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Use of the World Wide Web to Support Delivery of an Information Systems Course: An Exploratory Study

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Abstract

A number of universities are now trying to utilize the web to deliver courses. Although the move towards Internet-based courses is primarily technology driven, a number of pedagogical issues remain unanswered. In this paper we report findings of a preliminary study in which web-based tools were utilized in support of the traditional lecture method in an executive MBA course. Students reported that the web site added value to the course and was easy to use.

Introduction

In recent years we have seen an increased interest in the use of the World Wide Web in the delivery and support of courses in universities. A number of universities are now providing courses entirely on the web. This allows students to register, take classes, complete assignments and take exams over the Internet. Some have even called this a paradigm shift in the delivery of education (Boroni 1998). While the move to Internet-based courses has been driven by advances in technology, a number of teaching and pedagogical issues remain unanswered. In a study which investigated the use of the Web to deliver class lecture notes only to students of a traditional university course, it was found that students considered web-based lecture notes significantly improved the overall learning experience (Makkonen 1998). While this study was limited to lecture notes only, the effect of courses partly or completely delivered over the Web on student learning still remains uncertain. Although students consider the information available on the web an important asset it is still unclear how much of the available information is accessed and then used by students. The objective of this study is to determine the use of web-based resources by students, and the effect of this information on student learning and attitudes.

In this paper we report the findings of a preliminary study of student use of Internet-based resources in a graduate course in Management Information Systems. The paper is organized as follows: we first provide a description of an experiment. In the following section we provide information about the results of the study. Then we provide a discussion of the results and its implications for development of other web-based system to support traditional course delivery systems.

The Experiment

In this experiment, a web site was designed for the Information Systems and Technology Management course in a large regional private university. The web site included information about the course syllabus, project requirements, assignments, and exams. The site provided a link to a Yahoo! Club site created specifically for the course. This club site included a bulletin board where students and instructor could have a threaded asynchronous discussion, a calendar for a schedule of topics to be covered and due dates for assignments, a links section which listed links to various resources relevant to the course, and a chat room for synchronous discussion. The course selected for this study was a graduate executive MBA course which was delivered on five consecutive Saturdays in the Winter session. Since there were only a limited number of lecture days, there was an increased need to deliver course-related information to students quickly and efficiently.

The web site and the Yahoo! Club site designed for the course provided the additional information about the course. Please note that the terms course site and web site are used interchangeably throughout the paper and they refer to all web-based resources (including the Yahoo! Club site) available for the course. Although a hard copy of the course syllabus was provided to students, the syllabus was included on the web site for reference. All lecture notes (PowerPoint files) were available for download from the course site. A description of a required term project for the course was provided on the web site for reference. All lecture notes (PowerPoint files) were available for download from the course site. A description of a required term project for the course was provided on the site. Assignments were posted on the bulletin board at least a week before they were due. The instructor held virtual office hours in the chat room. Links listed in the links section of the site provided information on web-based resources which could be used by students for their projects. The site also had an e-mail mailing list which could be used both by students and instructor. All students had email and Internet access either at home or work or both. Any changes to the web site like a new listing of assignments was emailed all students in the course.
As mentioned earlier, this course had a five week semester. The study was conducted after the class met for the first time, so the entire duration of this project was four weeks. During this time data was collected on the number of times students accessed the web site and the number of pages they visited during their visit (the number of pages visited is called page views). Additional data was collected from students using a 16-item instrument at the end of the course. Students who participated in the study were requested to complete a questionnaire on the web. Ten out of the seventeen students registered for the course completed this questionnaire, a response rate of over 50 percent. This questionnaire was used to gather information about student perceptions regarding the information value, ease of use of the web site, as well as, issues regarding security and credibility.

**Results**

Preliminary results were based on the number of visits and number of page views for the four weeks of the semester. The results provided interesting insights into the use of web site in the course. First, the average number of page views per day was the highest in the first week (464 page views) and then gradually decreased throughout the duration of the study to end at 172 page views in the final week of the semester. Figure 1 shows a chart of the average number of page views per week and the cumulative number page views per week. A chart of cumulative page views per day for the four weeks of the study showed that though the number of page views increased throughout the duration of the study, the curve flattened out showing the decreasing page views per week. Moreover, the number of page views varied greatly with the day of the week. Since the class met on Saturday, this day had the least number of visits. The average number of page views were the highest on Mondays (67.25) and Fridays (57.25).

![Figure 1: Page Views Per Week](image)

Due to small size of the sample reporting, we were able to only provide some descriptive statistics about the students perception regarding the usefulness of the entire experience. The usefulness of the experience was measured in terms of the perceived information value provided by the web site, its ease of use, and whether the subjects considered the web site to be credible, i.e., whether they were concerned about disclosing personal information on the web. The results are given below in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Information Value</th>
<th>Ease of Use</th>
<th>Credibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minimum</strong></td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td><strong>Maximum</strong></td>
<td>2.000</td>
<td>3.400</td>
<td>3.000</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>1.480</td>
<td>1.420</td>
<td>2.000</td>
</tr>
<tr>
<td><strong>Standard Deviation</strong></td>
<td>0.355</td>
<td>0.745</td>
<td>1.154</td>
</tr>
</tbody>
</table>
The results in Table 1 show that students perceived that the web site provided high information value (since 1= highest and 5= lowest), and was easy to use. There were some concerns about the credibility of the web site primarily because a part of the site was hosted in a Yahoo! Club. To register for the club students were asked for some personal information. Although Yahoo! provided a disclaimer stating that personal data provided would not be used for marketing purposes or sold, some students did express their concern regarding releasing this data. This justifies the 2.0 score in credibility of the web site.

Another interesting result is provided in Table 2. It was found that 20% of the students reporting accessed the web site from work only and 10% accessed the web site from home only, but the majority 70% visited the web site from both work and home. This high percentage of students at work and home can be explained by the fact that students in the class were part of the executive MBA program and were all part-time students who were working full-time, and therefore has web access at both work and home.

**Table 2: Web Access**

<table>
<thead>
<tr>
<th>Information Accessed From</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>20</td>
</tr>
<tr>
<td>Home</td>
<td>10</td>
</tr>
<tr>
<td>Both Work and Home</td>
<td>70</td>
</tr>
</tbody>
</table>

**Discussion**

The results of this preliminary study show that significant gains can be made in the education process if the World Wide Web is utilized to deliver lecture support and supplementary materials to students. Not only do students access this information from both work and home, they perceive highly the information value provided by the site. Ease of use may have an impact of the information value of the site though. Students were not too concerned about the misuse of personal information they provided over the web. One of the reasons could be the very fact that the web site was provided by an educational institution, an organization the students believed would not allow personal data to be used or sold.

We acknowledge that this is a preliminary research in the area of information systems for supporting traditional lectures in a university environment. A larger study is now planned for next semester. We think it is important that additional studies be done in the area of supportive technologies in the learning environment to enrich the entire teaching experience.

**References**


Additional references are available on request.