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Students' perceptions of a course dedicated website

A regression analysis to predict its use

Malini Krishnamurthi
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ABSTRACT

There has been an unprecedented surge in the number of web related tools used for course delivery. This paper examined the reasons for students to go to course dedicated websites and the impact these sites have on classroom attendance. An empirical assessment shows that course dedicated websites enhance learning and do not tempt students to turn away from the classroom. A software program called Zlocker which gives students and teachers an opportunity to share a locker in cyberspace was incorporated in the courses that were examined in this study.

INTRODUCTION

The Internet and the World Wide Web (WWW) provide a plethora of opportunities to facilitate, assist and enhance the process of imparting education. Learning is no more confined by the constraints of distance, time and space. Distance education has become a veritable reality and researchers are striving to find new features that they could add to web-based course software in order to make on-line course delivery effective. This article is organized around the following topics. First, certain new features in distance education software programs in general and certain specific features of a new software called Zlocker are presented. Next, Information Technology and distance education literatures are reviewed to develop the theoretical foundation for this study. Third, the sample, measures and data analysis techniques used in this study are presented. Following this, the results of testing the hypotheses are presented and discussed. Finally, the study concludes with a section on the strengths and weaknesses of this study.

Features in Distance Education Software

The number of web-based course delivery systems are on the rise. Course management tools are plenty (e.g., WebCT (2000), CourseInfo (2000), Blackboard (2000), Lotus LearningSpace (2000). While most of the software that supports distance education supports asynchronous

communication, until quite recently, researchers have tried to incorporate synchronous capabilities also. Scarano and colleagues (2000) have developed a system called Teach++, which is designed for a multi-user, distributed, scalable and co-operative environment. By using a browser enabled with a Java virtual machine, Teach++ creates a virtual classroom where students and teacher can access a common workspace on the Internet using a simple interface. Teacher and students or students in a group can have on-line interaction, cooperative authoring, and editing. Following in the same vein is another software called "SCHOLION," an acronym which stands for "Scalable Technologies for Tele-learning." The designers of this software, Foreschauer and colleagues (2000), have examined the inability of annotating on websites and have suggested a solution to overcome this limitation.

Chong and associates (2000), in their paper entitled "Back to Basics: A first class chalk board and more" present a prototype written in Java to facilitate the use of a whiteboard as an authoring tool for preparing lectures that can be delivered in a synchronous or an asynchronous mode over a data communications network. Authoring tools are an extremely important component in distance education environments. While audio and video recording of classroom presentations can be useful to students, a video recording of chalkboard contents is not very helpful as it can be hard to read. Hence, in an electronic course, lecture presentation materials can be prepared in advance using authoring tools. So, although there are a number of software products with a host of new features, surprisingly, only a very few support the concept of a simple locker in Cyberspace. Zlocker is one such product.

What is Zlocker

Zlocker is a software tool that runs on a web server but supports non-HTML documents to be stored and exchanged. Besides storing and exchanging files, the software facilitates several file management tasks. Features of Zlocker include the following:

- Asynchronous communication
- File transfers
- Non-HTML files can be stored and exchanged
- Accessible from any computer that has an Internet connection
- Registration is open to the public and is user initiated
- Users receive two separate sectors called Private folder and Public folder
- Each folder has two sectors--an upload sector and a download sector. Also, there is a private folder with its own upload and a download sector and there is a public folder with its own upload and download sector.
- Documents for personal use can be saved in the private folder and documents to be shared with others can be placed in the public folder.

The designers of this product, Lakhanpal and Associates (2000), note the problems associated with files not being portable and files that need to be available at several locations. Some of the symptoms of this problem include having to carry floppy disks around or e-mailing to oneself using more than one e-mail address and trying to keep several e-mail addresses active. Developing the software called Zlocker was an attempt to overcome these limitations.

Purpose of This Study

The purpose of this study was to examine the conditions under which students perceived a course dedicated website implemented with Zlocker software to be worthy of use. The naturally occurring needs of students were hypothesized to influence the use of Zlocker. Henceforth, in this article, the website established for the course will be referred to as Zlocker.

