EVALUATION OF STUDENT-DESIGNED WEBSITES AS A MODE OF ASSESSMENT

Lim Kam Ming

Nanyang Technological University, Singapore

Abstract: The World Wide Web (WWW) has become widely used in many areas including commerce, entertainment, news media, communication, and education. Education has been transformed with the use of the World Wide Web. An ever expanding range and increasing variety of information is now easily accessible at the click of a mouse. Students need not travel to classes and to libraries where information in its printed form is rather slow in being updated. The roles of students and teachers in educational settings involving the use of the World Wide Web have also changed to one in which students take on a more active role in learning (Collins, 1991). This project investigated the effectiveness of using student created website as a mode of assessment in an elective module (Fundamentals of Group Guidance) in the Bachelor of Arts/ Bachelor of Science with Diploma in Education programme at the National Institute of Education. Students’ prior attitudes and usage of computers & WWW were assessed at the beginning of the course. Students’ attitudes toward the website creation assignment were assessed. The problems and implications of the website creation assignment are discussed.

The World Wide Web

The World Wide Web has made major and significant changes in the way people interact, work, study and live in a relatively short period of time since it first appeared. Kraut, et al (1998) argued that computers and the World Wide Web impact on the lives of the average person could be as significant (if not more) as the telephones’ or the televisions’ in the earlier part of this century. About 40% of all U.S. households owned a personal computer. About 30% of these computers are connected to the internet (Kraut, et al, 1998). The use of computers and the internet in a wide range of applications from on-line shopping, banking, entertainment, to commerce and education has definitely changed the way people perceived the world.

Use of the World Wide Web in Teaching

The use of the World Wide Web as a tool to enhance students’ learning and motivation has become a regular feature in many institutions and schools (Block, 1997). The use of computers and the World Wide Web has been shown to have positive influence on students’ learning, for example, increased ease of access to reference resources (Burden & Davies, 1998), use of electronic syllabus (Schneider, 1998); higher student motivation, exposure to extended resources, and improved quality of students’ work (Teeter, 1997), availability of a forum for students to exchange views and increase communication (Trapp, Hammond & Bray, 1996), and better study attitudes (Morrison, Gardner, Reilly & McNally, 1993). Forsyth and Archer (1997) reported that students in a psychology course which used computer-based teaching methods were favorable toward the use of computer-based instructions, achieved higher test scores when they consistently utilized the computer-based learning process, and were less likely to dropped out of college if they were regular users of computers.

Collins (1991) identified eight major trends resulting from the increasing use of computers in education: Shifts from: 1) whole-class to small-group teaching, 2) didactic lectures to constructivist coaching, 3) focusing on better students to helping weaker students, 4) passive students to interested students, 5) test-based assessment to continuous assessment, 6) competitive to
cooperative class environment, 7) standardized mass lessons to individualized learning, and 8) in use of verbal thinking to integration of visual and verbal thinking.

Collins (1991) suggests that teachers need to change from a whole-class to small-group instruction approach because students cannot follow the computer-based lessons in uniform pace. Teachers spend more time talking to individual students and understanding the students’ individual problems in computer-based classes. Whole-class teaching dropped from an average of 70% of class time to less than 10% when computers are used in the lessons. Teachers also used more facilitating instructions as opposed to directing instructions in computer-based lessons (average increase from 20% of class time to 50%). Weaker students also received more attention and help from teachers during computer-based classes (some by as much as 4 to 5 times more often) as their more academically able peers. Computers increased the interest levels of the students, changing them from passive, bored students to interested, actively engaged participants in the classroom.

Collins (1991) further suggests that the use of computers in schools prompted a change of “assessment based on test performance to assessment based on products, progress, and efforts” (p. 30). The use of computers in classes has also changed the classroom environment from a competitive to a cooperative social setting. Cooperative behaviour increased by about 400%. The cooperative nature of the computer-based learning tasks also allows for students to learn different materials, instead of learning the same basic knowledge and skills. Visual thinking is another factor brought about by the increase use of computers in schools. Computer programmes which show animations and graphics allow for visual illustrations and explanations of complex concepts and processes (Krantz & Eagley, 1996).

