Abstract: This study describes the development and implementation of an evaluation system applied to newly created master’s degree level online programs at a major metropolitan research university. A systematic approach to evaluation provided formative feedback on the processes and products of course development. Multiple data sources including course documents (instructional design plans, course syllabi, and on-line course materials), individual and focus group interviews (with instructors and designers), and web-based surveys (of instructors and students) were synthesized to provide the foundation of a comprehensive system for evaluating, verifying, and contrasting inferences related to both pedagogical and technological qualities. Results of both quantitative and qualitative analyses support the integrity of the evaluation system and underscore the importance of a carefully planned and executed approach to the evaluation of distance learning courses.

Introduction and Purpose

Online courses are proliferating at institutions of higher learning. The National Center for Education Statistics reported: “In 2000–2001, 90 percent of public 2-year and 89 percent of public 4-year institutions offered distance education courses” (U.S. Department of Education, p. iii). Most of the institutions (90%) offering distance education courses indicated that they used asynchronous Internet technologies as a delivery format. With this in mind, the primary purpose of this study was to develop and validate an evaluation system that could be used to examine the development, delivery, and effectiveness of web-based courses. It is important to note that this research is part of a series of studies designed to facilitate the development of a comprehensive framework for the evaluation of a 5-year technology project at a large, metropolitan research university.

Theoretical Framework

Large scale evaluation planning and implementation should be grounded in formal models of program evaluation. A consideration of the variety of standards, theories and models for evaluation, within the context and nature of the specific program to be evaluated often suggests an amalgam model or framework that will provide direction for evaluation planning. Our evaluation blended components advanced by the Joint Committee Standards
for Educational Program Evaluation (1994), with models that trace their roots to Stufflebeam’s CIPP model, providing a framework for the evaluation of a program’s context, input, processes and products (Stufflebeam, 2002). We also consulted instructional design models such as the systems-based Dick and Carey model (Dick, Carey & Carey, 2004) that focuses evaluation efforts on applications of learning theories and principles that guide the design and development of instruction.

Further, special attention was given to Eaton’s (2002) recommendations to accreditation agencies for evaluating distance learning. These strategies, entitled Assuring Quality in Distance-learning, were gleaned from a publication produced by the Council for Higher Education Accreditation (Phipps, Wellman, & Merisotis, 1998). These suggestions include providing substantive evidence of contact between faculty and students; evidence of effective instructional techniques (e.g., modular learning, collaboration, and attention to varied learning styles); and focused attention on the development of courseware and the availability of information.

In addition to Eaton’s (2002) recommendations, the recently adopted standards of the International Society for Technology in Education (ISTE, 2002) were consulted, with careful attention to essential conditions required to create learning environments that are conducive to powerful uses of technology. Although the aforementioned standards were developed specifically for teacher preparation programs, a subset of the essential conditions was deemed appropriate during this stage of the research. For example, the essential conditions of an effective system that coheres around a shared vision for the integration of technology and its use to support new modes of teaching and learning are critical contextual factors in the project. Of course, educators must be skilled in the use of technology for learning, and must have consistent access to professional development in the support of technology use in teaching and learning. Further, the development and implementation of an assessment system to monitor the effectiveness of technology for learners is imperative. These critical components were blended into the interview protocols and faculty and student surveys.

Research Methods

The courses examined in this study were initial components of a comprehensive series of online courses that are anticipated to fulfill the requirements of master’s degree programs in three distinct disciplines. Data were gathered over two semesters from instructors and students in 16 courses. Four instructional designers provided technical support for the instructors during course development and initial delivery.

The process undertaken reflects a triangulated approach to evaluation, consisting of multiple methods of gathering data to both develop the evaluation system and begin the process of course evaluation. Initially, our 11-member research team, comprised of measurement, technology, and evaluation specialists, looked to the literature to glean information regarding accreditation standards, the use of technology in higher education, and effective course evaluation (see, for example, ISTE, 2002; NCATE Standards, 2000; Barron, 1998; Phipps, Wellman, & Merisotis, 1998; Moore & Kearsley, 1996). Next, we divided into work groups to develop a variety of instruments and processes to gather data on the development and delivery of online courses. Once instruments were developed, they underwent initial validation procedures, including expert reviews and pilot testing. Information gleaned from these steps guided further refinements.

