A COMPARISON OF TRADITIONAL, VIDEOCONFERENCE-BASED, AND WEB-BASED LEARNING ENVIRONMENTS

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ABSTRACT

The purpose of the study was to gain a comprehensive understanding of the experiences of graduate students and faculty members at on-campus and remote sites in courses delivered using Web-based course management courseware and videoconference-based (TTVN) delivery methods. The study examined the differences among distance learning and traditional learning environments. Several factors were compared to determine the differences: student satisfaction, peer relationships, faculty motivation, faculty load, and resource support. The study applied a mixed-methods design, using both quantitative and qualitative methods, both descriptive and comparative in design. A questionnaire instrument was used to collect data concerning the differences among the three different learning environments from the students' perspectives. Qualitative interviews and observations were conducted to identify factors that contribute to the differences among the three different learning environments from the faculty members' perspectives. Findings from the study indicate that student satisfaction and peer relationships are significantly related to the learning environments. Faculty members have different motivations and workloads in different learning environments and feel that the tenure/promotion standard is not well defined and only universal standards apply for all faculty members. There is still no standard to evaluate the effectiveness of distance learning educators.

Introduction

Information technology has become more complex than ever with the progress of science and technology. Advancements in technologies, such as computers and telecommunications, have changed the way people work and how they are educated. Proper assessment is required to determine the strengths and weaknesses of any instructional delivery system. While a limited number of researchers have compared the differences of distance-learning courses to traditional courses, the study addresses factors other than student outcome (i.e. student satisfaction, peer relationships) in the three different learning environments.

Advances in technology also allow higher education to go "beyond the traditional classroom and deliver instruction and training to geographically diverse audiences locally, nationally, and even internationally" (Rockwell, Schauer, Fritz, & Marx, 1999). With advances in distance education technology and an increase in demand for distance education, faculty members remain a key element in the process of teaching and learning (Rockwell et al., 1999). Therefore, it is necessary to focus on faculty attitudes and specific factors (i.e. faculty motivation, faculty load, faculty promotion, and faculty tenure) affecting faculty members' participation in distance teaching.

As institutions of higher education launch or expand distance learning course offerings, it is important to identify factors that influence students and instructors participation in distance education. Information obtained from the study may help institutions of higher education, faculty, administrators, and researchers better understand the perspectives associated with students and faculty members in the different learning environments.

Purpose of the Study

The purpose of the study was to gain a comprehensive understanding of the experiences of students and faculty members at on-campus and remote sites in courses delivered using Web-based course management courseware and videoconference-based (TTVN) delivery methods. To accomplish this purpose, quantitative and qualitative data were collected using an on-line survey instrument and through interviews, respectively. A survey instrument validated by a panel of experts was used to analyze quantitative aspects of the study. Interviews were conducted and analyzed to generate data for the qualitative components of the study.

Analysis of Data

The quantitative sample for the study consisted of 311 Texas A&M University students taking distance-learning courses in the spring semester of 2005. A self-designed instrument created for the study was used to identify student satisfaction and peer relationships that contribute to the differences among three different learning environments from students' perspectives. Qualitative data were gathered via interviews. The participants of the qualitative study consisted of seven faculty members and six administrators from the Texas A&M University System. Interviews were conducted to

identify issues relating to faculty motivation, faculty load, faculty promotion, and faculty tenure contribute to differences among the three learning environments from faculty members' perspectives.

The study findings are divided into five areas: student satisfaction, peer relationships, faculty motivation, faculty load, and faculty tenure/promotion. The following is a summary of the findings.

Student Satisfaction

Data collected from the survey indicated that there were differences in student satisfaction among traditional, videoconference-based, and Web-based learning environments. "Streaming Video/Sound", "Class Material", "Quality of Course", "Class Interrupted", "Enjoyment", "Preference", "Done Better", "Overall Quality", "Take Again" and "Recommendation" responses were found to be significantly different among the three learning environments.

A majority of TTVN (59.1%) and Web-based (76.4%) students felt that the overall quality of their distance course was outstanding and didn't think they would do better if they took the same course in a traditional learning environment. Half of the participants preferred distance learning to traditional learning. Therefore, more than 63 percent of the students would take the distance course again, and 75 percent of the students would recommend it to other students. Overall, traditional students had the lowest agreement with these statements.

Technical problems become a critical issue in the operation of a TTVN learning environment. The TTVN class will be canceled or postponed if connection problems occur and no technical expert is available to fix the problems immediately. According to the survey data, 65 percent of TTVN students felt that their class was sometimes temporarily interrupted or canceled due to technical problems, only 25 percent of Web-based students experienced class interruption problems.