Conceptual Framework

The question of what students do with a website provided the impetus for undertaking this study. An examination of the theoretical and empirical literature in the area of distance education led to the selection of the dependent variable Zlocker used. Its use in this study indicates how frequently it is employed for a variety of course-related needs. The total volume of visits to the site per se is not of interest as much as the reasons which generate the volume of visits. Prior research in this area has examined the use of websites in distance education structures wherein a course is delivered on-line with very few in-class meetings. Others have examined the use of websites as a complement to face-to-face classroom instruction. A few studies have been done to compare face-to-face with on-line course delivery. All three research designs have been employed to examine the reactions of undergraduates, graduates and MBA students. This study like many others examines the use of a course dedicated website as a complement to face to face instruction. Data was collected using self-reported measures and multivariate analysis was performed.

Some of the important concerns borne in mind while developing factors for the prediction of Zlocker use were the naturally occurring needs of students in a course. Among the constructs examined in the literature, eight were selected as independent factors for inclusion in this study. They were: (1) usefulness of having Zlocker in the course; (2) useful to download instructor's notes; (3) useful for group projects; (4) to improve academic performance; (5) need course notes; (6) user-friendliness of Zlocker; (7) useful for overcoming time and distance constraints; and (8) class attendance.

A synthesis of these constructs yielded a conceptual framework for guiding this research. Specific statements of hypotheses indicating the direction of the relationship in each of the above areas are presented in the next section.

Although this study bears some resemblance to prior studies, assessment of web-based course tool is specific to courses and instructors. Further, prior studies have examined courses that have incorporated course software that are entirely web-based. Not very many studies in the recent past have examined a course that has incorporated a product like Zlocker. Further, in a few of the earlier researches the dependent variable has been the overall course satisfaction (Arbaugh, 2000; Karuppan & Karuppan, 1999), student performance (Sonner, 1998; Haworth, 1998; Bailey & Cotlar, 1994), and information delivery (Karuppan & Karuppan, 1999). Very few studies have examined the impact of course web&site on attendance (Karuppan & Karuppan, 1999). This aspect of distance education is very important and has not received much attention in the research community.

Teaching a course complemented with a website using a new software and evaluating students' perception of its use while also assessing its impact on attendance is what makes this study unique and worthy of empirical investigation.

Research on Zlocker use is not an end in itself, but rather, a means towards understanding the process of technological diffusion in organizations. Such research has implications for technology designers as they can have a better understanding of the real life uses of their inventions. Inventions are for people (Contractor & Eisenberg, 1990; Pool, 1978; Simon, 1981; Everett, 1983, 1986) and feedback from people can provide valuable insights for technology design and redesign.

A discussion of the independent variables hypothesized to influence to use of Zlocker follows in the next few sections.

LITERATURE REVIEW

Zlocker Use

In the parlance of diffusion of innovation, diffusion means acceptance of an innovation and adoption means a decision to continue full use of an innovation (Everett, 1983, 1986). The dependent variable in many of the diffusion studies in the area of computer-mediated communication (CMC) has often been the degree of use of the innovation rather than the decision to adopt or implement (Everett, 1986). This study examined the degree of use of Zlocker and examining the factors that influence the degree of use can help in understanding the decision to adopt an innovation. The reason for adopting this notion comes from the theory of purposive behavior as suggested by Pool (1978) who believed that the effects of technology are perplexing, confusing and often tend to move in opposite direction simultaneously. Therefore, the effects of technology can be better understood by examining what people do with it. Further, technology has been thought of as being neutral and accomplishing these goals depends entirely on the decision of how it will be used (Simon, 1981). Contractor and Eisenberg (1990) maintain that "there is no such thing as pure technology. To understand technology one must first understand the social relationships. The pragmatics of technological communication must always be understood in the context of the motives, paradoxes and contradictions of everyday life."

Usefulness and User-friendliness of Technology

The diffusion of innovation perspective suggests that beliefs and attitudes toward a technology can be important determinants of technology adoption. Therefore, two important variables from this perspective are perceived usefulness of the systems and its user-friendliness. These two variables can influence the attitudes toward technology and thereby the decision to adopt the technology. This belief has been empirically tested and accepted in information technology literature and has been found to be true in the case of computer software (Bagozzi, Davis & Warshaw, 1992), e-mail (Gefen & Straub, 1997; Krishnamurthi, 1998) and the world wide web

(Atkinson & Kydd, 1997) and more recently in the case of course web sites by Arbaugh (2000). Thus,

Hypothesis 1. Perceived usefulness of Zlocker will be a positive predictor of Zlocker use.