Analysis methods employed included both qualitative and quantitative approaches. Data were gathered from students, faculty, and instructional designers. Three student surveys were administered; each designed to tap a different aspect of the student’s experience with the online course. Faculty and instructional designers were also interviewed at the beginning of the semester to gather data on the issues and processes they faced developing and delivering these courses. Toward the end of the semester, faculty members completed a survey consisting of both selected and open response items related to perceptions of course effectiveness. The collective responses were analyzed for themes in order to identify recommended practices for effective development and delivery of distance-learning courses.

In addition to information obtained from those directly involved with the courses, team members reviewed pertinent course documents (e.g., course syllabi, instructional design plans and online course content). This review was intended to provide evidence related to the breadth and depth of course documentation regarding pedagogical and technological innovations, as well as the degree to which different documents synthesized information for a given course and were reflective of actual course practices. These documents each have a unique purpose and serve to inform different aspects of course development and delivery.
Results

Student Survey Data

The results from the surveys of approximately 200 students suggest that nearly 60% of the respondents live more than 30 miles from the campus where the courses were offered, and 47% live more than 60 miles away. Consistent with the geographic distance, more than half of the students reported that distance was an important factor in their decision to enroll in the courses. Additional important reasons for enrollment were work schedules (69%), class schedules (63%), and family obligations (49%). Survey questions related to previous experiences suggested that the students were relative novices in learning via online distance education. For example, 28% of the group is enrolled in their first web-based course, and an additional 10% have only one previous online course experience. Despite the large proportion of novices in these courses, more than 90% of the respondents indicated that it was easy to obtain an ID card and the network ID required to access the course delivery system, to access the Internet and the server, and to obtain a course syllabus.

Student survey data gathered at course midpoints suggested that the majority of the respondents did not experience any technical problems with connecting to their courses, uploading assignments, opening documents and displaying graphics (ranging from 70% - 76%). Minor problems were experienced with broken links (36%), and major problems occurred less than 4% of the time. In response to questions regarding the utility of various aspects of online instruction, the overwhelming majority of participants were most satisfied with the online submission of assignments and the online grade book (with more than 79% reporting these aspects of the course to be Very Useful). Sixty-six percent of the participants reported that navigation was Very Easy, and more than 90% believed that taking this particular online course was a good decision. Additionally, 61% of the students reported that their assignments took about the same time to complete as those in more traditional course formats, while 32% reported that the online assignments required more time.

Data gathered at the end of each course suggested that student found the course organization to be agreeable (81% found it logical and easy to follow, 77% reported that activities and assignments facilitated their understanding, and 73% reported that assignments were aligned with course objectives. Two items raised concerns about course delivery: 53% of the students reported that they rarely or only sometimes could skip over course content that was already familiar, and 24% reported that their instructors rarely or only sometimes provided timely feedback on assignments.

Faculty Survey Data

The instructors participating in the course offerings reported being Very Satisfied on 21 of the 30 selected response items, including items addressing student performance, availability of technical support, working with the instructional designer, and satisfaction with the course as a product. Further, the instructors reported being Satisfied with aspects such as interaction and communication with students, technology dependability and support received from the department and college. The instructors reported being Dissatisfied on only two items (support received from other instructors and ability to interact with other faculty using technology in teaching).

The open-ended responses corroborated the data obtained from the selected response items (e.g., the instructors reported being very pleased with the quality of the students’ work in the course and the experiences collaborating with the instructional designers). Further, the instructors indicated improvements to be made in future offerings of these courses in terms of clarifying instructions for students and facilitating communications. Although no dissemination activities have been undertaken, the instructors reported plans for presenting information on their experiences at professional conferences in the future.

Faculty Interviews

The interview protocol consisted of 36 questions falling within six general areas: Background/Training/Experience, Commitment, Support, Innovations, Satisfaction, and Concluding Remarks. The faculty members’ backgrounds and previous experiences with online course delivery varied greatly. One faculty member, for example, had delivered technology-driven distance learning courses in a variety of modes (e.g., web, email, satellite) for over five years. Conversely, other faculty members indicated no previous experience delivering courses from a distance and had received minimal, if any, training beyond their own self-study. All faculty
members interviewed, regardless of their previous experiences with online instruction, were enthusiastic about delivering their courses via this method.