**Transformation of students’ and teachers’ roles with the use of WWW in teaching**

The use of computers and WWW have two major influences on the way people interact with each other (Kiesler, 1997). The first impact is in the way these technology amplify the ways people interact. The current methods used in teaching and learning are amplified in the sense that certain processes are easier to complete or to use. For example, students can download materials from the course website, rather than getting printed handouts in class. These reduces the time and efforts needed to print the handouts, to distribute them in class, and also make it easier to update or inform students on any issues. Students can access the materials at any time from any place (as long as they have access to a internet-linked computer) instead of waiting for the class meetings.

The second impact is the transformation of people’s roles. Collins (1991) and Menges (1994) suggest that student roles are changed from the traditional role of being passive receptors of knowledge to an active participant role. At the same time, teachers’ role changes from the dispenser and controller of knowledge to one of a facilitator/coach/guide of knowledge.

Rosen & Petty (1997) demonstrated the usefulness of internet resources (WWW course website, listserv discussion forum, and email) in supplementing traditional teaching methods in a research methods course. Students became more actively involved in the learning process. Their attitude also became more positive toward the use of computers as a learning tool.

Bailey & Coltar (1994) suggested that the Internet could be used to increase the level and quality of interactions between students and teachers. The internet could be used to support instructional goals of helping students to develop thinking skills and deeper learning.
Cooperative learning structure

Cooperative learning occur in situations in which students work together in mixed-ability groups and are dependent on each other for their individual success and rewards (Sharan, 1994). The internet is a useful tool to facilitate and implement cooperative learning structure in the classroom (e.g., Koschmann, Myers, Feltovich & Barrows, 1993).

Miami University in Ohio, USA has recently developed a coordinated university-wide system of internet-intensive education (Wolfe, Crider, Mayer, McBride, Sherman & Vogel, 1999). The “Miami Model” consists of four major internet-based teaching and learning approaches: 1) lecturers encourage active learning on the part of the students, 2) students learn by creating course websites, 3) students’ interactions are increased both in frequency and quality, and 4) students are able to implement on a practical basis their learning. The “Miami Model” is implemented in four courses. One is a large environmental geology class in which students use the internet to search for material. Students work cooperatively in an economics class to gather and discuss abstract material from the internet. The third application of the “Miami Model” is in a psychology class where students create website materials to enrich their learning. Finally, students in a journalism class are able to experience what real-life journalism is like using the internet.

Student-designed websites have been successfully used to enhance students’ learning at Miami University (Sherman, 1996, 1997, 1998). Sherman (1997) asked his students in a psychology class to create website materials relevant to the course. Students worked cooperatively to design the following website materials:

- Web assignments: To explore internet sites relevant to the course content and to answer on-line questionnaires about their views.
- Humor project: To select cartoons and discuss the social psychological principles relevant to the cartoons.
- News analysis: To analyze news reports from a social psychological view.
- Web tutorial project: To develop web tutorial on selected topics.

Sherman reported that the students’ overall experience of the website creation assignment was positive. Students were highly motivated and generally proud of the website material they have created. Negative aspects of the website creation project were the high time demand of creating the website, and the overemphasis on the technical details of the process.

Outline and purpose of study

This paper will report on an attempt to use student-created website as a way to improve learning and teaching in an elective course at the National Institute of Education. The objectives of the study are to examine the effects of asking students to work cooperatively to create a course website. The study examines how the website creation task influence students’ attitudes about the use of IT in coursework, the nature of interactions with their classmates, and the quality of their course work.

Method

Participants

Fifteen undergraduate students (7 women, 8 men) enrolled in the Bachelor of Arts/Bachelor of Science programmes at the National Institute of Education participated in this study. The students
were enrolled in an elective module (BED285: Fundamentals of Group Guidance) during the January 1999 semester. Four students were Year 1 students, 4 were Year 2 students and 7 were Year 3 students. The mean age of the students was 21.8 years (sd=1.8). Students were required to complete one written assignment of about 1500 words, and create a class web-site. The written assignment (individual work) is worth 60% and the creation of the class web-site (group work) is worth 40% of course grades.

