An Empirical Investigation of Student Satisfaction with Web-based Courses

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Abstract: Electronic communication has become an integral part of higher education. Along with the growth of electronic communication is the rise of Web-based courses. This empirical study surveyed 128 students enrolled in 29 courses offered entirely over the Internet to determine the dimensions which underlie student satisfaction with Web-based courses and examined how these dimensions can be used to predict student satisfaction levels. This study also examined the relationship between demographic variables, such as gender, year in school, students' prior computer, email, and Internet proficiency, as well as, Web-based course experience and their satisfaction levels with Web-based courses. The implication of this study is that instructors of Web-based courses may be able to increase their online students' satisfaction by addressing the appropriate factors underlying student satisfaction.

Introduction

The Internet has impacted the way we learn. More and more courses offered by institutions of higher education are delivered via the Internet. A recent survey by the U.S. Department of Education’s National Center for Education Statistics (NCES) found Web-based distance education to be the most widespread mode of delivery (Lewis, et. al, 1999). At least 58 percent of institutions which offered distance education used Web-based courses, compared to 54 percent that used two-way interactive video and 47 percent which used one-way pre-recorded video. Because Web-based distance education is a fast-growing area, it is imperative that we gain a better understanding of this mode of distance education delivery. Most of the current literature about Web-based learning is based upon anecdotal experience or qualitative study (Kearsley, 1998). Many researchers agree that one of the greatest problems with online learning is the lack of empirical research and quantitative studies (McIsaac & Gunawardena, 1996; Schlosser & Anderson, 1994; Sherritt & Basom, 1997). Numerous studies in the field of distance education have focused on the comparisons of student performance in distance-education courses versus traditional face-to-face courses (DeLoughry, 1988; Souder, 1993). The general conclusion reached by these investigators is that there is “no significant difference” between the performances of students in distance-education courses compared to traditional face-to-face courses (Russell, 1999; Schlosser &
Anderson, 1994). More recent research efforts have focused on student attitudes rather than the previous emphasis on student performance (Biner, et al. 1994). Biner, Dean and Mellinger (1994) contend that student satisfaction play an important role in determining the success of distance-education courses. The authors argue that sustaining positive student attitudes can result in a number of student benefits such as lower student attrition rates, and higher levels of student motivation.

The Study

This empirical study surveyed 128 students enrolled in 29 courses offered entirely over the Internet to determine the dimensions which underlie student satisfaction with Web-based courses and examined how these dimensions can be used to predict student satisfaction levels. This study also examined the relationship between demographic variables, such as gender, year in school, students’ prior computer, e-mail and Internet proficiency, as well as, Web-based course experience and their satisfaction levels with Web-based courses. This research attempted to provide valuable information on the factors that influence the satisfaction of students participating in Web-based courses. The intent of the researcher was to obtain results from a quantitative study that would guide in the design and development of Web-based courses that would fulfill the needs of distance learners, thus ultimately leading to their success in distance-education courses.

The participants consisted of students who were enrolled in 29 Web-based courses in the University of Hawaii system, Hawaii Pacific University, Baker College, Michigan and Nova Southeastern University, Florida for the Fall 2000 semester. The 29 courses spanned a wide range of content areas: two Anthropology courses, one Astronomy course, one Biology course, four Business Management courses, six Computer courses, three English courses, two Educational Technology courses, one History course, one Japanese course, one Journalism course, three Mathematics courses, two Medical courses, and two Political Science courses.

Survey Design

A review of the existing literature on student satisfaction with Web-based instruction, distance education courses and general student course evaluations yielded eight dimensions and 47 question items for the survey questionnaire to ascertain the factors that underlie student satisfaction with Web-based courses. The eight original dimensions were instruction, instructor’s aspects, management/coordination, technological characteristics, interaction, experience with system, workload/difficulty and expected/fairness of grading.

The survey questionnaire was divided into two sections. In Section A, students were given a list of 47 statements that addressed the eight dimensions that could potentially affect their satisfaction with Web-based courses. For each statement, students were asked to evaluate the extent of their agreement with each statement. Throughout the survey instrument, a five-point, Likert-type scale ranging from “Strongly disagree” to “Strongly agree” was used. In Section B, students’ satisfaction, demographic and individual information was collected. Student satisfaction was measured based on students’ responses to two survey questions: overall satisfaction with the Web-based course, and comparison of the course with traditional face-to-face classroom courses (DeBourgh, 1999). Information about students’ prior experience with computers, the Internet, e-mail and Web-based courses was gathered. Demographic data collected included gender and year in school.

