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ABSTRACT

Prior research addressing whether differences exist between traditional classroom education and web-based learning has provided inconclusive results (Li, 2002); this is especially true in graduate level classes. The proposed empirical research attempts to explore differences in outcomes from a graduate level MIS course which was taught in a traditional classroom setting as well as in a web-based learning environment. The purpose of the proposed study is to determine whether differences between the two approaches exist, and to identify whether student attributes (employment status and whether the student has children) or educational approach attributes (traditional classroom or web-based environment) affect a student's learning outcomes. From a qualitative research perspective, the study also will address how satisfied students in the traditional classroom and the web-based environment are with the learning experience.

Keywords

Distance education, web-based education, education, computer based learning, distance learning

INTRODUCTION

Distance education, where teacher and student are physically separated but technologically connected, is an alternative educational model to the traditional classroom. Distance education is continually evolving. It is dynamic and non-static (Moore & Kearsley, 2005) and has been broadly defined to include everything from correspondence courses and instructional videotapes to access via computer satellite and telecommunications technology (Picciano, 2001; Spears, 1992; Spooner, Jordan and Algozzine, 1999). Because geographical and temporal separation is no longer considered an obstacle to course delivery thanks to the Internet and other information technologies, an increasing number of individuals are now able to partake in this new educational opportunity.

This study investigates differences in outcomes of traditional versus web-based course delivery at the graduate level and also attempts to identify characteristics of the students as well as the delivery modes that may affect these outcome differences.

This proposed study has important research and practical contributions. From a theoretical standpoint, this study will provide significant insights into understanding the factors that affect graduate student performance in a traditional classroom educational setting and a web-based environment. Though there have been numerous studies comparing distance education to traditional classroom learning, the evidence is inconclusive as to whether differences between the two approaches exist, especially at the graduate level. This study focuses on the graduate level of education, which few studies have done. Results from this study will shed light on issues affecting graduate level students, specifically those enrolled in a required introductory MIS course. From a practical perspective, findings from this research will enable instructors to adapt their web-based course delivery to optimize learning outcomes for graduate level students.

PRIOR RESEARCH

Prior research has compared traditional learning to online education (Li, 2002; Glenn, 2001) in a variety of disciplines including political science (Glenn, 2001), geography (Breetzke, 2007), and agricultural studies (Bruce, Dowd, Eastburn and D'Arcy, 2005) and across countries such as the US, Sri Lanka (Ismail, 1991), Australia (Kapitzke & Pendergast, 2005) and South Africa (Breetzke, 2007). With the advent of the Internet and the increasing number of advancements in technology in general, and in educational applications in particular, there has been a significant increase in online education programs (Natriello, 2005). Distance education with its ability to provide 'anytime', 'anywhere' education is often considered a more

convenient alternative especially for non-traditional students. Moreover, with the ever-increasing demands by employers that employees partake in lifelong learning and the need for individuals to constantly maintain and update their knowledge and skills, the popularity of online education programs is rapidly expanding (Lewis and Hedegaard, 1993; Pearlson and Saunders, 2006).

Although online education may not be suitable for all types of students, it is attractive to some learners for several reasons, including flexibility in time and location (Glenn, 2001; Johnson et al., 2001; Rosenbaum, 2001), financial considerations, and having a sense of control over the learning environment (Petracchi, 2000). Furthermore, the delivery mode of online courses may be appealing to those who are able to communicate well through writing, who are self-motivated and self-disciplined, who prefer to be able to think through ideas before presenting them (as opposed to the more spontaneous traditional classroom environment), who are comfortable with using technology, and who otherwise might not be able, for various reasons, to participate in higher education.

Zhao, Lei, Yan, Lai and Tan (2005) report findings of a meta-analytical study of research studies on distance education. Although they found no differences in the aggregate data between traditional, face-to-face education and online education, their study did find differences between individual studies. As with face-to-face education, variation exists in distance education programs. Some of these differences stem from the amount of interaction between students and instructors. An instructor who is involved in the delivery of the content of the course increases the students' opportunities to interact with the instructor. Studies show that distance education programs that include both synchronous and asynchronous interaction have the more positive outcomes. With the internet it is becoming increasingly possible for students and instructors to take advantage of more cost-effective communication technologies and hence to interact and communicate (Cao et al., 2005). Moreover, Zhao et al's (2005) meta-analysis found that involvement with a 'live' instructor produced more positive outcomes than simply interacting with technology and that the most positive outcomes were found when a combination of technology and face-to-face was used. For distance education programs that are not able to include a face-to-face component, tools such as video conferencing can be used as a substitute (Levin et al., 2001).

Another insight from the meta-analysis is that certain course content is more suitable to distance education. For example, studies showed that distance education was more appropriate for undergraduate versus graduate level courses. Undergraduate courses focus on skill and knowledge acquisition, which is more easily transmitted than idea and research interest development, the emphasis in graduate-level education. Moreover, certain course content, such as found in computer science, may be better suited for distance education, although more studies are needed to confirm this. Another area of interest is whether some learners may be better able to take advantage of distance education. Zhao et al.'s (2005) meta-analysis was not able to draw any conclusions based on individual characteristics.

Distance education programs vary widely in terms of their content, student characteristics and instructor characteristics, and delivery mode (i.e., use of various tools and technologies) (Zhao, Lei, Yan, Lai and Tan, 2005). In this research, we keep the content and instructor characteristics constant and are interested in how student characteristics and delivery method (traditional face to face vs. online) affect learner performance. With the findings from this research, we hope to be able to provide guidance to improve distance education.

