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The Impact of Web-Based Lecture Technologies on Current and Future Practices in Learning and Teaching

<http://www.cpd.mq.edu.au/teaching/wblt/overview.htm>

Maree Gosper | David Green | Margot McNeill | Rob Phillips | Greg Preston | Karen Woo

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Project Team

Macquarie University

Dr Maree Gosper

Academic Developer – eLearning
Learning and Teaching Centre
maree.gosper@mq.edu.au

Ms Margot McNeill

Academic Developer – eLearning
Learning and Teaching Centre
margot.mcneill@mq.edu.au

Ms Karen Woo

Program Research & Development Officer
Learning and Teaching Centre
karen.woo@mq.edu.au

Murdoch University

Dr Rob Phillips

Educational Designer
Teaching and Learning Centre
r.phillips@murdoch.edu.au

Flinders University

Mr David Green

Director, Educational ICT
Staff Development & Training Unit
david.green@flinders.edu.au

University of Newcastle

Mr Greg Preston

Manager, ICT and e-Learning
School of Education
greg.preston@newcastle.edu.au

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Key terms and definitions

Web-based lecture technologies (WBLT): The term web-based lecture technologies (WBLT) has been used throughout the project to encapsulate the range of technologies used for digitally recording lectures for web delivery. These technologies are best described as distributed recording systems for digitally capturing face-to-face lectures for web delivery. They are essentially a one-way medium of communication well suited to the delivery of lecture content in close to real time.

Lectopia is an example of WBLT. Developed at the University of Western Australia, Lectopia allows the automated recording of audio and visual elements of face-to-face lectures which are processed into a variety of streaming media formats. Recording options include:

- Audio-only recordings of lectures, or
- Audio and media recordings of lectures. These capture:
 - PowerPoint slides from lectures (if used)
 - Visual images of other materials (from the document camera – if used)

The delivery method can also vary encompassing streaming, downloading to computers or mobile devices and podcasting via RSS feeds.

Lectopia was previously known as **iLecture** and now branded as Echo 360. For this report Lectopia will be used as the preferred name.

Learning Management Systems (LMS). Many universities across Australia and internationally have invested in virtual learning platforms or Learning Management Systems (LMS) to enable large scale rollouts of e-learning. Blackboard and WebCT (which is now owned by Blackboard and being phased out) are well-known examples, providing instructors with relatively easy access to tools such discussion boards, mail systems and live chat, along with content such as documents and web pages. Lectopia recordings are often made available through the university LMS.

Unit is used to describe a single subject or course that makes up a program of study.

Executive summary

Web-based lecture technologies (WBLT), designed to digitally record lectures for delivery over the web, are just one of a range of information and communication technologies that have been introduced in response to the changing context of higher education in the past decade.

Universities have invested substantial resources in developing infrastructure to provide flexible options for students and to support their learning. The focus of developmental activity is often on operational imperatives to ensure the smooth running of the technology in secure and interoperable environments, rather than in supporting staff and students in the use of the technologies for learning and teaching.

There has been a rapid uptake of WBLT technologies in recent years. Their popularity with students is well recognised. However, from an institutional perspective, they are having a disruptive influence; challenging long held traditions of university teaching, students' attendance patterns and ways of learning.

This project was conducted to explore these influences and gain a better understanding of how WBLT are impacting learning and teaching. In particular:

1. how the technology is integrated into the curriculum, its role and relationship with other elements within the curriculum
2. how the technology can effectively support learning and teaching in different contexts, taking into account disciplinary differences, student diversity, specific teaching aims and learning outcomes.
3. the educational implications of its use for:
 - the design and delivery of curricula
 - academics and their teaching
 - students, their learning and the establishment of effective learning environments
 - professional development of academic staff
 - academic policies and practices

The project was a collaboration between four IRUA universities - Macquarie University, Murdoch University, Flinders University and the University of Newcastle with the support of the IRUA Universities and was funded by the Carrick Institute for Learning and Teaching in Higher Education from their Competitive Grants Program in the priority area of *Innovation in learning and teaching, particularly in relation to the role of new technologies*.

The research program adopted a mixed methods approach utilising both qualitative and quantitative methods. It comprised two stages. The first stage was designed to capture the diversity of experiences in the use of WBLT using staff and students surveys. It aimed to identify the range of learning and teaching issues and usage patterns of staff and students.

The second stage involved a more detailed exploration of the educational issues arising from the surveys through a series of vignettes and case studies. This stage was both investigative and developmental in nature, exploring the issues in depth by focussing on specific curriculum contexts.

Key findings

The results establish a picture of the experiences of students and staff who have used WBLT across a range of different contexts. The views of students and staff who have elected to not

make use of the technologies was outside the remit of this study. Further research is suggested to investigate this perspective.

The student survey explored students' experiences of WBLT in the context of a specific unit; their strategies and motivation for learning; their overall experience of WBLT in the university including their perceptions about WBLT's impact on their relationships with peers, their grades and ease of learning. The staff survey explored staff's own experiences as well as their perceptions of WBLT's impacts on their students' learning. The staff survey was designed to correspond with the student survey where possible, so that staff and students' perspectives on specific issues could be compared.

The three key outcome measures used in the surveys were: positive experience with WBLT; perceptions of benefits for learning; and perceptions of achievement of better results. Regardless of age, gender, enrolment mode or attendance pattern, 76% of students reported positive experiences with WBLT almost always or frequently. Staff experiences, on the other hand, were more varied with 54% of respondents finding use of WBLT to be generally positive, while another 26% found the experience to be negative.

Overall, there was a clear mis-match between staff and student views on learning and achievement of better results. Sixty seven percent (67%) of students compared with 30% of staff agreed that WBLT helped students achieve better results. In addition, 80% of students compared with 49% of staff agreed that WBLT made it easier for students to learn.

This mis-match between student and staff perceptions is one of several key themes that have emerged. Insights into the range of issues at the heart of this mismatch were explored more thoroughly through qualitative comments on the surveys, interviews and case studies. They are as follows:

Students appreciate the flexibility in access and support for learning - staff have concerns

Although it has long been acknowledged that external students need flexibility, the data indicates that students enrolled in internal mode also appreciate this aspect of WBLT. From the survey responses, 56.2% of students indicated that they didn't attend at least some of the face-to-face lectures available. Of these students who listened to WBLT rather than attending face-to-face lectures, 75.3% indicated this was because they 'couldn't attend'.

Responses from staff supported this view with a high proportion of respondents (81.9%) introducing WBLT to support students who could not attend. Staff also recognised the value of the technology as a study tool with 64.5% of staff providing it to support students in their learning. While many staff agreed that WBLT was a useful resource for external students, some were concerned that on-campus students were choosing not to attend lectures as a result of using the technologies and this was perceived as having a negative impact on their learning.

WBLT have contributed to a blurring of the boundaries between internal and external students

Many programs and individual units are being offered both internally and externally, with the same lectures being delivered to both cohorts. The data suggest that staff perceive access to recorded lectures is beneficial for external students but use of WBLT can be disadvantageous to internal students if they use them as a replacement for attending lectures. Students, on the other hand, do not perceive the difference. Moreover, internal students exhibit strong similarities to their external counterparts in the way they use WBLT as a study tool - to revise for exams, review complex materials and take comprehensive notes. This raises the question: Is there any difference between the learning needs of an internal student who cannot attend and an external student who is not expected to attend? More generally, where WBLT are

used in combination with other eLearning technologies to access and interact with content, communicate and collaborate, we need to question whether the distinction between external and internal modes of enrolment is of relevance to an increasing number of students.

Introducing WBLT will change lecture attendance patterns and may raise questions about the role of lectures

While staff seem to understand the need of flexibility for their students, they are, nevertheless, concerned about falling lecture attendance.

Students appreciated the flexibility offered by WBLT with 75% using the technology because they couldn't come to class and another 69% because it was the only class they had on that day. Importantly, they also viewed lectures as important to their learning. They found lectures motivating, they valued contact with the lecturers and their peers and they found the visual aids helpful. Importantly, the use of WBLT did not necessarily exclude lecture attendance and students often 'double up' by attending lectures and listening to the recordings.

Our findings indicated that students are quite strategic about the choices they make, basing decisions on lecture attendance around three types of factors: educational value; convenience and flexibility; and social opportunities to meet other students, exchange ideas and make new friendships. With students being offered the technologies and choosing not to attend, some academics have begun questioning the role of lectures. At least 80% of the staff surveyed use lectures to inspire and motivate students; build conceptual frameworks; establish connections with students; use multimedia content; provide structured experiences for students; impart information and make announcements. This raises the question of whether there are more effective ways of achieving these functions.

Using WBLT demands changes in the way students learn and teachers teach

The statistics are compelling - 68% of students using WBLT believe they can learn just as well using WBLT as they can face-to-face. They use the tools to help revise for exams, review complex materials, work at their own pace and place of convenience, pick up on things that they missed in class, go back and take comprehensive notes after the lecture so they can concentrate on what is happening in the lecture, and check what was said before approaching their lecturer for clarification of issues, ideas or misunderstandings.

Aside from some concerns about IP around the re-use of lectures and copyright issues associated with using visual aids such as videos on WBLT, staff were most concerned about WBLT reducing two-way communication with their students and their ability to inspire and motivate students. On the other hand, there was recognition that the technology could help to provide a structured experience for students and facilitate information exchange.

From the findings it is clear that many staff recognise the strengths and limitations of WBLT and are concerned about the impact these technologies may have on learning. Nevertheless, there has been a mixed response to dealing with the changing context. Approximately one third have not made substantial changes to what they do in lectures. A common approach has been to maintain the status quo by re-emphasising the importance of lectures and the need for students to attend. In managing the limitation of the technology some have reduced their movements around the lecture theatre and reduced multimedia content due to copyright restrictions.

On the other hand, another third of lecturers have taken a more proactive approach and made changes to cater for students who are present as well as those using WBLT. Many of the changes are reflective of sound inclusive practice for example changing teaching strategies to accommodate students not present by explaining the actions in the class and by repeating students' questions when they are being recorded, scripting the lecture more tightly

to provide a more controlled presentation, and using discussion forums and other activities to extend communication and interactive opportunities beyond the lecture experience. .

Introducing WBLT is more than a teaching issue – it will affect the design of the whole curriculum

The introduction of any new technology is not an isolated experience and it impacts the entire teaching and learning context: including the ways in which students and staff communicate and the relationship between other elements of the curriculum. Despite this, our study clearly showed 75% of staff reported they had not changed the structure of their unit.

Rather than focussing on the lecture alone, a shift is needed for staff to consider the whole curriculum, taking into account the learning outcomes and needs of students and using a range of different activities and technologies (tutorials, workshops, online communication, etc) to provide stimulating and engaging learning environments and experiences.

Introducing WBLT has professional and organisational development implications

In addition to strategies for successful implementation at a curriculum level, the project also highlighted several professional and organisational implications. For staff, a correlation between choice in the use of WBLT and a positive experience with WBLT sends a strong message that policies enforcing the uptake of technologies may be counterproductive. Empowering academics by encouraging a culture of innovation and experimentation with new technologies and enabling them to make informed decisions about the appropriateness of technologies in their own context may be more effective and sustainable in the longer term. Professional development is an essential ongoing requirement to enable staff to implement new technologies into their curricula. Similarly, students need support to use them effectively and the technologies themselves need to be embedded in a robust infrastructure and technical support network.

Project outputs

The overall aim of this research was to enable an informed answer to the question of how web-based lecture technologies can be used to their best effects to support learning and teaching. The answer is complex; one size does not fit all thus necessitating consideration of the particular context in which teaching and learning is taking place. A whole of curriculum perspective is required to account for the diversity in disciplines, students, approaches to teaching and the aims and outcomes of the curriculum. Because of this and also the rapidly changing nature of web-based lecture technologies we have taken an issues approach. We have used the findings of this research to identify the teaching, learning and curriculum design issues to take into consideration when planning for the use of WBLT. These are presented as a Toolkit of resources for use by the higher education sector. The Toolkit comprises guidelines for staff and students on how to make the best use of web-based lecture technologies, a compilation of frequently asked questions about using WBLT a series of vignettes which provide snapshots of the experiences of staff and students; and a series of case studies exploring the use of WBLT in different curriculum contexts.

The ensuing report and its appendices are a major output of the project, providing an overview of the research, key findings and identification of issues. The report is supported by a number of research papers, providing more detailed analysis and discussion of student and staff perspectives and specific issues. Details of these outputs are available on the Project web site at: <http://www.cpd.mq.edu.au/teaching/wblt/overview.htm>

We, the Project Team, invite you to read the report and the associated research papers and to use and adapt the guidelines in the Toolkits to suit your institutional context.

1. Overview of the project

This is the final report of the project, *The Impact of Web-based Lecture Technologies on Current and Future Practice in Learning and Teaching*, which was funded by the Carrick Institute for Learning and Teaching in Higher Education through its 2006 Competitive Grants Scheme. The duration of the project was from 1 August 2006 to 28 March 2008.

The project, led by Macquarie University, was a cross institutional collaboration of Innovative Research Universities of Australia - Murdoch University, Flinders University and the University of Newcastle.

The project was endorsed by Innovative Research Universities of Australia and in each of the participating universities by the relevant Executive member at that time:

Professor John Loxton – DVC (Academic) Macquarie University
Professor Jan Thomas – DVC (Academic) Murdoch University
Professor Kevin McConkey – DVC (Academic) The University of Newcastle
Professor Joan Cooper – DVC (Academic) Flinders University

1.1 Project aims and outcomes

The aim of the project was to investigate how web-based lecture technologies - (Lectopia and similar technologies) can be used to best effect to support learning and teaching. Specifically:

- how the technology is integrated into the curriculum, its role and relationship with other elements within the curriculum
- how the technology can effectively support learning and teaching in different contexts, taking into account disciplinary differences, student diversity, specific teaching aims and learning outcomes.
- the educational implications of its use for:
 - the design and delivery of curricula
 - academics and their teaching
 - students, their learning and the establishment of effective learning environments
 - professional development of academic staff
 - academic policies and practices

The outcomes the research was designed to achieve were:

- a broad overview of practice in the use WBLT and the learning and teaching issues arising from student and staff perspectives, including:
 - usage patterns and teaching and learning preferences
 - the uses students are making of the technology to support their learning
 - the uses teachers are making of the technology as a teaching and learning tool
 - the changes taking place in the learning environment, from both a teaching perspective and a student learning perspective
 - the changing role and place of lectures within the curriculum
 - the impact of the technology on lecturing styles and lecture-room dynamics
- a more in depth understanding of specific issues arising from the use of WBLT in different teaching and learning contexts:
 - identification of contextual issues
 - identification of strategies to deal with these issues
 - examples of how web-based lecture technologies can be used effectively to support learning and teaching in different contexts

- recommended guidelines for good practice in the use of WBLT
- foreshadowed implications for policy and practice in the development and use of WBLT as they relates to academic practices, quality learning and teaching, and curriculum development

This report will demonstrate that these outcomes have been achieved. It is one of the key deliverables of the project providing details of the study undertaken, including:

- the significance of the research
- project development, management and dissemination strategies
- the research undertaken - a literature review, methodology, key results, emerging themes and project deliverables
- critical success factors
- future directions, including the relevance and transferability of findings to the higher education sector

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<http://www.cpd.mq.edu.au/teaching/wblt/overview.htm>

We have used the findings of this research to identify the teaching, learning and curriculum design issues to take into consideration when planning for the use of WBLT. These are presented as a Toolkit of resources for use by the higher education sector. The Toolkit comprises guidelines for staff and students on how to make the best use of web-based lecture technologies; a compilation of frequently asked questions about using WBLT; a series of vignettes which provide snapshots of the experiences of staff and students; and a series of case studies exploring the use of WBLT in different curriculum contexts.

1.2 Significance of the research

Universities have invested substantial resources in sophisticated, fully integrated campus-wide IT infrastructure not only to meet existing educational requirements, but to provide opportunities for future innovation in learning and teaching. In establishing this infrastructure, it is not unusual for the focus of developmental activity to be placed on operational imperatives which ensure the smooth running of the technology in secure and interoperable environments. It is also not unusual for only a relatively modest provision of resources to be made available for supporting staff and students in the use of technologies for learning and teaching purposes (Burnett & Meadmore, 2002). Activity in this area is often confined to the development and provision of documentation, technical information and training sessions at the expense of meaningful short and longer-term evaluation of the technology's actual value to learning and teaching.

In the universities participating in this project, the introduction of web-based lecture technologies such as Lectopia had largely followed such a pattern. Both Macquarie University and Murdoch University had implemented Lectopia to deliver lecture content to external students. While the technology was found to be useful for external students and catered for those with disabilities, at both institutions, usage statistics indicated an increasing uptake for on-campus flexible delivery. At the University of Newcastle, the reported primary driver had arisen from the implementation of a blended learning model - to a small extent the use of web-based lectures delivered using Lectopia had been used for this reason (Carter, Hodgson, & Sher, 2005).

Surveys at Macquarie, Murdoch and Newcastle conducted prior to this project had found a range of issues around student access and academic staff perceptions on the impact of Lectopia on their teaching. The perceived and reported changes in access patterns were thought to have impacted on the learning environment, though it was unclear what the cause and related effect was. Some lecturers reported changing attendance patterns, loss of contact

with students, and disruptions to the continuity of the learning experience particularly when tutorials were dependent on lecture attendance. Others reported no apparent change. This raised questions of: What other changes were taking place in the environment, from both a teaching perspective and a student learning perspective? Were these changes having an impact on attendance and learning?

Further questions related specifically to how web-based lectures were integrated into the delivery of a unit of study. Lecturers reported having to make adjustments to their lecturing style. Some of these could be viewed as positive, such as repeating questions for those not present, or more negative, where lecturers felt constrained in moving about the lecture theatre. Less evident from the initial surveys were insights into how a course could be delivered to make the most effective use of web-based lectures. At Newcastle, for example, lecturing staff reported fielding complaints of remote students having a lesser quality experience than their on-campus equivalents. Although Flinders University had adopted a different approach to delivering web-based lectures, making use of a combination of streaming video/audio and media files rather than Lectopia these same issues were relevant.

Collectively, the feedback from staff and students raised a multitude of further questions:

- Were lecturers changing/having to change their teaching style to produce web-based lectures?
- How could the use of this technology contribute to good teaching practice?
- Was there a mismatch between student and staff perspectives on the use of web-based lectures?
- What are the best ways for students to use the technology to support their learning?
- What uses are teachers making of this technology as a learning (rather than delivery) tool?
- Are there differences across disciplines and modes of delivery?
- Could this technology be utilised in other ways to enhance learning and teaching?
- How can the curriculum be designed to make effective use of this type of technology?

It was apparent that the implications of adopting web-based lecture technologies such as Lectopia were potentially far reaching to a range of audiences:

- Individuals – changes to the environment and culture in which students and staff are working
- Academics and academic practice – changes to teaching and learning practices, professional development needs, workloads and discipline profiles
- Department/faculty– changes to curricula, resource development support and quality assurance processes
- University –infrastructure and support structures, academic policies and practices, financial and budgeting strategies

It was also apparent that the use of WBLT was likely to increase. Indeed, at the outset of this project, 16 Australian Universities and three international universities were listed on the Lectopia web site (<http://lectopia.com.au>) as current licensees, and others were considering its use. Since the acquisition of Lectopia by Anystream Apreso in 2007 and the formation of Echo³⁶⁰, the site now lists 91 licensees internationally.