Procedure

A letter to solicit for survey participants was sent via e-mail to 29 professors who taught Web-based courses, who then forwarded it to their online students. Recruitment of participants was on a voluntary basis, although some instructors provided additional incentive for students to participate in this study by offering extra course credits for completing the survey. The primary method to obtain data was through an online survey questionnaire that was made available to the students from December 11 to 23, 2000. Overall, there were 508 students in the 29 Web-based courses surveyed. A total of 128 usable survey submissions were received, giving a response rate of 25.2 percent.
Data Analysis

All data was analyzed with the use of the SPSS® Version 10.0 for Windows statistical software package. Prior to any data analysis, negatively phrased items were first transformed to ensure comparability of data. Descriptive statistics such as means and standard deviations were calculated for the student satisfaction variables, levels of satisfactions, and the demographic data collected.

Factor analysis was performed on the 47 variables that were expected to underlie student satisfaction with Web-based courses to establish the major dimensions of online student satisfaction. Varimax orthogonal rotation was used. After applying factor analysis, the study examined the relationship between the dimensions of student satisfaction and the overall student satisfaction. Stepwise multiple regression was used to identify dimensions that significantly predict overall student satisfaction with Web-based courses. The dependent variable was a summed scale that consisted of two items: overall satisfaction with the Web-based course, and comparison of the course with traditional face-to-face classroom courses (DeBourgh, 1999). Independent variables were the five dimensions extracted by factor analysis. In addition, t-test and univariate analysis of variance (ANOVA) were used to answer the other research questions in this study.

Results & Implications

Of the initial 47 items in the original survey, only 26 items emerged after factor analysis was performed and they loaded on five factors that were named – interaction, instructor, system-wide technology, workload/difficulty, and function-specific technology, see [Table 1]. The interaction factor was comprised of seven questions measuring respondents’ satisfaction with the interaction they experienced throughout the duration of the Web-based course. The instructor dimension was comprised of six questions that measured respondents’ satisfaction with the instructor of the online course that they took. The three items that comprised the workload/difficulty dimension measured students’ satisfaction with the workload and the level of difficulty of online courses. The system-wide technology dimension included six questions that addressed the general technological aspects of Web-based course systems, such as ease of access and navigation, “user friendliness”, online enrollment/registration, and assignment submission. The function-specific technology dimension consisted of four items that dealt with specific technological functions or features that are common to most Web-based course management tools, such as online grade book, assessment, audio/video components, and online lecture presentations.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Number of Questions</th>
</tr>
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<tbody>
<tr>
<td>Interaction</td>
<td>7</td>
</tr>
<tr>
<td>Instructor</td>
<td>6</td>
</tr>
<tr>
<td>System-wide technology</td>
<td>6</td>
</tr>
<tr>
<td>Workload/Difficulty</td>
<td>3</td>
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<tr>
<td>Function-specific technology</td>
<td>4</td>
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Table 1: Five dimensions of online student satisfaction involving 26 question items

Regressional analysis performed revealed that the five proposed dimensions of online student satisfaction were related to overall student satisfaction. Overall student satisfaction is apparently influenced primarily by four dimensions: instructor, system-wide technology, workload/difficulty and interaction. None of the demographic factors examined, such as gender and year in school, had any significant impact on overall student satisfaction with Web-based courses. Similarly, students’ prior experience with computers, email, Internet, and Web-based courses did not have any significant impact on overall student satisfaction.

The implication from the results of this study is that instructors of Web-based courses may be able to increase their online students’ satisfaction by addressing the appropriate factors underlying student satisfaction. For example, it may be possible for online instructors to alter how satisfied their students are with
this aspect of their online course by providing more timely feedback, and making themselves more accessible to their students. Additionally, student satisfaction with Web-based courses could be improved by ensuring that general technological aspects of Web-based course systems, such as ease of access and navigation, are improved. Biner, Dean and Mellinger (1994) argue that student satisfaction plays an important role in determining the success of distance-education courses. Therefore, understanding these factors that underlie online students’ satisfaction can lead to increased success of online courses.

References