Survey on students' perceptions of use of IT in class.

Students were asked to complete a questionnaire concerning their views about 1) increased use of IT & computers in schools, 2) increased use of project work in courses, & 3) increased use of independent studies/work (thinking) in courses. There were 23 items on the questionnaire.

Results of survey on students' perceptions of use of IT in class

Control over studies. The students believed that they have moderate amount of control (mean=3.6, sd=1.45 on a 1 to 6 scale with 6 being very much control) over their studies.

Time spent in study activities. The students spent an average of 14.87 hours (sd=7.4) in study activities per week for all their courses in the current semester.

Control over grades. Students perceived moderate amount of control over their grades (mean=3.53, sd=1.19 on a 1 to 6 scale with 6 being very much control).

Time spent in group work with classmates. Students spent an average of 4.33 hours (sd=2.72) discussing schoolwork with classmates per week.

Probability of obtaining desired grades for current course (BED285). Students felt that they have an average probability of 64.3% (sd=16.35) of obtaining the desired grades for the course.

Learning from a course using IT/computers. Students felt that they are able to learn quite a lot from a course involving the use of IT/computers (mean=4.1, sd=1.25 on a scale of 1 to 6 with 6 being very much).

Amount of independent learning for project work. Students felt that they have to do a lot of independent learning if they want to achieve an “A” grade for a course that involved project work (mean=4.9, sd=0.8 on a scale of 1 to 6 with 6 being very much).

Attitude toward IT & use of computers in school. Students’ attitude toward IT and use of computers in school was rather positive (mean=2.86, sd=0.64 on a 1 to 4 scale with 4 being like it very much). The majority of the students (80%) (n=12) indicated that they like the use of IT and computers in school.

Time spent surfing the internet. Students spent an average of 5.6 hours (sd=4.8) surfing on the internet per week.

Knowledge about internet & computers. Students were moderately knowledgeable about the internet and computers (mean=4.1, sd=1.22 on a 1 to 6 scale with 6 being very knowledgeable).

Know how to create website. Students did not know how to create a website (mean=2.2, sd=1.61 on a 1 to 6 scale with 1 being do not know).

Understanding schoolwork. Students tend to agree that understanding the work in school was more important than the grades they get (mean=4.33, sd=1.3 on a 1 to 6 scale with 6 being agree).
IT makes it easier to understand course material. Students were undecided as to whether the increased use of IT and computers in school make it easier for them to understand the course material (mean=3.7, sd=1 on a 1 to 6 scale with 6 being agree).

Like a subject that make students think. Students tend to moderately like courses that make them think (mean=4.07, sd=1.16 on a 1 to 6 scale with 6 being agree).

Project work & good grades. Students tend to agree that project work make it easier for them to obtain good grades (mean=4.4, sd=1.35 on a 1 to 6 scale with 6 being agree).

Own a computer at home. Fourteen out of the 15 students (93.3%) owned a personal computer at home. 78.5% (n=11) of these computers have access to the internet.

Use of internet in schoolwork. Students do not often use the internet to help them with their schoolwork (mean=3.73, sd=1.62 on a 1 to 6 scale with 6 being agree).

Usage of internet. Most of the students (87%, n=13) use the internet for emails, 60% (n=9) to look for reference material, 40% (n=6) to look for entertainment (e.g., movies), 33% (n=5) to look for news, 13% (n=2) for playing games, 13% (n=2) for participating in chatrooms, 13% (n=2) for internet shopping, and 6% (n=1) for creating homepages.

Do well in independent studies. Students felt that they were able to do moderately well in subjects that require independent studies (mean=4.2, sd=0.68 on a 1 to 6 scale with 6 being agree).