Given this context, an exploration of the impact of web-based lectures on learning and teaching was recognised by the project team as being something of broad interest to the higher education sector. This was not only because of the increasing demand from students for flexible access to educational opportunities, and substantial investments by institutions in this area. It was also because of the potential to substantially improve teaching practice, to improve the student learning experience and to contribute to the development of effective mechanisms for the identification, development, dissemination and embedding of individual and institutional 'good practice' in universities.

2. Project development

2.1 The project team

The project was developed under a full collaboration model between the four participating universities, each of the contributing universities had a direct and active role in all the design and implementation of the project, formulation of outcomes, development of the report and dissemination of findings. This is in contrast to a cooperative model where activities are disaggregated and each university takes a particular task or aspect of the project (Panitz, 2001).

The research was coordinated from Macquarie University and team members from Murdoch, Flinders and the University of Newcastle coordinated the data collection and development activities at their respective universities. The project team members were:

- Dr Maree Gosper (Project Leader), *Macquarie University*
- Margot McNeill (Project Manager), *Macquarie University*
- Karen Woo (Research Assistant), *Macquarie University*
- Dr Rob Phillips (Institutional Research Coordinator), *Murdoch University*
- Greg Preston (Institutional Research Coordinator), *University of Newcastle*
- David Green (Institutional Research Coordinator), *Flinders University*

2.2 Communication and dissemination strategies

A comprehensive communication and dissemination plan was developed at the outset of the project covering:

- Internal project communications to ensure efficient sharing of information within the project team, and
- Public project communication to enable the effective dissemination of key findings throughout the sector as the project progressed.

A separate dissemination plan was developed for distributing the project deliverables – student and staff guidelines, case studies, vignettes, frequently asked questions and research instruments.

2.2.1 Internal project communication

A private project web site was established to house documents and data files, share ideas and track decisions throughout the development of the project. Moodle was chosen because of the collaboration tools it provided, which included wikis, blogs, a calendar and discussion forums. Another reason was that Moodle's security settings allowed the team to selectively assign access rights to users as well as to different areas of the web site. Access to the site was given to team members, the reference group, the project evaluator and co-researchers in the six case studies that were part of the project. A short Camtasia presentation about the project's communication tools was produced for a Carrick Institute workshop on project management, which was held in Adelaide in August, 2007. This presentation is available on the project site.

Communication between the team members was further facilitated through a combination of face-to-face and virtual team meetings.

Five face-to-face meetings were also scheduled to capture critical stages of project development:

- Establishing the project – scope roles, responsibility, methodology, timelines, and deliverables
- Conceptualising the survey instruments for the first stage of the project
- Analysing survey data and conceptualising case studies for the second stage of the project
- Synthesis of results from all stages of the project
- Conceptualising key deliverables and their dissemination

In addition to the face to face meetings, regular online meetings were scheduled for project team members. These meetings were initially held on a weekly basis, but then changed to fortnightly once the project was firmly established and data collection was underway. A range of online meeting tools were trialled during the project, including Elluminate, Skype, Breeze and Live Classroom.

2.3 The reference group

At the outset of the project, a reference group was established to provide advice and formative feedback during the development of the project and advise on the alignment of the project with its stated goals and outcomes.

The members of the project reference group were all working in the higher education sector and were chosen for their particular expertise in one or more areas of web-based lecture technology, institutional development, learning and teaching development, professional development, project development, implementation, evaluation, e-learning and dissemination. See Appendix 3 for details of the Reference Group Terms of Reference.

Three members of the reference group changed their jobs during the life of the project. The members of the reference group and their initial and current positions are listed below.

Reference Group	Original role	Current role
Mr Michael Fardon	Academic Director, Faculty of Arts, Humanities and Social Sciences Multimedia Centre, University of Western Australia	Project Director, Echo 360
A/Prof Tony Koppi	Director, Educational Development and Technology Centre, University of NSW	Senior Research Fellow/Project Manager, Faculty of Informatics, University of Wollongong
Professor Joan Cooper	DVC (Academic) Flinders University	Pro-Vice-Chancellor (Students) and Registrar, University of New South Wales
Dr Richard Caladine	Coordinator - Learning, Innovation and Future Technologies (LIFT), University of Wollongong	unchanged

The reference group met face-to-face in December 2006 and took part in two teleconferences at critical points for the project in July and December 2007. To ensure the reference group had ongoing information about the project, including drafts of research instruments, findings, research papers and monthly progress reports, members were given access to the internal

project website. In addition, a schedule of monthly progress meetings, hosted in the virtual meeting environment was established to which they were invited. The reports were also emailed to them and posted to the website for referral as required.

2.4 External evaluation

A requirement of the Carrick Institute was for all substantial projects appoint an external evaluator. The project team sought to commission an external evaluator to undertake both formative and summative evaluation of the project. An initial Brief and Expression of Interest were developed and circulated amongst a list of possible evaluators drawn from the project team's networks across the sector and the Australasian Evaluation Society. Associate Professor Helen Carter was the successful applicant.

In consultation with the evaluator, an evaluation plan was agreed. The plan was designed to use both process and outcomes based approaches, examining both the project's development processes and whether or not project outcomes have been achieved. It specifically identified key areas of focus including project management, communication and dissemination strategies and reviewed project outcomes within the overarching framework of the stated values of the Carrick Institute for Learning and Teaching in Higher Education. (See Appendix 4 for the Evaluation Plan).

3. The research

3.1 Literature review

Lecturing is the most common, but perhaps also the most debated, teaching method in higher education. Bligh (1972) identified three objectives for lectures: acquiring information, promoting thought and changing attitudes.

A major critique of lectures is that most lectures only fulfil the “coverage” criteria, while “understanding and motivation” are noticeably missing (Biggs, Kember, & Leung, 2001; J. B. Bligh, 1972). More recently, Phillips (2005) challenged the primacy of lectures in university teaching and pointed out their deficiencies in fostering constructivist learning environments.

However, there is also revived interest and newer evidence to support lectures as a valid teaching method for higher education. Hodgson (2005) found that students may have “vicarious experience of relevance” in a lecture, where students are infected by the lecturers’ enthusiasm. Jones (2007) argued that instead of focussing on information transmission, lectures should be focused on engagement. He also alluded to the possibility offered by new technologies for engaging students.

3.1.1 Supporting learning through flexible access

Students are demanding more flexibility to enable them to study while managing their work and family commitments (McInnis & Hartley, 2002). A relatively large proportion of Australian university students are mature-aged, and many combine their studies with work or family commitments (Phillips et al., 2007). A recent report on student finances (Australian Vice-Chancellors’ Committee, 2007) indicates that 71% of Australian university students undertake paid employment during semester, working an average of 15 hours per week.

Indeed, universities can no longer afford to limit enrolment to the elite – ‘the most intelligent or privileged 10-15% of the population, who had the interest, motivation and ability to learn largely on their own’ (Phillips, 2005, p. 1). They are now required to meet the needs of an increasingly diverse cohort of learners. However, a recent study by Anderson (2006) reported that 78% of students found that work impacted on their study, and 40% felt that their university did not cater well for students in paid employment.

Providing easy access to lecture recordings to those who cannot attend lectures is one way to address students’ needs for flexibility. This has been one of the key drivers in the uptake of WBLT. However, the provision of flexibility has led to debates about the implications of WBLT for reduced attendance at lectures. Some perceived decreased attendance also meant decrease in student engagement (Williams & Fardon, 2007c) and may even have detrimental impacts on results (Massingham & Herrington, 2006). In preliminary surveys conducted at Macquarie, Murdoch and Newcastle, prior to this research, some lecturers linked changing attendance patterns with loss of contact with students and disruptions to the continuity of the learning experience particularly when tutorials are dependent on lecture attendance.

While the benefits of flexible access for internal students may be contested, this is not the case for externally enrolled students. In the past, some universities have provided external students with tape recordings of lectures to supplement print-based study materials. A positive feature of WBLT is that lecture content can be captured together with day-to-day updates, anecdotes, and discussions that provide a richness not available in pre-prepared materials. Because of the immediacy of delivery to students, there is the potential to provide entrée into follow-up online discussions or similar activities. As such, WBLT have the potential

to contribute to facilitating interactions with fellow students and also with the lecturer, which had been rare in distance education (B. Anderson, 2005) prior to the emergence of web-based information and communication technologies.

Students with disability and students from non English speaking backgrounds (NESB) also stand to benefit from the use of WBLT. Williams and Fardon (2007a) surveyed 130 students with disabilities, and 98.1% of the respondents reported that Lectoria was 'essential' or 'useful' to their learning. Reasons for using Lectoria included 'unable to take notes during the face-to-face lectures' mainly due to learning disability, and 'unable to attend face-to-face lectures due to disability' (including fatigue disorder).

In regard to benefits for NESB students, Wilson (2003) suggested that one way to support deep strategies for NESB students to help them understand lectures is to record and listen again. This is supported by Eckert (2005) who found that both teachers and students agreed that the live lectures should be supplemented by taped recordings. We are not aware of any research that has directly studied the impact of WBLT on the learning of students from NESB.

3.1.2 Student perceptions and use of WBLT

The introduction of WBLT has been one response to the need for flexibility of access. Not surprisingly, WBLT are gaining in popularity, particularly with students finding that their needs for flexibility have not been met by 'traditional on-campus teaching paradigms' (Lefoe & Albury, 2004). With increased demands posed by work and family commitments (M. J. Anderson, 2006; McInnis & Hartley, 2002), recent studies have confirmed students' appreciation of the convenience and flexibility offered by anytime, anywhere access to lectures (Fardon, 2003; McNeill et al., 2007; Williams & Fardon, 2007b).

In addition to flexibility, students are also generally positive about the impact these technologies have on their learning (Williams & Fardon, 2005). In McElroy & Blount's (2006) survey of 411 students on their usage of WBLT, more than 75% of students agreed that iLecture enhanced the course when compared to other subjects that did not include iLecture.

Soong, Chan, Cheers and Hu (2006) reported on a similar study conducted in Singapore, but with video-recorded lectures. In a survey of 1160 students, they found that 94.9% agreed that the video-recorded lectures were useful in relation to their studies. The most popular reasons for using video recorded lectures were for reviewing difficult parts of the lecture and for exam preparation.

There is also evidence that WBLT are used by students as a study tool to complement face-to-face lectures (Signor, 2003; Williams & Fardon, 2007c). Students reported using WBLT to support their learning by checking over notes, by reviewing difficult concepts, by revising for exams and by listening to missed lectures (Albon, 2004; Buxton, Jackson, deZwart, Webster, & Lindsay, 2006; Knight, 2006; Williams & Fardon, 2005).

3.1.3 Staff perceptions

The response to WBLT by academic teaching staff has been less consistent in the literature than their student counterparts. Some lecturers have adopted WBLT as tools which can be used to enhance student learning and provide flexible access to lectures (Buxton, Jackson, deZwart, Webster, & Lindsay, 2006; McElroy & Blount, 2006). Others have reported academics criticising WBLT as reinforcing lecturing as a transmission model of teaching (Donnan, Kiley, & McCormack, 2004). Some have linked them to decreasing attendance in lectures (Buxton, Jackson, deZwart, Webster, & Lindsay, 2006; Williams & Fardon, 2007c), while others find that they have no affect on the level of student engagement (Chang, 2007). Massingham and Herrington (2006) reported a relationship between students' participation in

class and their final results, suggesting that students who do not attend lectures also miss out on opportunities to participate, which could result in surface engagement with the content.

While much of the literature is focussed on the lecture experience, several studies have taken a broader curriculum perspective. Goldberg, Haase, Shoukas and Schramm (2006) cite an example where WBLT were used to deliver some lectures so more time could be spent with students in face-to-face seminars. Staff reported better learning quality from the medical students as a result of the change in curriculum.

Smeaton & Keogh (1998) reported a study in which they deliberately kept the curriculum design of the course the same, whilst replacing traditional lecture with virtual lecture. A comparison of approaches over two years have been taken to show that there has been no change in students' exam grades. In addition, result indicated that the usage patterns (e.g. early access in the course, more downloads) had no correlation with exam results. Prior technical experience did not correlate with performance neither. This study points to the need for a whole-of-curriculum approach to introducing WBLT in order to enhance learning experiences for students.

Based on the issues that are emerging from the literature, a picture has emerged of universities introducing tools such as WBLT as part of their attempts to adapt to the changing needs of their students, which have then enjoyed a positive reception by students for their added flexibility. The picture also shows academic teaching staff as being less positive as they struggle to deal with the complexities of the changing environment in which they work. On a more positive note, O'Donoghue, Hollis and Hoskin (2007) suggested that lecture recordings have provided stimulus for lecturers to reflect on their pedagogy and curriculum design.

The educational environment is complex. When introducing technologies philosophical perspectives and disciplinary differences, diversity in students, curriculum goals, aims and outcomes all need to be taken into consideration (Bates & Poole, 2003; Gosper et al. 2007). As we have seen from the literature review this presents challenges when technologies are introduced into existing practice. To better support lecturers in their reflections and their attempts to transform their teaching to effect positive change, a more comprehensive understanding of the ways in which WBLT can be integrated into the curriculum to support teaching and learning is needed.

Note: Issues relating to the themes identified in the literature review are explored in more detail in the publications arising from this project. Refer to Appendix 1 for a list of publications.

3.2 The research methodology

The research is based on an exploration of three aspects of WBLT:

1. how the technology can effectively support learning and teaching in different contexts, taking into account disciplinary differences, student diversity, specific teaching aims and learning outcomes.
2. how the technology is integrated into the curriculum, its role and relationship with other elements within the curriculum
3. the educational implications of its use for:
 - the design and delivery of curricula
 - academics and their teaching
 - students, their learning and the establishment of effective learning environments
 - professional development of academic staff
 - academic policies and practices

In order to enable a comprehensive exploration of these issues, the research used a mixed methods approach with both qualitative and quantitative dimensions. Data was drawn from

several sources in order to triangulate the perspectives of a diversity of stakeholders in the learning and teaching programs of universities.

The research program involved two stages. The first stage was designed to capture the diversity of student and staff experiences in the use of WBLT in order to identify and categorise the issues and usage patterns that emerged across participating universities in relation to the first two research questions. This was accomplished through surveys of both students and staff.

The second stage involved a more detailed exploration of the educational implications arising from stage one through a series of vignettes and case studies. This stage was both investigative and developmental in nature exploring the issues in depth by focussing on specific curriculum contexts:

- the conditions under which the use of WBLT is desirable in different curriculum and organisational contexts - across disciplines and modes of delivery;
- strategies for enhancing learning and teaching in different contexts;
- implications for the design and delivery of the curriculum and the establishment of effective learning environments in different contexts; and
- implications for academic policies and practice.

3.2.1 Student survey

Aim

The student survey aimed to provide a comprehensive overview of student experiences of web-based lecture technologies, with a particular focus on pedagogy and student learning.

Participants

Participants were students who had used WBLT. Invitations were emailed to students enrolled in units which made use of WBLT at the four institutions. Students were asked to respond to the questionnaire if they had used WBLT in their study.

Stratified sampling was used to identify the units which made use of WBLT. The sample included representation from:

- disciplines
- class sizes (less than 50 students, 50-200 and more than 200 students)
- enrolment mode (distance and internal students)
- level (undergraduate and postgraduate)

Instrument design

The process of developing the student survey involved collaboration from all four participating Universities. The design of the survey instrument involved consideration of previous research on the use of iLecture and similar technologies (Fardon, 2003; McElroy & Blount, 2006), the findings from evaluation surveys conducted at the four participating universities prior to the research, and anecdotal experiences of staff and students.

The survey consisted of both quantitative and qualitative items. The areas explored in the survey were:

1. students' experience of WBLT in the context of a specific unit;
2. their strategies and motivation for learning using the Study Process Questionnaire (Biggs, 2001);
3. their overall experience of WBLT in the university including their perceptions about impact on relations with peers, grades or ease of learning; and
4. general demographic information.

Once an initial draft was produced, the survey was piloted with a cohort of Macquarie students (n= 30 students.) The analysis of the pilot data resulted in minor changes to a number of items. The student survey is included as Appendix 5.

3.2.2 Staff survey

Aim

The aim of the staff survey was to establish a comprehensive overview of staff experiences of web-based lecture technologies and their perceived impact on teaching and student learning.

Participants

Participants were staff who had used WBLT. All staff making use of the web-based lecture technologies at the four universities were invited to participate in the survey.

Instrument design

The staff survey was designed to correspond where possible with the student survey, so that results could be compared.

The survey collected data on four specific areas in relation to lecturers and their use of WBLT:

1. the teaching and curriculum context, including details of delivery mode and discipline area;
2. the lecturer's approaches to teaching using Trigwell and Prosser's (2004) *Approaches to Teaching Inventory*;
3. the reasons for using WBLT and the strategies adopted; and
4. perceptions of the effect of WBLT on lecture attendance and communication patterns between themselves and their students.

The Survey was trialled with a small number of staff from academic departments and learning and teaching development units from the four universities.

A final copy of the staff survey is included as Appendix 6.

3.2.3 Vignettes

Stage two of the study was designed to enable a more detailed exploration of the issues emerging from the student and staff surveys in specific contexts. A series of vignettes and case studies were developed to explore a range of contextual issues covering disciplinary differences; student expectations, prior knowledge and experience; the goals, aims and outcomes of the curriculum; and the surrounding organisational environment.

Aim

The aim of the vignettes was to provide snapshots of individual student or lecturers' views of the issues that arose from the first stage of the research.

The vignettes were designed to be descriptive in nature to highlight the manifestations of particular issues in different contexts and the resulting opportunities and challenges.

Participants

Participants were staff and students using WBLT. An invitation to nominate for inclusion in the vignettes was included at the end of the student and staff surveys. Students and staff

members were invited to contact the project team if they were willing to describe their experiences with web-based lecture technologies in more detail.

Unit coordinators or lecturers, who may not have completed the survey but were known to have used WBLT in innovative ways, or who had strong feelings about the impact of WBLT, were also sent the invitation.

Method

Interviews were used to capture rich descriptions about the individual's context and current practice.

A semi-structured format was used to follow the general structure of the survey questions for both students and staff. Additional questions were included to explore in more detail relevant points of interest that arose, such as:

- Why do you use WBLT? Are there any special circumstances why you use it?
- Has WBLT changed your approach to learning? How?
- Describe your most positive and most negative experience of using WBLT
- Given the choice of attending face-to-face or using WBLT, what things do you consider when making this choice?
- Do you feel you missing out on anything by not attending lectures or what do you feel students are missing by not attending lectures?
- Overall, what do you see as the advantages or disadvantages of using WBLT for your learning or teaching
- Are there any circumstances / contexts in which you wouldn't use WBLT?
- If WBLT was no longer available what impact would this have on you - your teaching / learning
- How do you see teaching and learning taking place in 5 years' times? Will it be different and in what ways?

The interviews ranged from 30 minutes to 60 minutes in duration, depending on the length of the responses by individuals. The interview responses were transcribed to ensure efficient capture of the data for analysis.

3.2.4. Case studies

Case studies of specific units were selected to provide an in-depth analysis of the curriculum contexts and to provide multiple perspectives (from both staff and students). They involved small research projects which were both explorative and developmental in nature.