Thematic analyses of faculty interview transcripts suggested that virtually all of the instructors indicated that the time required to design, develop, and deliver their course online was intense and, in many cases, much greater than what had been anticipated. Assistance for faculty, in the form of teaching assistants or other graduate student help, also varied, with some faculty receiving no additional support through graduate or teaching assistants to others with more than one assistant. All faculty members had the benefit of working with an instructional designer to help develop and deliver their courses under the grant, and all indicated that working with their designer(s) was a very positive experience. The degree to which technological assistance (in the form of hardware and software support and troubleshooting) was considered adequate, however, varied across instructors. Instructors also indicated varying experiences with developing a positive and community-oriented atmosphere online. Although at least three instructors felt that they had been able to foster a very strong sense of community and partnership both between themselves and their students, as well as between the students themselves, other instructors considered this an issue of potential concern.

All of the instructors were satisfied with various aspects of innovations that occurred either as a part of their online course delivery or as a result. Three instructors indicated that putting together a class online required more thought and careful consideration of the organization and presentation of course material. A few noted that they had changed methods of assessment to both take advantage of the opportunities presented in an online environment (e.g., having students make web pages as a means of introducing themselves and communicating their learning) as well as circumventing potential problems with cheating (e.g., more project based assessment processes). Three instructors also indicated that their experiences developing and delivering online courses had helped them make changes in courses they delivered face to face. Two instructors provided feedback on the different characteristics required for students to be successful in online and in-class delivery modes. One instructor was particularly adamant that both modes of delivery are needed to meet the learning styles of different students.

Faculty Inservice

The purpose for these evaluation studies was to examine a strategy for evaluating professional development workshops in the university setting where pre-post achievement testing of professors is not the norm, and to examine the viability of the information obtained for locating the strengths and problems with the instruction. Workshop observations and time-lapse transfer designs were used. For the workshops, twenty faculty in the program were selected to participate in four, one-half day workshops designed to help build collaboration networks among faculty engaged in infusing technology into their courses and to enhance faculty skills in technologies for online course delivery. Four evaluators used an “events of instruction” rubric to observe and rate instructional procedures used during the workshops. Using a 4-point scale, evaluators’ mean ratings revealed that content presentation (3.9) and learner participation (3.8) were the strengths of the workshops. Pre-instructional activities were also well designed and delivered, and received a mean rating of 3.5. Concluding activities, important to support transfer to the workplace, although still good, appeared to be the weakest instructional event receiving a mean evaluator rating of 2.9. Based on trainers’ adherence to best instructional practices, the probability of faculty participants acquiring the information and skills was judged high.

After one semester lapsed, workshop participants were contacted to complete a survey of their perceptions of the utility of the workshops and their ability to transfer the strategies learned in the workshops to their course development and delivery activities. The survey was developed using workshop goals, particular technology taught, and stages of change from change theory (Hall & Hord, 2000). A response rate of 50% was obtained without follow-up reminders. Participants clearly indicated specific concerns with or praises for particular technologies introduced during the workshops. Related to the faculty collaboration goal, slightly more than half reported they were collaborating with colleagues and that the workshops had little impact on their overall use of technology in the classrooms. Half indicated they would seek collaboration with technology specialists or instructional designers for incorporating technology in their courses, and slightly more than half said that they would recommend these workshops to their colleagues.

Instructional Designer Interviews

A semi-structured interview protocol was used as a guide during interviews with the instructional designers. A team conducted the interviews, asking the instructional designers questions from the protocol, audio-recording the conversation, and taking notes. All participants were encouraged to elaborate on any issue to ensure
Thematic analyses of the designer interviews revealed seven domains (Faculty/Designer Interaction, Monitoring Maintenance and Evaluation, Course Management System, Resources, Designer Perspective, Instructional Design and Instructional Development). These themes elucidated issues the instructional designers found both challenging and rewarding throughout the process. One of the most prominent positive results was a strong collaborative relationship built between the instructors and the designers, while the most prominent negative theme stemmed from restrictions placed on design due to the available systems for online course development and short time frames for development.

