses while offering a wide range of opportunities, still present many questions and unique problems (Percini & Casati, 1997). The traditional classroom-based course typically consists of instructional design fully developed prior to course implementation. The format of this course is minimally adjusted during the time the course is delivered. Internet-based education also requires a similar amount of prior planning and design. Revisions, however, are easier to make than in traditional classroom-based courses (Bannan, & Milheim, 1997).

Various definitions of web-based instruction exist. Bannan and Milheim (1997) define Internet-based instruction as, "…an instructional program which utilizes the attributes and resources of the World Wide Web to create a meaningful learning environment…". (p. 381). Percini and Casati (1997) suggests the term web-based instruction and defines it as, "On-demand instructional materials stored in a server and accessed across a network. Web-based instruction can be updated very rapidly, and access to instructional materials can be controlled by the provider." (p. 2). A common theme of the definitions is reliance on the

Internet for delivery of course content and activities, as well as, assessment of student performance (Bannan, & Milheim, 1997). The definition of web-based instruction for the purpose of this article is course delivery involving the Internet that is intended to deliver education in remote areas in ways that augment a commitment to premier undergraduate residential and graduate education, and that capitalizes upon new opportunities in an evolving educational marketplace.

Squires and Preece (1996) offer a comprehensive overview of design and implementation options for web-based courses. The process can be solely reliant on the World Wide Web for facilitation of the educative experience. Courses also can utilize the World Wide Web for provision of all course content, activities, and performance assessment (Percini & Casati, 1997). Other design options could involve distance delivery of print materials, varied communication methods (i.e., e-mail, telephone, fax, discussion list, chat rooms, video-conferencing), and assessment of student performance and outcomes. Regardless of the delivery format, web-based distance education raises issues regarding collaborative design efforts, course design, pedagogy, selection of authoring tools, and copyright or intellectual property issues (Relan & Gillani, 1997). The purpose of this article is to share administrative, technical, and educational perspectives learned from a collaborative effort to provide an online instructional experience for a content-driven undergraduate health sciences course at a midwestern university.

A key to successful development and implementation of web-based courses is collaboration (Bannan, & Milheim, 1997). Squires and Preece (1996) suggest web-based course development typically requires more resources than traditional class-based courses. As the technology becomes more integrated and sophisticated, collaborative arrangements will be necessary to manage myriad elements associated with conceptualization, development, implementation, and evaluation of web-based course delivery methods. Necessity of interdependence between what may, in some cases, be independent departmental or campus units or personnel will require a new way of viewing the collaborative process. A content specialist, technological specialist, and administrator can be brought together as a team with the common purpose of conceptualization, development, implementation and evaluation of a web-based course. This article shares such a three-team member collaborative process with each member's perspective and lessons learned through their sharing in this process.

Administrative Perspectives

Key administrative concerns emerged during the process of offering the first academic course within the department for university credit entirely over the Internet. The Medical Terminology course, a traditional site-based class for a number of years, was selected as the first course to be offered through the Internet format. This course had been approved previously through the standard university curricular process. However, university policy stated that any approved course could be adapted and offered as a distance education class without any additional university approval (Illinois State University, 2001). Other universities may require additional curricular approval before a site-based course can be offered in the Internet format.

A primary concern for the course instructor and unit administrator was to insure that the approved traditional classroom course objectives could be achieved through the Internet format. The Medical Terminology course was selected purposely because the course objectives referred specifically to mastery of course content, not skill acquisition. Demonstration of skill competence was acknowledged by being more difficult through Internet courses.

Previous fall and spring semesters, two sections of the Medical Terminology course had been offered. The decision to offer two formats (site-based and Internet only) was made deliberately to accommodate different learning needs of students.