Hypothesis 2. Perceived user-friendliness of Zlocker will be a positive predictor of Zlocker use.

Overcoming the Constraints of Distance and Time and Facilitating Collaborative Learning

Karuppan and Karuppan (1999) argue that Internet education can facilitate cooperative learning experiences and the development of cooperative learning behavior among students. This is very important for business students, because they normally will be expected to work in teams in the business profession. Every student must be computer and information literate by the time he or she enters the world of work. College students must not only be adept in their chosen field but also be prepared for an environment characterized by on-line communication and collaborative work using the internet and intranet tools. In the campus environment, a course dedicated website would be a very appropriate tool to incorporate internet education in general and cooperative learning in particular.

Research in the area of Computer Mediated Communication (CMC) shows that the software that facilitates such communication can help to overcome the constraints imposed by distance and time (Krishnamurthi, 1998, 1999; Arbaugh, 2000). Further, the social information processing theory of technology use shows that social context cues such as communication apprehension, gender, title and position are attenuated in CMC and so groups can reach levels of intimacy comparable or better than in the case of face to face groups (Sproull & Kiesler, 1986). This feature increases the opportunity for increased participation and collaborative learning in a given course setting (Bailey & Cotlar, 1994; Arbaugh, 2000). Because the electronic medium can be flexible and independent of time and distance, student and teacher can benefit from this by scheduling their activities to a time frame that is more convenient to them (Krishnamurthi, 1998; Ragothaman & Hoadley, 1999). If students have access to the internet at home, they have round-the-clock access to the course materials. And so, the ability of a web-based course to overcome the constraints of distance and time and enhance group participation leads to the following hypothesis:

Hypothesis 3. Perceived independence of time and distance constraints will be positive predictors of Zlocker use.

Hypothesis 4. Perceived usefulness of Zlocker for collaborative work will be a positive predictor of Zlocker use.

Improved Performance

The academic literature includes numerous studies that have assessed student performance in distance education classes, most of these studies have examined the grades that students in the

distance learning sections earned (Heines & Hulse, 1996; Kabat & Friedel, 1990). The conclusion of most of these studies has been that students in the distance learning courses performed better than their in-class colleagues (Bartlett, 1997; Heines & Hulse, 1996; Kabat & Friedel, 1990). Bailey and Cotlar (1994) found that using the internet in a business strategy class led to higher student achievement and a more positive relationship among members of the learning community.

Arbaugh (2000) reports that student performance in the internet-based courses was better or equal to the classroom-based counterparts. When students access certain features at the website accompanying a specific course their performance in that course may improve (Haworth, 1998). Sonner (1999) examined whether taking one or more courses through distance education had an impact on student performance in the capstone business class. Results from her analyses show that those students who had taken more of the required classes through distance learning formats performed better in the capstone class than other students. There was a significant positive correlation between the number of distance learning courses the students had completed and their final class average. Further, students who took courses in the more unstructured format of distance learning exhibited the best performance in the capstone class. Sonner (1999) concludes that students can successfully learn the important and fundamental business concepts when they study in a distance learning format. And so,

Hypothesis 5. Perceived improvement in performance will be a positive predictor of Zlocker use.

Absenteeism

Unfortunately very few studies have examined the impact of course related websites on attendance. Some faculty might resist making class material available on the website because they fear that students might use this as an opportunity to stay away from class. Decreased attendance would make web-based material counterproductive to the delivery of a face-to-face course. In a study conducted by Karuppan & Karuppan (1999) it was found that students who used the notes on the website did not use it as a pretext to miss class. Contrary to expectations, student attendance conformed to the usual norm and was not significantly different from the prior semester when the website was not used. However, this was not tested empirically in their study. This leads to,

Hypothesis 6. Perceived availability of class materials will be a negative predictor of attendance and positive predictor of Zlocker use.

METHODS

The study was conducted during the fall semester in 1999 at a state university on the west coast. Subjects consisted of undergraduate students in two sections each of two courses which were IS 3310 Systems Analysis and Design and IS 4408 which was Database Design and Programming with Oracle Database Management Systems.

