INTERACT
INTEGRATE
IMPACT

Proceedings of the 20th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education (ASCILITE)

Adelaide, Australia
7–10 December 2003

Editors
Geoffrey Crisp, Di Thiele, Ingrid Scholten, Sandra Barker, Judi Baron

Citations of works should have the following format:

Author, A. & Writer B. (2003). Paper title: What it's called. In G.Crisp, D.Thiele, I.Scholten, S.Barker and J.Baron (Eds), *Interact, Integrate, Impact: Proceedings of the 20th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education*. Adelaide, 7-10 December 2003.

ISBN CDROM 0-9751702-1-X WEB 0-9751702-2-8

ascilite
Australasian Society For Computers
In Learning In Tertiary Education

Published by ASCILITE www.ascilite.org.au

UTILISATION AND ACCEPTANCE OF MIXED MODE TEACHING AND LEARNING

Kate Henderson and Peter Bone
School of Construction
UNITEC Institute of Technology, NEW ZEALAND
khenderson@unitec.ac.nz, pbone@unitec.ac.nz

Abstract

This paper describes and discusses student utilisation and acceptance of online (Blackboard) mixed mode digital technology for teaching and learning. Whilst students utilised the asynchronous capacity of online learning to its maximum, course and lecturer evaluation results indicated that students were less than enthusiastic with some aspects such as a lack of paper-based handouts and teaching style.

Keywords

Online, mixed mode, Blackboard, PowerPoint, Building, Construction

Introduction

We are often exhorted to look further than just comparing learning outcomes between traditional face-to-face teaching and learning, and mixed mode teaching and learning. Tony Bates in particular brings the message home with his quote "...comparative worth is like cutting two legs off a horse to see if it can run as fast as a man." (Bates, 2000 p200) In the first instance, when evaluating the relative effectiveness of online mixed mode teaching and learning compared with traditional face to face teaching, the most common finding from comparative studies focusing on objective learning measurements is that teaching utilising digital technology does at least as well, if not better, as conventional classroom teaching (Laurillard, 1997).

The main aim of an online mixed mode learning environment is to provide students with the opportunity to choose where, when and how they learn, and staff the facility to vary how, where and when they teach (Elliott et al, 2003). The work described and discussed in this paper examines the utilisation and acceptance of online mixed mode teaching and learning by students.

Case Study

This case study evaluates some aspects of teaching a first year National Diploma course utilising online mixed mode delivery as an adjunct to face to face teaching. Construction Systems 1 (CS1) is a full year, core course for all National Diploma students in Architectural Technology (AT), Quantity Surveying (QS) and Construction Management (CM). In the School of Construction, this course is offered through five streams. Four classes being offered during the daytime, and one [the course show cased here] as an evening class. The lecture time being Wednesday: 17:30 hrs - 20:30 hrs. This evening class is the scheduled time for all the QS and CM majors and is the only alternative for part time or repeating AT students. The daytime classes are studio-based, [CS1 integrated with several other courses] with a maximum of 20 students per stream - these Studio streams are for AT students only. The evening course is stand alone with 54 students.

The learner group is diverse in terms of a combination of the following characteristics: demographic factors, such as age, gender, ethnicity, language; previous educational experience; other commitments,

such as work (full or part-time) and family; motivational factors; and readiness to learn; full or part-time study. The wide diversity is further enhanced by the end use for the core course information, as characterised by the student's major.

Course Design

The first half of the course focuses on the detail, specification and construction of timber framed buildings. The culmination of this section of the course is a proficiency, restricted book test based on the use of the New Zealand Standard NZS 3604. The three-hour session per week consists of a two-hour lecture followed by a one-hour tutorial. Lectures are supported with an animated PowerPoint presentation, that in the main follow the lecture outline. PowerPoint slides provide step-by-step action for the use of the NZS 3604 lookup tables, identification of individual members in a structural system and structural layouts. Slides are interspersed with sketching of details, group discussion, and group and individual activities such as sizing and bracing calculations. The PowerPoint presentation is placed on Blackboard (Bb) in the topic folder alongside the lecture outline and other technical information after the lecture.

As this is the first online course for any student a large portion of the first lecture was set aside to orient and prepare the students for this new accessory to learning. Checks were made during subsequent tutorials that students could log on, access the files and use the discussion board.

