Students' Views about their Experiences of Learning Online

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ABSTRACT

In 1999, with funding from TDG, CELT launched a project to promote the use of the Web for enhancing the quality of teaching and learning at HKUST. The project is now nearing its end and CELT has helped to create almost 200 courses on the Web delivered mostly through two web-based systems, WebCT and LearningSpace. During the two years since the launch of the project, regular effort has been made to collect students' views about their online learning experience. This paper will report on the main findings collected from surveys and interviews, as follows.

- *Students generally find WebCT user-friendly and easy to use.*
- *Students find online learning components such as quizzes and bulletin boards useful.*
- *Generally speaking, of those students who enrolled in courses with a significant online component, most of them preferred online learning.*
- *Face-to-face lectures are important to students in ways we are probably not fully aware of.*

BACKGROUND

The Center for Enhanced Learning and Teaching (CELT) at HKUST, in partnership with the associate deans of four HKUST Schools received funding from a University Grants Committee Teaching Development Grant to implement an easy-to-use web-based course delivery platform to support different faculty at different levels of adoption across various disciplines such as science, engineering, business and management, and humanities and social science at HKUST. It is hoped that the results of this project will help to identify factors which affect the success and failure of using the Web for teaching in universities. Since the project launch in December 1999, a total of about 200 courses have been created using one of the two web-based learning management systems which have been installed at HKUST, namely WebCT and LearningSpace. Details about what has been done in the project to support instructors' use of Web have been reported in another publication (Ha, Au Yeung, and Au, 2001). This paper focuses mainly on the learning experiences of the students who have engaged in online learning.

DEFINITION OF ONLINE LEARNING

Online learning refers to the kind of learning activities students engage in through the Internet, which includes:

- Online discussion
- Studying with the help of online resources (e.g., animations, video clips)
- Completing tasks online (e.g., online quizzes, evaluating peers' work)

Excluded from this definition would be the learning experiences of students engaged in courses which use the Web solely for the purposes of distribution of course materials. As many previous studies have confirmed, students in online courses often print the materials from the Web and study them offline. (Muppala and Ha, 1999)

DATA COLLECTION

Three different methods were used to collect data on students' online learning experiences, namely questionnaire survey, semi-structured interview, and student online activity records captured by the learning management systems (i.e., WebCT and LearningSpace).

Questionnaire Survey

Most of the data were collected using online survey questionnaires at the end of the semester. Not all sections using web-based teaching were surveyed. Only students who were enrolled in sections adopting a web-based teaching model of 2 or above were asked to respond to our surveys (see Appendix 1 for a definition of the models). Two approaches were used in the surveys. For most sections being surveyed, students were only asked to respond to several simple questions on their online learning experiences. These questions formed part of the end-of-semester course-evaluation questionnaire, which is a standard instrument for evaluating courses and instructors in the majority of sections at HKUST. For a small number of sections, which made innovative use of the Web, a more in-depth survey was conducted. Each section was evaluated using a specially designed questionnaire. Below are the statistics showing the number of sections which have been evaluated.

Table 1

	Brief survey		In-depth survey	
	No. of sections surveyed	No. of students responded	No. of sections surveyed	No. of students responded
Summer 2000	-	-	2	95
Fall 2000	10	607	3	69
Spring 2001	18	1025	4	172
Fall 2001	30	1217	Data collection in progress	

Semi-structured Interviews

About 14 students have been interviewed. All of them have completed a model-3 online course. The interview usually lasted for more than one hour. The focus of the interview was on students' online learning experience, but it also touched on other aspects of the students' learning experience, such as their learning approaches and views about learning in traditional face-to-face lectures. Such supplementary information helped the interviewer to make sense of the behavior of the students engaged in online courses.

Students' Online Activities Records

One of the benefits of Web-based teaching is the ease of tracking students' learning activities. A learning management system like WebCT will automatically record a lot of the online activities students engaged in (e.g., completion of quizzes, posting of messages, and viewing of course content) after they have logged into the system. However, such systems typically will not be able to provide information about the period of time students spent on individual tasks, only the time of the access of a page or submission of a completed task will be recorded.

PRELIMINARY RESULTS

Collection of data is still ongoing. What is reported in this paper is a summary of the preliminary findings.

Acceptance of WebCT

In the end-of-semester survey in spring 2001, students in 18 different sections of various departments were asked if they found WebCT easy to use. Of the 1,025 students who responded to the survey, only 4% said it was difficult to use and 67% said it was easy or very easy to use.