A paper and pencil questionnaire was distributed to every student in the class on the day of the final exam and was collected right away. Every student volunteered to answer the questionnaire. This gave a response rate of 100%. In all, 103 students responded to the survey. Fifty-seven percent of the sample comprised of males and 42% were females. Asian Americans accounted for 47%, Caucasians accounted for 24%, African Americans accounted for 1%, Latinos accounted for 3% and others accounted for less than 24%. Eighty percent of the students were Information Systems majors, 11% were Management Science majors. Eight-two percent of the students were Seniors, 16% were Juniors, and 3% were Graduates.

Section one of the questionnaire contained items to determine the biographic profile of the students such as: year in school, major, ethnicity, age, gender, work experience, computer ownership and access to the internet. Section two contained items to measure the student's Zlocker usage, how many times they carried their floppy disks around, how many e-mail addresses they owned and used and how many times they e-mailed to themselves using different e-mail addresses and what did they use Zlocker for.

Following these questions, statements describing the conditions of student environment were stated and students were asked to express the extent of their agreement to these conditions. Responses to these statements were captured on a Likert scale ranging from (1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree. A sample of the scale items used in this study can be seen in Table 1.

Table 1. Sample Items

The following statements describe some conditions of your environment. State the extent of your agreement.

1. How would you rank the usefulness of having Zlocker in this class.
1. Not useful 2. Somewhat useful 3. Very useful 4. Extremely useful
 2. I found Zlocker to be useful to download notes from my instructor's Zlocker.
1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
 3. I found Zlocker to be user-friendly.
1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
 4. I found Zlocker to be useful to exchange notes/work with people whose working hours are different from mine.
1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
 5. I don't think there is a need to attend class, since most of the things I need to know are available on Zlocker.
1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
-

A frequency distribution was done for all the study variables in order to obtain a descriptive information about the entire sample. A Pearson correlation analysis was done in order to determine a linear relationship between some of the variables and Zlocker use. Multiple regression was the principal method that was employed in this study to analyze the data. Among the many multivariate techniques available, multiple regression is the only technique that helps to examine how several independent variables collectively predict a single dependent variable. R-square, the overall coefficient of determination, was used to assess the amount of variance explained by the variables of interest in this study. The significance of the regression equation was assessed using the F statistic. In order to determine which of the selected independent variables was the most helpful, beta, the standardized regression coefficient, was used. The significance of the beta was assessed using t ratios. A free-entry stepwise multiple regression technique was considered to be the most appropriate to examine the interactions among the variables. The decision rule for including variables in this technique is the respective contribution of each variable to the explained variance in the dependent variable. The first variable identified is the one that singly explains the greatest amount of the variance; the variable that explains the greatest amount of the remaining variance in conjunction with the first is entered second, and so forth, until no more improvements can be made in the prediction. Any previous strong independent variable that becomes weak is discarded from the equation.

In analyzing data, care was taken to avoid the violations of the assumptions underlying the multiple regression technique. First, examination of the correlation among the independent variables revealed no evidence of multi-collinearity. A tolerance protection of .30 was taken to avoid multi-collinearity. Second, missing observations were taken care of by substituting mean values.

One of the limitations of multiple regression analysis is that it hides the relationship between the independent variables that may be inter-correlated. Path analysis helps to uncover significant latent relationships among a set of independent variables and helps to explore the influence of a third and a fourth variable. In this study, a path analysis procedure was used to examine the direct and indirect effects of significant independent variables that predicted Zlocker use.

Although correlation does not mean causality, multiple linear path analysis is predicted on causality. An initial model was proposed showing causal assumptions among the selected variables and the ultimate endogenous variable Zlocker use (see Figure 1). The result of the path analysis were then shown in another figure (see Figure 2) and a table (see Table 6). Table 6 reflects the total covariation between pairs of variables decomposed into causal and spurious components. The Path coefficients (standardized regression coefficient) were used to assess the strength of the direct and indirect relationships. The error terms of the endogenous variables reflected the overall strength of the model.

The rationale for using the regression technique was not only its strength in predicting but it also seems to be a preferred technique among some researchers (Arbaugh, 2000) in the area of CMC.