Aim

The aims of the case studies were to explore:

1. the conditions under which lecture delivery technology use is desirable in different curriculum and organisational contexts - across disciplines and modes of delivery;
2. strategies for enhancing learning and teaching in different contexts;
3. implications for the design and delivery of the curriculum and the establishment of effective learning environments in different contexts; and
4. implications for academic policies and practice.

Participants

The project team invited lecturers who had used WBLT in innovative ways at the four participating universities to submit an initial expression of interest to use their units as contexts for the case studies. These lecturers were identified either through the vignettes or through professional links at the universities. Case studies were selected for the innovative

usage of WBLT or interesting curriculum contexts. Six case studies were supported with project funds.

Lecturers were given the choice of being a co-researcher or a participant in the case study itself. All elected to be co-researchers.

Method

Each of the case studies had specific aims and outcomes hence, the research methods varied accordingly. Details of the methods used in the specific case studies are available in Appendix 10.

There were possible conflicts of interest with some case studies where data were collected from students pertaining to their experiences of the unit during the semester. To ensure that students would not be disadvantaged in any way, the raw data was only available to the core project team. Although the lecturers were given co-researcher status, they were only presented with aggregated and de-identified results.

3.3 Ethical considerations

Over the entire project, ethics approval was sought from the separate institutions at each stage of the project. In order to expedite the process and enable the student surveys to be delivered during Semester 2, 2006, separate applications were developed for the student surveys and vignette interviews involving students. Applications for staff surveys and interviews were then included in a separate applications for each institution.

Ethics consent for the case studies was requested in separate applications.

In total, twelve applications were developed, with each institution requiring the content to be adjusted according to its own template.

4. Research results

In this section, an overview is provided of the key results emerging from the student survey, staff survey, vignettes, and case studies. Only selected items directly relating to the key themes emerging from the study are reported here. A series of research papers developed to complement this report provide more detail on specific issues that have emerged including: the diversity of student experience arising from generational groupings and enrolment modes; changing roles of learners and lecturers; and the differing perspectives of staff and students. The papers and abstracts are listed in Appendix 1.

Full details of the frequency data compiled for each variable or scale, as well as the key validity and comparative analysis results within the student and staff surveys are contained within Appendices 7 and 8 respectively. All the vignettes and case study reports can be found in Appendices 9 and 10.

4.1 Student survey

Invitations were sent to 13278 students from across the four universities, inviting them to complete the online survey if they had used WBLT. In total, 815 students responded.

The units surveyed included both users and non-users of WBLT. An invitation was extended to all students in the nominated units because we could not distinguish between the two groups. As a result, the response rate cannot be determined as the total number of WBLT users is unknown. Nonetheless, a number of factors contributed to the utility of the data collected:

1. The sample size itself was large enough to provide meaningful data in relation to the research questions posed;
2. The use of Wave analysis of the data further justified the validity of the responses collected;
3. A follow-up survey was distributed to a specific cohort to gather more information about the response rate (see details below);
4. Modified versions of the original surveys were distributed to some of the case study cohorts and analysed for significant differences with the main survey responses. Whilst the response rates for these surveys varied between 25% and 74%, overall the results clarified the lack of significant differences between the responding and non-responding students. Additionally, there were no obvious differences between the demographic, WBLT usage, or other background variables of responders and non-responders.

The response rate has had one material effect on the data analysis in this study. As the response rates were not uniform across disciplines, the resulting cell sizes for certain discrete discipline areas were too small to allow statistical techniques to be utilized in the comparison of these disciplines. Importantly however, in keeping with the mixed methods approach, the data collected was a useful tool to inform the qualitative section of the study. Some information on the comparative utility of WBLT can be drawn from the qualitative data.

4.1.1 Follow-up survey

In order to gather more information about the response rate of the initial student surveys, one of the units included in the stratified sample of the student survey was identified for a follow up survey. The survey was delivered to this target group of students in the following semester, asking students whether they had filled in the initial survey and to comment on why not.

In total, 60 students filled out the follow-up survey from a class of 68. All 60 indicated that they had used WBLT before.

- 9 did not enrol in the unit in Semester 2, 2006, so they were not part of the target group
- 3 filled in the original survey
- 48 reported that they did not fill in the survey.

It seems that two issues contributed to the low response rate. The first was students' lack of awareness of the survey (29) even though it was initially advertised by their lecturers. The second was students' lack of use of the university email (21) through which they were sent the required login details.

4.1.2 Survey data analysis

The statistical package SPSS was used to undertake analysis of the quantitative data and the general descriptive data were supplemented by correlational, factorial, variance and regression analyses. Specifically, frequency data was developed for each of the dependent and independent variables in the study. The scale items were analysed in terms of face validity and then statistical validity, through the use of cronbach alpha measures. Depending on data type, correlational, analysis of variance, or regression analysis were conducted to address the key research issues identified within the project framework.

The Software package nVivo was used to analyse the qualitative data. This included traditional transcription and line coding techniques, with the development of concept nodes around the key issues appropriate to the form of interaction developing within the data.

4.1.3 Demographics

Participants were spread across the four universities, with the largest proportion (42.9%) enrolled at Flinders University. Distributions are shown in Table 4-1. All areas of study, other than Architecture were represented; frequencies are shown in Table 4-2

Table 4- 1: Student demographics - University

	Frequency	Percentage (n=815)
Flinders	350	42.9%
Murdoch	235	28.8%
Macquarie	124	15.2%
Newcastle	106	13.0%
Total	815	100.0%

Table 4- 2: Student demographics - Discipline

	Frequency	Percentage (n=815)
Humanities	178	21.8%
Psychology	131	16.1%
Business	96	11.8%
Life Sciences	96	11.8%
Education	80	9.8%
Law	72	8.8%
Health	59	7.2%
Economics	44	5.4%
Maths/Physics	33	4.0%
Comp Sc.	23	2.8%
Engineering	3	0.4%
Architecture	0	0.0%
Total	815	100.0%

Of the respondents:

- 70.7% of the sample were female;
- 13.9% were enrolled externally;
- 91.1% of respondents were studying at the undergraduate level;
- 80.8% were full-time students;
- 15.0% responded that English was not their first language; and
- more than half (56.8%) were 24 years of age or younger.

4.1.4 Student perceptions of the effectiveness of WBLT

The questions about students' overall perceptions about their experiences with WBLT and the tools' impact on their results and learning were used as key outcomes measures used for the survey. These results are shown in Table 4-3 and 4-4

Table 4- 3: Student responses to the statement "overall, my experience of using WBLT for teaching and learning has been positive". Percentage responses on a five point Likert scale.

Response	Percentage (n=813)
Almost always	44.0%
Frequently	32.2%
About half of the time	12.7%
Sometimes	7.6%
Rarely or almost never	3.4%

Of the 813 respondents, 76.3% indicated they frequently had positive experiences using the technology.

Table 4- 4: Student perceptions about the ability of WBLT to assist students to achieve better results and learn better. Percentage responses on a five point Likert scale.

	Do you think using WBLT has helped you to achieve better results?	Do you think using WBLT makes it easier for you to learn?
Response	Percentage (n = 746)	Percentage (n = 746)
Yes – significantly	35.1%	47.1%
Yes – moderately	31.6%	32.8%
Not sure if any change	23.3%	13.4%
No – didn't help	8.6%	5.6%
No – detrimental	1.3%	1.1%

The majority of students (66.8%) believed WBLT helped them to achieve better results in their units. 79.9% of students believed using the technology made it easier for them to learn.

4.1.5 Student usage patterns

Students exhibited a range of usage patterns. The most common method of using WBLT was as a backup when they couldn't attend the lecture (used by 83.4% of students). This theme also emerged in the comments in the qualitative sections of the survey, for example:

Lecture Recordings are an invaluable tool for me... I utilise them to facilitate learning & understanding. If it were not for lectures being recorded I would not have been able to study 2 of the subjects I did this semester due to family commitments”

Other results revealed that:

- 71% of listened to the entire recording;
- just over half (55.6%) listened more than once:
- approximately one third were selective about their use – browsing and stopping at points of interest , or choosing particular segments
- half of users listened on a regular basis and close to 40% listened to several weeks at once:

Younger participants were more likely to browse through the recording and choose particular segments to listen to ($p < .01$). In contrast, older students were more likely to listen to the recording or parts of it more than once ($p < .05$).

4.1.6 How students are using WBLT to support their learning

The ways in which students are using WBLT to support their learning are listed in Table 4- 5. Most students participating in this survey appreciated WBLT as a study tool. Whether attending the face-to-face sessions or not, the recordings provided opportunities to revise for exams and review materials and announcements made in the lecture.

Table 4- 5: How students are using WBLT

Use of WBLT to support learning	Percentage
Pick up things missed	78.6 % (n=677)
Revise for exams	76.4 % (n=717)
Revisit complex ideas and concepts	76.2 % (n=727)
Work at own pace	73.9 % (n=729)
Take comprehensive notes	62.5 % (n=731)
Pick up announcements and exam hints	62.2 % (n=712)
Revisit portions because lecturer was unclear	20.8 % (n=557)
Review as NESB student	20.4 % (n=328)

NB: Percentages shown are the combination of students responding to Strongly Agree and Agree to the respective item.

It is noteworthy that there were no significant differences between internal or external students or between males and females. What was significant was between age groups: Older students were more likely to use WBLT to work through the material at their own pace, and younger students were more likely to use WBLT to revisit sections where the lecturer was unclear ($p < .05$).

The following quote from the qualitative comments from both internal and external students indicated that some were using WBLT in relatively deep and thoughtful ways:

It is an extremely good service and a great way to supplement one's learning by being able to follow up on concepts raised in the lecture and being able to listen to lecture's when one is sick and has not attended class

Lecture Recordings are an invaluable tool for me... I utilise them to facilitate learning & understanding. If it were not for lectures being recorded I would not have been able to study 2 of the subjects I did this semester due to family commitments.

I am a slow note taker so taking away the iLectures would affect me in the way that I learn. Knowing that I can come back to the iLecture to take more notes reduces my stress.

I can validate a question before I ask it. I can listen to the lecture maybe a few times then really refine what I want to ask. I can then (with confidence) approach the lecturer to seek my answer based on accurate reflections not what I thought the lecturer said.

Reading alone does not provide an all-rounded learning experience. It helps to connect external students with the campus. I love iLecture and never miss a lecture if it is available. I believe my learning is far deeper in units where iLecture is provided.

4.1.7 Lecture attendance and WBLT usage

Table 4-6 indicates that 56.2% of respondents attended lectures frequently.

Table 4- 6: Frequency of lecture attendance

	Frequency	Percentage (n=810)
Always/almost always	314	38.8%
Frequently	141	17.4%
About half the time	108	13.3%
Sometimes	63	7.8%
Rarely/almost never	145	17.9%
No lectures available	39	4.8%
Total	810	100.0%

The most common reasons indicated by those who did attend were visual aids, motivational aspects of the lecture and the value added by the lecturer, as outlined in Table 4-7.

Table 4- 7: Reasons for attending face-to-face lectures

Reasons for attending	Frequency	Percentage
Visual aids useful	448	86.8% (n=516)
Live lectures motivating	369	71.2% (n=518)
Presence of lecturer added value	367	70.7% (n=519)
Informal conversation with other students	343	67.4% (n=509)
Liked established routine	339	66.1% (n=513)
Concentrated better in lectures	316	61.2% (n=516)
Liked to meet friends	292	58.9% (n=496)
Interact with lecturer	271	54.5% (n=497)
On campus anyway	267	53.8% (n=496)
Lectures needed for later tuts	256	52.5% (n=488)
Wouldn't have listened to lectures later	227	46.0% (n=493)
Liked lecture atmosphere	219	43.0% (n=509)
Group activities/discussions in lecture	143	31.5% (n=454)
I don't like using technology	31	6.3% (n=476)

NB: Percentages shown are the combination of students responding to Strongly Agree and Agree to the respective item.

The older the generational grouping, the more likely students were to come to lectures because the presence of the lecturer added value, live lectures were motivating, and because of the opportunities for communication with the lecturer ($P < .01$ for all contrasts). The younger the generational grouping, the more likely students were to come to lectures because they liked to meet their friends, were on campus anyway, or they wouldn't have listened to the recordings later.

Of those who did not attend face-to-face lectures, 75.3% indicated they were not able to attend the lecture. Other reasons for non-attendance are shown in Table 4-8.

Table 4- 8: Reasons for non-attendance

Reasons for not attending	Frequency	Percentage
Not able to attend	289	75.3% (n=384)
Learn as well from WBLT as lectures	226	68.3% (n=331)
Only class on campus	206	69.1% (n=298)
Couldn't concentrate in class	112	39.7% (n=282)
Material was simple	55	19.3% (n=285)

NB: Percentages shown are the combination of students responding to Strongly Agree and Agree to the respective item.

Of particular interest is that 68.3% of students believed they could learn as well from WBLT as from face-to-face lectures.

4.1.8 Student approaches to learning

Participants in the survey were asked to complete the Study Process Questionnaire (Biggs, 2001) in order to identify their approaches to learning. The scale has a proven validity and reliability, and the statistical validation of the scale was within the range suggested for university students. The students' learning approach had little direct effect on the variables being accessed in relation to WBLT in this study. Preliminary regression analysis suggested that the effect is being overshadowed by other variable concerning WBLT (discussed above).

Whilst beyond the scope of the current study, further analysis of this variable is recommended for future studies, and indeed additional manipulation of the variables surrounding the SPQ are continuing with the current data set.

4.1.9 Advice from students

Participants in the student survey were asked the open-ended question: *If you were to give advice to a lecturer on using WBLT effectively, what would it be?*

Students' responses to this question, along with their reasons for attending face-to-face lectures and the uses they make of the technologies, were summarised into advice from students on effective use of WBLT for their learning. There are 3 areas of focus; *the structure and content of the lecture; the lecturing process and managing the technical aspects of WBLT*. Many suggestions relate to basic requirements for good lecturing, whether in face-to-face or web-based contexts. The suggestions are captured in materials developed for the toolkit for university staff (See Appendix 11).

4.1.10 Overall findings from student surveys

Respondents from across all four universities liked WBLT and found they helped them to learn. Seventy-six percent (76%) reported they had a positive experience with WBLT almost always or frequently. When asked if they thought that using WBLT made it easier to learn, 80% of respondents agreed that it had in either a significant or a moderate way. When asked if they thought using WBLT helped them achieve better results, 67% of respondents agreed that it had, in either a significant or a moderate way.

Students appreciate WBLT as providing additional study tools to assist their learning although face-to-face lectures are also seen as valuable. Seventy six percent (76%) of students indicated they used WBLT to study for exams, and the same number indicated they used the recordings to revisit complex ideas and concepts. Sixty three percent (63%) of students indicated they used WBLT to take notes from the lectures. It is clear that, whether attending the face-to-face sessions or not, the recordings provided opportunities to support learning of the content presented in lectures.

Although it has long been acknowledged that external students need flexibility, the data indicates that students enrolled in internal mode also appreciate this aspect of WBLT. From the survey responses, 56% of students indicated that they didn't attend at least some of the face-to-face lectures that were available. Of these students, 75.3% indicated this was because they 'couldn't attend'.

The use of WBLT does not necessarily exclude lecture attendance as many students in both the surveys indicated that they often 'double up' by attending lectures and listening to the recordings. While they appreciate the flexibility and convenience of WBLT, students in the survey also like lectures. They find them motivating, they value contact with the lecturers and their peers and they find the visual aids helpful. Many of the comments from those enrolled in external modes indicate that they use WBLT to increase their sense of participation in the lectures and as a form of communication with their lecturers and peers.

Although WBLT were introduced to capture lecture content, some external students saw their use as reducing the sense of isolation and helping connect them to their lecturers and to each other, particularly when used in conjunction with other social technologies. As one external student commented:

Every lecture should be available on [WBLT] and I would not mind if the tutorials were as well... With modern day technology external students could send their presentation taped and have discussion via Skype... So we would not really be 'external'

One of the items invited student respondents to comment on the impact, if any, the use of WBLT had on their communications with staff or other students.

The comments by external students frequently reiterated this appreciation of WBLT as having a generally positive impact on communication, for example:

As an external it has been very helpful as I don't feel so alone. Through this I have made regular contact and met a few of the students in my course

Some comments also reflected positive changes for on-campus students. For example:

I can validate a question before I ask it. I can listen to the lecture maybe a few times then really refine what I want to ask. I can then (with confidence) approach the lecturer to seek my answer based on accurate reflections, not what I thought the lecturer said.

4.2 Staff survey

A total of 676 academic teaching staff who had made use of WBLT were invited to participate in the survey and 155 (22.9%) responded from across the four universities. Even though the response rate was relatively low, the mixed methods model provided opportunities for the triangulation of the qualitative and quantitative data collected. Together, the quantitative and qualitative data provided an insight into staff perceptions of the effectiveness of WBLT and the issues that emerged from their use.

4.2.1 Demographics

Staff responding to the survey represented all four universities, with the largest proportion teaching at Macquarie University (43.2%). Distribution of staff across the different universities and disciplines are shown in Tables 4-9 and 4-10.

Table 4- 9: Staff demographics - University

	Frequency	Percentage (n=155)
Flinders	23	14.8%
Murdoch	53	34.2%
Macquarie	67	43.2%
Newcastle	12	7.7%
Total	155	100%

Table 4- 10: Staff demographics - Discipline

	Frequency	Percentage (n=153)
Arts Humanities	42	27.5%
Psychology	15	9.8%
Law	12	7.8%
Computer Science	6	3.9%
Economics/ Politics	1	0.7%
Business/ Commerce	15	9.8%
Education	22	14.4%
Health Medicine	13	8.5%
Life Sciences	17	11.1%
Physical Sciences	10	6.5%
Total	153	100%

The majority of respondents were aged 43 to 60 (60.4%). Approximately half of all respondents (51.1%) had been teaching for longer than 10 years.

4.2.2 Staff perceptions of the effectiveness of WBLT

The staff survey asked about perceptions of the use of WBLT for teaching and learning. The results are shown in Table 4-11, together with the student results for the same question.

Table 4- 11: Staff and student responses to the statement "overall, my experience of using WBLT for teaching and learning has been positive". Percentage responses on a five point Likert scale.

Response	Staff (n=136)	Student (n=700)
Almost always	29.4%	44.0%
Frequently	24.3%	32.2%
About half of the time	18.4%	12.7%
Sometimes	14.7%	7.6%
Rarely or almost never	11.8%	3.4%

When asked whether they perceived WBLT to make it easier for students to learn or achieve better results, staff were also less likely to agree than students. Table 4-12 includes the data from these two questions, along with the student data from the comparable questions.

Table 4- 12: Staff and student perceptions about the ability of WBLT to assist students to achieve better results and learn better. Percentage responses on a five point Likert scale.

	Do you think using WBLT has helped your students (you) to achieve better results?		Do you think using WBLT makes it easier for your students (you) to learn?	
Response	Staff (n=139)	Student (n=746)	Staff (n=139)	Student (n=746)
Yes – significantly	7.9%	35.1%	12.2%	47.1%
Yes – moderately	22.3%	31.6%	36.7%	32.8%
Not sure if any change	54.7%	23.3%	38.1%	13.4%
No – didn't help	9.4%	8.6%	7.2%	5.6%
No – detrimental	5.8%	1.3%	5.8%	1.1%

It is noteworthy that there were high neutral scores by staff for both questions, perhaps because, as expressed in the following quote, staff have little evidence available to make judgements about these questions:

I have no real indication of whether students learn just as well using [WBLT]. I believe this may be true for some, but have no real evidence.

