USING THE INTERNET TO ENHANCE COURSE PRESENTATION: A HELP OR HINDRANCE TO STUDENT LEARNING

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ABSTRACT

Use of the Internet and other electronic technology to enhance course presentation is growing rapidly. Delivering courses through the Internet is growing at the rate of 20% a year. Over 81% of all universities offer Internet delivered courses. A number of advantages and disadvantages have been cited for this form of delivery. Past research is inconclusive with regard to the value of Internet offerings for students. This paper presents a framework for examining Internet assisted course offerings and examines results from a survey of over 500 undergraduate students exposed to Internet delivery within a Principles of Marketing course. The survey results indicate significant declines in class attendance and examination performance with the addition of an Internet enhancement to the traditional course format.

INTRODUCTION

The term "Internet" was used for the first time in 1982. It wasn't until the mid-1990s though that the Internet as we know it today materialized. The beginning of the Internet was Arapanet, a military project aimed at networking research centers to strengthen military defence. In 1969, UCLA, UC Santa Barbara, Stanford Research Institute, and the University of Utah became the first hosts of Arapanet. In 1981, Arapanet had grown to 214 hosts, with a new host joining every twenty days. By the mid-1980s, e-mail had become an important component of university education and research. It wasn't until 1991, however, with the advent of the World Wide Web, that Internet usage began to expand outside of academe (Lamb, Hair, McDaniel and Faria 2002).

By the mid-1990s, the Internet came to be recognized as a powerful business tool. Publications began to emerge on building Websites. Today, the Internet is the world's fastest growing communication technology. There are currently nearly 500 million Internet users worldwide with the greatest number of users in North America, Europe and the Asia/Pacific region. Internet penetration is well over 60 percent of the population in these areas (Lamb, Hair, McDaniel and Faria 2002).
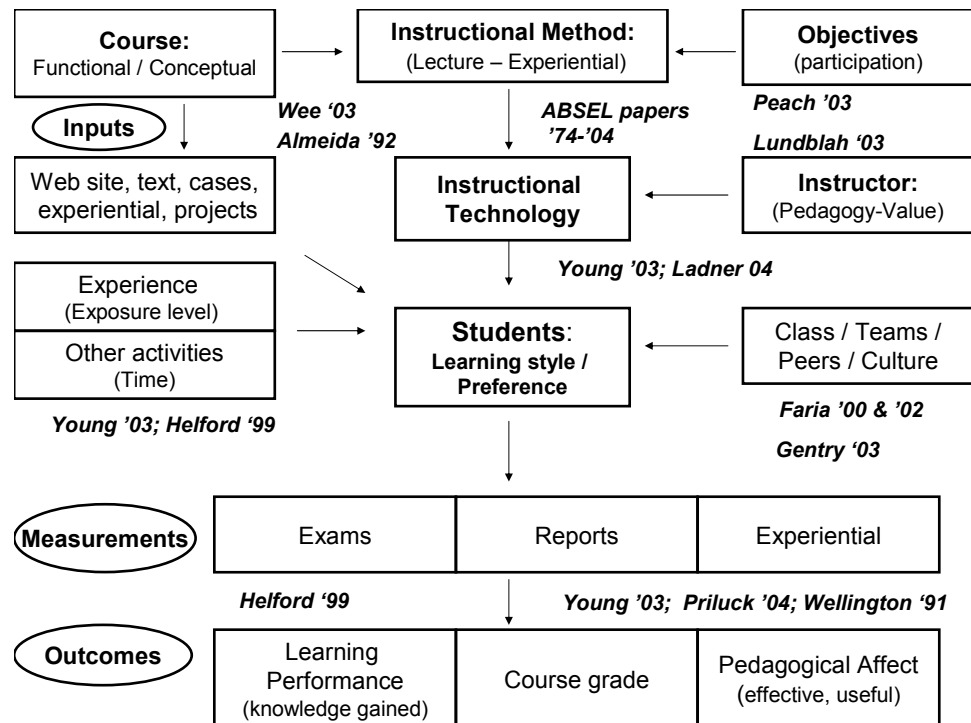
PAST RESEARCH

The time frame within which an innovation, such as the use of the Internet to enhance course offerings, is adopted is influenced by five characteristics: relative advantage of the innovation, compatibility, complexity, trialability, and observability (Lundblad 2003). While the use of technology can offer some advantages, the overall acceptance of new technology is often based on the view of the stakeholders (Schillewaert, Ahearne, Frambach and Moenaert 2000; Venkatesh and Davis 2000). A number of studies have looked at the pros and cons of using electronic technology to deliver or supplement course material from different stakeholder perspectives as shown in Figure 1.