Course Activity

IS 3310-Systems Analysis and Design and IS 4408-Database Design and Programming with Oracle, are two core courses in the IS curriculum. In the System Analysis and Design course, students were exposed to concepts and techniques used in developing an information system. Students were required to work in groups of four to analyze end of chapter cases to learn systems development skills, oral and written communication skills, project management skills and team building skills. Students presented the results of their collaborative work every week. After the presentation, the entire class participated by way of raising questions and discussing different points of view.

In the IS 4408 Database Design and Programming with Oracle, students were exposed to the fundamental concepts guiding database design and were given hands-on experience in learning the syntax of the Oracle SQL 8.0 plus programming language. The course had a lecture and a lab session every week. Students were required to work in groups and design a database and develop a prototype by the end of the semester.

The internet provides a mechanism for cooperative learning. Students had to prepare their reports and submit them electronically to the instructor (i.e., place them in the instructor's public upload sector in Zlocker). Approvals as well as suggestions for revisions were given via e-mail on the internet. In both the above-mentioned courses, students were task oriented and were appreciative of the ability of Zlocker to be able to share their work electronically with their team members without being constrained by time and distance.

Internet Course Software and Pedagogy Description

Each course was administered face to face complemented via a website using Zlocker software. Instructor's course materials were placed in the instructor's public download section and the students' assignments and notes were received in the instructor's public upload sector. The files could be non-HTML files. This is a very strong feature of Zlocker because instructors may find that preparing their class materials in hypertext markup language (HTML) for their website to be a very time consuming task. Access to the software could be obtained by registering at the Zlocker website. After registration each user received a username and a password for future log-ins. Students could access the system from their home computers or the campus computers. Each student had an individual account that he or she could use.

Most of the documents that needed to be exchanged between instructor and students were done electronically and it reduced the number of documents that needed to be Xeroxed and distributed. An initial syllabus, three exams and student evaluation of the course were the only paper documents used by the instructor in the course. In the case of both the courses that were taught, notes for every chapter that was covered in the course were placed in the instructor's public download folder. Additionally, various exercises and solutions to assignments on cost-benefit analyses, project management and data flow diagrams in the case of systems Analysis and design and various examples of Entity-relationship diagrams, normalization and SQL Queries in the case of the database design course were also placed in the instructor's public download folder.

RESULTS

Table 2 summarizes the findings of students' general file sharing pattern. On the average students often carried their floppies around and e-mailed to themselves occasionally. They had at least two e-mail accounts and used one account actively.

Table 2. File Sharing Pattern

	<u>Mean</u>	<u>Std Dev</u>
1. How often did you carry your floppies around?	3.20	.89
2. How often did you e-mail to yourself using one or more than one e-mail address?	2.41	.97
3. How many e-mail addresses do you have?	3.23	.73
4. How many e-mail addresses do you actively use?	2.87	.71

For items 1 & 2 the scales were: 1. Never, 2. Occasionally, 3. Often, 4. Very often
 For items 3 & 4 the scales were: 1. None, 2. One, 3. Two, 4. Three or more

Five questions were constructed to capture students' reactions to Zlocker. Table 3 summarizes the results. On the whole students knew that Zlocker could be used for their personal use also and did recommend it to their friends and found it worthy of recommendation. Students used it at least once a week primarily for their course work.

Table 3. Reactions to Zlocker Use

	<u>Mean</u>	<u>Std Dev</u>
1. Did you know that you could use Zlocker for your personal use?	1.27	.45
2. Did you recommend Zlocker to your friends?	1.60	.49
3. Would you recommend Zlocker to your friends?	1.23	.42
4. What did you use Zlocker for?	1.75	1.5
5. How many times did you use Zlocker over the semester?	3.33	.90

For items 1 thru 3 the scales were: 1. Yes, 2. No
 For item 4 the scale was: 1. Only for course work, 2. Only for personal files and docs, 3. For both but mainly course work, 4. For both but mainly for personal files and docs
 For item 5 the scale was: 1. Every day, 2. Several times a week, 3. Once a week, 4. Several times a month

Eight questions were specifically designed to capture students' perception regarding using Zlocker as a course dedicated website. Table 4 summarizes these findings. Students were asked to express the extent of their agreement of a scale of 1 to 4. Students were in agreement about Zlocker being useful for not only downloading instructors notes which they found to be helpful but also useful for exchanging notes and documents with their fellow students. Students were in strong disagreement about skipping classes. Students were somewhat in disagreement about the general usefulness of Zlocker and did not think that its use could improve their academic performance.