PROPOSED RESEARCH

The proposed research will compare and contrast two diverse education delivery approaches, namely traditional on-campus learning and web-based education. The same course and course material was offered to graduate students at an AACSB accredited university through 1) a traditional method of on-campus classroom lecture and discussion and 2) a web-based learning environment using iLearn and WebCt technologies. Prior research on graduate-level courses has been inconclusive. This study focuses on an introductory MIS graduate-level course where learning outcomes address IT skill and knowledge acquisition. Outcomes, which include final exam grade and final course grade, will be measured for two entire academic years (6 semesters, including Fall, Spring and Summer terms).

The same faculty member taught, administered and oversaw all classes whether on-campus or provided through the web-based program, using the same lecture notes, tools, assignments, and tests. In the web-based course, lectures were recorded using voice with MS Powerpoint presentations for some modules and actual video-taped segments for others. Both classes included a participation requirement and both were encouraged to develop discussion topics and to foster them using the tools available through iLearn and WebCT. The courses had unique discussion areas as well as a combined area where web-based and on-campus students could discuss topics of interest via live discussion forums.

Research Questions

This study will address the following:

- Do differences exist in learning outcomes at the graduate level, as measured by final exam grades and final course grades, between traditional classroom education and web-based learning?

- Can differences in learning outcomes at the graduate level be attributed to identifiable student attributes such as employment status and whether the student has children or not?

- Can differences in learning outcomes at the graduate level be attributed to identifiable educational mode (traditional classroom vs. web-based) characteristics?

Because of the decreased media richness present with web-based learning compared to traditional classroom delivery it is hypothesized that:

1. Students enrolled in the web-based class will (a) score lower on the final exam and (b) achieve a lower overall course grade than students enrolled in the traditional on-campus class.
2. Students enrolled in the web-based class will be less satisfied with the educational experience than students enrolled in the traditional on-campus program.

Because of the increased demands present with students who are employed full time and have family commitments it is hypothesized that:

3. Students who are employed at least half-time (20 hours per week) will (a) score lower on the final exam and (b) achieve a lower overall course grade than students enrolled in the traditional on-campus program.
4. Students with children at home will (a) score lower on the final exam and (b) achieve a lower overall course grade than students with no children or children who are not in the household.

PROPOSED METHODOLOGY AND ANALYSIS

This research will be conducted through a longitudinal field experiment. Categorical data will be collected from all study participants including employment status, number of children that reside in the house, as well as age, gender, and computer efficacy in a naturally-occurring educational environment. Final exam grades and overall course grades for students enrolled in the web-based classes and the traditional on-campus classes will be compared to test for significant differences in performance across educational delivery methods. Age, gender, employment status, and family commitments will also be tested for their effect on students' performance. Finally, qualitative data obtained to ascertain the level of satisfaction with web-based and traditional on-campus learning will be content analyzed.

SUMMARY AND CONCLUSION

The results of this study will be beneficial to both instructors and students. We hope to be able to shed light on factors (personal situations and characteristics and type of course delivery) that affect students' performance and help offer a satisfying educational experience. Students will be able to make better informed decisions as to whether they are suitable candidates for web-based education.

For instructors, the results of this research will provide insights into whether web-based education can deliver a similar learning experience as a traditional on-campus environment. Furthermore, due to the qualitative data that will be collected through surveys we hope to identify the strengths of web-based education and address weaknesses that students have experienced.

FUTURE RESEARCH

Despite continuous efforts to improve educational delivery methods, barriers to effective knowledge transfer between instructor and students may still remain because of the lack of or minimal amount of "face" time in web-based learning (Cao et al., 2005). A follow up survey is proposed in an attempt to gain insight into what students see as potential blocks to learning. Potential ways to correct or compensate for any shortfall in knowledge transfer could then be proposed. Furthermore, while in this initial study we focus on two distinct variables (employment status and whether the student has children), future studies will also look at the students' undergraduate major, the type of work experience they have had, and

their prior level of exposure to distance education. These are all variables that could affect a student's performance in distance education versus traditional classroom instruction.

Findings from this study will provide a springboard for a future study that will examine differences in learning outcomes by comparing student performance of two distinct distance learning programs. The same course will be presented to students using two distinct distance education delivery formats. The first class will receive class material using the more established distance education format of pre-taping all lectures and delivering that product to the students to proceed through in whatever manner they choose within a broadly defined timeframe. The second group will receive class material via a web-based format with several virtual classroom experiences during the semester at predetermined times. All material for the class will be accessible through a web-based interface and the faculty member will establish preset "office" hours where students can chat or utilize video capabilities to discuss issues with the professor. Students will still maintain the ability to review the virtual classroom lectures as many times as they desire but will also be able to attend the live classroom and interact with the lecturer in real time. Because the web-based program provides visual cues and offers a richer and more interactive environment it is hypothesized that it will increase student performance levels above the level of those who enroll in more traditional distance education classes employed by many current programs, and that the web-based approach with provide a more satisfying educational experience.

CURRENT STATUS & PRESENTATION AT AMCIS

Data has been collected for the first five semesters of the study. The sixth and final semester is currently under way and data will be available at the conclusion of the Spring 2008 term. Analysis will then be conducted and presented at AMCIS in August 2008.

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