Whereas most of the students surveyed reported generally positive experiences with WBLT, as shown in Table 4-12, staff experiences were less consistent. Of staff respondents, 54.5% found using WBLT to be a positive experience most of the time. 11.8% of respondents indicated that they rarely or never had a positive experience in using WBLT. While 30.2% believed the use of WBLT helped their students to achieve better results, 54.7% were unsure. Just under half (48.9%) of the respondents believed WBLT made it easier for students to learn, but 12.9% indicated that it did not help or was detrimental to their students' learning.

The most common qualitative responses related to the first two items in Table 4-13. A number of comments expanded on use of WBLT to provide another tool for students to learn, e.g. allowing students to revise for exams, to revise complex ideas and to cater for different learning styles:

It allows students to review and add to their lecture notes points that they may have missed. It allows auditory learners to revise in a suitable way.

External (distance) students are recognised by staff as a distinct cohort falling into the category of not being able to come to class. Of the 155 respondents to the staff survey, 84 taught a mixture of internal and external classes. The use of WBLT was seen as beneficial to these students particularly for:

- providing up-to-date information;
- increasing a sense of belonging; and
- providing opportunities for interactions between staff and other students.

Whilst there is consistent support for WBLT in the choice they offer external students, there is concern that WBLT could be detrimental to internal students, as typified by this comment,

For internals I think it can help them to justify not coming to lectures. They think, "it's OK not to go, I'll listen to the iLecture later". I fear later never comes or comes too late and they cram for assessment. Externals, however, brilliant!

Staff members who reported using WBLT due to pressure from their departments or students were less likely to report overall positive experiences with the technologies ($p < .01$).

4.2.3 Reasons for using WBLT

The majority of respondents (84.7%) use WBLT to accommodate students who cannot attend lectures. Approximately half (48.67%) of staff indicated they used WBLT to support NESB students or students with disabilities. Other reasons for using WBLT are shown in Table 4-13.

Table 4- 13: Reasons for using WBLT

	Frequency	Percentage (n=155)
Support students unable to attend	127	81.9%
Provide another study tool	100	64.5%
Support students with disabilities	76	49.0%
Support for NESB	73	47.1%
Required by department	27	17.4%
Student pressure	18	11.6%
Help students cope with my delivery style or accent	15	9.7%
Avoid repeating lectures	13	8.4%
Students can learn just as well using WBLT	5	3.2%

4.2.4 Lecture attendance

Concerns about the impact of WBLT on student lecture attendance were identified prior to the commencement of this project, and investigated in both students and staff surveys. The staff survey asked for agreement with the statement 'Student attendance in my lecture has decreased as a result of using WBLT'. The results are shown in Table 4-15.

Table 4- 14: Student attendance in my lectures has decreased as a result of using WBLT

Response	Percentage (n=136)
Strongly agree	29.4%
Agree	25.7%
Neutral	24.3%
Disagree	11.8%
Strongly disagree	8.8%

Some of the qualitative responses recognised that decreases in lecture attendance had occurred prior to the introduction of WBLT. Others saw WBLT as a backup mechanism for students who were going to miss classes anyway, for example,

There has always been reasonable student drop-out in attendance at lectures during the semester. The advantage of (WBLT) is that you can be reasonably confident that most students will listen to the lectures at some time.

Among the various reasons given for decreases in attendance, three comments pointed directly at WBLT as the cause. Others referred to the timing of the lecture (impending

assessments or the time of the day) and competing commitments for students. However, a common perception was that WBLT encouraged students to give preference to other commitments because a backup was available, as typified by this comment:

Students seem slightly more willing to skip class when other pressures come up (eg, work) as they know they can catch up via the iLecture recording.

One free-form question asked for views about what students would miss if they did not attend face-to-face lectures. Many respondents were concerned about students missing the group experience of being in a lecture where they can get to know and become intellectually engaged with other students and the lecturer. They also commented on non-verbal communication and the ability to ask questions, relating to the perceived one-way nature of web-based lecture technologies. The opportunity for students to ask questions *on the fly* was seen to be missed if students do not attend face-to-face lectures. It is not clear whether lecturers saw students asking questions in the lecture theatre as being a significantly better learning experience than if they ask them online, but many responses included some remarks about students missing the opportunity to ask questions.

The opportunity to ask questions and engage in discussion. In other words, I think they come to regard lectures as information transfer rather than as an intellectual engagement with ideas.

Some observed that if students do not attend lectures or listen to them regularly, they do not participate as much in other components of the course:

Students don't turn up to lectures (or listen to them) and rapidly fall behind. As they have not had face to face interaction in the lectures, they tend to be more withdrawing in the prac classes and/or are reluctant to ask questions.

Another interaction issue raised by lecturers as a result of dropping attendance is that they are unable to gauge students' understanding, for example,

I have not changed the way I communicate with the students I see, but feel that I do not see the same proportion of them as previously and have no way of monitoring how that has effected them. It has certainly influenced my confidence that I am meeting my students' needs, and raised great uncertainty as to how to address that...

Some lecturers have begun feeling that their good intentions of providing WBLT for students may be abused. The following quote summarises the types of concerns and struggles that have come through in several responses:

They deliberately organise other commitments knowing that their university commitments can be fulfilled by listening to iLecture. I am lucky to get 40% attendance at class...What is worse, many of them now work close to full time so the time and energy they have available is limited. There is a clear trend of students just doing what they need to pass the unit, and not really interested in engaging with the subject or me as teacher. I-lecture encourages this passive approach to learning, and also fuels a perception that these students can 'do it all'... As such I have decided I will no longer be iLecturing my elective subjects.

Boycotting WBLT was one strategy identified for addressing falling lecture attendance. Others were to make attendance compulsory or warn students of the disadvantages of not attending. One interviewee had recently implemented a roll to record student attendance and assigned participation marks for attending lectures.

4.2.5 The role of lectures

The survey asked staff to respond to several statements related to the role of lectures in their teaching. Two responses were requested (see Table 4-15): firstly about how they perceived lectures in their teaching and the secondly whether the use of WBLT changed (enhanced or reduced) their ability to do these things in lectures.

Table 4- 15: Roles of lectures in teaching and WBLT's impact on the respective roles.

Role of lecture in teaching	I use the lecture to: Percentage agreed (n=141)	Has WBLT enhanced/reduced your ability to perform the role? Percentage (n=141)		
		Enhanced	No change	Reduced
Inspire and motivate my students	95.7%	30.4%	31.2%	38.4%
Build a conceptual framework with students	94.3%	34.5%	47.5%	18.0%
Establish a connection between me and my students	93.6%	27.1%	21.4%	51.4%
Make use of visual aids, video, or other props to explain the content	92.9%	29.7%	23.9%	46.4%
Provide a structured experience of the unit content	90.0%	43.6%	41.4%	15.0%
Impart a lot of information related to the unit	82.3%	47.9%	41.4%	14.3%
Make announcements to keep students up to date with events and course administration	81.4%	47.1%	38.6%	14.3%
Gauge students' understandings and then respond accordingly on-the-fly	68.8%	12.9%	41.4%	45.7%
Demonstrate processes and/or procedures	67.4%	20.9%	53.2%	25.9%
Provide group feedback to students	54.3%	20.9%	59.0%	20.1%
Provide a routine for my students	38.8%	15.9%	54.3%	29.7%

At least 80% of the staff surveyed use lectures to inspire and motivate students; build conceptual frameworks; establish connections with students; use multimedia content; provide structured experiences for students; impart information and make announcements.

Aside from the potentially concerning copyright issues associated with using visual aids such as videos on WBLT (46.4%), staff were most concerned about WBLT reducing their ability for two-way communication with their students:

- Establishing a connection with students (51.4%);
- Gauging students' understanding (45.7%); and
- Inspiring and motivating students (38.4%).

On the other hand, WBLT has enhanced some aspects of lecturing, with staff reporting that they are more able to impart information (47.9%), make announcements (47.1%), and provide a structured experience for students (43.6%),

4.2.6 Implications for teaching and curriculum design

A further question asked how WBLT might affect lecturing styles. Multiple responses were possible to a range of options. Results are given in Table 4-16.

Table 4- 16: Change in lecture style

Item	Frequency	Percentage (n=139)
Become more aware of spontaneous comments in lectures	70	45.2%
I have not made any substantial changes to lecturing style	60	38.7%
I have not made any substantial changes to what I do in lectures	51	32.9%
I have adjusted activities/ interactions to cater for students who are present as well as those using WBLT.	47	30.3%
I have reduced my movement around the lecture theatre	45	29.0%
I have reduced multimedia content due to copyright restrictions	41	26.5%
I have listened to recordings and adjusted my performance	36	23.2%
I have scripted the lecture more tightly to provide a more controlled presentation	35	22.6%
I have reduced the amount of interactive activities between students	25	16.1%
I have reduced students' questioning opportunities	15	9.7%
I have made changes to the content because the lecture could be re-used or monitored	15	9.7%
I have adopted a more didactic style of lecturing	12	7.7%

Of respondents, 60 and 51 people, respectively, reported no significant change to lecturing style or what was done in lectures. Approximately a third have adjusted their activities in lectures to cater for students who are not present and a third reported reducing their movement in the lecture theatre and reducing the use of multimedia content due to copyright restrictions. Approximately half (70) of the 139 responses indicated that they had become more aware of their spontaneous comments in lectures. Thirty-six reported listening to their lectures to improve their performance. While some lecturers attempted to make lectures more interactive, thus making it better for those who attend and less meaningful to those who rely on listening, 12 said they had adopted a more didactic style of lecturing.

Qualitative comments expanded on some of these issues. The most common changes cited by respondents were to explain themselves more and to repeat students' questions when they are being recorded, for the benefit of non-attending students. Some lecturers did not mind doing so whilst others found that it *"tends to kill the snappiness of lecturing a bit"*. Reduced attendance at lectures was also reported as reducing the dynamism of lectures.

In the open-ended comments, some respondents explained that they chose not to change their lecturing style or what they did in lectures because they see that internal students have the responsibility to attend lectures. They also felt that adjusting for non-attending students would degrade the lecture experience for internal students. As examples:

As 90% of my students are registered as being able to come to lectures, I continue to lecture in the style that is best suited for face-to-face attendance. The fact that they progressively turn solely to iLecture for the notes during the semester, I think is a shame, but their choice.

On the other hand, there is evidence of a lecturer taking advantage of a combination of technologies to bring together the previously separate cohorts of external and on-campus students in his unit. This lecturer explicitly addressed external students in his lectures, and found that external students would be discussing his lectures in the online forum one hour after he had delivered it. In fact, the external students and internal students were able to participate in the online discussion as a single community through the timely delivery of lectures and the support of a discussion forum,

I think (the) internal/ external divide is much less than it used to be.

To gain insight into whether the use of WBLT had influenced teaching beyond the lecture experience, participants were asked whether they had changed the structure of their unit as a result of using WBLT. Three quarters of respondents (75.4%) indicated they had not.

Although some lecturers realised that certain curriculum designs didn't suit the use of the technologies, the most common response was to not use WBLT, rather than redesigning the curriculum. For example,

If we were to adopt it in our pregraduation "capstone" classes, we would have to rethink some of our pedagogy. These classes, designed to prepare students for their post-graduation options, currently incorporate live class presentations by students and interaction for which actual bodily presence is essential.

The 24.6% who had restructured did so for various reasons. Most had done so to increase the emphasis on online communication and activities. They acknowledged that some students cannot regularly come on campus and use online communications and activities to stay connected with them. One lecturer reported rethinking a new form of internal student who does not attend campus:

We are now pioneering off-campus tutorials for students who access lectures via video recording. These students in principle may never need to visit campus, though they are still formally internal and not external students.

Some lecturers reported that they communicate with their students online more often, although it is difficult to tell whether this is due to WBLT or simply as a general trend of online education. They use emails and discussion boards for both internal and external students. Interactions and communication for external students have particularly been improved:

Contact with the external students is much improved, as most access the lecture soon after its actual delivery. Feedback and discussion of topics is much improved

Others found that students ask more questions, possibly indicating more engagement with the material:

Seem to get a few more requests for clarification - it seems to increase the ability of those students who listen to the recordings to reflect on the material

However, some staff indicated that improved interaction came at a cost to workload and equated flexibility for students with duplicated administration for lecturers:

... through WebCT, the communication has increased enormously through the bulletin board and via email communication in particular; which is positive from a pedagogical perspective and disastrous from a workload perspective!

Well, since some people may choose not to be there, I have had to use email for administrative things to make sure the message gets across properly.

Other lecturers have adopted formative assessment approaches to promote engagement with the curriculum.

... we have required that the students submit progress tasks, to attempt to make sure they actually are keeping up with the work in the unit.

4.2.7 Other contextual issues

The staff survey identified various contexts where **WBLT were considered to be inappropriate**. Some respondents answered that they would use WBLT for all classes. However, many respondents felt that WBLT were not appropriate for interactive and small classes, which required students to engage in discussion. Some lecturers expressed concern that offering the option of simply listening to them sends a wrong message to students:

A class where discussion is a core activity does not record well on WBLT.

I wouldn't use it in seminar classes because students seem to assume if there is iLecture that means passive engagement with the unit is ok

The use of WBLT was also questioned in learning situations where students need to present or learn embodied skills, such as presentation or practical skills:

[For] some of the hands on practical sessions I cannot use iLecture because we take the students outside and engage in activities that would be meaningless to listen to...

Confidentiality and privacy is of concern 28.4% of staff respondents. The confidentiality of students' comments in discussions was also raised as a concern for some lecturers when considering the use of WBLT, especially in areas where the content is sensitive, e.g. victimisation. In one case, the lecturer required the students to be present to offer immediate counselling if students displayed signs of distress. This was not possible when the students were sitting at home listening to the lecture in isolation.

IP and copyright are still issues of concern. Due to copyright restrictions, some lecturers indicated they would not use WBLT in classes where copyrighted multimedia material is essential to students' understanding, for example, films. Further to this concern to approximately a third of respondents concerned about others re-using their lecture recordings, and a smaller number concerned about moral rights issues.

The four participating universities offer different types of WBLT; 77.4% of staff respondents were from the two universities (Murdoch and Macquarie) offering only audio recordings, with the option of downloading visuals. At Flinders and Newcastle, full audio and video capture is available. Correspondingly, some Macquarie and Murdoch lecturers indicated they would not use WBLT in lectures which involve demonstration of procedures that cannot be adequately captured, for example mathematics.

The survey results indicated that approximately half of respondents would make more use of WBLT if **additional multimedia functionality** was available to capture more visuals and synchronise visuals with audio recordings. In addition more use would be made WBLT if discussions could be captured more effectively and there was the ability to edit recordings.

4.2.8 Approaches to teaching

Participants in the survey were asked to complete the Prosser and Trigwell (2004) Approaches to Teaching Inventory. This Inventory was included to explore whether there are relations between the way teachers approach their teaching and their perceptions and use of WBLT, to mirror the Study Process Questionnaire (Biggs, 2001) used in the student survey. . While the scale employed has a proven validity and reliability, the scale was not a significantly

useful tool in the analysis of this data. The distinction between the previously identify approaches to instruction had little effect on the variables being access in relation to WBLT. It would appear from preliminary regression analysis that the effect is being overshadowed by the reasons for staff adoption of WBLT (discussed above). Further analysis of this variable is recommended for future studies.

4.3 Vignettes

The vignettes were undertaken to investigate the issues that emerged from the staff and student surveys.

In total 20 interviews were conducted from across the participating universities. A total of 19 vignettes were developed, because two staff members who team-taught were interviewed at the same time. Nine staff vignettes were developed and ten student vignettes.

4.3.1 Analysis of the vignettes

The vignettes were intended to be descriptive in nature, capturing current practice as narratives. To make analysis and presentation of the data easier, a template was developed using a framework for analysing curriculum contexts, technology issues, organisational support and environmental characteristics developed by Gosper, Woo, Muir, Dudley and Nakazawa (2007).

The categories were:

- The specific learning/ teaching context of each example;
- The impact of WBLT on learning or teaching
- Overall impressions about WBLT
- Learning futures

The transcriptions were analysed against these themes and the template modified to reflect issues emerging from the interviewees.

Given the extreme views captured during the interviews, from both staff and students, analysis of the transcriptions and reporting of the vignettes were identified as areas where potential bias (Ahern, 1999) might impact on the outcomes. Triangulation (Denzin, 1978) between the surveys and the opposing perspectives in the interviews was used to ensure that data from the different perspectives was captured equally, that analysis was conducted fairly and that both groups were represented equally in the final reporting of the vignettes.

An overview analysis was conducted on the vignettes to establish:

- Student and staff perceptions about WBLT as positive or negative;
- How the tools are used by students and staff;
- Main issues emerging for staff and students;
- Points of disconnect between staff and student perspectives.

Table 4-17 presents an overview of the results of the vignettes. Pseudonyms are used to protect the participants' anonymity:

Table 4- 17: Overview of Vignettes

Vignette participants - Students	Overall Perception	Theme
Dominique, Sophia, Maria	Positive	External students
Amy	Negative	External student
Elizabeth, Sophia, Elinor	Positive	Working students or those with carers' responsibilities
Sacha, Elinor, Sophia, Charlotte, Mary, Emma	Positive	Students using WBLT as learning tool
Margaret	Positive	Student with a disability

Vignette participants - Staff	Overall Perception	Theme
Darcy, Phil, William	Positive	Blended environments
Edwina, David, Thomas and Michael	Negative	Concerns about attendance
Julia, Charles, David	Negative	Concerns about impact on on-campus students

Although it was initially intended that vignettes would be chosen for publication on the basis of purposive sampling, the project team decided to publish all of them due to the wide range of perspectives and issues emerging from the data, including:

Each vignette is presented in full in Appendix 9 and on the project web site.

The following sections synthesise the common themes arising from the vignettes.

4.3.2 Staff perceptions about WBLT

As indicated by the results of the staff survey, staff attitudes about why they used the technologies varied greatly. Some interviewees saw the primary drivers as the provision of flexibility and support for increasingly time poor students, for example, Phil, Darcy and William. Other staff members acknowledged that they had been offered little choice and that pressures from their university to use the technologies left them feeling disempowered, for example, Edwina, Julia and Charles.

The lecturers' sense of control over their decision about whether to implement the technologies seemed to have an impact on their perceptions about their overall experiences. The lecturers who felt external pressures recounted largely negative experiences, while others who used the technologies as part of a suit of tools to support students had largely positive experiences.

Most interviewees saw benefits to external students and some acknowledged benefits, such as Darcy's recognition of previously unavailable opportunities for communication between on-campus and off-campus students. Darcy reported adjusting his curriculum to take advantage of this opportunity. Edwina acknowledged that her external students 'appreciated the immediacy' of being able to access WBLT. Many others, even those such as Edwina with overall negative experiences with the technologies, agreed that students appreciated the back-up the tools provided when a lecture was missed. Interestingly, Phil discovered that the tools could also provide back-up when staff were unavailable for a lecture.