Delivering courses through the Internet or other form of electronic technology is growing rapidly and is expected to continue to grow at the rate of 20% a year (Allen and Seaman 2003). Currently, 81% of all universities offer at least one online course and 34% offer complete online degree programs (Conhaim 2003). Many ABSEL members utilize the Internet to add to their course delivery options as can be seen in the number of ABSEL papers describing the users' experiences (Potosky 2002; Gold 2001; Overby, Griffin, Joyner, Schmidt, Mansfield and Tuck 2000;

Figure 1: Research Areas on Technology Use to Enhance Course Presentation

Course: Functional / Conceptual	**Instructional Method:** (Lecture – Experiential)	**Objectives** (participation)

Inputs

Wee '03
Almeida '92

ABSEL papers '74-'04

Peach '03

Lundblah '03

Web site, text, cases, experiential, projects	**Instructional Technology**	**Instructor:** (Pedagogy-Value)

Young '03; Ladner 04

Experience (Exposure level)	
Other activities (Time)	**Students**: Learning style / Preference
	Class / Teams / Peers / Culture

Young '03; Helford '99

Faria '00 & '02

Gentry '03

Measurements

Exams	Reports	Experiential

Helford '99

Young '03; Priluck '04; Wellington '91

Outcomes

Learning Performance (knowledge gained)	Course grade	Pedagogical Affect (effective, useful)

Palia, Keong and Roussos 2000; Peach and Platt 1998; Wilson and Maxham 1997; Krishnan 1997; Pillutla 1996). Several additional ABSEL papers have strongly endorsed the use of the Internet to enhance business course offerings (Pillutla, Crino, Elfner, Bill, Keys and Butler 1998; Leonard and Leonard 1996).

There are, of course, a number of advantages to using the latest technology in our courses. For the university, Internet offerings reduce the cost of course delivery, expand the geographic area the university can serve, and increases the number of students that can be enrolled. For the student, learning can take place at a pace the student wants to establish, most students are very comfortable with computers and the Internet, it is convenient, Internet courses may offer more flexibility for the student than in-class instruction, students can interact with the instructor and other students in a non-threatening environment, and students become actively involved in the learning process. For the instructor, we have the opportunity to enhance our classes, bringing in a wider range of materials and media.

There are, as well, some potential drawbacks to Internet or other technologically enhanced instruction. Research reports higher dropout rates in Internet versus in-class courses (Priluck 2004), many students prefer face-to-face contact, and technical difficulties can become very frustrating. Research has also shown that older, more self-disciplined and more highly motivated students are better able to handle Internet delivered courses than students who don't have these characteristics (Eastman and Swift 2001; Sweeney and Ingram 2001; Leasure, Davis and Thievon

2000; Helford and Lei 1999; Phipps and Merisotis 1996, Willis 1994). For the instructor, delivering all, or part of, courses through enhanced technology requires much up-front time and effort.

While growing rapidly, there are differences of opinion of the value of using the Internet or other electronic technology to teach courses or to enhance courses. Grossman (1999) contends that we are racing to adopt educational techniques without fully understanding them. Do students learn more in technology enhanced or delivered courses or do they learn less? Gosen (2003) cites findings from a number of studies comparing Internet delivered versus classroom delivered courses. The studies cited by Gosen (2003), though, involve primarily non-business courses. These studies will not be reviewed here. Instead, adding to Gosen (2003), only studies involving a comparison of Internet delivered, or Internet enhanced, courses to traditional classroom delivered business courses will be reviewed.

Thirteen studies have been identified that compare student performance and attitudes in Internet, or Internet enhanced, business courses versus traditional classroom courses. These studies compared student final exam scores and/or student opinions of Internet sections of the course against traditional classroom sections of the course.