Table 4. Students' Perception of Zlocker Use

Var num		Mean	Std Dev
1	Zlocker usefulness	2.41	0.83
2	Useful in downloading notes	3.11	0.77
3	Useful in setting up Locker	2.51	0.91
4	Improve academic performance	2.3	0.87
5	Instructor notes helped	2.92	0.72
6	Zlocker is user friendly	2.88	0.68
7	Zlocker is useful in exchanging notes	2.79	0.83
8	No need to attend class	1.91	0.82

n = 103

1 = strongly disagree

Table 5 summarizes the results of the regression analysis that was done to identify significant independent variables that could explain the variation in Zlocker use. Twenty-nine percent of the variation in Zlocker use was explained by eight independent variables. The most important predictor was "Zlocker usefulness in this class"; the second was "Useful in downloading notes"; the third was "Useful in setting up a locker for my project"; the fourth was "helped to improve academic performance"; the fifth was "Instructor's notes helped"; the sixth was "I found Zlocker to be user-friendly"; the next was "Useful for exchanging notes with people whose working hours are different from mine"; the last was "No need to attend class, since most of the things I need to know is available on Zlocker." It is worth noting that all the variables that were entered into the equation did prove to be significant predictors of Zlocker use.

The path analysis procedure provides a method for evaluating patterns of relationship among a set of independent variables that may be inter-correlated. In addition to displaying the relationships, the procedure is intended to show unique latent relationships that cannot be revealed by other associations within the model.

Table 5. Regression Analysis: Determinants of Zlocker Use

<u>Var num</u>	<u>Variable Name</u>	<u>R²</u>	<u>beta</u>	<u>Z</u>	<u>t sig</u>	<u>F</u>	<u>r</u>	<u>n</u>
		0.29				4.8		103
1	Zlocker usefulness		-0.05	-0.308	0.758		-0.44	
2	Useful in downloading notes		-0.29	-2.33	0.02		-0.45	
3	Useful in setting up locker		0.01	0.09	0.93		-0.28	
4	Improve academic performance		-0.18	-1.375	0.172		-0.35	
5	Instructor notes helped		0.1	0.902	0.37		-0.21	
6	Zlocker is user friendly		-0.1	-0.924	0.36		-0.3	
7	Zlocker is useful in exchanging notes		-0.17	-1.35	0.18		-0.33	
8	No need to attend class		0.19	1.867	0.65		0.065	

Building on the results obtained from the regression analysis, a path model was proposed (see Figure 1). A reason for pursuing this analysis was to examine the pattern of inter co-relations of a few important concepts, namely, Zlocker's use for obtaining instructor's notes, to do group projects, to see if the user-friendliness of the software would have an influence on its use and to examine the need to attend class in the presence of a website.

Figure 1 shows the initial hypothesized model proposed to examine the inter-correlations among the key variables and the direct and indirect influences of these variables on Zlocker use. The variables were V2--useful in downloading notes, V3--useful for project, V6--Zlocker is user friendly, V8--no need to attend class. The path model in this context had four endogenous variables; they were V3, V6, V8 and Z-use. The error terms of the endogenous variables were used to assess the strength of the path model. An error term (also known as error vector) less than .95 was used to decide if the variable was a strong predictor.