Table 2

Do you find WebCT easy to use? (N=1025)	
Very easy to use	18%
Easy to use	49%
Acceptable	32%
Difficult to use	4%
Not applicable	1%
Unanswered	2%

About online quizzes

Online quizzes are quite popular among some instructors using WebCT. Our surveys show that students are in general positive about using quizzes. We have conducted two surveys, one in fall 2000 and another in fall 2001. Based on students' feedback,

quizzes (1) help to make students work harder; (2) help to check their understanding; and (3) help them learn more. As the results in Table 3 show, the pattern of responses from students are quite similar across years and across disciplines. The differences are probably due to implementation details.

Table 3

Semester	Fall 2000 (N=287)		Spring 2001 (N=318)		Fall 2001 (N=149)	
Discipline	Business		Sciences		Business	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
❑ The online quizzes in this course made me work harder.	-	-	37%	21%	59.1%	10.1%
❑ The online quizzes in this course help me to find out if I understand the materials correctly.	-	-	54%	11%	65.8%	8.1%
❑ Doing online quizzes in this course helps me learn more about the subject matter.	63.8%	9.4%	52%	12%	64.4%	6.7%

However, the fact that students considered the online quizzes useful does not necessarily mean they take them very seriously. Students apparently did not spend too much time preparing for the quizzes as the results in Table 4 show. How common cheating may be is not known; but results from the survey in fall 2000 (item 3 in Table 4) show that it probably is quite common, especially if the results are counted towards the final course grades, even if it is a small percentage.

Table 4

Semester	Fall 2000 (N=287)		Spring 2001 (N=318)		Fall 2001 (N=149)	
Discipline	Business		Sciences		Business	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
❑ I like online quizzes because I can get instant feedback about my test results.	44%	15%	48%	14%	45%	18%
❑ I usually do not spend much time preparing for an online quiz.	26%	37%	40%	20%	24%	46%

Table 4 (Cont'd)

Semester	Fall 2000 (N=287)		Spring 2001 (N=318)		Fall 2001 (N=149)	
Discipline	Business		Sciences		Business	
▫ It is not fair because students can cheat in online quizzes.	50%	17%	-	-	-	-

Online Discussion

Online discussion was generally conducted through the Bulletin Board in WebCT. The number of instructors using it has increased gradually. A survey in fall 2001 showed that 21 out of 78 active WebCT courses used an online forum.

The level of student participation varies from class to class as Table 5 below shows. The average number of messages posted per student ranges from 0.64 to 3.51. The percentage of students who have never posted a message ("lurkers") ranges from 34% to 79%. In fact, the correlation between these two variables is quite high (0.79).

From the data in Table 5, one thing common to all classes is the high level of input made by the instructors. So for large classes, the effort the instructors have to put in is quite significant. One instructor who taught a large class said in an interview that he had to check the forum and respond to students' message once every few hours.

Table 5

	Fall 2000	Summer 2000	Fall 2001			
Discipline	Business	Social Science	Social Science	Business	Gen. Edu.	Business
Total Enrolment	292	201	120	171	20	151
Total number of messages posted	296	463	311	260	68	935
Average number of messages posted by students	0.64	1.27	1.11	0.66	1.65	3.51
Percentage of "lurkers"	63%	51%	44%	79%	40%	34%
Percentage of messages posted by instructor	37%	45%	57%	57%	52%	44%

As for the reasons why students did not participate in online discussion, two surveys, one conducted in fall 2000 and one in summer 2000, provide some preliminary answers (see Appendix 2). The results from the two surveys are quite similar. The most common reason why students did not ask for help through the online forum is that they preferred to seek help from their friends, TA, or the instructor directly. The most common reasons why students did not respond to questions posted are that they

thought they did not have the knowledge to respond or were afraid that they said something wrong. It seems that students who never participated in online discussion perceived the online bulletin board as a channel for getting answers to their questions or problems; and not as a forum for them to exchange ideas or explore meanings on important issues. It will be interesting to find out if this has anything to do with their approach to learning.

As for the effects of online discussion on students' learning, our surveys showed that it is generally positive. The two surveys showed that a high percentage of students (67% and 98%) said that they learned something from reading messages posted by others; whereas the percentages of students who said they learned something from engaging in online discussion with others are relatively lower (17% and 89%). This is not surprising given the fact that on average 40% - 50% of the students never posted any messages.

