The Relationship between Self Report of Computer Technology Experience and Students' Perception toward a Course Management System

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Abstract: The purpose of this study was to examine the relationship between self report of computer technology experience and students' perception toward a Course Management System (CMS). Participants were two hundred eleven (n=211) undergraduate students, between the ages from 19-24 years old. One hundred fifteen (71.1%) of the participants were male and sixty one were female (28.9%). Data were collected using an online questionnaire during one week period. Pearson correlation coefficients was conducted to determine what relationships exist among the self report of computer technology experience and the five dimensions that were used to assess the students' perceptions in online courses (including participation, educational material, usefulness, user control and instructor interaction). The results of the correlational analyses identified a significant positive correlation between the self report of computer technology experience and students' perception in each dimension of the survey. These finding suggest that the higher the computer technology experience, the higher the evaluation of students' perception. Further research is needed to see if this relationship exists with other student populations enrolled in other online courses.

Introduction

Online Course Management Systems (CMS) are in use to facilitate the face-to-face learning process in many universities. There are many variables that shape and influence a student's perception of an online learning management system (Liyanagunawardena, 2008). As Piccoli, Ahmad & Ives (2001) had pointed out computer anxiety significantly affects learning satisfaction in e-Learning. Computers are media tools in e-Learning environments and fears of computer usage would certainly hamper learning satisfaction (Piccoli et al., 2001). Early studies had shown that learners with high computer technology experience were more confident in accomplishing e-Learning activities and improved their satisfaction. (Campbell-Coggins, 1988, 1995; Howard, 1986). However more recently the results of studies on the effects of previous computer and Web experience on learning in Web-based courses have been mixed. Stein & Wheaton (2003) found no significant correlation between computer or Web-based course experience and satisfaction with perceived knowledge gained in a Web course. However, in this study

there was very little variance in the computer and Web experience scores among the participants. That is, all of the participants reported at least average experience with both the computer and the Web. That all participants were comfortable using these course tools may be the reason there was no significant relationship between computer and Web experience and satisfaction with knowledge gained.

Joo, Bong & Choi (2000) found that self-efficacy for computer and Web tasks correlated highly with self-efficacy for Web-based instruction. Participants who believed they were proficient on the computer or in Web environments were more likely to believe they would be successful in a Web-based learning environment. Overall course grades confirmed that students who had self-efficacy for the computer and Web received higher grades.

Ford and Chen (2000) found a number of correlations between Web experience and learning in hypermedia environments. Specifically, they found that there was a positive relationship between Web experience, gain on post test scores, and cognitive strategy use. Again, this study did not examine satisfaction with perceived learning, only scores on pre and post tests in specific lessons.

Lim (2001) also found a relationship between computer self-efficacy and satisfaction on the part of adult learners in distance education on the Web. The purpose of her study was to create a predictive model for the satisfaction and future participation of adult learners in Web-based distance education programs. Lim examined years of computer use, frequency of computer use, computer training, Internet experience in a class, and participation in a workshop for a Web-based course as measures of computer and Web experience. The study found an overall significant relationship between computer self-efficacy and satisfaction in the course, however, frequency of computer use and participation in the workshop had negative correlations while computer use and Internet experience in a course had positive correlations. In the overall predictive model, computer self-efficacy had the highest linear correlation with intent to take future Web-based courses of all the demographic variables included in the study. This study indicates that computer experience and previous experience in Web-based courses may correlate to overall satisfaction with Web-based distance education among adult learners.

Research indicates that course structure (Stein, 2004; Stein, Wanstreet, Calvin, Overtoom & Wheaton, 2005) and learner attributes such as learner autonomy (Bray, Aoki & Dlugosh, 2008), self-efficacy (Miltiadou, 2001; Reinhart & Schneider, 2001), and computer technology experience (Buzzetto-More, & Sweat-Guy, 2006; Buzzetto-More, 2008) can affect student satisfaction. However, the factors influencing the satisfaction of such a system may vary among different societies. Even though the Course Management System was used for quite some time at Democritus University of Thrace, little research was devoted to identify learner characteristics that affect students' satisfaction with the online courses. Therefore, this study was a preliminary investigation attempting to ascertain a relationship between the perception of the system and the self report of computer technology experience. The study looked at the following general research statements:

1. Is there a relationship among the students' self report of computer technology experience and the students' perception toward the CMS, e-Class in each of the following dimensions: participation, educational material, usefulness, user control and instructor interaction respectively?

Methods

Participants

The participants included in this study were undergraduate students enrolled in courses at the Democritus University of Thrace, Department of Physical Education & Sport Sciences in the spring semester of 2008. The sampling frame used for this study was convenience sampling. For data collection, the researchers asked five instructors who were delivering online instructions in different subject disciplines at the university to allow students' participation in the study. As a result, two hundred eleven (n=211) students were participated in the data collection. The participants consisted of 76 (36%) freshmen, 58 (27.4%) sophomores or juniors, and 77 (36.5%) seniors. One hundred fifteen (71.1%) of the participants were male and sixty one were female (28.9%), between the ages from 19-24 years old. The students' participation was voluntary, and the anonymity of students' responses and their confidentiality as participants were explained before distributing the instruments.