Echoing the results from the staff surveys, reduced attendance and the impact on internal students' learning was considered as an issue by some interviewees. For example, Edwina raised concern that WBLT gave the on-campus students an excuse not to attend and has introduced roll-taking in her lectures. Charles, Thomas and Richard shared this concern that the technologies reinforce a pattern of non-attendance and disengagement among some students. This will be discussed further in Section 5.

4.3.3 How staff used the technologies

Again, in line with the staff survey results, opinions about how the technologies were used varied. Some staff recognized students needed more flexibility and made changes to their lecture delivery to accommodate listeners (William, Darcy and Edwina). Others, for example, Darcy, embraced them as tools to support learning and integrated them into the whole curriculum. Julia and Charles restructured the activities in their units from lectures to workshops to avoid the use of WBLT.

Julia's negative perceptions about the technologies stem from her concerns about the content of her units. She felt that she could better support her students in grasping the violent and sometimes confronting material of her unit if they were in a face-to-face context.

The lecturers' perception of the technologies seemed to correspond with how they integrated the technologies into their units. Although all interviewees indicated that they had changed their delivery in some way, such as repeating student questions, some were more willing to explore more widely. Those lecturers who saw the need to support students in as many ways as possible were more likely to effect changes in their lecture delivery or curriculum to accommodate 'listening' students. Examples are William, Phil and Darcy. These lecturers seemed to focus on student needs for flexibility and used the tools to assist those who couldn't attend. For example, Phil recognised that many of his students had conflicting engagements and tried to introduce measures such as repeating student questions and uploading visuals for online access.

Even when lecturers made changes to aspects of their curriculum, this did not necessarily mean they included WBLT in these changes. For example, when Edwina reviewed the curriculum of her unit to introduce lectures to provide a theoretical foundation prior to the two hour workshops, she acknowledged that these were useful for the tutors in allowing them freedom to use their own style in tutorials. However she didn't want to use WBLT because of previous experiences with reduced attendance. Many of her efforts are aimed at providing for a learning community and she saw WBLT as working against this. She introduced the tactic of taking the roll at unpredictable times to encourage students to attend. She also acknowledged that she likes to control how students receive the foundation materials in her unit.

Some lecturers, such as William, were not concerned with attendance but still found many students attended – this will be explored in more detail in the case studies.

Immediate student feedback during the lecture was raised by both Charles and Edwina as an important feature of face-to-face teaching that was reduced by the use of WBLT. This is consistent with survey responses. William recounted how he uses feedback from those present to let him know about 'the muddiest point' and then instructs his students to revisit this content using WBLT.

Using the technologies for staff was also raised by some interviewees. Phil used WBLT as part of the induction process for new lecturing staff or tutors and Edwina recorded the lectures of visiting presenters as resources for the departmental website.

4.3.4 Issues raised by staff

A diverse range of issues was raised in the interviews with staff. An example is the perceived value of skills traditionally associated with lecture attendance, such as note taking and summarising. While Thomas and Michael lamented the loss of these skills, since students can now review lectures to develop their notes, Phil suggested that writing down notes in lectures would not necessarily help students recall the contents.

Phil raised the issue of using traditional methods of gathering student feedback for promotional purposes and for improving academics' own practice. Handing out surveys during lectures needs to be supplemented by online surveys to overcome the reduced attendance.

When asked about the future of learning, both staff and students saw that the use of technologies would continue to grow but highlighted the need to maintain communication opportunities between staff and students. The notable exceptions were Charles, Thomas and Michael who foresaw that online learning would decrease in prevalence due to the unsatisfactory outcomes it produced.

4.3.5 Students' perceptions about WBLT

Most of the students interviewed reported largely positive experiences with the technologies. They appreciated the flexibility. Some (Sophia, Maria) used the tools to supplement their external studies; others (Sacha, Charlotte, Margaret) used them as study tools in conjunction with their lecture attendance. Many interviewees acknowledged the importance of face-to-face learning opportunities, even if they did rely on WBLT for flexibility. Again, this is consistent with the student survey results.

Although the staff opinions about the benefits of WBLT were split, most students were generally positive. Only one of the students interviewed recounted an overall negative experience. Amy found the technology difficult to use and much preferred the CDs sent out as part of her distance education package.

The external students interviewed largely had positive experiences of using the technology. Elizabeth and Dominique recounted the enhancement to their learning as a result of feeling less isolated as a result of using the tools in close to real time.

Mary recognised the slow download times as a limitation for students with poor internet access: 'it takes an hour to download a lecture'.

Maria and Sophia described the technologies as enhancing their communication with the lecturer and other students. They use WBLT to review the materials and help clarify their questions before posting them to the online discussion, rather than asking them spontaneously in class. Maria is currently enrolled as external, but attends some lectures. This is further evidence supporting a blurring between internal and external modes of enrolment, as explored in the discussion section. Some students acknowledged that there is resistance from some academics to using WBLT. Maria reported that she felt punished for not being at the lecture and that some lecturers deliberately created an inferior experience for WBLT users. She raised as an example the deliberate omission of slides which could accompany WBLT.

4.3.6 Overall findings from the vignettes

The vignettes provide some insight into the complexity of the changing higher education sector. Staff recognised the need for flexibility to meet the needs of a more diverse and increasingly time-poor student cohort demographic, yet they are concerned about maintaining standards and expectations that industry has for graduates; all amid increasing workloads and pressures on institutional funding.

Technologies such as WBLT were implemented, in many cases, as 'quick fix' solutions to one aspect of this complex environment; the students' need for flexibility; however, as with any system, changes made to one area impact on other elements and these impacts were not anticipated. Without adequate resources, this quick fix solution can cause the whole curriculum to become misaligned. Resourcing is required to ensure that change is considered from the perspective of the whole curriculum.

4.4 Case studies

The final aspect of this study consisted of six case studies aimed at investigating, in depth, issues identified in earlier parts of the study. From the initial invitation to academics to submit expressions of interest about issues they wished to explore in case studies, six applications were received. After a review of the submissions by the project team and telephone interviews with the applicants, all six were accepted as case studies. Each study was eligible to apply for \$5,000 of project funding as support. These funds were used by the case study participants for support such as data entry of paper-based survey results, data analysis or teaching release time. Due to the part time nature of the Unit Convenor in Case Study One, the funding was used on additional project management support during the semester.

Each case study was managed by the co-researchers as a mini-project. Interviews were conducted during the semester with each of the co-researcher, in which progress towards the stated objectives and issues emerging during the studies were discussed.

Part of the commitment to receiving the project support was the agreement by co-researchers to submit a report at the end of the case study. These reports were used, in conjunction with interviews conducted during the process, to establish rich descriptions of the specific curriculum contexts for each case. Full details of the Case Studies are presented in Appendix 10. Table 4-18 indicates the aims and discipline areas explored by each study, along with a summary of the aims and results.

Case studies one to four were investigative in nature, focusing on one or more aspect of the use of the technology within specific contexts. Case studies five and six were developmental, in that they each used the support to introduce some change to the curriculum and analyse the impact.

4.4.1 Analysis of the case studies

The six case studies were analysed to determine how they related to earlier findings in relation to:

- the conditions under which lecture delivery technology use is desirable in different curriculum and organisational contexts - across disciplines and modes of delivery;
- strategies for enhancing learning and teaching in different contexts;
- implications for the design and delivery of the curriculum and the establishment of effective learning environments in different contexts; and
- implications for academic policies and practice.

In addition to providing rich descriptions of specific uses of WBLT in curriculum contexts, some of the case studies also provided an opportunity to validate the student survey. Case studies One, Two, Three and Five used modified versions of the survey with fewer respondents but a larger response rate. These responses were very similar to our original results.

Table 4- 18: Overview of Case Studies

Case Study	Discipline	Aim	Result
1. The Professor and the Lectopians	Environmental	Using Lectopia to build community between on campus and external students.	Although the two cohorts did collaborate using Lectopia and the online communication tools, other factors such as the lack of a champion student and technical issues affected the level of interaction.
2. Learning & Teaching using Lectopia with a Large Cohort	Accounting	Investigating student and staff perceptions of Lectopia in a large lecture environment	Students in surveys and interviews generally appreciated the technologies as providing flexible study tools. Attendance at lectures remained high but students used WBLT as back up. Staff perspectives were less consistent.
3. WBLT and supporting students with disabilities	Disabilities Studies	Investigating perceptions of students in a Disabilities Studies unit about the impact of WBLT on their learning	Students in this unit, whether or not they had disabilities or significant health issues, appreciated the technologies for the flexibility provided and as study tools.
4. A Tale of Two Deliveries	Marketing	Comparing online and on campus post-graduate student perceptions of Lectopia	Online students appreciated the tools as adding an element of communication previously unavailable. On-campus students used the tools as back up, but preferred to attend face-to-face lectures
5. Replacing live lectures	Multimedia	Investigating student and staff perceptions about the use of pre-recorded multimedia lectures to replace live lectures	Students appreciated the recording as adding flexibility, but saw it as a supplement rather than replacement to face-to-face lectures. Several time-management issues were identified for staff
6. The one-stop unit shop	Health and Chiropractic	Investigating the impact of changes to the curriculum to centralise unit online materials, lecture recordings and communication into one location.	Students appreciated the centralised location. Although their overall satisfaction with Lectopia rose, students chose to attend lectures and accessed the recordings less.

4.4.2 Conditions for using WBLT

The range of teaching and learning contexts explored by the case studies included units with large and small class sizes, undergraduate and postgraduate students, and internal, external and blended enrolment modes. One case study enabled a comparison between parallel streams of the one unit; one entirely online (external) and one on-campus. The disciplines involved ranges from those with a large practical component, such as chiropractic and media studies, to units with a theoretical focus (Marketing Communications, Environmental Law).

The need for flexibility in students' learning was a prime motivator for each of the co-researchers. For example, the Unit Convenor in Case Study One has around 150 internal and up to 50 external students each year and has organised his unit to address the equity issue of providing a consistent student experience for internal and external students. He has created the opportunity for greater communications between these cohorts.

Equity for students who were not able to attend was also raised by Unit Convenors in Case Studies Two, Four and Six.

All of the case study participants indicated that they had worked at integrating WBLT into a wider suite of online communication and administration tools. For example in Case Study One, the online forum was redesigned in response to student requests in the previous semester, to mimic the organization of the unit into modules with *study questions* and *module activities* linked to lectures and readings. In this way, the Unit Convenor scaffolded and guided the online discussion providing the equivalence to module discussions in tutorials. A comment exemplifying students' appreciation of this integration came from an interviewee in Case Study One:

I do like the convenience of having everything available from the online unit page from lectures to helpful links to library links.

This student appreciation of the convenience of a centralised location for all the online resources and communication tools was also evident in Case Study Six. In this study, feedback from previous semesters about the dispersed nature of the online support, including WBLT, lead the Unit Convenor to establish a single site on the university's LMS. Unit materials, readings, communication tools and lecture recordings were all available from this single site. The survey responses from the students indicated that this was an improvement.

Some of the case study co-researchers described themselves as 'encouraging students to attend if possible'. While they see the need for student flexibility, they recognize the benefit of collaboration and socially constructed learning. For example, in Case Study Three, the Unit Convenor does encourage students to attend as he considers the unit part of a professional training course, with students needing to engage with lecturers and establish a network for use in their professional lives.

In Case Study Two, the Unit Convenor includes guidance on how to make the best use of WBLT in her opening lecture each semester, including attending where possible and using WBLT as back up.

4.4.3 Strategies for enhancing learning and teaching

The findings suggest that while the teaching and learning contexts may vary considerably, there are several features common across the participating Unit Convenors. These were:

- an appreciation of changing student need;
- a focus on engagement;
- a whole -of- curriculum approach to integrating the technologies; and
- demonstrated demonstrable critically reflective practice.

Each of these is explored in this section.

4.4.4 Changing student need

All lecturers acknowledged the changing needs of students. They articulated their awareness of the time pressures on students as they juggle studies with the demands of work and other commitments. As an example, the Unit Convenor in Case Study One describes himself as grappling with the challenge of engaging students when university is often not at the centre of a student's universe.

The Unit Convenor of Case Study Four acknowledged that many of his post-graduate students enrol online to enable them to continue working in their 'high-powered careers'.

4.4.5 Engagement

Perhaps as a result of the increased demands on their students, engaging students in the learning process emerged as a common theme among the case study co-researchers. In Case Studies One and Two, the Unit Convenors both described the difficulty of engaging students in units that are core, but not central to the students' degrees. For example, the Unit Convenor in Case Study One articulated the challenge of engaging students in a unit outside their primary interest area:

They find it quite foreign, so for that reason, I've put lots of tricks in my tool box to try and get them interested, to try and get them excited, to try to make sure they see how relevant the material is... that's always been fine with internal students, I sort of use the force of my personality to try engage them, but I have always been worried that external students miss out on that ... So now lecturing with Lectopia has begun to solve that problem for me...

This theme of engagement also emerged in Case Study Two. The Unit Convenor's main priority is engagement; she realises that attending lectures does not necessarily mean students are engaged and many students will make decisions not to attend. The Unit Convenor uses Lectopia to provide flexibility for students and tried to enhance the learning experience for all:

'In my teaching, I will continue to think of things that will resonate with students in the lecture and try and make sure the students get as much of that experience on Lectopia as possible'.

4.4.6 Whole-of-curriculum approach

All case study participants had implemented measures to integrate WBLT into their teaching, ranging from embedding WBLT into a wider online environment to involving off-campus students in classroom activities. In Case Study One, the study guide is designed to '*reinforce the impression of an interdependent learning system where the LMS is linked to the unit website and Lectopia in a way that traverses the internal/external experience*'.

The needs of listeners and how to make the best use of the technologies for all students were raised as high priorities for all the lecturers. For example, all lecturers worked to ensure that student relying on WBLT had access to the visual aids, learning activities and communication opportunities.

All of the case study participants reported that they communicated with their students online more often and have made efforts to embed WBLT into an online environment such as an LMS.

4.4.7 Critical reflection

All Unit Convenors indicated that they had reflected on how to use the technologies to best meet the needs of their students. For example, the Unit Convenor in Case Study Two reflected and gathered data over six semesters to improve student learning using WBLT. The Convenor from Case Study Four described himself as continually looking for good practice examples to improve his own use of the tools. The Convenor of Case Study One grappled over several semesters about the inequity of learning between on-campus and external students, and concluded that WBLT may provide an opportunity to address this imbalance.

In addition to their own reflections, all had sought student feedback over several semesters and used this to inform changes and improvements including those related to WBLT. Examples One example is in Case Study Six, where student dissatisfaction led the Convenor to explore the integration of WBLT into a central location for all the online learning resources and communication tools.

4.4.8 Student perceptions from the case studies

Consistent with the results of the wider student surveys, the case study results indicate that students appreciate WBLT as both a back up when they cannot attend campus lectures and as a study tool. As suggested by the Unit Convenor in Case Study Two:

Students found using iLecture as a backup technology when they could not attend a lecture very useful (79.1%).

This case study also raised the issue of student choice as being a benefit of the technologies:

...students like the choice and do not like being forced to use a technology or be forced into attending face to face lectures.

Case Study Four involved cohorts with large numbers of NESB students. The Unit Convenor indicated identified a tendency for many students in these cohorts to 'double up' by attending on-campus classes and revising with WBLT. This trend was also evident in the Disabilities Studies cohort. These units also recorded strong preferences for students to 'pick up on things missed in class', 'revise for exams' and 'revisit complex materials, ideas and concepts', in line with the survey results.

All of the case studies reported a high incidence of students using online notes and resources – 100% of students in Case Study Six accessed these online resources, which was an area of student dissatisfaction in the previous semester.

4.4.9 Enhancing WBLT

The student survey invited students to suggest improvements to WBLT. The results of our survey indicated the importance of visual aids and synchronisation of slides. This also came out in the case studies. As suggested by the Unit Convenor in Case Study Five:

'It was generally agreed that the multimedia lecture would make a good supplement to a face-to-face lecture, though chapter headings embedded within the video would be a great advantage. The ability to revise with the multimedia lecture would then be very strong, and provide more engagement, and hence understanding'

Some student respondents to the case study interviews and surveys indicated that the lecturer's attitude affected the impact of WBLT as a learning tool. For example, one student interviewee as part of Case Study Two believed that lecturers' attitudes and how they utilized WBLT was crucial to whether it added value for students. This student summed it up as:

'I think this unit is really good because you know the Lectopia is going to be good. But I think for other subjects – I think if you're going to make Lectopia hard to use – like not putting up notes or skip things or stuff then you shouldn't have it at all. I think if it's going to be available you should make it useful.'

This reiterates a finding from the vignettes, where a student said she went to the first lecture of each unit and then decided whether she would attend the other lectures in person.

The staff member interviewed as part of the same study indicated a less positive perspective about the technologies than the Unit Convenor (who is also the co-researcher in the study). He indicated that he felt concern about WBLT recording his mistakes but did listen to other lecturers. In contrast with the Unit Convenor (who is also the co-researcher in this study), the lecturer felt strongly that WBLT should be used sparingly by students when they couldn't attend and not as an alternative to attendance.

4.4.10 The quality of the lecture experience

Four of the case studies made use of the student survey developed in phase one of our study. The results reinforce our earlier findings that while students appreciate the benefits of WBLT, they also like lectures. In all these cases the results indicated that students generally found lectures motivating, they found it easier to concentrate, and found the visual aids useful. In the four surveys, students said that the presence of the lecturer added value (ranging from 100 % to 71.5%). One student commented in an interview that:

'I always try and be there because there is nothing like being there and being live when they talk about things. But then it's good to listen to it. And I find that when you go into a lecture you can't take notes. It's just – you know, you can listen or you can take notes....'

Case Study Two respondents indicated overall perceptions about WBLT that were positive (42.8%) and approximately 40% were unsure about their impact on learning and results. The Unit Convenor indicated that she makes clear statements to students at the beginning of the semester that she does try to make the best use of WBLT for listeners, but that she does expect students to attend when possible. She reinforced this expectation with the students throughout the semester and provided guidance for them on how to best use the technologies as back-up and study tools.

4.4.11 Themes emerging from the case studies

Each of the case studies set out to investigate specific aspects of WBLT use, yet one of the themes emerging from each one was the complex nature of research into curriculum contexts, especially by those not experienced in this activity. For example, in Case Study One, student perceptions of WBLT were conflated with their unsatisfactory experiences with the new LMS discussion tools used in the overall blended environment. In Case Study Six, students' perceptions about the use of WBLT as part of a suite of online tools may also have been affected by changes to staff and their results in the previous semester. While students in all the case studies appreciated WBLT as back-up when they couldn't attend, some of the students in Case Study Four indicated that their main driver for attending face-to-face lectures was the 'expense of post-graduate study' and a notion of value for money.

The results of Case Study Six reinforce the complexity of investigating the impact of any changes in a curriculum context. In general, students were more positive about the impact of WBLT on their learning and also attended face-to-face lectures.

Lecturers ‘trying something new’

As part of their reflective practice, each of the case study participants were reflective practitioners, and demonstrated a willingness to ‘try something new’. For example, after a successful discussion forum in a previous semester, the Convenor from Case Study One planned to try linking his use of WBLT to the forum. He asked his students to post up- to- the-minute questions online and then answered them in the lecture. WBLT would then deliver his response back into the online domain. Another example was the Unit Convenor in Case Study Six using student feedback to inform his students of changes to the online support for the unit.