Peer Relationships

Data collected from the survey indicated that there were differences in peer relationships among traditional, videoconference-based, and Web-based learning environments. "Reliable Means of Communication", "Efficient Means of Communication", "Preference Face-to-face Interaction with Peers", "Preference Face-to-face Interaction with Instructor", and "Sufficient Opportunity" responses were significantly different among the three learning environments.

Web-based students felt that the learning environment provided an efficient and reliable means of communication; therefore, they did not prefer the traditional face-to-face interactions with peers and instructors. Overall, traditional students had the highest preference of face-to-face interactions with instructors and peers among these three learning environments. TTVN students also had a higher preference of face-to-face interactions with instructors and peers than Web-based students. Among the three learning environments, even thought more than 81% of the students all agreed with the statement that they had sufficient opportunities to communicate with their instructors, however, more TTVN students (16.3%) disagreed with this statement than the other two

groups. TTVN students did not feel that TTVN was an efficient means of communication.

Faculty Motivation

Providing more learning opportunities and reaching wider audiences were the common motivating factors that drove Web-based and videoconference-based faculty members to devote themselves to distance teaching. Flexible schedule and location were the motivational factors that appeared to be most influential for Web-based faculty members, but the flexibility factors were not identified as being motivating by videoconference-based faculty members. For videoconference-based faculty members, the class schedule, time requirement, and location are fixed. Teaching a TTVN class is very similar to teaching in a traditional classroom.

The review of literature endorses the finding that flexible scheduling and wider audiences are the most important intrinsic motivators for faculty members to participate in distance education Parker (2003).

Faculty Load

Web-based and videoconference-based faculty members expressed the view that the workload was greater when teaching in these environments than teaching in a traditional environment. According to the interviewees, two reasons that increased faculty workload were noted: more time was required to prepare course materials and communicate with students. Faculty workload also increased when the size of classes increased in videoconference-based and Web-based learning environments. In addition, videoconference-based faculty members had more concerns about equipment and travel to the different sites was required to increase face-to-face communication and social contact with students.

The review of literature endorses the premise that providing timely feedback is crucial for the distance instructor (Grossman & Wagner, 2000; Kearsley, 2000). Students need much more support and feedback in the distance environment than in a traditional class because of the potential that students may feel alienated (Kearsley, 2000; Palloff & Pratt, 1999).

Faculty Tenure and Promotion

According to the results of the qualitative interviews, participating distance faculty members felt that administrators did not recognize the efforts of distance educators. From the administrators' perspective, the main factors affecting tenure and promotion were teaching effectiveness and quality. According to participating administrators, "the quality of the class depends on the instructor, not the medium." Therefore, there should be no difference between distance and traditional educators when considering the tenure/promotion issues.

One of the criteria for evaluating tenure is the effectiveness and quality of the teaching. The majority of participating administrators stated that there should be no quality difference among the three learning environments. However, one administrator

indicated that there was no difference between TTVN and traditional classes, but there were differences between Web-based and traditional classes. The administrator indicated that "some Web-based faculty members did not prepare well for the class and spent less time communicating with their students, they just take advantages of distance learning."

Overall, participating administrators and faculty members agreed that the quality of a course depends on the instructor. However, distance faculty members felt that the tenure/promotion standard was a gray area for them. The standard was not well defined and only universal standards apply for all faculty members. There was still no standard to evaluate the effectiveness of distance learning educators. For distance educators, it was a barrier for them when the institution used the traditional standard to evaluate the effectiveness of distance teaching.

Conclusions

The findings of the quantitative and qualitative study resulted in the following conclusions:

Student Satisfaction

According to results from the analyses of students' survey, there were significant differences in student satisfaction among traditional, videoconference-based, and Web-based learning environments. The results showed that current students were more satisfied with and preferred distance learning environments over traditional learning environments. Distance learning students indicated that the quality of Web-based and videoconference-based courses was equal to or better than traditional courses. Undoubtedly, both Web-based and videoconference-based courses provide students with a more flexible learning environment. Students were no longer limited by time or location in pursuing learning opportunities. Through the flexibilities of class schedule and location, students can more easily arrange their daily life and study schedules. This flexibility is also the main reason that the majority of the responders would like to take a distance class in the future and would recommend this learning method to other students.

Even though both Web-based and videoconference-based delivery methods provide students flexibilities in learning, TTVN students still need to attend class to receive instruction. TTVN and traditional class materials and activities are very similar. In contrast, Web-based students can receive class materials and resources through diverse technologies at a variety of locations and times. The advancement of computer technology, the Internet, and multimedia applications provide various learning channels and effective communication with the instructor.