Know how to save files from internet. Students agreed that they know how to save files onto their computer hard drive / floppy disks from the internet (mean=5.1, sd=1.06 on a 1 to 6 scale with 6 being agree).

Use computer to fill free time. Students were not likely to use a computer to fill up their free time (mean=3.93, sd=1.4 on a 1 to 6 scale with 6 being agree).

Spend time learning about computer or internet. Students were not likely to spend time learning about computers or about the internet (mean=3.2, sd=1.15 on a 1 to 6 scale with 6 being agree).

The results from the questionnaire suggest that students are quite willing to use computers and IT in their school work if they have to.

Creation of class website

Students met in groups outside of class time and during two class meetings (13 March 1999 and 20 March 1999) to work on the website. The website consisted of 3 sections:

• A 100 words Introduction – Who, what & why of this web-site?
• Compilation of www resources (e.g., news articles, school web-sites) related to the students’ individual written assignment.
• Summaries of students’ individual paper (about 500 words each).

The students’ websites were not actually uploaded onto a server due to lack of time.

Students’ attitudes toward class assignments

Students were asked to complete a post-test questionnaire assessing their attitudes and views regarding the web-site creation assignment for the course. Only 10 of the 15 students (67%) returned completed questionnaires.
Students' perceived control over course assignments. Students felt that they have a fair amount of control over the course assignments (mean= 4.3, \(sd=.48\) on a 1 to 6 scale with 6 being very much control).

Time spent on study activities. Students spent an average of 2.25 hours (\(sd=.71\)) on study activities for this course.

Students' perceived control over course grades. Students felt that they have average amount of control over their course grades (mean= 3.8, \(sd=.91\) on a 1 to 6 scale with 6 being very much control).

Time spent discussing / working with classmates. Students spent an average of 1.7 hours (\(sd=.86\)) per week discussing or working with classmates on the course work.

Perceived probability of obtaining desired course grade. Students felt that they have 64.5\% (\(sd=16.4\)) chance of obtaining the desired or expected course grade.

Learned from course. Students reported that they learned little from the website creating assignment of the course (mean= 2.6, \(sd=1.26\) on a 1 to 6 scale with 1 being very little).

Amount of necessary independent learning required. Students felt that they needed to do quite a lot of independent learning to obtain an “A” grade for this course (mean= 4.5, \(sd=1.43\) on a 1 to 6 scale with 6 being very much independent learning required).

Students' attitudes toward IT & use of computers in school. Students' attitude toward IT and use of computers in school was positive (mean= 3, \(sd=.67\) on a 1 to 4 scale with 3 being like it). The majority of the students (60\%) (\(n=6\)) indicated that they like the use of IT and computers in school.

Attitude toward the web-site creation assignment. 50\% of the class (\(n=10\)) liked the website creation assignment required for this course.

- 0\% liked the website creation assignment very much
- 50\% liked the website creation assignment
- 50\% did not like the website creation assignment
- 0\% did not like the website creation assignment very much.

Level of difficulty in completing the website creation assignment. Students tend to disagree with the statement that the website creation assignment is very easy (mean=2.4, \(sd=1.35\) on a 1 to 6 scale with 1 being disagree). Students found that it was not very easy to work on the website creation assignment.

Major problems in completing the website assignment. Students were asked to rank a list of possible problems in terms of the most significant problems hindering the completion of the website assignment.

- lack of time (not enough time)
- difficult to coordinate group efforts
- difficult to schedule group meetings
- disagreements among group members as to the content & structure of website interpersonal conflicts among group members
- amount of time needed to complete project (too long)
- some group members did not do their share of work
- technical problems in setting up website
- do not know how to integrate the individual summaries/papers.
• difficult to divide and assign work to individual group members
• some group members dominated the group project
• difficult to get access to a computer
• have too many other assignments & projects to do
• others – please specify:

The problems which were ranked as the 3 most significant problems were:

