

Web-based Lecture Recording Technologies: Do Students Learn From Them?

Maree Gosper, Margot McNeill, Karen Woo, Macquarie University
Rob Phillips, Murdoch University
Greg Preston, University of Newcastle
David Green, Flinders University

1. Introduction

The recent emergence of web-based lecture technologies (WBLT) has heralded a growing use of digital web-based lecture recordings for all students. This is pushing the boundaries of established practice and challenging the role of the face-to-face lecture as a prime teaching strategy. Studies to date on the use and uptake of web-based lecture technologies have explored the technical and operational issues surrounding access and use. Few have addressed issues around the implications for teaching and learning in different contexts; whether student's learn from them how do they go about their learning.

To address the learning and teaching perspective, Macquarie University, Murdoch University, Flinders University and the University of Newcastle have been collaborating on a project to investigate the impact of web-based lecture recording technologies on current and future practice in learning and teaching. Details are available on the project web site at <http://www.cpd.mq.edu.au/teaching/wblt/overview.htm> The project, funded by the Carrick Institute for Learning and Teaching in Higher Education, consists of a multi-level research program entailing surveys, vignettes and case studies. This presentation reports on the initial findings from the first stage of the research, a survey of students to capture the diversity of experiences in the use of WBLT. In particular it reports on students' experience of WBLT, as well as how and why students of different generations (Oblinger & Oblinger, 2005) use them to support their learning.

2. What are web-based lecture technologies?

Web-based lecture technologies (WBLT) are distributed digital recording systems to capture face-to-face lectures for web delivery. These recordings are converted into streaming media formats available for access 24 x 7. The appeal for higher education institutions is that WBLT systems enable expansion of delivery options into remote or international markets and also offer more flexibility to students (Fardon, 2003).

A popular system in Australia is Lectopia (previously known as iLecture), which was developed at the University of Western Australia. With 14 universities (including Macquarie, Murdoch and Newcastle) listed on the Lectopia web site (Lectopia, 2007) as current licensees, the technology is poised to have a substantial impact on the delivery of higher education in Australia. Other universities have adopted a different approach to delivering Web-based lectures. For example, Flinders University makes use of a combination of streaming video/audio and media files to deliver lecture materials through WebCT.

3. Research Overview

The first stage of the research aimed to provide a comprehensive overview of student experiences of web-based lecture technologies with a particular focus on pedagogy and student learning. Details about the methodology for survey development and delivery are described on the Project web site. In brief, the survey used a mixture of scaled responses and open ended questions to gain demographic information about students including, age, gender enrolment mode; their approaches to study, their experience of lectures, how and why they used WBLT.

Students who were using WBLT from all four universities were invited to participate. Stratified sampling was used to identify a range of disciplines, class sizes, enrolment modes and levels (undergraduate and postgraduate). In total, the survey invited 13278 students across the university and 815 responses were received.

4. Do students learn from web-based lecture technologies ?

Our findings show that across all four universities, 76% of respondents reported a positive experience almost always or frequently and only 11% reported a positive experience rarely or almost never. The more important question however, is whether students are learning from this positive experience.

Unpacking the relationship between learning and specific interventions is always problematic because of the plethora of interrelated variables present in any given learning and teaching context. Variables can include curriculum and instructional design, students' personal circumstances, their approaches to learning, their motivation, the support and resources provided approaches to teaching and lecturing styles. In addition, measuring the learning that takes place using defined assessment tasks is not straightforward, because assessments do not always capture the scope and depth of learning that takes place (Freeman & Lewis, 1998).

Nevertheless, there has been research showing that students perceive that recorded lectures have positive influences on their learning (Donnan, Kiley, & McCormack, 2004; Goldberg & McKhann, 2000; Maag, 2006; McElroy & Blount, 2006; Soong, Chan, Cheers, & Hu, 2006). Following this line of research, we sought students' views on whether WBLT helped them to achieve better results and made it easier for them to learn.

In response we found that 66.7% of respondents indicated that using WBLT either helped them in a significant or a moderate way to achieve better results. Only 9.9% felt WBLT didn't help or were detrimental and 23.3% were not sure if there was any change.

More compelling is the overwhelming agreement of students when asked if WBLT made it easier for them to learn. Four in every five (79.9%) respondents indicated that WBLT had made it easier for them to learn in either a significant or a moderate way. Only 6.7% felt they didn't make it easier or were detrimental and 13.4% were not sure if there was any change.

5. How students learn using WBLT

To unpack the reasons for these positive perceptions we explored the ways in which students used WBLT to support their learning and also the strategies they employed when listening to recordings.

First, we asked participants to indicate their level of agreement, using a 5 point likert scale, with eight statements about why they used WBLT. The responses are shown in Table 1, ranked in order of agreement, where the percentage agreement refers to those who agreed or strongly agreed. The five most common responses clearly relate to the use of WBLT as a study tool.

Table 1: Ways in which students used WBLT to support their learning

I used WBLT in this unit to support my learning in the following ways:	N = number of responses	* Mean	Agreement as a % of N
1 to pick up on things I missed in class	677	2.04	78.6
2 to revise for exams	717	2.03	76.4
3 to revisit complex material, ideas and concepts	727	2.07	76.2
4 to work through the material at my own pace	729	2.08	73.9
5 to take comprehensive notes	731	2.33	62.5
6 to pick up on announcements and exam hints	712	2.38	62.2
7 to revisit the material because the lecturer did not speak clearly	557	3.67	20.8
8 to revisit the material because English is not my first language	487	3.93	20.4

* The mean was calculated using as scale from 1 =strongly agree to 5 = strongly disagree

Being conscious of the range of student characteristics that can influence learning, we intend to undertake further analysis on the influence of WBLT on deep and surface learners, distance/ external students, and students from non-English speaking backgrounds. One characteristic we have explored is age of students.