Peer Relationships

According to results from the analyses of students' survey, "Class Discussion", "Peer Discussion", and "Team Projects" responses were not found to be significantly related with the learning environments. For the majority of students, both Web-based and TTVN delivery methods provide an interactive learning environment and collaborative learning opportunities similar to the traditional environment. However, with changes in

the social environment and popularization of the Internet, students are more inclined to prefer the learning environment that can provide effective learning methods and immediate feedback.

With the facilitation of technology, the majority of participants believed that the Web-based learning environment not only can provide reliable and effective interactions between students and instructors and among students, but also offer sufficient opportunities for them to communicate with others. Immediate feedback from others can also enhance their learning. For this reason, traditional teaching methods that place emphasis on face-to-face communication and relationships are unable to meet the demand of current students.

Faculty Motivation

Administrators and instructors have realized that modern technology is essential to teaching and learning worldwide. Distance learning and technological curricula have already broken regional boundaries of schools and offer more educational opportunities for students. Therefore, understanding what motivates faculty members to participate in distance education is a key factor that may influence the success or failure of distance education. Reducing obstacles that prevent faculty members from participating in distance education becomes more important than ever. In qualitative interviews, both Web-based and videoconference-based faculty members chose “providing more learning opportunity” and “reaching wider audience” as their motivations to teach via distance education. Flexible schedule and location were the motivational factors identified by Web-based faculty members, but these factors were not identified as motivating by TTVN faculty members. Faculty members also identified “lack of release time”, “lack of technical support”, and “increased faculty load” as inhibiting factors when teaching in distance learning environments.

The literature reveals that distance education involves the recruitment and development of quality faculty who are critical to any distance education program, as is the development of distance education policies. Therefore, it is quintessential that institutions work with faculty to identify and eliminate/reduce barriers that defer faculty participating in distance education and to work with them in the development of policies that meet their diverse needs (Betts, 2000).

Faculty Load

The development of modern technology not only has influenced curriculum design and students' learning methods but has caused the change of teachers’ instructional methods. Distance instructors have to develop new skills in instruction strategies, methods of teaching, teacher-student interaction, feedback, and evaluation (Knobloch, 2000). Although the students’ survey data showed that most students have positive attitudes toward both Web-based and TTVN learning environments, the new technologies of distance education create more faculty workload.

According to the result of qualitative interviews, faculty members stated that their workload in distance education is somewhat higher than in traditional teaching. They indicated that they need more time to prepare course materials and communicate with

students. In addition, faculty members stated that one of distance education's goals was to provide more learning opportunities for students. Therefore, their workload increased when the class size is large.

The review of literature endorses the finding that the overall teaching load was somewhat higher for instructional faculty and staff teaching distance classes than for those not doing so (Bradburn, 2002); faculty who teach through distance learning are spending more time preparing the course and teaching it than their face-to-face counterparts. Therefore, institutions of higher education should recognize this transformation of workload and incorporate appropriate compensations when planning distance education initiatives.

Faculty Tenure and Promotion

According to qualitative interview results, distance faculty members indicated that their efforts are not emphasized by the school, and the increased faculty workload does not provide them extra credit when tenure and promotion decisions are made. For most institutions of higher education, tenure is awarded by achieving the institutionally approved balance of teaching, research, and service. However, most institutions today lack the appropriate evaluation method to assess the effectiveness of distance teaching. Faculty members stated that using the traditional standards to evaluate distance instruction not only could not measure the real value of distance teaching but also ignored the efforts of distance faculty.

The review of literature endorses the finding that participating in distance education was not a factor that carried much weight in influencing promotion or tenure decisions. Time and effort spent preparing instruction, creating materials, and managing distance students had little pay-off other than strengthening a good teaching record and sometimes contributing to the individual's service component. Therefore, institutions of higher education should establish policies relating to workload, promotion, tenure, and merit that fairly compensate faculty for work valued by the institution and align external rewards with institutional values (Wolcott & Betts, 1999).

Contributions to the Literature

The study has contributed a unique element to the literature by researching the perceptions of students and faculty members who were engaged in distance learning environments. Rather than focusing on student outcomes, the study used student satisfaction, peer relationships, faculty motivation, faculty load, faculty promotion, and faculty tenure factors to compare different distance learning delivery technologies to traditional course delivery. It also combined quantitative and qualitative data to provide a humanistic aspect to the study.

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