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<tr>
<th>Problems</th>
<th>Percentage of students ranking this as #1 problem</th>
<th>Percentage of students ranking this as #2 problem</th>
<th>Percentage of students ranking this as #3 problem</th>
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<tbody>
<tr>
<td>Have too many other assignments &amp; projects to do</td>
<td>50%</td>
<td>10%</td>
<td>10%</td>
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<tr>
<td>Lack of time</td>
<td>30%</td>
<td>40%</td>
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<tr>
<td>Difficult to coordinate group efforts</td>
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<td>Difficult to schedule group meetings</td>
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<td>Difficult to divide and assign work to individual group member</td>
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<tr>
<td>Disagreements among group members as to the content &amp; structure of website</td>
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Methods used to overcome the 3 most significant problems
• Time management
• Delegating tasks (assign clear & specific tasks to individual members).
• Limit number of students working on a particular topic.
• Schedule meetings on Saturdays (normal class schedule).
• Have more effective use of time during group meetings.

Factors listed as the least significant problems. All of the students (100%) stated that interpersonal conflict among group members was not a problem or as the least significant problem. Other factors listed as least significant problems include:
• Some group members did not do their share of work - 70%.
• Difficulty in getting access to a computer – 50%.
• Disagreements among group members as to the content and structure of the website – 50%.
• Technical problems in setting up the website – 50%.

Placing course materials on the internet. Students generally thought that it was a good idea to place course material on the internet (mean=4.2, sd=1.75 on a 1 to 6 scale with 6 being agreeing that it is a good idea).

Good grades in courses involving use of internet. Students were generally not sure that they would do well in courses that require the use of the internet (mean= 3.3, sd= 1.49 on a 1 to 6 scale with 6 being agreeing that they would do well).

Class pride of their website. Students were generally quite proud of the class website that they have created (mean=4.3, sd=1.42 on a 1 to 6 scale with 6 being agreeing that they were proud of their class website).
Discussion

The students’ overall reactions to the class website creation task was positive. 50% of the class indicated that they like the website creation assignment while the other 50% did not like the assignment. They did not encounter any major difficulties in planning, and implementing the task of compiling, organizing, and integrating the class website. However, the website was not actually uploaded onto a server due to lack of time. The two main problems in completing the website were: 1) the numerous number of assignments and projects the student have to complete for the semester, and 2) they do not have enough time. The two problems are related to each other. This problem is not directly related to or caused by the website creation assignment itself. This is an inherent problem with the overall structure of the Bachelor of Arts / Bachelor of Science programmes. Students indicated that they overcame these problems by implementing a system of better time management and tasks delegation. Students were generally proud of the website that they have created as a results of their cooperative group work. This study suggests that asking students to work cooperatively on a class website could be an effective method to encourage students to take a more active role in their own learning.

Potential problems: Gender differences in computer attitude and usage. Although the World Wide Web has been shown to be a useful teaching resource (Sherman, 1996, 1997, 1998), there are a number of potential problems in using the World Wide Web and computers in teaching and learning.

Sherman, End, Kraan, Martin, Cole & Gardner (1998) asked American college students (115 men and 275) women about their use of computers and the internet. Men participated in 3 internet activities: WWW, newsgroups, and chat groups more frequently than did women. There was no difference in the usage of email between men and women. Women also rated themselves as significantly less familiar with computers than did men. This difference in attitude was not accounted for by their level of usage of computers and the internet. Men were also more positive about their own personal experience with using computers and the internet, and about the use of computers in classes. Unfortunately, the small sample size of men and women in the present study did not allow for statistical comparisons to be made along these dimensions.

Shashaani (1997) also reported similar gender differences in attitudes toward and usage of computers. A survey of 202 American college students indicated that women were: 1) less interested in using computers, 2) less confident of being able to use computers, and 3) less experienced in using computers. However, the study also demonstrated that this gender differences in attitude was reduced by one semester of computer training.

In summary, computers and the World Wide Web are now an accepted and expected feature in education systems around the world. Despite the potential problems of gender differences in computer attitudes and the technical difficulties of using computers and the internet, educators and students should continue to explore the possibilities of using computer technology to enrich and enhance the teaching and learning experience.

References