Use of Multimedia Elements in Online Learning

In fall 2001, a science course teaching basic laboratory techniques made intensive use of animations to explain important concepts and video clips of instrument demonstrations to explain to students how to use equipment. Results of the survey (Table 6) showed that students are quite positive about their online learning experience. The data also provide evidence that the students did make intensive use of the multimedia components.

Table 6

Survey conducted in fall 2001. 65 students responded. Response rate = 78%	
❑ I find the instrument demonstrations (i.e. the video) very useful in helping me to master the laboratory techniques in this course.	61% Agreed
❑ The instrument demonstrations explain the laboratory techniques very clearly.	48% Agreed
❑ I find the animated diagrams (i.e. animations) very useful in helping me to learn the important principles in this course.	69% Agreed
❑ The animated diagrams (i.e. animations) give clear explanation to some of the abstract topics introduced in this course	65% Agreed
❑ How much do you understand the concepts taught in the animated diagrams?	Mean = 75%
❑ How many of the 4 instrument demonstrations have you watched?	Mean = 3
❑ How many of the 10 animated diagrams have you watched?	Mean = 6.5

Face-to-face versus Online Learning

It is quite common for people to compare online with face-to-face learning. In a model-3 course offered at HKUST, which requires students to learn from video-recorded lectures made available on the Web, students were asked what they liked and disliked about online learning and to compare their face-to-face learning experience with the online one.

The results (Table 7) showed that what they liked best is the flexibility and convenience of online learning. Students can organize their study according to their own schedule. What they disliked most is that when they had problems with their study, they had no one to discuss them with. Eye-strain as a result of reading from the computer screen is also a common complaint.

Table 7

Survey conducted in summer 2001. 50 students responded to the survey. Response rate is 36%	Agree	Disagree
❑ The thing I liked most in this course is I have more freedom in organizing my study	58%	10%
❑ The thing I like most about this course is I don't have to attend lectures at scheduled times.	55%	8%
❑ I find watching the video lectures very tiring to my eyes.	50%	16%
❑ I did not like watching the video lectures because I had no one to discuss with when there was something I didn't understand.	38%	22%

Similar findings were obtained by three other similar surveys conducted for other model-3 courses at HKUST. In those surveys, students were asked to write down what they liked and disliked about their online learning experiences. Of the three surveys, one is a language course (38 students responded), and the remaining two are engineering courses (64 and 58 students responded to the surveys).

When asked to compare online learning to face-to-face one, there were often more students who preferred learning online. The percentage of students who preferred face-to-face learning and thought that it was more effective is about 25%.

Table 8

Semester	Discipline	Number of students responded	Preferred online	Preferred face-to-face
Fall 2000	Engineering	64	47%	25%
Summer 2001	Language course	38	39%	23%
Spring 2001	Engineering	58	37%*	21%*
Spring 2001	Engineering	50	22%	50%

* In this survey, students were asked if learning online is as effective as learning in the traditional way.

To understand more about students' preferences as regards learning mode, students who were interviewed were asked what they got from attending face-to-face lectures. Since many students in Hong Kong are generally rather silent in class, we thought there would be little difference to them whether they were watching the lectures online or attending a real lecture. Through the interviews, we found out that there are some interesting reasons why some students like to attend face-to-face lectures, which we have not thought of. They include:

- The lectures help them to structure their study. Attending lectures gives them a clue how much has been covered in the course, and whether they are lagging behind in their study.
- Even if they do not ask questions in class, the instructor will be able to judge from some non-verbal cues (e.g., facial expression) if they understand the materials or not, and take necessary remedial measures. In an online lecture, that will not happen.
- In a lecture, if they encounter something they do not understand, they can always consult their neighbors. So even in a "quiet" class, there could still be interaction among the students.

Bearing in mind that most of the students at our university have been educated in the traditional face-to-face mode for years before they got into university, classroom learning is naturally something they are very accustomed to.

CONCLUSION

What are reported in this paper are only some preliminary findings from our project. More data will be collected in future about students' online learning experience. More importantly, effort will have to be made to synthesize and interpret the data collected. From the data collected from students so far, it seems that students are moderately receptive towards the Web as a medium for learning. But what we have now are mainly some overall quantitative descriptive summaries of students' online learning experiences. Similar types of finding were reported in other studies (e.g., Chin, 1999; Fredericksen and others, 2000). A lot of factors appear to be involved in determining the quality of students' online learning experience, such as the quality of instructional

design involved, the nature of the subject matter to be learned, the students' learning styles, etc. The questions of how these factors interact and affect the quality of student learning need further investigation.