Instrumentation

Examination of the literature revealed the Course Management System Scale - CMSS (Vernadaki, Antoniou, Vernadakis, Giannousi & Kioumourtzoglou, 2008) as a valid instrument for testing students' perception toward CMS. This instrument was developed to evaluate the educational services offered by an asynchronous Course Management System (e-Class) for the support of the traditional instruction method in the classroom. Reliability estimates of the original instrument based on Cronbach's alpha measure was .78.

The CMSS survey contained three sections: a) demographic information, b) information technology skills, and c) the students' perception toward online CMS.

The first section of the survey included questions relative with the participants' demographic information (age, gender, academic year) while the second section constituted of 8 questions on the participants' prior expertise with computers and computer applications, such as: word processing, spreadsheet, presentation, graphics, communications systems, computer maintenance, online library resources and course management system. Each of these eight items had five response categories coded from 1 to 5 with 1=poor, 2=fair, 3=good, 4=very good and 5=excellent.

In the third section, five dimensions were used to assess the students' perceptions toward online CMS, including *participation dimension* (5 items), *educational material dimension* (4 items), *usefulness dimension* (4 items), *user control dimension* (4 items),

and *interaction dimension* (4 items). Under the five dimensions previously identified, twenty one items were involved such as: My participation in class discussions has improved significantly; The educational material was clear; The registration process was efficient; I was able to repeat the curriculum whenever it was necessary; Student-to-instructor interaction was more difficult than in other courses. Participants rated their responses for each of these 21 items using a 5-point Likert-type scale. These five response categories were coded from 1 to 5 with 1=strongly disagree, 2=disagree, 3=neither disagree nor agree, 4=agree and 5=strongly agree.

Data Collection

Data for this research were collected using an online questionnaire. An online questionnaire is a more efficient and economical way of collecting data from students in a university because most students today are avid users of the web. Communication using email is almost inevitable for faculty since almost all students are using such communication as a primary source for communication outside the classroom. Most university announcements and event updates are also communicated through the web or email communication, which make accessing the web and knowledge of email communication an inevitable tool for students.

The online questionnaire was designed in such a way that when participants first clicked on the link to the questionnaire, they were shown an informed consent letter explaining the purpose and structure of the questionnaire, their rights as participants, as well as any possible risk involved in participation of this research. In the letter, participants were also given the email address of the researcher in case there were other questions regarding the research that a participant wished to clarify. The email could also be used if a participant was interested in knowing the results of the research study.

The online questionnaire was divided into three different sections. After reading the informed consent letter, the participants were asked to indicate if they had ever used e-Class. Participants who have used or were using e-Class completed all three sections of the questionnaire. Participants who had never used e-Class or had never heard of e-Class were directed to only two sections of the questionnaire – demographic information, and skills with information technology. Both groups of participants completed the questionnaire in a section-by-section manner, that is, after the completion of one section, the participant was asked to click a *next* button to go to the next section, until all sections were completed. The questionnaire was also designed with an embedded program so that if a participant chose to skip any item, a remark designed using JavaScript appeared requiring the participant to complete the missing item before he or she proceeded to the next section. After completion of the entire questionnaire, the participant clicked on a *submit* button, which sent the completed questionnaire to a secure server accessible only by the researcher. It was determined that participants would need approximately 30 minutes to complete all sections of this instrument.

Results

The collected data was run through SPSS 17.0 for both descriptive and inferential statistics. Descriptive statistics were provided to summarize the data and include measures of central tendency: mean, median, mode, and measures of variability (i.e., range, standard deviation) (Green & Salkind, 2007). Inferential statistics were based on the relationship between two or more variables in two different but related ways. The Pearson product-moment correlation was used to determine the relationship between self report of computer technology experiences and students' perception toward the CMS, e-Class at Democritus University of Thrace. An alpha level of .05 was established prior to data analysis.

Demographics

Males comprised 71.1% (n=150) of the sample while females comprised 28.9% (n=61). Most participants were 22 years of age, the mean age was 21.6 (S.D. = 3.12) and the range was 19 to 24. The majority of the participants were seniors (36.5%) with sophomores & juniors making up the next largest group (36%). The remaining (24.6%) of the participants were freshmen.

Information technology skills

Besides the demographic information, participants were asked to report their experience level on specific computer technologies and application. Table 1 shows the frequencies and percentages associated with the information technology skills. The most frequently occurring information technology categories were the word processing, communications systems and course management system, and the least common information technology categories were online library resources, graphics software and computer maintenance.

Table 1. Frequencies and percentages of information technology skills.