Blurring the boundaries between internal and external students

The theme of blurring the boundaries that emerged in earlier phases of the study was also evident in some of the case studies; in particular, Case Studies One, Two and Three. In Case Study One, the Unit Convenor explained that his student cohorts have changed from internal and external to three different groups:

- a core group that attend all lectures;
- a revolving group that float between attending lectures and using WBLT; and
- Those who rely completely on WBLT, which may include internal as well as external students.

The survey results from Case Study Two included examples of students who doubled up by listening to WBLT and attending the lecture and those who varied their pattern during the semester. One interviewee described herself as making decisions about whether to attend based on the quality of the WBLT experience.

In Case Study Three, the need for flexibility is not merely driven by the students themselves, but also the curriculum itself. Students are encouraged to work to gain experience during their study, and are required to complete a practical component in many units, impacting on their ability to attend. Often by the end of the second year, students are working at least part time and support is needed during this time. The result is students blurring the lines between internal and external study modes;

‘Students listen to lectures when they can’t come due to work commitments. Then they (sometimes) elect to do an internal unit just to maintain contact with other students, even if it is not regular.’

5. Discussion

The results of the research establish a picture of the experiences of students and staff who have used WBLT across a range of different contexts. The complementary view of students and staff who have elected not to make use of the technologies was outside the remit of this study. Nevertheless the insights gained from this work provide a valuable understanding of the implications of these technologies for current and future practice in learning and teaching in higher education.

Three of the four participating universities used different versions of Lectopia. The fourth made use of a combination of streaming video/audio and media files to deliver lecture materials across the University. The four universities varied in their use of the media which accompanied the recordings, which ranged from audio-only, to audio accompanied by slides, to full video. The delivery method also varied, encompassing streaming, downloading to computers or mobile devices and podcasting. Variation was also present in the level of automation of the recording process, the level of centralised support, and the extent of adoption across campus. Despite these variations, the ways in which students used WBLT for learning, the perceptions of staff and students on its effectiveness as a learning tool, and issues that have emerged around the use of WBLT are remarkably consistent across all four universities.

Overall 76% of students who used WBLT, regardless of university, age, gender, enrolment mode or their attendance pattern, reported positive experiences with WBLT almost always or frequently, consistent with the general findings in the literature (Donnan, Kiley, & McCormack, 2004; Goldberg & McKhann, 2000; Maag, 2006; McElroy & Blount, 2006; Shannon, 2006; Signor, 2003; Soong, Chan, Cheers, & Hu, 2006; Tynan & Colbran, 2006; Williams & Fardon, 2007c).

Staff experiences on the other hand were more varied with 55% of respondents finding use of WBLT to be generally positive, while another 27% found the experience to be negative. Overall they were concerned about decreased opportunities for interaction with students, and a decreased ability to gauge students' understanding.

Looking beyond the actual experience to perceptions of effectiveness for learning, the findings reveal a clear mis-match between staff and student views. Sixty seven percent (67%) of students compared with 30% of staff agreed that WBLT helped them achieve better results, although many staff reported they were neutral on this question. In addition, 80% of students compared with 49% of staff agreed that WBLT made it easier for students to learn. There was a significant difference ($p < 0.05$) between the perceptions of the staff and students on these two dimensions.

This mis-match between student and staff perceptions is one of several key themes that have emerged from this research and, while it is not altogether unexpected, it is not particularly comforting to those concerned with providing a quality and sustainable learning experience for students. The range of issues at the heart of this mismatch have been explored more thoroughly through qualitative comments on the surveys, interviews and case studies. Together with the survey data they have helped to portray the complexity of teaching and learning in higher education, and the role of WBLT in this.

The discussion that follows is structured around the major themes that have emerged in relation to the use of WBLT and the implications these have for improving learning and teaching practice as a whole.

5.1 Students appreciate the flexibility in access and support for learning - staff have concerns

Although it has long been acknowledged that external students need flexibility, the results indicate that students enrolled in internal mode also needed flexibility. Overall, only 56.2% of student respondents indicated that they attended lectures almost always or frequently. Of the students who did not attend lectures, 75.3% indicated that they were simply unable to attend. Their reasons ranged from time-table clashes, work commitments, family commitments, caring responsibilities (Massingham & Herrington, 2006). Flexibility is crucial for some students, as exemplified by this comment:

I work full time and the subjects on iLecture mean that it does not disrupt my work day in fact I would have to give up my job and find a part time position. More subjects should be on iLecture.

On the surface, staff are largely supportive of students who cannot attend. In fact, 81.9% of the staff respondents listed this as one of the reasons why they use WBLT. In addition, 64.5% of staff respondents used WBLT to give students another tool to learn. However, the open-ended responses reveal that when staff think of students who cannot attend, most of them only think of external students. A common belief amongst staff was that WBLT encouraged internal students to give preference to other commitments over attending lectures and they thought that it could lead to students becoming disengaged from their coursework. A related concern was that non-attendance at lectures could lead to delays in students listening to lecture recordings, which may result in students lagging behind in their studies or that it may affect their class participation as students may attend tutorials without listening to the relevant lectures.

However, these concerns from staff are not supported by the results from the student survey. The results indicate that while some students may leave listening to the recordings until late in the semester, many other students use them throughout the semester to support their learning. To assume that students do not have the discipline to use the recordings wisely is somewhat draconian. Nonetheless, the technology does give students more freedom and choices. Instead of abandoning WBLT because of those who misuses the system, it would seem more appropriate for a university to inform students on how to make the most out of WBLT for their learning. To this end, a set of guidelines for students is developed and may be found in Appendix 11.

5.2 WBLT have contributed to a blurring of the boundaries between internal and external students

Of the 155 respondents to the staff survey, 84 taught a mixture of internal and external classes. It appears that external (distance) students are recognised by many as a distinct cohort falling into the category of not being able to come to class. For these students the use of WBLT was seen as beneficial for:

- providing up-to-date information;
- increasing a sense of belonging; and
- providing opportunities for interactions with staff and other students.

While many staff interviewed agreed that WBLT was a useful resource for external students, some were concerned that on-campus students were choosing not to attend as a result of using the technologies. It seems that, as indicated by the study data, many students did not draw this distinction. In the vignettes, Maria, for example, is currently enrolled as an external

student and sometimes attends on-campus lectures. Both Elizabeth and Dominique could almost replicate the on-campus real time access to lectures using WBLT. Elinor is enrolled as an on-campus student but describes herself as rarely attending due to the long drive. She also says she can learn just as well from WBLT as in the face-to-face lecture.

There is, thus, a blurring of external and on-campus modes of study. While at one time students enrolled in internal mode might have been seen as having a superior learning experience to students enrolled in external mode, the possibilities brought about by WBLT and other social technologies are challenging this traditional expectation. WBLT have helped to provide more parity of experience for internals and externals.

Furthermore, external students were quite passionate in their open-ended comments in the ways WBLT helped them in terms of reducing isolation, providing guidance and clarification of issues, and increasing confidence and motivation:

iLecture is my lifesaver. As I study completely by external I find iLecture clarifies and explains any points I am struggling to grasp. iLecture also introduces materials that may not appear in the Readings. I also find the iLecture that discusses exam preparations a vital source. Please don't take it away!

Studying externally iLecture was an invaluable tool in keeping in touch with the expectations for the subject. It is a major help with confidence and direction when you would otherwise as an external student be very unsure of expectations and requirements. Very helpful in keeping on track.

There were, however, some statistically significant differences between internal and external students in how they used WBLT to support their learning. External students were more likely to listen to the entire recording of the lecture, to listen regularly, and to listen to several weeks at a time. They were also less likely to listen and browse and stop at points of interest. Overall, they seemed more systematic in their approach to using WBLT. One reason for the difference could be that the recording is the only way externals can access the lecture. Internals, on the other hand, have a choice of attending the lecture or listening to the recording.

Nonetheless, the usage patterns adopted by the two groups were similar. The statement, *I usually listen to the entire recording of the lecture*, was rated highly by both groups; just over half of both groups of students agreed that they listen to the recordings more than once. Moreover, there were no significant inter-group differences relating to the use of WBLT to revise for exams, to revisit complex ideas and concepts, to take comprehensive notes and to pick up on announcements and exam hints.

Overall, this suggests that there are strong similarities between both groups in using WBLT as a study tool. External students and internal students seem to use WBLT for their study in similar ways. This suggests a merging of the two cohorts as it seems that more students living locally are choosing different enrolment modes for different units because of lifestyle and other commitments. Secondly, it raises the question of why lecturers should believe that one group of students benefits more from WBLT than another, if both groups are using the technologies in similar ways.

The apparent disconnect between perceptions and evidence indicates a need to review assumptions and expectation surrounding enrolment modes, student behaviours and their learning needs. This has major implications for the design of curricula and also the delivery of lectures. Moreover if the boundaries are blurring and lecturers are combining their internal and external cohorts within the one class, then this raises the question: Is there any difference between the learning needs of an internal student who cannot attend and an external student who is not expected to attend?

5.3 WBLT changes lecture attendance patterns and raises questions about the role of lectures

Staff concerns about the impact of WBLT on student lecture attendance were identified prior to the commencement of this project. We explored these concerns from the perspective of both students and staff.

From the student perspective, while the survey results indicated that they appreciated the flexibility offered by WBLT, they also viewed lectures as important to their learning. They found lectures motivating, they valued contact with the lecturers and their peers and they found the visual aids helpful. Importantly, the use of WBLT did not necessarily exclude lecture attendance. Indeed, some students in the surveys, vignettes and case studies indicated that they often 'double up' by attending lectures and listening to the recordings.

Valuing lectures is not confined to internal students and many of the comments from those enrolled in external mode indicate that they use WBLT to increase their sense of participation in the lectures and as a form of communication with their lecturers and peers.

Our findings indicated that students are quite strategic about the choices they make, basing decisions on lecture attendance around three types of factors:

- educational value
- convenience and flexibility, and
- social advantages (e.g. to meet up with other students in their unit).

This considered approach by students sends a clear message that attendance at lectures can no longer be taken for granted.

Pratt and Collins (2001) maintain that many academics have a teaching perspective with a focus on nurturing their students, and a key mechanism for this is through the personal contact during and after lectures. This may go some way towards explaining why falling attendance is problematic for many lecturers. The survey data indicate that many lecturers used WBLT to provide opportunities for students who cannot attend lectures for various reasons. They seem to understand the need of flexibility for their students, but are, nevertheless, concerned - when students exercise the choice not to attend, there is concern they will not learn as well. This raises the issue of how staff can continue to provide the level of academic and pastoral support that they currently offer in and around lectures, when students do not attend. With small numbers in a large classroom, it is hard to be motivated and dynamic. A related issue is the lack of opportunity to receive feedback from students about how well they were understanding unit content.

In response, a small number of lecturers have developed compliance oriented strategies through roll calls and choosing not to record selected information. Some have stopped using WBLT altogether, but most simply made no change to their practices.

A relatively small number of academics responded by changing the way they taught and the structure of their units. Approaches ranged from restructuring units to replace lectures with more interactive tutorials or workshops, to providing the lecture materials as pre-recordings.

With students being offered the technologies and choosing not to attend, some academics have begun questioning the role of lectures. When we look at the most common use of lectures (as shown in Table 4-14) they closely reflect the educational and social reasons that students give for attending:

- motivating and inspiring,
- building conceptual frameworks,
- establishing connections, and
- making use of multimedia content.

It is noteworthy that the ratings by staff of whether WBLT enhanced or detracted from these functions were largely mixed. There was recognition that the technology could help to provide a structured experience for students and facilitate information exchange. On the other hand, staff were concerned about WBLT reducing two-way communication with their students and their ability to inspire and motivate students. Perhaps the mixed results may be because the role and effectiveness of face-to-face lectures in relation to student learning has been taken for granted and rarely questioned.

Technologies like WBLT can be “disruptive”; while they initially seem to support currently accepted teaching practices, they can undermine those practices particularly when students choose not to come to lectures. As a disruptive influence WBLT can lead us to question the status quo, providing a new lens to review existing practices that may no longer be effective for students’ learning.

The lens offered by WBLT prompts us to question the traditional pedagogy of university teaching, with its focus on the lecture. Numerous authors have analysed the educational effectiveness of lectures, in terms of research about how people learn. Laurillard (2002) argues that the success of lectures:

depends on the lecturer knowing very well the capabilities of the students, and on the students having very similar capabilities and prior knowledge. Lectures were defensible, perhaps, in the old university systems in which students were selected through standardised entrance examinations. Open access and modular courses make it most unlikely that a class of students will be sufficiently similar in background and capabilities to make lectures work as a principal teaching method. (p. 93)

Bligh’s (1972) work, based on numerous studies relating to the lecture method concludes that lectures:

can be used to teach information, including the framework of a subject, but an expository approach is unsuitable to stimulate thought or change attitudes (: 223).

Recent work by Jones (2007) argues that lectures are not conducive to deep and/or active learning and various technologies can be used by students to access content. He argues that lectures serve to engage and motivate students, and function more as a guide and a précis of course material, pointing students in the right direction to explore and build their own understandings.

These perspectives, combined with the increasing use of WBLT and other technological tools to facilitate and support learning and teaching demand a rethinking of the role of lectures in the curriculum.

5.4 WBLT will change the way students learn and teachers teach

The statistics are compelling: 68.3% of students using WBLT believe they learn just as well using WBLT as they can face-to-face; 79.9% of student respondents agree that WBLT are positive for their learning; and 75.3% listen because they cannot attend.

Staff have justifiably commented that these are perceptions which may not necessarily be correct; students may not be aware of what they are missing. As noted by one lecturer:

I have no real indication of whether students learn just as well using [WBLT]. I believe this may be true for some, but have no real evidence.

This research has found some evidence showing that students use WBLT to engage relatively deeply with their units. Almost all the on-campus students interviewed for the vignettes agreed that they used the tools to help revise for exams, review complex materials, work at their own pace and place of convenience, pick up on things that they missed in class, go back and take comprehensive notes after the lecture so they can concentrate on what is happening in the lecture, and check what was said before approaching their lecturer for clarification of issues, ideas or misunderstandings.

These new opportunities are highlighted in a comment from the vignette by Maria:

I tend to have a lot less face-to-face time and I don't need to go and see a person in their consultation hours. If I miss something I listen to it on (WBLT) and if I've got any questions, I email them. That's probably a broader technology thing. I find I would take up less of my lecturer's time as a consequence of that. In terms of interacting with fellow students, discussion boards are really good when they've been made use of. For example, when people would ask a question about an assignment and a fellow student would answer. So sometimes you'd get some interesting debate relevant to the subject on discussion boards

While students may be taking the opportunities offered to change the way they learn, are staff changing the way they teach?

The statistics show that only 30.3% of the staff have adjusted activities/ interactions to cater for students who are present as well as those using WBLT. Some of the changes these lecturers have made were to explain themselves more and to repeat students' questions when they are being recorded.

An observation emerging from the study is that of the self-fulfilling prophecy; if academics begin their exploration of WBLT with a positive attitude, they are more likely to have a positive experience than those setting out with a negative mind set. There was a negative correlation between those who felt pressured by either students or their departments to adapt WBLT and their overall experience of using the technology (refer to the section 4.2.2). This also came through in the vignettes and case studies where these initial perceptions seemed to influence whether staff considered the impact of WBLT to be positive for student learning.

If face-to-face time was considered by lecturers to be important, some had planned to optimise their learning and teaching activities with students by, as exemplified in Julia's vignette, refocussing the lecture to include more workshop style activities.

Some staff members expressed concern that reduced student attendance restricted their own opportunities for gathering feedback during lectures. Strategies included in the case studies suggest that lecturers may gather formative feedback using alternative methods, such as setting online quizzes to monitor students performance or monitoring the quality and issues revealed in students' online discussions. What became clear from these examples is that the challenges to teaching practice resulting from introducing WBLT often requires a solution involving adjustments in other elements of the curriculum.

5.5 Introducing WBLT is more than a teaching issue – it will impact on the design of the whole curriculum

The introduction of any new technology is not an isolated experience and it impacts on the entire teaching and learning context, including the ways in which students and staff communicate and the relationship between other elements of the curriculum (Bates & Poole, 2003). Our study showed that successful adopters of WBLT tended to use a range of teaching approaches and tools, rather than just one. They chose new tools because they

wanted to provide a quality learning experience which was relevant to students' circumstances.

This research has shown that WBLT are effective tools when their use matches their purpose. When mass lectures are appropriate, WBLT can support both students who do attend and those who cannot, or choose not to, attend. The Vignettes and Case Studies in this research provide example where staff have developed new ways of communicating and integrating other activities through the use of other tools, such as Learning Management Systems, for example:

- utilising online forums to discuss issues and themes emerging from the lecture;
- gathering feedback through discussion on issues and misunderstandings that can be addressed in subsequent lectures.

In Case Study One, the Unit Convenor reflected on how he used to stop in his lectures to pose questions to students, and give the students time to consider their answers. Now, with the pressure of increasing amount of content, he has moved away from this format. Although the students in his tutorials still ask questions, he is concerned that the majority of students do not have this opportunity. He considered that the forum would facilitate this, giving students time to compose 'good' questions.

He also used online "ice breakers" such as a race to the first posting. Cane toads (chocolate frogs), a tongue-in-cheek incentive, were used to facilitate this strategy to get students writing early in a unit that demands good writing skills. There was no assessment requirement to contribute to the forum, however, the Convenor encouraged such contributions at every turn.

We would like to encourage you to bring your own news items to lectures (and tutorials) and to ask questions about them (you are also invited to do likewise through the discussion forum especially for external students) and more generally to contribute to making the lectures more interesting.... A week or so in advance of each module commencing a set of notes will be posted on the website. Study Guide 2007:12

The Convenor in Case Study Six reflected that students supporting each other was a benefit of the revamped online environment he provided:

An unexpected benefit from the LMS site was how students helped each other through the discussion board function, decreasing the convenor's need to intervene.

Another example of integrating a combination of technologies was a strategy reported to bring together the previously separate cohorts of external and on-campus students in his unit. This lecturer explicitly addressed external students in his lectures, and found that external students would be discussing his lectures in the online forum one hour after he had delivered it. In fact, the external students and internal students were able to participate in the online discussion as a single community through the timely delivery of lectures and the support of a discussion forum:

I think [the] internal/ external divide is much less than it used to be.

According to our study, 75% of staff reported they had not changed the structure of their unit. While many staff recognised the limitations of WBLT and were concerned about the impact these technologies had on learning, one response was to address these issues by attempting to maintain the status quo, by re-emphasising the importance of lectures and the need for students to attend them, rather than restructuring the curriculum to best achieve desired learning outcomes in the context of the reality of most students' lives. Deeper thought is needed about the role of lectures to meet the learning needs of students. Rather than focussing on the lecture, it may be more appropriate to focus on the whole curriculum, considering the learning outcomes of students and how best to provide stimulating and engaging learning environments and experiences.

So, when are WBLT appropriate tools? The vignettes and case studies undertaken in phase two of the study provided an opportunity to explore specific examples of how WBLT can be integrated into a whole of curriculum approach.

Contexts in which WBLT can be particularly beneficial are when:

- the lecture is delivered in a traditional format based largely on one-way communication;
- class sizes are large and tend to be impersonal; and
- there are little to no interactive elements where students communicate or collaborate with others.