Figure 1. Proposed Path Model for Zlocker Use

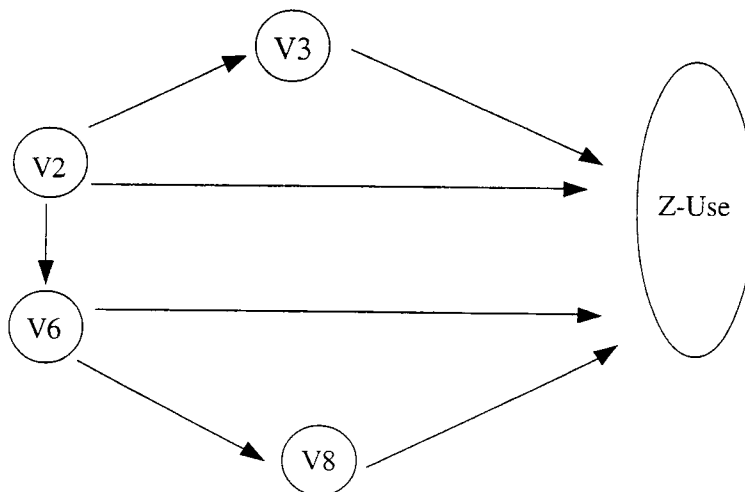
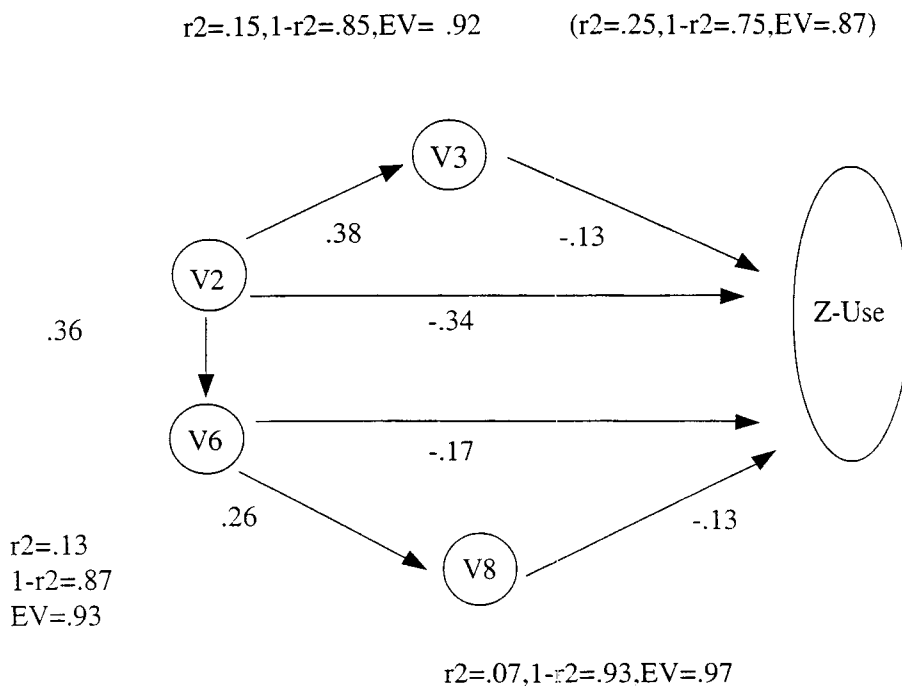


Figure 2 shows the results of the path analysis. A series of regression analysis was done to determine if the proposed direct and indirect relationships shown in Figure 1 were significant. The results proved that all the paths were significant. The variable V2--useful to download notes from my instructor's Zlocker influences Zlocker use not only directly but indirectly via Variables V3--useful for setting up a locker for my project and V6--Zlocker is user-friendly and V8--no need to attend class. The variable V6--Zlocker is user friendly influences Zlocker use not only directly but also indirectly through variable V8--no need to attend class.

Figure 2. Results of the Path Model for Zlocker Use



A closer examination of Figure 2 reveals that 85% of the variation in V3--Useful in setting up a locker for my project, 75% of the variation in Z-use, 93% of the variation in V8--No need to attend class, and 87% of the variation in V6--Zlocker is user-friendly, remain largely unexplained by the variables included in the model. The value of the error vector (EV) used to assess the strength of the variable in predicting the dependent variable showed that variable V6 is not a strong predictor of variable V8. As mentioned earlier a variable with an EV of more than .95 is not considered a strong variable. In this case the error term = .97.

Path analysis helps to trace direct, indirect and spurious components in a relationship between two variables. Table 6 summarizes these components. It shows the decomposition of the total co-variation between two sets of variables represented by "r."