Lecture outlines posted on Bb are visible to the student one week before the lecture date. The format for each lecture outline remains similar to handouts of previous years. Each lecture outline states the 'Aims' for the lecture, 'Key Words' and an overview of the main points. Where appropriate, points are referenced back to New Zealand Standards. The construction industry, as other disciplines, has an extensive nomenclature. The key words are a list of new words or terms introduced in the lecture - sometimes as many as twenty words per lecture. An enhancement over the paper-based handouts is the ability to embed hotlinks to territorial authority and corporate web sites, or specific technical information. In addition to understanding the construction and detailing for each aspect of the building the students are required to calculate wind and earthquake bracing requirements and size individual construction members. Sizes are calculated via look up tables in the Standard. This is not a simple skill! Four or five steps are required to reach a single figure conclusion. Bracing calculations involve fifteen to twenty sequential calculations.

Student Feedback

Formal student feedback was sought via SEQUAL (course and lecturer evaluation) Course evaluation is mandatory and is conducted at the conclusion of every course taught at UNITEC to assess student satisfaction with the quality, relevance and delivery of courses and teaching. Evaluations are administered independently and include both standard questions (Likert scale responses) and two open-ended areas for comment. It is also possible for a SEQUAL evaluation to be administered mid course at the request of the programme leader or lecturer (as in this case).

In addition, informal student feedback was sought on issues raised in the open-ended SEQUAL questions. At the conclusion of the first semester students were asked to answer a short questionnaire regarding their use of Bb. This questionnaire augmented the statistical tracking information available on Bb.

Findings

SEQUAL

Within a few percentage points the results for the standard questions were similar to previous year's lecturer and course evaluation.

The open ended questions regarding what the student liked best about the course included:

- Ability to get lecture notes on line.
- Blackboard learning.
- Ability to go back over the lecture.
- Ability to catch up if a lecture is missed.

The open ended questions regarding what the student liked least about the course included:
- I shouldn't have to download my course notes. Other courses have handouts.
- Put 'fuller' course notes on Bb.
- We have to teach ourselves.
- Put the Powerpoint on Bb earlier.

Blackboard Tracking

Over a period of 14 weeks a total 13 files covering Topics 6 through 13 were tracked via the Bb statistical reporting facility. These files include both the lecture outlines and the PowerPoint presentations. Over this period 46 students accessed the Bb files. The total number of hits (number of times a file was accessed) is 1440; an average of 31.3 hits per student. The minimum hits for an individual student is 3 and the maximum 111hits.

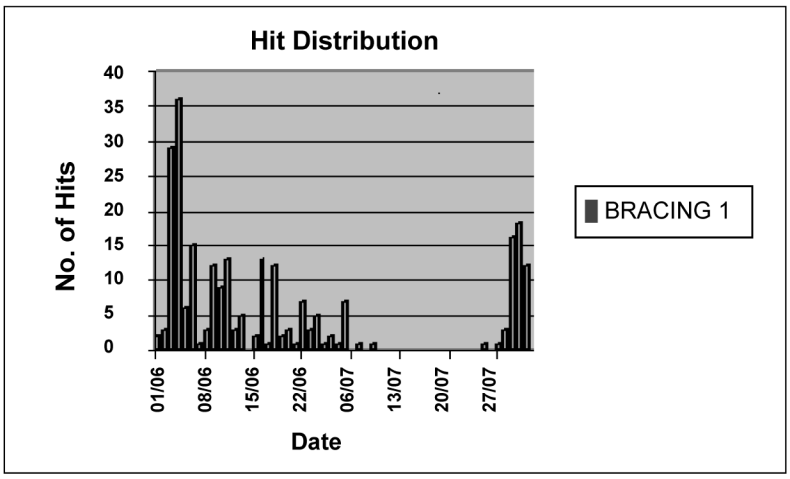

Figure 1: Topic 11 Subfloor Bracing

Topic 11 consisted of four lectures and tutorials, each of which required the student's mastery of wind and earthquake bracing calculations. There were a total of 70 hits before the lecture; 36 hits occurring on the day of the lecture. Sixty-two hits were recorded within one week after the lecture. The hit distribution shown in Figure 1 is typical for the four bracing lectures. The second cluster of hits around the 27th July indicates preparation for the test. The total number of hits for the period recorded is 276. The hit rate for other lecture topics based on construction detailing and sizing followed a similar distribution pattern. However the total number of hits is less. These topics were accessed between 33 and 205 times, with an average of 105 hits per file.