In one study (Helford and Lei 1999) students in the traditional course scored higher on a common final exam than students in the Internet course. In six other studies (Priluck 2004; Wilson 2002; Leasure, Davis and Thievon 2000; Tucker 2000; Jones 1999; Smeaton and Keogh 1999)

there was no significant difference reported on common final course exams. No studies reported higher exam scores, in comparison with traditional course sections, in Internet delivered courses.

Based on end-of-course student surveys, five studies reported that students preferred the traditional course format (Priluck 2004; Sweeney and Ingram 2001; Aragon, Johnson and Shaik 2000; Ponzurick, France and Loger 2000; Helford and Lei 1999) over an Internet offering of the course. Only one study reported a preference for the Internet delivered course (Schutte 1996). In three of the studies, no significant difference in student preference between course delivery formats was found (Wilson 2002; Truell 2001; Glenn 2000). Priluck (2004) also reported that there was no significant difference in professor evaluation by students between the Internet and traditional course sections.

A drawback to all past studies is that they involved small numbers of students. This is rectified in the current study that involves over 500 students in a Principles of Marketing course.

RESEARCH QUESTIONS

Based on the research cited above, the following research questions were formulated and examined within the present survey.
1: What kinds of course delivery modalities do students prefer for a Principles of Marketing Course?
2: Would class attendance decline with the introduction of course content via a website which students could access?
3: Would examination performance be affected by the introduction of course content via an Internet enhancement?
4: Would students use the Internet enhancements, how often would they use them and how satisfied would they be with these enhancements?
5: What learning activities affected class grade performance and did the use of Internet enhancements significantly affect class grade performance?

Past research has suggested that students prefer a course delivery modality that involves face-to-face contact. In addition, many studies have indicated that examination performance across content delivery methods is not significantly different. However, no studies have reported on the impact of class attendance when a significant Internet content component has been added as an enhancement to a course.

DATA COLLECTION AND ANALYSIS

The research questions were examined using a questionnaire administered to 502 Principles of Marketing students registered in two different Principles of Marketing course sections, one of which was Not Internet Enhanced (hereafter the NIE group) and a second which was Internet Enhanced (hereafter the IE group). The two different sections were offered in two consecutive semesters. The course is offered as a three hours long night class with a mass lecture format to hundreds of students. The students were evaluated on the basis of a midterm and final examination using a multiple choice question format with a course weight of 80 percent. There was an additional 20 percent weighted towards the completion of two written group assignments and there was a 3 percent extra bonus award available for completion of weekly attendance quizzes. The course syllabi for both sections were virtually identical in terms of grading schemes, textbooks used, assignments and the instructor.

The only difference in the course sections was that the second semester class was conducted with the support of an online content delivery and communications Website program known as the Virtual Course Kit whose acronym is ViCKi. ViCKi allows instructors to create a course Website that is presented along with Websites of other university courses on a master Web page called "Course Notes". A ViCKi website is created in a Lotus Notes software environment and is presented as a Lotus Notes Database file. This file allows one to communicate with students via e-mail and paste files (e.g., Excel files, Word files, Powerpoint files) that students can access through the university Web page. ViCKi allows for uncontrolled access with a published course ID or controlled access with a published course ID and an instructor provided password. When students enter the ViCKi site they are greeted with webpage content choices such as announcements, lectures, lessons, labs, resources, information, FAQ's, calendar, course outline, discussion, assignment drop box, and e-mail instructor. The ViCKi site developed for the second semester course section contained copies of all of the planned lectures for the course in Powerpoint format. The planned lectures were posted in advance of their delivery so that students would be able to download them and use them for in-class note taking and questions.

The first research question on the kinds of course delivery modalities preferred by the students was explored by asking students in both groups (i.e., the NIE group and IE group) to provide their preference ratings of the descriptions for five different course delivery designs in terms of strongly supporting or strongly opposing the design using a 7 point semantic differential scale. The course delivery designs outlined for the students were as follows:

Traditional Design - Weekly meetings, lectures, videos, cases, midterm and final examinations

Simulation Design - Weekly meetings, lectures, videos, simulation, midterm and final examinations

Hybrid Design (Traditional plus Modular) - Students can opt to learn under either approach but must choose one for evaluation purposes

Modular Design - No meetings, text, online materials, modular testing with pass hurdle of 70%, no limit on number of attempts to complete modules

Self-study Design - No meetings, text, online materials, instructor as a resource, two to three exams to measure learning

The results of these ratings and a comparison of the course delivery design ratings between the two groups using a t-test procedure in SPSS PC Version 10.0 is presented in Table 1.