A secondary concern was to help students recognize the two contexts in which the course was to be offered. At this university, the policy required each format to be scheduled in a different section of the course (Illinois State University, 2001). Instead of information on place and time of day, the term "arranged" was used for the Internet only section. In addition, there was a designation of "N" which indicated to students that the course format was Internet. The course was listed in the departmental pages of the Class Registration Directory and again in a list of all courses offered as Internet format that semester. The University policy also allowed a line devoted to Website information for the student. The phrase "HSC 105 will be conducted over the Internet, Go to http://www.cast.ilstu.edu/hsc/hsc105.htm" appeared in the Class Registration Directory.

From a scheduling perspective, courses offered through the Internet hold unique advantages to students. For example, taking an Internet course frees students

from the traditional time commitment and allows them to complete another site-based course that may present a time conflict. During the regular school year as well as summer, the Internet course format allows the working professional to take courses that would not be possible otherwise due to job demands. Summer courses are often concentrated over a four to eight week period, requiring two to three hours in class everyday. As more health education programs attempt to recruit and reach out to nontraditional college students, the freedom from time constraints becomes very attractive. However, freedom from time spent in a traditional classroom setting can create another problem as the format requires a great deal of independent work and self-discipline. Workload expectations are not different, but the emphasis is shifted from time spent in the classroom to time spent working independently. Students need to understand that university policies on course incompletes or withdrawal are the same for both site based and Internet format courses.

Another key administrative issue was understanding the tuition and fee cost structure. A student enrolled in the Medical Terminology course could have been completing it from a campus residence hall or anywhere in the state or world. At this university, the student pays resident (in-state) tuition for Internet courses regardless of the student's actual residence. Fees and insurance are not assessed. However, an outreach fee of $30.00 per credit hour is charged per person. Funds collected from the outreach fee help defray costs of personnel and technology necessary for a university to offer Internet only courses.

The administrator's temptation to view Internet only courses as different from site base courses was real. In theory, the constraints, especially enrollment size, were removed. A site base course of Medical Terminology was capped at 30 students because of the course objectives and number of seats in available classrooms. Since the Internet course was a cyber classroom, the administrator wanted to increase the enrollment size. Why not 100 students instead? Work demands were not lessened because it was in Internet format; the demands were different. Course preparation was more time intensive prior to the first offering of the Internet course. Additionally, communication between faculty and students changed to electronic communication instead of face-to-face meetings, but time and effort spent answering questions via email increased demands on faculty. Initially, it appeared that the department could increase student credit hours without increasing resources but in reality the opposite was true. The work demand and ability to meet the needs of the students were increased by the Internet format.

Other potential administrative concerns related to a faculty member teaching the Internet course can arise. New course development is often rewarded in the faculty annual review system at universities, but the issue of offering a traditional classroom course in an Internet format and new class preparation that it involves may not be addressed in faculty evaluation policy and procedures. Faculty evaluation criteria and committees that make decisions about annual review and tenure/promotion need to be in agreement on how the Internet courses are viewed. Some evaluation systems were written prior to university faculty developing and offering a course in the Internet format. The issue is not how universities decide to review the effort of the Internet course, but rather there is faculty discussion and input, a decision is formalized, and that decision is clearly communicated to all faculty.

A secondary issue with faculty evaluations is the potential problem of student course evaluations that typically are administered at the end of the semester and often weigh heavily in personnel decisions. Many departments have a standardized form that is administered across all courses so that some comparisons among faculty can be made. Depending on the type of question and how the question is answered, i.e., five point Likert scale, it may be very difficult to use the standardized form. In addition, students' anonymity is usually protected in the student evaluation process and may present technological challenges to maintain that**.** Fortunately, some of the software used to deliver Internet courses offers the ability to administer faculty evaluations via the Internet and maintain the anonymity of students who respond.

Unit administrators who venture into offering courses via the Internet need to be very supportive of the faculty who are involved. Research is not clear on whether or not Internet courses result in the same, worse, or better learning for the student. Clearly, there can be division among faculty in a department or college as to the value of Internet courses. Some faculty may not view the Internet courses as having the same value as site-based courses and such differences may be expressed to the other faculty. Clear support for the value of the Internet course on the part of the unit administrator must be shared with all faculty from the onset.