Questionnaire

78% of the students indicated that over the duration of the course they accessed the Bb course site via a dial-up modem from outside UNITEC. However students preferred to access or print the lecture outlines and view the PowerPoint presentations at UNITEC. 7% of the students downloaded the files to their own computer.

Discussion

The tracking statistics in terms of 'hits' supplied by Bb can only indicate part of the utilisation and learning patterns of the students. In particular, it is not possible to identify those students that accessed a file once to downloaded the information to their own home computer or student account. This factor needs to be taken into account before drawing conclusions regarding individual student utilisation of online material. The informal questionnaire identified that students' access Bb from UNITEC, home and in some instances work, likewise a small percentage of students downloaded the files. The Bb tracking also identifies the day of the week, and time of day the students accessed files. It is not possible in this 'concise paper' to examine these aspects in depth other than to note that students utilise every day of the week and hour of the day. No student chose to rely solely on Bb for course content.

As the 'hit rate' is identified against an individual student it is possible to extend the findings to broad-brush student characteristics. A student requiring an IELTS certificate, (as evidence of English proficiency), to enter the programme of study is more likely access Bb before the lecture. It was noted that many of these students arrived at the lecture with translations against the Keywords in the printed lecture outline. It could be argued that this 'evidence' supports the notion that Bb has a role in providing for a range of learning skills. Repeating students are the least likely to access the online material. In all likelihood these students will have previous year's course notes. Women students over 25 years old accessed individual files more often. Male students less than 25years of age represent the group least likely in this cohort to engage in the online learning. These aspects may not be exclusive to mixed mode learning, but engagement of tertiary education in general! Eight students do not register as Bb participants in this section of the course. Until end of year results are available it is not possible to positively identify these students as withdrawals from the course, unless they formally do so. This aspect of Bb is beneficial for tracking student retention and can alert concern for student progress.

Students find the bracing calculations the most difficult part of the CS1 course. As such, students were entreated to view the online material before the lecture. In addition, the previous year's test paper utilised as an example during the tutorials reinforced the complexity of the material. When comparing the hit rate for the four bracing calculation lectures with the lectures centred on the building construction detailing and sizing it appears that students are more motivated to engage in the online material if the topic is more complex and they perceive an immediate and practical use for the material (the up coming test).

Many lecturers have enthusiastically embraced the digital age of teaching and learning with the anticipation that the students will also embrace this new style of learning. Of most concern from this investigation are the negative comments from students who feel that mixed mode learning is inferior to traditional face-to-face learning. Of particular concern is the notion that lecture material online prior to the lecture represents a demand for self-directed learning. Whereas this is seen as sound pedagogy in terms of introducing new words, terms and concepts so that the lecture and tutorials can investigate the topic in more depth than would otherwise be possible if introducing fresh material at the lecture. The lecture outlines provided allow the students to reflect on the topic, and consequently may engage in discussion leading to deep learning. Regardless of the lecture format the lecturer still needs to be cognisant of the differing learning styles of students.

Whilst from a lecturer point of view course delivery utilising Bb was successful in terms of providing technical skills support this does not address the apparent mismatch between lecturer enthusiasm and resentment of some students to aspects of online mixed mode teaching and learning. It is acknowledged, however, that the expected pattern of learning requires students to take more 'ownership' of their education. Hence, more active engagement is required from the student. Perhaps when/if this style of teaching is extended to other courses in the programme students may be a little more accepting of a high tech. academic future.

References

Bates, A.W. (2000). *Managing Technological Change: Strategies for College and University Leaders*. San Francisco: Jossey-Bass Publishers.

Elliot, R., Northover, M., & Donald, C. (2003) *A Learning Technologies Report on the Efficacy of the Blackboard Learning System at UNITEC*. Report for the Academic Board of UNITEC (unpublished)

Laurillard, D. (1997). *Studying and Learning: Rethinking Teaching* http://iet.open.ac.uk/pp/d.laurillard/InaugWeb/Inaugweb/index.cfm 19/11/97