

EFFECT OF PRIOR EXPERIENCE WITH THE INTERNET ON GRADUATE STUDENTS' PERCEPTION TOWARD COURSEWARE USABILITY AND WEB-BASED DISTANCE LEARNING INSTRUCTION: AN EXPLORATORY STUDY IN A HYBRID INSTRUCTION ENVIRONMENT

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ABSTRACT

This paper is an exploratory study that seeks to examine the effect of prior experience with the Internet on graduate students' perception toward courseware usability and Web-based distance learning instructional design. A Likert-type instrument that measures subjects' perception toward 1) courseware usability and 2) Web-based distance learning instructional design was designed and administered to 89 graduate students who were enrolled in a hybrid MBA program. Results from analyzed data indicated that prior experience with the Internet was a significant factor for both courseware usability and Web-based instructional design. The findings of this study are discussed and recommendations are made for future research.

Keywords: Prior Experience with the Internet, Web-based Distance Learning, Instructional Design, Usability Properties, Perception, Courseware, Adult Learning

INTRODUCTION

In less than a decade since its widespread availability, the use and familiarity with the Internet has increased in the United States and Canada by 53%. Between 1995 and 2002 the numbers grew from 6.7 million to 167.75 million. In the United States alone, in 2002, 69% of adults over age 18 were reported to have used the Internet, up 2% from the previous year (8). As this population continues to use the new source for information and resources, distance learning has expanded into the Internet at an increasing rate. Generally, distance learning is the formal instruction that is conducted when teachers and learners are not located in the same place (5). Distance learning has advanced through the assistance of technology using various types of delivery that have included telephone and/or video conferencing, email, and Web-based distance learning via the Internet.

Throughout the years distance learning programs in general have played an increasingly important role in higher education. The advent of the Internet has made Web-based distance learning very popular in higher education institutions. In fact, Web-based distance learning courses and programs may be one of the major approaches that higher education can address with the rising student enrollment as Department of Education statistics has projected that college enrollments will be approximately 20 million by the year 2010 (1). Furthermore, Web-based distance learning provides the learner greater flexibility and accessibility in their learning effort (12, 14, 17).

The Web-based distance learner is the new generation of distance education that is removed from direct instruction. However, the distance learner is directly responsible for making learning progress in a specific subject area via the Internet. Web-based distance learners tend to self-select, knowing that their success requires self-discipline and good time management (10).

One of the most significant features of Web-based distance learning is the asynchronous education. This means that Web-based instruction is delivered to the learner anytime, anyplace, and anywhere (2, 3, 6, 15, 18). Asynchronous education, in fact, has provided all that it has professed to offer. But its very high tech aspect could often cause teachers and students to yearn for some aspect of high touch. To deal with this, real time components such as chat room sessions have been added to many entirely web-based courses in order to replicate the sense of classroom interaction.

Nevertheless, several higher education institutions are reporting that pure distance education programs are not very popular among students (19). These institutions are experiencing a high dropout rates in their pure distance learning courses and programs. Jones (9) reported that majority of college students believe that the Internet has had a positive effect on their academic experience, however; they still prefer the traditional face-to-face classroom to the pure Web-based distance learning instruction.

One recent approach higher education institutions are taking to maintain the benefits of Web-based distance learning while retaining the sense of real classroom instruction is the move toward what has come to be known as the *hybrid model*. The hybrid model is a blend of both traditional face-to-face instruction and Web-based distance learning. The hybrid model brings together classroom and technology as essential partners in Web-based instruction design. Courses designed in the hybrid model move a significant portion of learning activities from the classroom to the Web and reduce the amount of seat time. The professor and the student have the advantages of real-time exchange in scheduled classes but have the benefit of continuing the discussion and activities in the spaces between meetings (19).

The Setting

This study is the case of a university that has maintained its home campus in a large U.S. Midwestern urban region. Since 2000, the university has sought to incorporate Web-based distance learning into its traditional face-to-face programs. In the development stage of a new MBA program that was geared toward adult learners, the faculty decided to employ the hybrid model approach in designing the MBA curriculum. The hybrid MBA curriculum design consisted of conventional face-to-face classroom instruction and Web-based distance learning instruction. In other words, an eight-week course in the hybrid MBA program consists of 1) conventional face-to-face instruction, which is conducted in the actual classroom and 2) Web-based distance learning instruction, which is conducted via the Internet onto a courseware known as WebCT. The design of the curriculum mandates the use of appropriate androgogy (pedagogy for adults) instructional design for both conventional face-to-face instruction and Web-based learning instruction.