WBLT are beneficial when students:

- cannot attend for bona fide reasons – sickness, timetabling, distance from campus;
- are seeking flexibility due to work, family and other lifestyle arrangements;
- come from non-English speaking backgrounds; and
- have special learning needs which make understanding and comprehending real-time lectures difficult

Some of the contexts in which WBLT are less beneficial are when:

- learning experiences and outcomes are best achieved through a physical presence for example where social communication, networking, socialisation and collaboration are a key outcomes;
- the face-to-face encounter is used for problem solving, discussions and other small group activities;
- the lecture contains confronting, disturbing, confidential or sensitive content that is best discussed in an environment where students reactions can be monitored and responded to on the fly;
- the lecture requires copyrighted elements that cannot be broadcasted through the Internet;
- the lecturer uses video and other multimedia content that WBLT are not able to capture; and
- classes are small and a physical presence is desirable.

The findings suggest that while the teaching and learning contexts may vary considerably, there are several common features. All the lecturers participating in the case studies as co-researchers:

- reflected on how to use the technologies to best meet the needs of their students;
- implemented measures to integrate WBLT into their teaching, ranging from embedding WBLT into a wider online environment, to involving off-campus students in classroom activities;
- focussed on the needs of listeners and how to make the best use of the technologies for all students; and
- adjusted how they communicate with their students to include more online discussions and made efforts to embed WBLT into an online environment such as an LMS.

These examples and others have been incorporated into a set of Guidelines for Staff and a compilation of Frequently Asked Questions about the use of WBLT. The content of these materials illustrate that, where technology is involved, one size does not fit all. Student characteristics, the nature of the content, the lecture context and dynamics all require consideration.

5.6 Introducing WBLT has professional and organisational development implications

Implementing new technologies in Universities requires more than acquiring the technology and developing the necessary technical infrastructure to support its use. The successful use of technology for learning also demands changes to teaching and the organisational culture (Bates, 2000). Although the focus of this research was to identify the implications of WBLT for teaching, learning and curriculum development, in doing so a number of professional and organisational implications for institution have emerged.

One of the observations about effecting educational change made by Fullan (2003) was that an organisation needs to channel its power in exerting pressure and providing support into sound pedagogical practice. He notes:

Successful change projects always include elements of both pressure and support. Pressure without support leads to resistance and alienation; support without pressure leads to drift or waste of resources.

Achieving the balance between pressure and support is a challenge. Given the benefits of WBLT for students it could be tempting to mandate its use in some, or all units. The findings from the staff survey dispute this approach. Lecturers who reported having little sense of choice regarding the implementation of WBLT, due to pressures from the institution or their students, were more likely to disagree that their experiences had been positive. Under these circumstances, staff were also more conscious of their moral rights and were concerned that their privacy would be invaded by the University. An even more undesirable consequence could be that WBLT are put to use in contexts where it is inappropriate or ineffective for student learning.

Rather than pressuring staff on using WBLT of any particular technology, Universities can gain more in enhancing the quality of student learning if they apply pressure to ensure technologies are integrated into an aligned curriculum,. That is, to require staff to articulate the links between aims, outcomes, activities and the technologies on the one hand, and an understanding of students, their context and learning needs on the other. Universities can also mandate the systematic collection and analysis of feedback from both staff and students about their experiences and the achievement of identified learning outcomes. This provides a strong evidence-base for staff to make informed decisions and can help to overcome the mismatch between student and staff expectations of studying both on- and off-campus that has been revealed in this study.

With a firm approach to quality student learning, Universities can then foster a culture of risk taking and innovation to enable staff members to experiment with new technologies and make informed decisions about the appropriateness of these tools for their own context. The case studies and vignettes, where academics were positive about the technologies, had in common a willingness to step beyond their comfort zones and explore improvements in their students' learning, within a 'risk-tolerant' environment.

To disseminate good practice to the less adventurous, Universities will need to provide support and encouragement for their use of technologies in learning and teaching (Bates 2000). Professional development is essential to enable staff to explore new technologies and understand the affordances they have in supporting the learning and teaching process. In the context of this study, the range of support services that were currently available to staff at the participating universities focussed mostly on the technical training required to operate the WBLT systems. Notwithstanding this, there is a need for training and development which places teaching and learning issues at the centre stage. Furthermore, to encourage participation, Universities will need to remove some existing barriers. For example, when planning professional development opportunities, Universities will need to ensure adequate provision of time and resources to trial and evaluate the new tools for integration into practice.

Finally sustainability should be a primary consideration of any innovation. The integration of technologies into the curriculum brings unique challenges which heighten the critical interrelationships between the technology, the curriculum and the organisational culture in which they are embedded (Gosper, Woo, Muir, Dudley, & Nakazawa, 2007). Technical support for staff and students is necessary to ensure they can use new technologies; pedagogical support is necessary to ensure effective integration into the curriculum; and learning support is necessary to ensure students make the most effective use of the tools provided.

6. Concluding remarks and future directions for research and development

The overall aim of this research was to enable an informed answer to the question of how Lectopia and similar web-based lecture technologies can be used to best effect to support learning and teaching. The answer is complex; one size does not fit all thus necessitating consideration of the particular context in which teaching and learning is taking place.

A whole of curriculum perspective is required to account for the diversity in disciplines, students, approaches to teaching and the aims and outcomes of the curriculum. Because of this and also the rapidly changing nature of web-based lecture technologies, we have taken an issues approach. We have used the findings of this research to identify the teaching, learning and curriculum design issues to take into consideration when planning for the use of WBLT. These are presented as a Toolkit of resources for use by the higher education sector. The Toolkit comprises guidelines for staff and students on how to make the best use of web-based lecture technologies, a compilation of frequently asked questions about using WBLT a series of vignettes which provide snapshots of the experiences of staff and students; and a series of case studies exploring the use of WBLT in different curriculum contexts – refer to Appendix 11.

Overall, the guidelines emphasise that Web-based lecture technologies, such as Lectopia, were designed to support a traditional pedagogical approach based around lectures. We found that WBLT are effective tools when their use matches their purpose – supporting the delivery of traditional lectures and providing access to students who cannot attend, or choose not to attend.

Students who use WBLT perceive that it supports their learning while providing much-needed flexibility in their study options. Staff appreciate the flexibility they provide for students, and particularly the support for external students.

Nevertheless, the successful uptake of the technology by students has posed a challenge to lecturers through falling attendance and the blurring of traditional boundaries and expectations of internal and external students. The ways students learn and communicate are changing. There appears to be a mis-match in the reality of the student experience and the way they engage in learning and the corresponding conceptions of staff. This is bringing into question the nature of teaching and in particular the role of lectures.

Our study concludes that WBLT can indeed support learning and teaching in certain circumstances, but that it is a disruptive technology which may change the nature of university teaching. WBLT have therefore become a driver for change. The lens offered by WBLT prompts us to question the traditional pedagogy of university teaching, with its focus on the lecture. Academic development units and learning and teaching centres have been attempting to raise this issue in the collective consciousness of universities for at least the last 15 years, with little impact; however, the consequences arising from the introduction of technologies such as WBLT is bringing these issues to the fore in a pragmatic way.

Successful adopters of WBLT are those who have taken a whole of curriculum approach and have used a range of teaching approaches and tools, rather than just one, to meet the needs and expectations of students. They chose new tools because they wanted to provide a quality learning experience which is relevant to students' circumstances and aims and outcomes of the curriculum.

6.1 Wider applicability to the sector and to Carrick objectives

This study has shown that the issues which arise from the use of web-based lecture technologies are remarkably consistent across the four universities involved. While not representative of the whole Australian university sector, the four participating universities cover a mixture of city-based and regional campuses, and internal and external enrolment modes.

With the Lectopia product licensed to 17 universities in Australia, and numerous other universities implementing or investigating WBLT, the results are likely to be applicable across most universities in the sector. The Guidelines and FAQs developed as part of this project are designed to assist staff and students in making considered decisions about how best to use web-based lecture technologies.

The overall aim of this project was to enable an informed answer to the question of how Lectopia and similar web-based lecture technologies can be used to best effect to support learning and teaching. This objective and numerous sub-objectives have been met. A summary of the outcomes and deliverables of this project, together with their status, is presented in Appendix 12.

The outcomes of this study can inform two of the current Carrick funding priorities:

- curriculum renewal (directly)
- teaching and learning spaces (indirectly, by foreshadowing the need for smaller and more flexible spaces)

More broadly the relationship between the project outcomes and the objectives of the Carrick Institute are shown in Table 6-1 below.

Table 6- 1: Relationship between this project and Carrick objectives

Carrick Objective	Relationship to this project
Promote and support strategic change in higher education institutions for the enhancement of learning and teaching, including curriculum development and assessment	The outcomes of this research will assist institutional decision-making in enhancing learning and teaching, particularly in making effecting use of learning technologies to support the increasingly diverse needs of students.
Raise the profile and encourage recognition of the fundamental importance of teaching in higher education institutions and in the general community.	Robust research into learning and teaching issues, such as that reported here, serve to raise the importance of teaching in the sector.
Develop effective mechanisms for the identification, development, dissemination and embedding of good individual and institutional practice in learning and teaching in Australian higher education.	The outcomes and deliverables of this research directly contribute to this objective. However, for effective embedding of good practice to occur, a community should be developed and supported within the Carrick Exchange to enable continuing sharing and discussion of issues around WBLT.
Develop and support reciprocal national and international arrangements for the purpose of sharing and benchmarking learning and teaching processes	Some international dissemination has taken place through the Journal and Conference of the Association for Learning Technology.

6.2 Future work

One of the acknowledged limitations of this study is that it focussed on student perceptions about the usefulness of WBLT. Perceptions are different to the achievement of actual learning outcomes. In addition, the present study drew largely on the perspectives of students and staff who were users of WBLT. For a more comprehensive understanding of how these technologies support learning and teaching, this needs to be broadened to include those who do not make extensive use of technologies. Therefore, further work is needed to explore in detail the learning approaches and processes used by students in the 21st century Australian university to achieve specific outcomes.

The scope of this study was limited to the impact of a single technology on learning and teaching practice. The technologies we explored were quite specific in their orientation and function in that they were institutional solutions put in place for use by teachers to capture lectures for web delivery. WBLT are essentially a one-way medium of communication designed to deliver the lecture in close to real time. While the case studies began an exploration of issues within a broader curriculum perspective, they revealed the need to consider the interrelationship between all activities within an aligned and revised curriculum including those that are technology-based, face-to-face, collaborative and individualistic. In particular, the role of lectures in a technology-rich environment bears closer examination.

There are a range of other technologies that can be used to support lecture delivery as well as offer functions to support communication and collaboration between participants. Adobe Connect, Wimba Live Classroom and Elluminate, for example, offer audio and text two-way communication, file, applications and screen sharing and whiteboard facilities that can be used by both staff and students to create a rich interactive environment. When integrated into social networking sites, Vodcasting / podcasting technologies (for example, Voice Thread <http://voicethread.com/about/>) provide opportunities for staff and students to be part of an environment where they can create, discuss collaborate. These new social networking environments according to The Horizon Report (2008) help to change the focus from content to connections with people. They provide real and exciting opportunities for transforming the traditional lecture experience. It is important however, that we have some understanding of the implications for teaching and learning so their use can be tailored effectively to specific contexts. Explorations mentioned above would valuably be extended by considering students studying units based on a well-designed curriculum which appropriately used a range of learning technologies.

Other, potentially fruitful areas for further research that emerged from the study and are also identified in The Horizon Reports (2007 and 2008) are:

- the role of lectures within a technology rich environment
- misalignment between the expectations and perceptions of staff and students, institutional policies, plans and infrastructure,
- investigating the use of the web 2.0 and mobile technologies on university learning and teaching

The research team intends to build on the findings of this project to submit a follow-on application covering one or more of these themes.

7. References

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8. Appendices

Appendix 1 - Dissemination activities and publications

As part of the project's dissemination strategy, the major findings of the study have been published through conference and journal publications, including:

Conferences

Gosper, M., McNeill, M., Woo, K., Phillips, R., Preston, G., Green, D. (2007). Web-based Lecture Recording Technologies - Do Students Learn from Them? Invited presentation at the *Educause Australasia*. Apr 29 - May 2, Melbourne, Australia.

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.

McNeill, M., Woo, K., Gosper, M., Phillips, R., Preston, G., Green, D. (2007). Web-based Lecture Technologies - Advice from Students. Paper presented at *HERDSA '07*. Jul 8-11, Adelaide, Australia.

Web-based lecture technologies (WBLT) have been introduced in many Australian and overseas universities to offer students access to lecture recordings, twenty four hours per day, seven days per week. These technologies have been well received by many students who appreciate them as study tools offering flexibility and convenience. The findings of a recent survey of over 800 students in four Australian universities suggest that, rather than questioning whether or not to introduce these technologies, the focus of academics should be on how to make the best use of them. This paper provides an overview of some of the findings from this survey and collates students' qualitative responses into advice on how to use WBLT effectively in terms of the structure and content of the lecture; the lecturing process and managing the technical aspects of WBLT.

Phillips, R., McNeill, M., Gosper, M., Woo, K., Preston, G., Green, D. (2007). Staff and Student perspectives on Web-based Lecture Technologies: insights into the great divide. Paper presented at *ASCILITE*. Dec 2-5, Singapore.

Web-based lecture technologies (WBLT) have been introduced by some Australian Universities in recognition that many students need flexible learning choices during their studies. This paper reports on some of the findings of a research project, "the impact of WBLT on current and future practice in learning and teaching". The research was conducted across four Australian universities, with data obtained from surveys and in-depth interviews with both staff and students who had used WBLT.

While student perceptions about WBLT have been largely positive, staff opinions are varied. Many lecturers see the potential of WBLT as a study tool and recognise students' need for flexibility. However, staff are concerned that WBLT are exacerbating a trend toward declining lecture attendance, which they are linking to a drop in academic performance. While some lecturers indicate they have made changes to their lecturing in

response to the technologies, there is little evidence of changes to the curriculum to effectively utilise these technologies.

Green, D., McNeill, M., Gosper, M., Woo, K., Phillips, R., Preston, G. (2008). Web Based Lecture Technologies: A Lens Intensifying the Changing Roles of Learners and Lecturers. Paper to be presented at *Ed-Media*. Jun 31- Jul 4, Vienna, Austria.

There is now widespread recognition of the changing nature of students in higher education: they come from a wider sphere of the community; they are busier with work and family commitments outside their study; and they demand greater flexibility and support during their programs.

This paper reports on recent research into the impact of web-based lecture technologies (WBLT) which indicates that, while many academics recognize the changing nature of their learners and the sector generally, many have not changed their curriculum to meet these demands. The central premise in this paper is that while many academics are concerned that WBLT have impacted on students' learning and overall results, the technologies have really just provided a lens with which to view several emerging issues:

- new roles for students, including the blurring of traditional lines between internal and external study patterns;
- new roles for lecturers, including integrating technologies into curriculum design; and
- new roles of lectures in technology rich environments.

Phillips, R. A., Gosper, M., McNeill, M., Woo, K., Green, D., & Preston, G. (2008). Student and staff perceptions of *Lectopia*. Paper presented at the *Teaching and Learning Forum*, Perth, Australia.

Some Australian universities have had a long tradition of capturing analogue recordings of lectures and providing these for distance students or storing them in libraries for students who may have missed a lecture. However, the recent emergence of web-based lecture recording technologies, such as *Lectopia*, has heralded a growing use of digital lecture recordings by 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.

Four Australian universities - Macquarie University, Murdoch University, Flinders University and the University of Newcastle - have been collaborating on a project funded by the Carrick Institute for Learning and Teaching in Higher Education. This project investigates the impact of web-based lecture recording technologies on current and future practice in learning and teaching in higher education. This presentation reports on preliminary results of this research, arising from surveys of students and staff, and in-depth interviews.

This and other studies have found that *Lectopia* is very popular with students. *Lectopia* provides flexible and convenient access to lectures for students who cannot attend lectures for work, family and lifestyle reasons. Many students use *Lectopia* in positive ways to support their learning, and they see it as assisting their ability to achieve better results. Academic perceptions of the value of *Lectopia* are mixed. It is seen as a tool to provide flexibility for students unable to attend lectures, and to support external students. However, many academics report falling attendance, and are concerned at the loss of contact with students and a diminished learning experience. Many students reported that listening to a lecture recording is just as valuable as attending face-to-face and this is challenging to the self-perception of many academics about their role as lecturers.

On the other hand, other academics have reported no apparent changes in attendance, and have used the *Lectopia* technology to enrich the learning experience of their students, largely by changing the unit structure and activities.

This session will present some of the results of this research and explore the implications for future university teaching.

Phillips, R. A., Gosper, M., McNeill, M., Woo, K., Green, D., Preston, G., et al. (2007). Student Perceptions of Web-based Lecture Recording Technologies. Paper presented at the *Teaching and Learning Forum*, Perth, Australia.

Four IRUA universities - Macquarie University, Murdoch University, Flinders University and the University of Newcastle - have been collaborating on a project funded by the Carrick Institute for Learning and Teaching in Higher Education. This project investigates the impact of web based lecture recording technologies on current and future practice in learning and teaching.

The project aims are to identify:

1. how web based lecture recording technology is being integrated into the curriculum, and its role and relationship with other elements within the curriculum;
2. how the technology can effectively support learning and teaching in different contexts, taking into account disciplinary differences, student diversity, specific teaching aims and learning outcomes; and
3. the educational implications of its use for:
 - o the design and delivery of curricula
 - o academics and their teaching
 - o students, their learning and the establishment of effective learning environments
 - o professional development of academic staff
 - o academic policies and practices.

A multi-level research program is underway to investigate these questions, initially surveying students on their experiences in the use of web based lecture technologies. Subsequent stages will involve a staff survey, follow up interviews with students, the development of vignettes with staff about concerns they may have, and several case studies developing innovative ways of using these technologies.

This presentation focuses on the first stage of this project, a student survey focussing on pedagogical rather than technical aspects of web based lecture technology use.

Preliminary results of the student survey, involving more than 750 responses from students in four universities, will be presented in this session.

Journals

Woo, K., Gosper, M., McNeill, M., Preston, G., Green, D., Phillips, R. (In Press). Web-based Lecture Technologies: Blurring the boundaries between face-to-face and distance learning. *ALT-J*.

Web-based lecture technologies (WBLT) have gained popularity amongst universities in Australia as a tool for delivering lecture recordings to students in close to real-time. This paper reports on a selection of results from a larger research project investigating the impact of WBLT on teaching and learning. Results show while staff see the advantages for external students, they question the extent to which these advantages apply to internal students. In contrast both cohorts of students were positive about the benefits of the technologies for their learning and they adopted similar strategies for their use. With the help of other technologies, some external students and staff even found WBLT useful for fostering communication between internal and external students. As such, while the traditional boundary between internal and external students seems to remain for some staff, students seem to find the boundary much less clear.

A paper reporting overall project results is now under development for possible submission to a journal (AJET or similar). This paper will respond to the questions raised in the original proposal and will synthesise the findings included in the range of papers.

Papers are currently under development on differences between deep and surface learners and also project management strategies used throughout the study.