	Poor	Fair	Good	Very good	Excellent
Word processing (Word, etc.)	16 (7.6%)	30 (14.2%)	62 (29.4%)	75 (35.5%)	28 (13.3%)
Spreadsheets (Excel, etc.)	32 (15.2%)	75 (35.5%)	59 (28%)	28 (13.3%)	17 (8.1%)
Presentation software (PowerPoint, etc.)	36 (17.1%)	57 (27%)	52 (24.6%)	51 (24.2%)	15 (7.1%)
Graphics software (Photoshop, Flash, etc.)	61 (28.9%)	58 (27.5%)	52 (24.6%)	26 (12.3%)	14 (6.6%)
Communications systems (Internet, e-mail, chat, etc.)	21 (10%)	26 (12.3%)	57 (27%)	56 (26.5%)	51 (24.2%)
Online library resources	61 (28.9%)	64 (30.3%)	51 (24.2%)	28 (13.3%)	7 (3.3%)

Computer maintenance (Downloading updates, etc.)	63 (29.9%)	57 (27%)	37 (17.5%)	35 (16.6%)	19 (9%)
Course management system (e-Class, WebCT, etc.)	14 (6.6%)	38 (18%)	53 (25.1%)	64 (30.3%)	42 (19.9%)

Relationship between perceived computer technology experience and students' perception toward the CMS, e-Class

Pearson correlation coefficients were computed among the five dimensions of the students' perceptions toward the online CMS and the perceived computer technology experience. The results of the correlational analyses presented in table 2 show that 15 out of the 15 correlations were statistically significant and were greater than or equal to .226. The correlations of perceived computer technology experience with the other five dimensions of the students' perceptions toward the online CMS measures were positive significant. These finding suggest that the higher the computer technology experience, the higher the evaluation of students' perception in each dimension of the survey.

Table 2. Correlations among the five dimensions of the students' perceptions toward the online CMS and the perceived amount of computer technology experience.

	Perceived computer technology experience	Instructor Interaction	Participation	Educational material	Usefulness
Instructor Interaction	.226**				
Participation	.297**	.445**			
Educational material	.238**	.444**	.597**		
Usefulness	.299**	.412**	.472**	.492**	
User control	.333**	.369**	.533**	.376**	.344**

**p < 0.01

Discussion

Online course management systems are an increasingly important part of academic systems in tertiary education. Most use of course management systems in Greece is to enhance regularly scheduled face to face classes. This study investigates whether there is a relationship between the perception of a student regarding the CMS, e-Class and their perceived computer technology experience. Investigating this relationship will help the administrators to have a better understanding of the variables that shape and influence student's perception in the online CMS at Democritus University of Thrace. Results indicate that there were a significant positive relationship between the perception students had about the CMS, e-Class and their perceived computer technology experience. Students with high computer technology experience had more positive perception toward physical education courses using the CMS, e-Class than students with low computer technology experience. This is consistent with previous studies (Buzzetto-More, & Sweat-Guy, 2006; Buzzetto-More, 2008) in the literature which indicated that students who were comfortable with computer technology were more likely to have a positive

attitude toward online learning. Similar findings by Papasratorn & Wangpipatwong, (2006) suggested that experience with technology affects students' beliefs, expectations, and attitudes about online learning, therefore; students with low computer abilities may feel uncomfortable in an e-learning course, which may affect the expected outcomes.

The results of this study highlight the critical role of perceived computer technology experience in student positive perception from online CMS learning environments. To fulfill students' expectations from online learning environments, they need to be supported both technically and technologically. Institutions and educators should create opportunities and devote resources to assist students in developing their computer skills and expertise needed for online learning. Before offering a distance education course, the instructor should make sure that the students have basic computer skills so they will not be frustrated and discouraged with using the tools and environments of the online class. If necessary, at the beginning of the semester, the students who have a low level of computer proficiency should be provided with a training program to assure that they gain the computer skills required for the distance education course.

As with all investigations, this study is not without limitations. First, the data used in this study were drawn from a single institutional sample. The institution is best described as a large, public research department on physical education and sport sciences at Democritus University of Thrace. Thus, findings should be interpreted with caution and generalizations may only be relevant to institutions similar in size, control status, and institutional emphasis. The present study used self-report data and this may be another possible limitation. To the extent that respondents did not know the information being requested or found survey questions to be ambiguous and unclear, the generalizability of these findings may be limited (Pike & Kuh, 2005).

It is also important to note that the sample consists of slightly more men than women. This is noteworthy, given recent enrollment data that suggest women comprise the majority of postsecondary students (National Statistical Service of Greece, 2008). Thus, results from the present study should be interpreted in light of this limitation and generalizations may be limited to comparable samples.

Conclusion

The results of this study might provide suggestions to administrators and information technology directors who hope to increase the adoption and diffusion of CMS technology in undergraduate education. This study provided useful information about the relationship between perceived computer technology experience and student perception. Results suggest that comfort with technology supports positive perception with online physical education courses using the CMS, e-Class. Therefore, to support future success of students and their perception with online courses, educators would do well to help prepare students for the technological demands of the course either through prerequisites or direct training. Motivation to engage and learn technological tools could easily be included as a prerequisite. Students who enroll in online courses must be prepared and motivated to engage the tools needed to have successful learning experiences.

Administrators may use these findings when designing strategies for increasing the acceptance of CMS technology on campus. In addition, results from this study may prove suggestive of the impact of computer technology experience on students' perception toward online CMS learning environments in tertiary education; though causal linkages cannot be drawn from self reported data. Therefore, further research is needed to see if this relationship exists with other student populations enrolled in other online courses.

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