One method utilized in this department was to have the faculty member teaching the course provide

periodic updates at faculty meetings and answer questions. Also, the faculty member established a guest account so that other departmental faculty could review the site while the Dean of the College was also kept apprised on the effort. The College Technology Support employee was involved in development and management of the course, and both computer hardware and software utilized. All these efforts seem to have contributed to a positive feeling from faculty about the efficacy of Internet courses for academic credit.

Technological Perspectives

The literature and anecdotal evidence suggests that students enter postsecondary education capable of utilizing technology to enhance the learning process. This potentiality confronts the educator, technological support and administrative personnel with opportunities and challenges. Students expect courses will include technological enhancements that provide support to or replace traditional classroom-based learning experiences. Some students, however, may experience trepidation when confronted with online assignments or activities. Regardless of the students' level of technological sophistication or comfort, problems are certain to arise. The design team's responsibility is to ensure that practical and meaningful support is readily available. This requires the design team to consider what problems may be encountered and develop solutions *a priori*. Reliance on colleagues and the literature can help eliminate much of the guesswork in planning support. Design of the course site should limit the technological "bells and whistles" that slow access and inhibit simple and efficient navigation of course material. The design of an online course does not seem an appropriate venue for experimentation with features that add little or no functionality. For example, an instructor might add a streaming video file simply because he or she has secured the equipment necessary to the video message. The pedagogical impact of any delivery method should be carefully weighed to ensure that it does not prevent access or complicate the learning process. Materials that require excessive download times may create frustration and inhibit learning. The ideal seems to be delivery of an online course that takes advantage of the latest technological innovations in a manner that is efficient and accessible to the vast array of technological configurations students will utilize to access the site.

A final concern is related to inclusion. Online courses should ensure equity in access to users confronted with various disabilities. Bobby (http://www.cast.org/bobby/) is a tool for Web page authors. It helps identify needed changes to their pages so users with disabilities can more easily use course online materials. For example, Bobby reminds the design team that a written transcript of a sound file aids a hard-of-hearing user. Use of a service like Bobby can help ensure that the online course meets the needs of every possible student (Center for Applied Special Technology, 1999-2000).

A continuum of delivery mechanisms was available to this instructional design team. Basic questions by the team surfaced in two major areas: mechanisms for the provision of course content and activities; and mechanisms for student/student and student/instructor communication. Delivery mechanisms available for web-based delivery of course content, activities, and communication were course authoring tools, mail, e-mail, telephone, CD-ROM, fax, discussion lists, chat rooms, and audio- and video-conferencing.

After answering the important pedagogical questions regarding purpose of lessons, primary audience, and learner expectations, practical technological questions were formulated. Two general questions were asked to provide direction. What specifics needed to be addressed for the students and instructor? What was the best, most efficient delivery method?

After assessing the technological capabilities of the target audience, the instructional design team had a clearer understanding of what could facilitate student success. Students needed access to an IBM-compatible, personal computer that utilized a recent version of any popular web-browser. Furthermore, students needed proficiency with communication via e-mail, including use of attachments.

A web-based course authoring system was determined to best meet the instructional design and delivery needs of the instructor. Such a system offered consistency of design, ease of navigation and orientation, and accommodate a variability of delivery options. An added benefit was ease of integration with the web-editing software used in lesson module development (Microsoft FrontPage 2000). Technical expertise that was required to develop and maintain a web-based course authoring system was supported through college and university mechanisms. WebCT was chosen due to support issues. The decision of using a web-based course authoring system was an important one because an authoring tool impacts the entire course design and implementation process. For example, key issues addressed through selection of a

web-based course authoring system included administrative features such as setup and maintenance, access control, tracking functions, and assessment tools. Course material was placed on the college server. The instructional design team had access through office Ethernet or remote modem connections. Course materials were divided into modules and each module was developed using Microsoft FrontPage 2000. These module lessons were saved and made available to students using the WebCT course tools.