The purpose of the Study

The present study's focus is on the Web-based distance learning instruction portion of the hybrid MBA curriculum. It is an exploratory study that seeks to examine the effect of prior experience with the Internet on graduate students' perception toward 1) courseware usability and 2) Web-based distance learning instructional design.

The usability of the courseware is important because system usability is closely related to user experience (13). Usability is a product's potential to satisfy the needs and specifications of users. Usability includes factors such as ease-of-use, visual consistency, simplicity, efficiency of use, and user satisfaction (13, 16). The Web-based distance learning instructional design is imperative because research has documented that incorporating appropriate instructional design into Web-based distance learning instruction that is geared toward adult learners creates a successful learning environment for students (7).

This study presumes that the usability properties of the courseware and the instruction that incorporates appropriate principles of learning in the instructional design process in Web-based distance learning cannot be separated from each other. Usability properties and appropriate instructional design in Web-based distance learning environments interact with each other and complement one another to achieve successful learning. The present study takes into consideration the independent variable of prior experience with the Internet because research has documented a close and significant relationship between perception and users' prior experience with technology in general (4, 11).

METHODOLOGY

The Instrument

The Likert-type instrument used in this study measures graduate students' perception toward 1) courseware usability – *courseware usability scale* and 2) Web-based distance learning instructional design – *Web-based instructional design scale*. A panel of 5 experts chose the items of the instrument. The responses to the items were recorded so that strongly agree=5, agree=4, neither agree nor disagree=3, disagree=2, and strongly disagree=1. A higher score indicates higher perception. Table 1 shows the instrument items for both courseware usability scale and instructional design scale.

Sample Population & Procedure

A total of 89 subjects who were enrolled in a hybrid MBA program participated in this study. The instrument was administered on-site to the subjects. The subjects were 42 males (47.2%) and 47 females (52.8%). The subjects' age were divided into three categories: 21 – 31 (N = 44, 49.4%), 31 – 40 (N = 29, 32.6%) and over 40 (N = 16, 18%). The subjects were given rationale for their participation. They were assured that their responses would be anonymous and confidential.

Research Question

This study answers the following question:

Is there a perception difference among the levels of independent variable (subjects' prior experience with the Internet) and the dependent variables (courseware usability scale and Web-based instructional design scale)?

Table 1. The Instrument Items

Courseware Usability

1. The platform is simple to follow.
2. I feel comfortable using the platform.
3. I believe the platform is user-friendly.
4. I feel in control using the platform.
5. The links are visible and readable.
6. I can easily get to where I want to go throughout the pages.
7. The color contrast of the text is high and readable.
8. I quickly understand the key points presented in each page.
9. I like the type and size of the fonts used to present information and contents.
10. I don't have to wait a long time for the pages to load.
11. The contents are brief, short, and right to the point.
12. The contents are presented in plain language -- not too technical.

Web-based Distance Learning Instruction

1. Contributes positively to my learning.
 2. Is valuable.
 3. Complements my learning.
 4. Enhances my ability to understand and evaluate viewpoints.
 5. Encourages my decision-making and problem solving skills.
 6. Encourages me to develop myself as a team member.
 7. Sharpens my discussion/interaction skills.
 8. Makes me feel more involved.
 9. Gives me the opportunity to practice ideas and skills I learned in the course.
 10. Enhanced my ability to think well.
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Data Analysis

The research question was answered by conducting a one-way multivariate analysis of variance (MANOVA, Wilk's Lambda). This technique shows the explicit interplay between the dependent variables (*usability scale* and *Web-based instructional design scale*) when measured against the independent variable (*subjects' prior experience with the Internet*). Univariate analyses of variance were conducted automatically if the overall MANOVA yielded significant result. In addition, Scheffé's Post Hoc multiple comparison tests were conducted to determine whether differences exist among the means of the independent variable.