Table 6. Decomposition of Bivariate Covariation

<u>Bivariate Relation of Concerns</u>	<u>V2, Use</u>	<u>V3, Use</u>	<u>V6, Use</u>	<u>V8, Use</u>
(A) Original Covariation	-0.45	-0.28	-0.30	0.06
(B) b1. Causal Direct	-0.34	-0.13	-0.17	-0.13
b2. Causal Indirect	-0.12	0	-0.03	0
Total Causal = (b1+b2)	-0.46	-0.13	-0.20	-0.13
Non Causal A-B	0.01	-0.15	-0.10	0.19

V2: Useful to download notes from my instructor's Zlocker

V3: Useful for setting a locker for my project

V6: Found Zlocker to be user-friendly

V8: There is no need to attend class since most of the things I need to know are available on Zlocker

The closer the total causal comes to the original co-variation, the stronger the path model. If the non-causal or the spurious components was zero then it would have been a perfect model. The proponents of the path model believe a non-causal value of .10 or more reflects the weakness of a variable in predicting. In this case the variable, V8--No need to attend class, was not a strong predictor of Zlocker use because the non-causal in this case = .19.

DISCUSSION

This study treated the variables discussed in the information technology and distance education literatures to an empirical assessment. Results from this study affirm the findings in prior research. The hypothesis testing showed that Hypothesis 1 defined by perceived usefulness of Zlocker, "need to download instructor's notes" and "found that the notes from my instructor helped me understand the course better," were some of the reasons for Zlocker use. This supports prior research by Arbaugh (1000) who found that perceived usefulness of a course website led to its use. Hypothesis 2, which proposed that "perceived user-friendliness of Zlocker will be a positive predictor of Zlocker use," was supported. Hypothesis 3, which posited that the perceived independence of time and distance constraints will be a positive predictor of Zlocker use, found support in this study and affirmed earlier findings by Ragothanman and Hoadly (1999). The need to have a locker for the group project (Hypothesis 4) found support in this study and played an important role in determining the use of Zlocker. In the case of Hypothesis 5, defined by "Using

Zlocker in this class helped me improve my academic performance." although the mean response to the question showed disagreement, it was still a significant predictor of Zlocker use. This affirmed prior research by Sonner (1999), Bailey and Cotlar (1994), and others who found that students in distance learning courses had higher levels of achievement and performance than their in-class colleagues. The findings from this study do not provide empirical support to the issue of absenteeism (Hypothesis 6). Students did not use the website as an opportunity to miss class. On the other hand, students downloaded the notes prior to the lectures and brought them to class and lab sessions and elaborated on them during classroom lectures. The attendance was as normal as it was in earlier semesters when Zlocker was not used. This confirms the findings in an earlier research by Karuppan and Karuppan (1999). In this present study, although students were not strongly in disagreement unanimously, some of them did express disagreement to the statement "No need to attend class since everything I need to know is on the website." Thirty-three percent strongly disagreed, 45% disagreed, 15% agreed and 5% strongly agreed. An so, there were some students who stayed away from class and relied entirely on the notes in the website, but they were not in the majority.

The overall pattern of results was consistent across data analyses. The variables that were strong in the regression analysis was also strong in the path analysis. In summary the study has found empirical support for most of the stated hypotheses.

STRENGTHS AND WEAKNESSES OF THIS STUDY

This study was an unobtrusive study of student perception of a course dedicated website. The natural setting greatly enhanced the basis of external validity. In studies trying to explain communication patterns and behaviors, field settings are more appropriate than experimental designs. The fact that the factors chosen for examination are deeply anchored in theory, lends some protection to the problem of generalization (Kidder & Judd, 1986). The survey instrument captured perceptual data in which measurement errors in responses can place limitations on the study. Although, the survey results provide clear support for some of the questions in this study, they barely scratch the surface for what are important predictors of Zlocker use in this university where the study was conducted. Results in this study are based on students at one specific university and may not be generalizable to students at other universities. Further, due to the small sample size, care must be taken in interpreting the results of this study. However, they do support the findings of previous research which indicates that course-dedicated websites can be an effective way of delivering information to students.

CONCLUSION

This study suggests that making course materials available on the web has a positive effect on students. It enhances classroom instruction by way of allowing students to take notes, discuss with fellow classmates and "catch up" on lost ground. It facilitates studying undoubtedly. Professors can use internet tools and resources to completely redesign their course materials.

Students need skills in using current computer technology such as the internet, the world's largest computer network, to promote themselves in the job market. Incorporation of internet use in business courses is a very effective way to prepare students for lifelong learning. Faculty members have to spend a little bit of time or a lot of time to incorporate internet use into their curriculum, depending on what and how much they want to accomplish.

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