The key lesson learned from this online course delivery experience was that student support should be personalized and timely. Instructor and technological support contact information was placed throughout the course site. This allowed the student to feel that help was literally an e-mail message away. Furthermore, the site was supported through online publication of a wide array of support information that provided step-by-step instructions for all course related activities (e.g., e-mailing instructor, accessing WebCT).

A key aspect throughout the technological conceptualization and implementation phase was collaboration. Three individuals representing different functions and expertise relevant to the proposed web-based course were in regular communication prior to, during course development, and throughout course implementation. Whenever problems arose, they collaborated to analyze the problem, then collectively determined the best remedy by identifying what assistance was needed from team members.

Educational Perspectives

The assigned course instructor was responsible for course content design and assumed the role of content specialist on the collaborative team. Prior to designing the Medical Terminology Internet course, the instructor had taught the course in the traditional classroom for several semesters. Two preliminary challenges prior to teaching the course were the acquisition of WebCT courseware skills and development of the content and evaluation materials. The instructor acquired prerequisite WebCT courseware skills through four hours of training provided by the university. An additional four hours were spent exploring and practicing within the courseware to become familiar with WebCT tools prior to beginning the design process.

To manage the design process, a multi-step plan was developed by the instructor and the technological specialist. This plan was designed to manage communication, course content, learning activities, and evaluation processes as time spent in course design was a key factor for instructor consideration. Schweizer (1999) noted that the design and development of the Internet-based course might require time up to 40 percent longer than a traditional course. The additional time was due to the need to pay considerable attention to clearly outlining course expectations, detailing course activities, discussions and assignments, creating assignments, and making the course easy to navigate.

The design process began in the prior semester with the development of a time-sensitive work plan by the instructor and the technological team member. The design team members met every one to two weeks for about an hour. During the first meetings, steps of the work plan were identified with assigned timeframes for completion. Later meetings included progress reports by team members with the identification of issues regarding task completion.

As with all courses, key elements of course design such as the syllabus, course objectives, schedule, student outcomes, content materials, assignments, examinations, midterm course evaluation tool and course/instructor evaluation tools were developed. The instructor reviewed each traditional course component. The traditional syllabus, course objectives, and student outcomes were uploaded to WebCT's Syllabus Tool without revision. The schedule, content materials, assignments, examinations, midterm course evaluation tool, and course/instructor evaluation tool required moderate changes.

No changes were made in the course textbook and it was available at university bookstores or through an off-campus location. Students were encouraged to request a specific receipt date for the textbook delivery from an off-campus location for the first day of class activities. A recently published medical dictionary was recommended as the only additional learning resource. For off-campus students, ordering the textbook and medical dictionary through an Internet book service was most practical.

The course schedule was modified from 16-week course to a six-week format as the Internet course was first offered during the summer semester. Assignments were scheduled four days a week and examinations were scheduled weekly. The schedule was uploaded into WebCT's Schedule Tool and then manually entered into the Calendar Tool to provide students with two options for accessing the course schedule.

Strategies were identified for communication between the instructor and students. Verbal and visual synchronous communication of the traditional

classroom was replaced by written, asynchronous communication of the Internet. Correspondence guidelines were published in the syllabus. Students were expected to communicate by email or through WebCT. The instructor's university phone number and office address were provided to students through the syllabus although the instructor did not maintain traditional office hours. Students were notified that email was the preferred communication mode but that the instructor would be available to meet with any students as needed. The instructor responded within 24 hours of receipt of the email and Monday through Thursday only. Students were notified through email if the instructor was not able to meet the published deadlines, for example a response delay due to attendance at a conference. In addition, weekly emails were sent to all students through their university email addresses with reminders about assignment and exam dates.