There was considerable concern, on the part of the course instructor, about the introduction of the ViCKi website leading to a decrease in class attendance as one of the primary offerings on the website would be advance lecture notes. It was believed that given the mass lecture approach used in the class that students might feel that they did not need to attend as they had the lecture notes in advance. Since attendance based quizzes were offered in both semesters, a comparison of attendance at these quizzes between the NIE and IE classes was undertaken using a t-test procedure. The results are presented in Table 2.

Was examination performance affected by the introduction of content via the Internet as a course enhancement? This question was examined by undertaking a t-test to compare the average examination performance between the NIE and IE course sections. The findings on this question are reported on in Table 2.

Research question number 4: Would students use the Internet enhancements, how often would they use them and how satisfied would they be with these enhancements? In order to examine this research question only the IE group was asked how often they accessed the course website and to rate their satisfaction on a semantic differential scale (1- very satisfied to 7- very dissatisfied). The findings on this research question are reported on in Table 3.

What learning activities affected class performance most and did the Internet course enhancements and their usage significantly affect class performance in the IE group? This question was examined by undertaking a MANOVA evaluation of course grade level performance (A, B, C, D or less) versus self-reported learning activities such as ViCKi usage, ViCKi satisfaction, self-reported study hours, proportion of midterm readings completed, proportion of final exam readings completed, and class attendance (as measured by quiz attendance). The findings on this research question are reported on in Table 4.

FINDINGS

The findings with regard to research question 1 (What kinds of course delivery modalities do students prefer for a Principles of Marketing Course?) are reported on in Table 1. The results from the student survey show that the traditional lecture delivery approach was preferred by students from both the NIE and IE course sections and that the order of preference for the five delivery options proposed was the same for both groups as well. The only significant difference in rating of course designs was that the IE group rated the Modular design more favorably than the NIE group and this difference was statistically significant.

Research question 2 asked if class attendance would decline with course lecture notes being made available in advance of class meetings on a course website. A comparison of course quiz attendance between the two groups is found in Table 2 and indicates that attendance did decline in the IE group with an average attendance of 2.081 out of 3 quizzes (69.37% attendance) versus 2.245 out of 3 quizzes (74.83% attendance) for the NIE group.

Research question 3 looked at student examination performance in the NIE versus IE course sections. A comparison of average examination performance grades between the two groups is presented in Table 2. The results indicate that examination performance was slightly better in the NIE group with an average class score of 72.54% versus 70.25% in the IE group and this difference is statistically significant.

Research question 4 asked how often students would use the course Internet enhancements and how satisfied they would be. The results of the survey for this research question indicated that over 50% of the students visited the course website at least once a week. This would be in concert with the class meetings that occurred once a week as well. More frequent student visitors to the website reported greater satisfaction with the website while less frequent visitors reported being less satisfied. An ANOVA analysis of satisfaction levels across the groups indicated that the differences in satisfaction levels were significant.

Research question 5 looked at whether or not the internet course enhancements had an impact on the course grade. The manova analysis of examination performance of four course grade groups (students receiving grades ranging from a through d) reported on in table 4 indicates that in combination, vicki usage, vicki satisfaction, final examination reading, midterm examination reading, weekly study hours and attendance as measured by quiz performance produced significant differences across the grade level groups. The manova results of tests of between-subjects effects indicated that the percentage of the text read for the midterm and class quiz attendance were the only significant individual contributors to grade performance differential. As such, the existence of the internet course enhancements and the use of the internet course enhancements did not have an impact on the students' grade performance in the principles of marketing course.