Document Analysis

The analysis of course syllabi was guided by a checklist delineating evidence of the integration of technology with respect to six categories: Contact Information, Online Resources, Course Delivery and Interactions, Processes and Products, Course Administration, and Software/Tools. These data suggested variability with respect to the availability of online resources, with some providing online readings, while others provided class notes. With the exception of a single course, all of the courses required students to create or interact with technology to produce course projects or presentations, and required some form of online submission of student work. Further, as might be expected, all of the courses required some form of asynchronous discussion or posting. Surprisingly, only one course made reference to the use of an electronic portfolio. Lastly, all of the course syllabi contained references to the technology requirements of the course (e.g., software, hardware, plug-ins, internet connections).

The primary purpose of the Instruction Design Plan (IDP) is to document the analysis for the course and provide a mechanism for communicating learning objectives, design strategies, and production schedules between the instructional designer and the course instructor. The instructional designers construct the IDPs based on preliminary syllabi from the courses and on-going discussions with the course instructors. Although individual IDPs differ slightly based on the content and the designer, they all cover the Analysis, Design, Technical Specifications, and Production Schedule of the course. The Analysis portion of the IDP consists of goals for the course, learning objectives, and audience analysis. The Design portion provides information relative to the instructional strategies, course structure, and specific tools (such as bulletin boards and chat) that will be implemented into the course. The Technical Specifications section covers aspects of both the development and delivery environments. The Production Schedule outlines the tasks, responsible parties, and due dates.

Currently, the IDPs have been examined from the standpoint of the design strategies implemented and the “innovativeness” of the strategies. Within the IDPs, we noted a variety of approaches across the courses. From this review, two major themes emerged – an emphasis on collaboration and project-based learning. In every case, the design plans stipulated that students would engage in discussions (synchronous and/or asynchronous) and work in groups to produce projects related to the course objectives. Several innovative uses of technology were also noted – many of the design plans explicitly mentioned narrated presentations, and several plans called for the implementation of video, either as an introduction, presentation of content, or student project. All of the courses were divided into several units, with related content, links, and assignments for students. Only two of the courses included activities with immediate feedback (e.g., computer-assisted instruction tutorials).

The review of the online course content was used to understand how the courses use technology and innovative strategies for teaching and learning. A multi-category checklist was created to assess technical and pedagogical innovations found within the online courses. The checklist consists of four major domains, Course Design, Instruction and Collaboration, Assessment and Learner Support, which describe how the courses are implementing innovative strategies in ways to increase interactions and effectiveness. The review of the courses in this manner provides additional information that complements the other data sources, providing a vivid picture of the overall courses and the processes that cohere to create online programs. The analysis of these data revealed many aspects of technology innovation being exhibited within the courses. Some of the innovations that were noted include: narrated, web-based presentations from the instructor, an online syllabus that hyperlinks content within the course to outside resources, webcast, video presentations that enhance content with authentic examples, and student use of technology such as making web pages and multimedia presentations.

Conclusions
The results of this study provide strong evidence that delivery of distance-learning courses needs to be carefully and thoughtfully planned and implemented. Both faculty members and instructional designers indicated that effective development and delivery of distance-learning courses is predicated on a close and collaborative working relationship. The articulation of course development and delivery with a comprehensive evaluation system that includes multiple data sources and multiple methods of data analysis facilitates the collection and analysis of pertinent information to provide timely, formative feedback to course developers. The triangulation of results from these multiple data sources provides supportive evidence of the dependability of such information to guide development and refinement of the educational initiative.

As the proliferation of distance-learning opportunities continues in this era of educational accountability, educators, administrators, and institutions will need to have tools and methods available to ensure that the courses and programs they offer continue to meet the requirements of accreditation, policy-making, and funding agencies. Further, initiatives for the retooling of higher education have generated a variety of programs in which technology plays integral roles. There is an attendant need to plan for creative teaching opportunities and the establishment of mechanisms to link them to widely accepted standards and accountability systems. Clearly, the development and implementation of such programs requires a carefully planned and executed evaluation strategy. This study provides a foundation upon which to build and further develop a system to meet the needs of a host of individuals and groups involved in higher learning, including faculty, administrators, and regulating or granting agencies. We anticipate that a variety of diagnostic tools and innovative methods will be necessary in order to meet the needs of large-scale evaluation endeavors in the future.

References


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