The management of student inquiries by email required a different approach than routine email correspondence as many students asked multiple questions in a single paragraph. To assure that all questions were answered, the instructor responded to the student's questions within the body of the student's email message. The instructor used bold and colored fonts to identify the response.

Lecture notes from the traditional classroom were uploaded into WebCT's Content Tool and organized by textbook chapter title within the Content Tool. A table was used to correlate the lecture notes to the specific medical term. Assignments were completed a few weeks prior to the first day of class and uploaded with the syllabus to WebCT. An additional assignment was added that requested information about the student's previous experience with Internet-based courses and WebCT.

Assignments were submitted as email attachments. Some students encountered a problem when submitting their first assignment because this was their first experience attaching files to emails. No problems were encountered with subsequent assignment submissions. Upon receiving an assignment, the instructor notified the student of its arrival.

Past examination questions were entered manually into WebCT's Quizzes Tool using multiple-choice, matching, and short answer formats. Each question was assigned a Quizzes' Category that corresponded to its textbook chapter so that the questions could be easily retrieved for the examinations. Each question required three to five minutes for entry into the WebCT database. Approximately 60 hours were required to enter 700 questions into the database. The midterm course evaluation and course/instructor evaluation eliciting student feedback were adapted from traditional courses to the WebCT Survey Tool using a multiple choice and short answer question format.

Five chapter examinations and a final examination assessed the student's knowledge of course content. Chapter examinations contributed 30 percent and the final examination 50 percent to the course grade. While chapter examinations were completed from any computer, the final examination was completed at a proctored examination site selected by the student and approved by the instructor. All examination sites were selected from the Illinois Virtual Campus directory because these sites provide proctored testing services through the state's community college system.

Practice examinations were developed for each of the five chapter examinations allowing students to experience taking WebCT examinations while assessing their knowledge of chapter content. Multiple opportunities to take practice examinations were offered to students until the final examination. None of these scores contributed to their course grade.

Student examinations were graded automatically by WebCT and transmitted to WebCT grade book for individual student viewing. The instructor was able to manually over-ride any individual grade. Since assignments submitted as email attachments were not graded by WebCT, grades were entered manually. The work plan and WebCT course files were copied and retained by the instructor for future courses. Student records, as with any course, were kept for documentation purposes for a minimum of one year.

Conclusions

Using standard measures of student enrollment, student satisfaction, and instructor input, the experience of offering the Medical Terminology course in the Internet format has been beneficial to both the department and students enrolled. In the five semesters that this course has been offered through the Internet, all sections have been filled or near capacity. However, the site-based section also continues to fill so the authors conclude that the different formats are meeting the needs of different learners. As a result, both formats will be offered each semester. Although pleased with the success of the Medical Terminology course, we are proceeding cautiously with offering other courses in the Internet format. Two additional courses are now offered through the Internet but both are primarily

content-driven types of courses. There is much hesitancy on the part of faculty to offer courses that have a strong skill acquisition component. Instead, faculty prefer offering skill-based courses in a traditional site-based format while utilizing the Internet to enhance and support the teaching/learning experience. Many faculty believe strongly that the acquisition of skill cannot be adequately demonstrated through an online course.

It is the belief of the collaborative team that a successful online course is best designed and implemented when administrative and technological input is purposefully integrated into the course planning process. Clearly, the educational design and delivery is primary to a successful learning experience, but the two other perspectives are vital to the ongoing support of the faculty teaching the online course. Departmental members should consider forming a similar type of collaborative team to ensure a successful experience for both faculty and students.

Finally, there needs to be evidence that students learn and student outcomes are achieved in an online course to the same extent as a site-based experience. The collaborative team is currently implementing a research design to compare both student learning and satisfaction in the Internet vs. the site-based format of the same course. Findings will be shared with professional colleagues to help them in deciding whether or not to offer existing courses in their programs through the Internet.

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