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Appendix 1

Four models of Web-based Teaching

Model 1

All learning activities will be conducted face-to-face. Web will be only used for information dissemination and other class management functions.

Model 2
Learning activities will be mainly conducted face-to-face, supplemented with Web components (such as interactive learning materials, online quizzes, online discussion forums) to enrich students' learning experiences

Model 3
Most learning activities will be conducted on the Web, supplemented with face-to-face activities only occasionally.

Model 4
All learning activities will be web-based. Students never meet or meet only rarely.

Appendix 2

Selected results of survey conducted in fall 2000.
Discipline of course being surveyed is business
Number of students responded = 243
Response rate = 83%

The reason(s) I never or rarely asked for help on the bulletin board is/are (Students can choose more than one an answer)	
I preferred to ask my friends directly for help.	42%
I preferred to ask the instructor or the TA directly for help.	35%
It is difficult for me to explain my questions to others in writing.	16%
I do not have any questions.	11%
Posting questions on the bulletin takes too much of my time	9%
Other reasons	7%
I do not think I will get an answer.	5%
I was afraid that others might not agree what I said.	2%

Why did you rarely or never respond to others' messages?	
I was not interested in the topics being discussed.	21%
I was afraid that I would say something wrong if I responded.	20%
Other reasons.	20%
I did not have the knowledge to respond to the message.	18%
I did not know when new information was posted and it is not convenient to check constantly.	18%
It was not my responsibility to respond. I thought the instructor or the TA would do it.	11%
I was too slow to react. (Someone else took the chance to response before I did.)	11%
Responding to the message took too much of my time.	7%

Were you able to learn from participating in online discussion?	
Yes, I learnt a lot from discussing with others online.	2%
Yes, I learnt something from discussing with others online.	13%
No, I do not think I have learnt anything through online discussion.	12%
I do not know because I have rarely or never participated in online discussion.	17%
Unanswered	56%

Were you able to learn from participating in online discussion?	
Yes, I learnt a lot from discussing with others online.	2%
Yes, I learnt something from discussing with others online.	13%
No, I do not think I have learnt anything through online discussion.	12%
I do not know because I have rarely or never participated in online discussion.	17%
Unanswered	56%

Regardless of whether you have posted messages on the bulletin board or not, were you able to learn from 'reading' messages on the bulletin board?	
Yes, I learnt a lot.	11%
Yes, I learnt something.	50%
No, I do not think so.	16%
I do not know because I rarely or never read those messages.	21%
Unanswered	2%

Appendix 3

Selected results of survey conducted in summer 2000.
Discipline of course being surveyed is social science
Number of students responded = 57
Response rate = 28%

The reason(s) I never or rarely asked for help on the bulletin board is/are (Students can choose more than one an answer)	
It was a lot easier for me to ask one of my friends directly for help.	69.2%
It was a lot easier for me to ask the instructor or the TA directly for help.	38.5%
It is difficult for me to explain my questions to others in writing.	34.6%
It will take a long time for me to get an answer.	23.1%
I was too shy to post messages in a bulletin board.	23.1%
Posting my question on the bulletin takes too much of my time.	19.2%
I don't think I will get an answer.	7.7%
I am lazy	3.9%
I can get answer from book	3.9%

Reasons not responding to others' messages	
I did not have the knowledge to respond to the message.	56%
I was afraid that I would say something wrong if I responded.	51%
Responding to the message took too much of my time.	14%
It was not my responsibility to respond. I thought the instructor or the TA would do it.	5%
Other participants have the same opinion as mine already.	2%

Were you able to learn from participating in online discussion?	
Yes, I learnt a lot from discussing with others online.	36.8%
Yes, I learnt something from discussing with others online.	52.6%
No, I don't think I have learnt anything through online discussion.	5.3%
I don't know because I have rarely or never participated in online discussion.	5.3%

Regardless of whether you have posted messages on the bulletin board or not, were you able to learn from 'reading' messages on the bulletin board?	
Yes, I learnt a lot.	26.8%
Yes, I learnt something.	71.4%
No, I don't think so.	1.8%
I don't know because I have rarely or never read those messages.	0%