RESULTS

The overall MANOVA yielded a significant difference for the independent variable – subjects' prior experience with the Internet and the dependent variables – courseware usability scale and Web-based instructional design scale (Wilk's Lambda = .703, F = 8.173, p = .000). This

suggests that there is a significant interplay between the dependent variables and the independent variable of prior experience with the Internet.

The results of univariate analyses indicated significant differences for the independent variable – prior experience with the Internet and each dependent variable – courseware usability ($F_{2, 86} = 4.391, p = .015$) and Web-based instructional design ($F_{2, 86} = 17.674, p = .000$). Students who had more prior experience with the Internet had higher perception toward both the usability of the courseware and the Web-based instructional design.

Scheffé's Post Hoc multiple comparison tests for courseware usability and prior experience with the Internet showed significant differences between the means of level 1 (1 – 2 years) and level 3 (over 5 years), mean diff. = .5315, $p = .016$. Scheffé's Post Hoc multiple comparison tests for Web-based instructional design and prior experience with the Internet yielded significant differences between the means of level 1 (1 – 2 years) and level 2 (3 – 5 years), mean diff. = 1.1248, $p = .000$ and the means of level 1 (1 – 2 years) and level 3 (over 5 years), mean diff. = 1.1405, $p = .000$. Means and standard deviations for courseware usability and Web-based instructional design are shown in Table 2.

Table 2. Means & Standard Deviations

V		Courseware Usability	Web-based Instruction
1	Mean	3.4537	2.6944
	N	18	18
	SD	.81058	1.27301
2	Mean	3.7724	3.8192
	N	26	26
	SD	.58241	.62866
3	Mean	3.9852	4.1000
	N	45	45
	SD	.61399	.75408
Total	Mean	3.8155	3.7337
	N	89	89
	SD	.67367	1.00068

V = Prior Experience with the Internet

1 = 1- 2 years, 2 = 3 – 5 years, & 3 = Over 5 years

DISCUSSION

This study sought to examine the effect of prior experience with the Internet on graduate students' perception toward courseware usability and Web-based distance learning instructional design. There was an overall significant difference reported for the independent variable – subjects' prior experience with the Internet and the dependent variables – courseware usability and Web-based instructional design. In other word, there was a significant interplay between the dependent variables of courseware usability and Web-based instructional design and the

independent variable of subjects' prior experience with the Internet. This suggests that both courseware usability and Web-based instructional design were significantly interrelated with prior experience with the Internet. The results of univariate analysis of variance showed that prior experience with the Internet was a significant factor for both courseware usability and Web-based instructional design. Students who had more experience with the Internet expressed higher perception toward course usability and Web-based instructional design.

In this study, 79.8% of the participant had more than 3 years of prior experience with the Internet. Experienced users may have been more comfortable with the use of the media. The level of comfort with the media may have contributed to increased perception toward the courseware usability and Web-based instructional design.

The use of appropriate and sound instructional design coupled with inclusion of usability properties in designing the courseware may contribute vastly to the success of learning. Therefore, this study recommends that in designing Web-based distance learning it is extremely vital that attention must be given to both sound and appropriate instructional design and incorporation of usability properties in design of the courseware. Instructional design must contain critical, cognitive, and behavioral learning issues. An effective Web-based distance learning effort must include a variety of learning principles and address the learning issues incorporating strategies to engage and challenge the learner. In addition, the courseware must be usable and include the usability properties such as simplicity, comfort, user-friendly, user control, uncluttered/readable information, enough information, visible/readable links, good navigation, high/readable color contrast, understandable key points, appropriate font type/size, and load time.

This study was an initial stride to conduct an exploratory study that examined the effect of prior experience with the Internet on graduate students' perception toward courseware usability and Web-based distance learning instruction. Future research must be carried out to further delineate the importance and the relationship between Web-based instructional design and courseware usability. There may be other usability properties that must be delineated and incorporated in the courseware design in Web-based learning environments. In furthering this research, attention must be given to other variables such as age, gender, and amount of time a user spends to interact with the courseware. Attention also must be given to different population samples, including undergraduate students.

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