TABLE 1: RATINGS OF COURSE DELIVERY DESIGNS BETWEEN NIE AND IE
MARKETING SECTIONS

	(n=502) Combined		(n=291) NIE		(n=211) IE	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Traditional	2.75	1.430	2.73	1.419	2.78	1.447
Simulation	3.01	1.657	3.03	1.644	2.99	1.679
HYBRID	3.16	1.682	3.23	1.682	3.06	1.682
Modular	4.30	1.838	4.47	1.795*	4.05	1.873*
Self-study	4.49	1.799	4.50	1.831	4.47	1.757

Ratings on a 1-7 scale (1 = Strongly Support and 7 = Strongly Oppose)

* t-test significant at <.01

TABLE 2: T-TEST RESULTS FOR MEAN QUIZ AND EXAM SCORES BETWEEN
NIE AND IE MARKETING CLASS SECTIONS

	NIE Group	IE Group	Significance
Mean Quiz Attendance	2.245 out of 3	2.081 out of 3	.023
Mean Exam Scores	72.54%	70.25%	.021

Table 3: ANOVA Results for Frequency of ViCKi Website Visits and Mean Satisfaction
with the ViCKi Website

Frequency of Visits	Number of Respondents (%)	Mean Satisfaction	S.D.
2-3 times/wk	45 (19.6%)	2.51	1.753
ONCE/WK	**77 (33.5%)**	**2.52**	**1.456**
Every other week	55 (23.9%)	2.73	1.340
Once/Month	46 (20.0%)	3.52	1.426
Never	7 (3.0%)	5.14	1.773
Total	230 (100%)	2.85	1.586

TABLE 4: MANOVA RESULTS OF THE IMPACT OF LEARNING ACTIVITIES ON GRADE PERFORMANCE

	Grade Performance Category							
	A Grade N=46		B Grade N=64		C Grade N=71		D Grade N=44	
Learning Activity	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
ViCKi Usage	2.63	1.103	2.61	1.093	2.46	1.067	2.45	1.210
ViCKi Satisfaction	2.80	1.376	2.63	1.589	2.99	1.653	3.11	1.701
Final Exam Reading	2.00	1.265	2.30	1.365	2.51	1.340	2.61	1.125
Midterm Reading	1.57	1.047	2.02	1.215	2.52	1.319	3.25	1.278*
Weekly Study Hours	3.98	3.221	4.36	3.946	4.14	2.072	5.95	7.396
Attendance Quizzes	2.446	.8044	2.145	.8028	1.979	.7789	1.795	.8798*

Multivariate Tests:		
	Pillai's Trace	.956
	F Value	780.179
	Hypothesis Degrees of Freedom	6.0
	Error Degrees of Freedom	216
	Significance	.000

- Between Subjects Effects Significant at < .001

DISCUSSION AND CONCLUSIONS

The findings reported in this study generally concur with the findings of prior researchers that student's prefer face-to-face contact in their course instruction. Both the NIE and IE groups ranked the traditional lecture delivery for the principles of marketing class as the preferred format. The addition of an internet enhancement to supplement the delivery approach in a large lecture class resulted in a statistically significant decrease in both class attendance (as measured by quiz taking) and examination performance. A correlation analysis of class attendance and examination performance for both marketing course sections indicated that quiz attendance was correlated with examination performance (R value of .332, significant at .000). It would appear that many students in the IE class assumed that the internet content represented a "substitute" for lecture attendance as opposed to being a lecture enhancement. The findings in this study also suggest that greater class attendance leads to better class grade performance. This finding supports the notion that face-to-face instruction provides more value added for learners and justifies the preference of students for this mode of delivery.

In both course sections (NIE and IE), students preferred the traditional lecture and examination delivery method. However, students who were exposed to an available online component were significantly more supportive of a modular design than those who had not been exposed to this component. Curiously, within the IE

group, the self-reported frequency of use of the course notes website did not contribute to an improved course grade performance in any significant way. In addition, better performers reported spending less time per week on studying marketing than poorer performers. This seems quite contrary to what might be expected. One would think that a student who spends more time studying a subject should perform better than a student who spends less time. A consideration of the "quality" of time spent might explain this curious finding. For example, better examination performers reported doing more of the textbook reading than did poorer performers.

The findings from this study indicate that attendance levels were adversely affected by the addition of an Internet enhancement to support instruction in a large lecture class. It is postulated that some students saw the website as a "substitute" for lecture attendance instead of treating it as a support tool. This attitude with regard to Internet course enhancements will have to be changed if use of this new technology is to be successfully implemented in our courses.

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