Oblinger and Oblinger (2005) posit that different generations vary in their expectations of the teaching and learning environment and this has particular implications learning. They have identified four generational groups:

1. Matures (1900-1946)
2. Baby Boomers (1946-1964)
3. Generation X (1965-1982)
4. Net Generation (1982-1991)

The Net Generation, in particular, has attracted the attention of researchers and educator because they appear to be different to previous generations. They are more digitally literate and connected, like to multitask and expect immediacy in response times, are experiential, social and like collaborating and working in teams.

When exploring the differences due to generational groupings, we found that there was reasonable consistency in their use of WBLT across groups. There were only two items which showed a significance difference across the 4 groups:

- Item 4: To work through the material at my own pace – older students were more likely to work through at their own pace ($p < .05$).
- Item 7: To revisit the material because the lecturer did not speak clearly – younger students were more likely to revisit the lecture ($p < .05$).

Second, in regard to strategies for listening, we identified seven common strategies that students were adopting when they listened to WBLT. We asked participants to indicate their agreement with each. The results shown in Table 2 revealed that the most common strategy, adopted by 71% of participants, was to listen to the whole recording. Just over half of respondents also listened to the recording or parts of it more than once.

Table 2: Strategies adopted for listening to WBLT

Please indicate your agreement with the following ways of using WBLT in this Unit.	N = number of responses	* Mean	Agreement as a % of N
1 I usually listened to the entire recording of the lecture	730	2.15	71.0
2 I usually listened to the WBLT or parts of it more than once	717	2.67	55.6
3 I listened to the lectures on a regular basis throughout the semester	731	2.67	49.5
4 I listened to several weeks of WBLT at the one time	699	3.13	39.3
5 I generally browsed through the recording and stopped at points of interest	696	3.18	37.5
6 I deliberately chose particular segments of the WBLT to listen to	691	3.35	30.5

* The mean was calculated using as scale from 1 =strongly agree to 5 = strongly disagree

There were significant differences in strategies adopted by older and younger participants. Younger participants from the Net Generation group were more likely to take a strategic approach by selectively choosing segments of interest. This trend was present in:

- Item 5: I generally browsed through the recording and stopped at points of interest (p <.01)
- Item 6: I deliberately chose particular segments of the WBLT to listen to (p <.01)

In contrast, older students were more likely to listen to the recording or parts of it more than once – Item 2 (p < .05).

In a slight departure from previous trends, where differences increased or decreased sequentially with age, there were two strategies that Generation X (followed by Boomers then the Net Generation) were more likely to:

- Item 1: listen to the entire recording of the lecture (p < .01)
- Item 3: listen to the lectures on a regular basis throughout the semester (p < .01)

One possible explanation is that there are relatively more part-timers in the Generation X cohort, compared with the Boomers and the Net Generation. Being older, the Boomers and Generation X may have a greater commitment to study and hence be more focused and conscientious learners.

The conscientious factor was reinforced by other key finding relating to lecture attendance. The older the generational grouping the more likely students were to come to lectures because:

- the presence of the lecturer added value ($p < .01$)
- they found live lectures motivating ($p < .01$)
- they communicate/ interact with the lecturer , $p < .01$)
- the lectures were necessary to prepare for follow-up tutorials ($p < .05$)

The younger the generational grouping the more likely students were to come to lectures because they

- liked to meet my friends ($p < .01$)
- were on campus anyway ($p < .01$)
- wouldn't have got around to listening to the lecture recordings ($p < .01$)

Clearly younger students are more social. However, this raises the question of whether the strategies employed by the younger students are due to the characteristics identified with the Net Generation or whether they are simply exhibiting traditional 'young people' behaviours – these issues are being explored more fully in another project funded by the Carrick Institute (Kennedy, 2007; Kennedy et al., 2006).

In summary, considering the pervasiveness of WBLT and the positive perception of students of these technologies for their learning, the focus of discussion about WBLT should not be on whether they should be adopted, but on how they can be used effectively as study tools to enhance student learning.

Understanding why students attend lectures and how they use WBLT as a study tool to assist them with their learning is a first step towards improving the quality of teaching and providing more effective learning experiences for students. For example, for a younger audience, who tend to use WBLT more selectively, the evidence from this study suggests teachers should consider structuring their lectures and lecture slides to enable students to navigate easily to specific ideas and themes. This, of course is a strategy that can also assist older students, even though they are more likely to listen to the whole recording.

Thought should also be given to how the lecture experience can be redesigned to ensure that the reasons for attending lectures (listed above) can be integrated into the learning experience for all students by:

- rethinking the design of the curriculum, particularly the role of teaching and learning activities such as lectures, tutorials, and online discussion forums
- reflecting on the delivery style adopted in lectures
- structuring the lecture and supporting visuals to maximise the effectiveness of WBLT

6. The next stages of the research

The results provide important evidence that can assist in understanding why and how students are using WBLT. Because of space limitation, we can only present a small portion of our results here. Further findings from the student survey and also the staff survey, which is currently underway, will be posted to the project web site at <http://www.cpd.mq.edu.au/teaching/wblt/overview.htm>

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