In addition to the publication of papers, the team has presented at numerous conferences and institutional forums including:

- Staff Forum at La Trobe University (May 07). Presented by Maree Gosper and Rob Phillips.
- Student and Staff Forum on Podcasting at University of Technology, Sydney (June 07). Presented by Maree Gosper.
- iLecture Conference, Nov 24, 2007. Presented by Rob Phillips.
- Macquarie ELS (Environmental & Life Sciences) and L&P (Linguistics & Psychology) divisional teaching and learning committee meetings (June 07 and Oct 07). Presented by the Macquarie team.
- An overview of the project at the Carrick Project Managers' meeting (Aug 21-22, 07) Presented by Margot McNeill.
- Macquarie Learning & Teaching with Technology Symposium (Aug 23, 07). Presented by Maree Gosper.
- Murdoch Learning Technology Steering Group (27 August, 07). Presented by Rob Phillips.
- HERDSA *Rekindled* miniconference, where WA attendees at HERDSA gave their talks again (28 August, 07). Presented by Rob Phillips.
- Institutional workshops to disseminate the project findings at each of the participating Universities.
- Western Sydney Institute of TAFE, invited presentation (9 April, 2008). Presented by Margot McNeill.

Informal dissemination

The communication plan developed for the project also included a number of strategies recommended by Southwell et al (2005) to ensure effective dissemination in a manner that has the potential to enable more effective capacity building across the sector. These measures included:

- sponsorship at the sectoral level through the auspices of the IRUA Universities
- a Reference Group utilising expertise in the sector drawn from Universities that are undertaking similar research and/or are involved in similar web-based lecture developments
- a Project Team, whose members are active in the sector through their work on the Executive of organisations such as ACODE and ASCILITE. They also have responsibility for a range of mechanisms and structures that support the development of teaching and learning at their own Institutions
- a project that is grounded in scholarly research in web-based lecture technologies and extends that research to explore new dimensions
- project outcomes that provide recommendations for policy, practice and professional development
- components of the research that involve discipline-based project teams undertaking action research in their own context
- the inclusion of an external evaluator to ensure that formative and summative evaluation is undertaken at multiple points throughout the project

Due to the high level of interest in the project and WBLT is general from across the sector, there were many opportunities for the project team to discuss the project in informal conversations, such as conference discussions with peers. These were captured in the communication strategy matrix on the Moodle site.

Use of the surveys by other institutions

One result of the dissemination activities undertaken throughout the project was the request received from other institutions to use the surveys instruments developed as part of the study.

Requests were received from:

- La Trobe
- Australian National University

Appendix 2 - Institutional profiles

This section provides an overview of the WBLT profiles of each of the universities.

Note that of the four participating universities, Macquarie University, Murdoch University and University of Newcastle are current licensees of Lectopia.

Macquarie University

In 2004 - 2005 Macquarie invested heavily in upgrading the audiovisual infrastructure and facilities available to assist in the delivery of teaching and learning. One of the main drivers of this upgrade was the need to replace antiquated systems for producing audio tapes for external students.

Part of the upgrade was the installation of full AV facilities in new lecterns with Lectopia digital recording and delivery systems in 40 lecture theatres and classrooms across campus. From this initial requirement to meet the needs of external students, the use for delivery to mixed mode or face-to-face students has grown significantly. In 2006 iLecture recorded 391 of 1404 undergraduate and 87 of 781 postgraduate units available at Macquarie. This represents 28% of undergraduate and 11% of postgraduate units.

A total of 11545 hours were recorded at an average of 444 hours per week - up from 9327 hours in 2005 and 6840 in 2004. Lectopia registered 473659 hits in the 2006 period - up from 388434 hits in 2005 and 24815 hits in 2004.

Although Lectopia currently has the ability to capture videos and projected materials, at this stage only digital audio and uploaded presentation slides are available. The recordings are accessed via a link in the LMS (Blackboard).

Murdoch University Profile

Murdoch University has had a tradition of distance education since its inception in 1975. Approximately 2,000 students study fully externally, while another 1,500 study some units externally.

Murdoch has moved from 'modes of delivery' to a flexible access model, where students can access learning materials in the way most convenient to them. This has led to a duplication of traditional materials into technology-supported formats. One aspect of this has been the use of Lectopia to replace the cassette system previously used. The University LMS Blackboard CE6 is widely used at Murdoch, with over 95% of students accessing it in an average of 2 units.

From the introduction of Lectopia in 2002, this move to flexible access saw an initial growth in the use of the technologies to a peak of 2500 lectures recorded in Semester 1, 2005. About 80,000 hits were recorded over the semester, peaking prior to exams. In Semester 2006, this had dropped back to 1769 lectures recordings. On average, there were 27 hits per lecture recording and 457 hits per unit, totalling about 48,000 hits over the semester.

At Murdoch, Lectopia is an automated system with staff choosing which units are recorded and the Lectopia 'staff system' is used to upload presentation slide files. Multimedia and podcasting functions are currently available, but this was not the case at the beginning of this project.

The University of Newcastle

Lectopia was piloted at University of Newcastle in Semester 2, 2005 following an increase in demand for lecture recordings. Recordings were previously audio cassette based and this was proving to be extremely resource intensive. An automated, digital system was sought and Lectopia was introduced to fill this need.

Since the pilot, Lectopia recording is now available in 42 venues across 3 campuses. The number of recordings has grown to 730 in Semester 2, 2007

Audio only recordings are available with results streamed, downloadable and podcast. Presentation slides and supplementary documents are available for download (not synchronised). Combined RGB video (lectern computer, laptop and document camera) and audio recordings are also options for staff, with results streamed and downloadable.

Flinders University

Flinders University has adopted a different approach to delivering Web-based lectures, making use of a combination of streaming video/audio and media files to deliver lecture materials across the University. The university LMS (Blackboard) is used as the organising point (from a student point of view) for access to most of these materials.

The use of lecture recording technologies has been a bottom up process driven by student demand in the main. It is largely based in Social Sciences and Humanities, and provided on an ad hoc basis. A media manager tool was developed which integrates the delivery of recordings within the WebCT site, however recording is not regulated in any way and different software, and quality assurance procedures of recordings, are used. Most recordings are audio, although some lectures are recorded in video. Some staff actively resist using the tools.

Because of the ad hoc nature of the use of lecture recording technologies, it is very difficult to generate statistics which account for use of lecture recording technologies.

In Semester 1, 2007, 274 topics (out of a total of approximately 900 topics) use the lecture recording facility.

Appendix 3 - Project reference group

The Terms of Reference for the Group were to:

- ratify the project and evaluation plans for Stages 1 and 2 of the project;
- review progress at critical points in the project, specifically February and August 07 and January 08;
- review the dissemination strategies to provide advice on ways of providing maximum exposure of the findings to the higher education sector;
- advise on possible risks that may emerge in the development of the project;
- advise on specific areas of expertise for example web-based lecture technology, institutional development, learning and teaching development, professional development project development, implementation.

Appendix 4 - Project evaluation plan

Prepared by External Evaluator: Helen Carter

Background

The Project is a collaboration between four IRUA universities - Macquarie University, Murdoch University, Flinders University and the University of Newcastle. It is funded by the Carrick Institute for Learning and Teaching in Higher Education, an initiative of the Australian Government Department of Education, Science and Training.

The impetus for the project arose from a need to develop an understanding of the implications of the use of web-based lecture recording technologies such as Lectopia (formerly iLecture) for the design and delivery of curricula, good teaching and high quality learning in higher education.

The project aims to identify:

- how web-based lecture recording technology is being integrated into the curriculum, its role and relationship with other elements within the curriculum;
- how the technology can effectively support learning and teaching in different contexts, taking into account disciplinary differences, student diversity, specific teaching aims and learning outcomes; and
- the educational implications of its use for:
 - the design and delivery of curricula
 - academics and their teaching
 - students, their learning and the establishment of effective learning environments
 - professional development of academic staff
 - academic policies and practices.

A comprehensive understanding of these issues requires consideration of numerous interrelated factors arising from strategic, epistemological, pedagogical, disciplinary, cultural and operational perspectives. Hence, a multi-level research program has been devised entailing two stages. The first stage will focus on capturing the diversity of student and staff experiences in the use of Lectopia and other similar technologies in order to identify and categorise the issues and usage patterns that are emerging across participating universities. The second stage will be both investigative and developmental in nature and will explore the issues that have arisen from the first stage through a series of vignettes and case studies.

Arising from this research will be a register of issues relating to the use of web-based lecture technologies for learning and teaching, suggested strategies for dealing with these issues, examples of how web-based lecture technologies can be used effectively to support learning and teaching in different contexts and recommended guidelines for good practice. Implications for policy development in relation to academic practice, quality learning and teaching, and curriculum development will also be foreshadowed.

The project is scheduled to begin in August 2006 and conclude in January 2008. Part of the funding requirement is the undertaking of an external evaluation to:

- monitor project processes and analyse critical success factors and factors that impeded success;
- assess the achievement and potential scalability and sustainability of project outcomes.

Methodology

The Project Evaluation will use both process and outcomes based approaches¹, which examine both the project's development processes and whether or not project outcomes have been achieved. It will specifically examine project management, communication and dissemination strategies and will review project outcomes within the overarching framework of the stated values of the Carrick Institute for Learning and Teaching in Higher Education².

To achieve this, the evaluation will monitor and review progress in relation to processes and outcomes at pivotal stages of the Project against the stated Project Plan.

The evaluation will contribute to the communication of the results of the Project's work to others, which will help contribute to the larger body of knowledge about work in the area of the Project. Ultimately it will inform Carrick of the Project's effectiveness against the framework of Carrick's values.

The effectiveness of the Project will be evaluated using a staged approach. Stage 1 and Stage 2 will examine progress in implementing Project activities and achieving Project outputs against the Project Plan for activities identified for each Stage. An outcomes evaluation at each stage will look at whether or not the Project outcomes are being achieved and whether there is a need to modify the Project Plan.

The Final Stage will be a summative evaluation which will report on the critical success factors, factors that impeded success and the potential scalability and sustainability of Project outcomes. It will report on the overall outcomes of the Project within the framework of the Carrick values of inclusiveness, long-term change, diversity, collaboration and excellence.

Further detail about the evaluation stages, the related questions and data collection methods are contained in the next section.

Project Evaluation Stages

Stage 1 – Project Goal Statement:

To evaluate whether the project has captured the diversity of student and staff experiences in the use of Lectopia and other technologies in order to identify and categorise the issues and usage patterns that are emerging across participating universities.

The process evaluation at this stage will examine progress in implementing Project activities and achieving Project outputs against the Project Plan for activities identified in Stage 1. A review of project processes and self-reflection exercise with institutional coordinators/project manager/research assistant to further identify benefits, risks and constraints will be undertaken.

The outcomes evaluation at this stage will look at whether or not the Project outcomes are being achieved and whether there is a need to modify the Project Plan. A review of aggregated descriptive statistics will inform this, as well as a content review of Project documentation from the Moodle site and a focus group with the Project Team to address any concerns will be undertaken.

¹ http://www.endowmentforhealth.org/_docs/37.doc

² <http://www.carrickinstitute.edu.au/carrick/go/pid/10>

The outcomes evaluation at this stage will look at whether or not the Project outcomes are being achieved and whether there is a need to modify the Project Plan. A review of aggregated descriptive statistics will inform this, as well as a content review of Project documentation from the Moodle site and a focus group with the Project Team to address any concerns will be undertaken.

Process Evaluation Questions

Is the Project proceeding according to the timeline in the stated plan? If not, why not?

Are the project processes leading to effective outputs? Eg, communication, project management, Reference Group

Is the collaboration between the 4 participating Universities working effectively?

Are identified stakeholders being kept updated on progress?

Outcomes Evaluation Questions

Have adequate numbers and teaching and learning characteristics been included in the student and staff samples? (For example gender, age, discipline, enrolment status, employment status.) Does more data need to be collected?

Have the survey results identified usage patterns and the teaching and learning contexts of students?

Have the survey results been able to identify the uses students are making of the technology to support their learning?

Have a variety of teaching issues and strategies been identified?

Is the survey data able to identify changes taking place in the learning environment from a teaching and student learning perspective? If not, why not?

Have issues relating to the changing role and place of lectures within the curriculum been identified for further investigation in Stage 2 case studies and vignettes?

Have issues relating to the impact of the technology on lecturing styles and lecture-room dynamics been identified for further investigation in Stage 2 case studies and vignettes?

Stage 2 – Project Goal Statement:

To evaluate whether the issues that have arisen from the first stage are being explored through a series of vignettes and case studies.

The process evaluation at this stage will examine progress in implementing Project activities and achieving Project outputs against the Project Plan for activities identified in Stage 2. A review of project processes and self-reflection exercise with institutional coordinators/project manager/research assistant to further identify benefits, risks and constraints will be undertaken.

The outcomes evaluation at this stage will look at whether or not the Project outcomes are being achieved and whether there is a need to modify the Project Plan. A content review of case studies and vignettes, a content review of Project documentation from the Moodle site, as well as a focus group session will be held with the Project Team to address any concerns.

Process Evaluation Questions

Is the Project proceeding according to the timeline in the stated plan? If not, why not?

Are the project processes leading to effective outputs? Eg, communication, project management, Reference Group

Is the collaboration between the 4 participating Universities working effectively?

Are identified stakeholders being kept updated on progress?

Outcome Evaluation Questions

Are the issues that have arisen from the first stage being explored through a series of vignettes and case studies. For example:

- the conditions under which lecture delivery technology use is desirable in different curriculum and organisational contexts - across disciplines and modes of delivery;
- strategies for enhancing learning and teaching in different contexts;
- implications for the design and delivery of the curriculum and the establishment of effective learning environments in different contexts;
- implications for academic policies and practice.

Final Stage – Project Goal Statement:

To determine whether the Project has achieved what it set out to achieve mapped against the framework of the Carrick values of inclusiveness, long-term change, diversity, collaboration and excellence:

- Development of a register of issues relating to the use of web-based lecture technologies for learning and teaching;
- Development of suggested strategies for dealing with the issues identified above;
- Documentation of examples of how web-based lecture technologies can be used effectively to support learning and teaching in different contexts;
- Development of recommended guidelines for good practice; and
- Foreshadowing of implications for policy development in relation to academic practice, quality learning and teaching, and curriculum development.

The summative process evaluation will report on the overall effectiveness of project management and communication strategies in achieving Project outputs against activities in the Project Plan. A review of project development and communication processes and interviews with institutional coordinators/project manager/research assistant to identify critical success factors and factors that impeded success will be undertaken.

The summative outcomes evaluation will report on the effectiveness of the dissemination of the Project outcomes identifying the potential for scalability and sustainability. It will involve interviews with the Project Leader and Institutional Research Coordinators. Further feedback will be sought from the Reference Group and the IRUA Teaching and Learning sub-group to provide objective evidence of dissemination strategies.

Summative Process Evaluation Questions

Did the Project proceed according to the timeline in the stated plan?

Was there evidence of flexible planning strategies during the project to accommodate issues as they emerged?'

Have the issues identified from the interim report/s been addressed?

What are the critical success factors?

What are the factors that impeded success?

Did the communication processes work?

Was the collaboration between the 4 Universities effective?
Did the Reference Group make an adequate contribution?
Were the identified stakeholders kept updated on progress?

Summative Outcome Evaluation Questions

Are plans in place for the outcomes to be disseminated to the sector (journal and conference papers, formal reports and materials made available through the IRUA and participating University's professional development web site)?

Do dissemination plans have the potential to enable more effective capacity building across the sector?

Are the Project development processes/ methodology scalable and sustainable?

Were sufficient resources available to the project?

Deliverables

Development of Evaluation Plan by 30 October 2006

Interim Report on Stage 1 by 8 February 2007

The first stage will focus on capturing the diversity of student and staff experiences in the use of iLecture and other technologies in order to identify and categorise the issues and usage patterns that are emerging across participating universities.

Interim Report on Stage 2 by 8 August 2007

The second stage will be both investigative and developmental in nature and will explore the issues that have arisen from the first stage through a series of vignettes and case studies.

Overall Report by 8 January 2008

For noting from Carrick Guidelines:

All projects provided with funding of greater than \$150 000 must commission a formal independent evaluation at the conclusion of the project. This evaluation should be factored into the budget and the time-lines for the project.

It has been agreed to include both formative and summative aspects in the Project evaluation.

Appendix 5 - Student survey

Part I – Your Use of iLecture

This part of the questionnaire contains questions about your use of iLecture in a Unit of your choice. Your experience in this Unit may have been positive or negative. The questions below refer to this particular unit. Please choose the most appropriate response to each question and do not spend a long time on each item.

Think of a Unit in which you used iLecture and choose the best response to the following questions.

1. Overall, my experience of using iLecture in this Unit was positive for my learning?
 - Almost always
 - Frequently
 - About half the time
 - Rarely
 - Almost never
2. How would you rate the level of difficulty of the material being taught in this Unit?
 - Very easy
 - Moderately easy
 - Average
 - Moderately difficult
 - Very difficult
3. Approximately how many students were studying this Unit?
 - 0-20
 - 21-50
 - 51-100
 - 101-500
 - 501 plus
 - Don't know
4. Which of the following best describes your enrolment/ study mode for this Unit?
 - External/ Distance
 - Internal/ On-campus
5. In which of the following discipline area would you classify the Unit?
 - Architecture and Building – including Urban Design and Regional Planning, Building Construction Management, etc
 - Arts, Humanities and Social Sciences – including Languages, Literature, Political Science, History, Indigenous Studies, Media and Communication Studies, Social Work, Women's Studies, etc
 - Psychology
 - Law – including Legal Studies, Justice Studies, etc
 - Computer Science
 - Economics – including politics
 - Business and Commerce – including Marketing, Tourism, Real Estate Management, etc.
 - Education

- Engineering and Surveying – including Manufacturing, Process, Resources, Automotive, Mechanical, Civil and Electrical and Electronic Engineering, Design, etc.
 - Health and Medicine – including Nursing, Pharmacy, Public Health, Applied Gerontology, Palliative Care, Rehabilitation Therapies, Chiropractic, etc.
 - Life Sciences – including Biology, Environmental Science, Zoology, Biodiversity, Biotechnology, Biochemistry, etc.
 - Physical Sciences – including Mathematics, Chemistry, Physics, etc.
6. How long was each lecture?
- 1 hour
 - 2 hours
 - 3 hours
 - More than 3 hours
7. As well as iLecture, which of the following components were available in this Unit ? (you can choose more than one option)
- Online lecture notes, readings and other resources
 - Online administration (announcements, assignment submissions, etc.)
 - Online communications (mail or discussion forums)
8. If face to face lectures were available in this unit, how often did you attend:
- Almost always
 - Frequently
 - About half of the time
 - Sometimes
 - Rarely or almost never
 - They were not available - Go to Question 11

9. Only answer this question if you did not regularly attend face-to-face lectures. Why did you use iLecture instead of going to face-to-face lectures? SA A N D SD N/A
- 9.1 That was the only class I have on campus on that day
 - 9.2 I was not able to attend
 - 9.3 I couldn't concentrate in class
 - 9.4 The material was simple and I didn't need to come to lectures
 - 9.5 I could learn from iLecture as well as I can from face-to-face delivery
10. Answer this question only if you have regularly attended face-to-face lectures. I attended face-to-face lectures in this Unit because SA A N D SD N/A
- 10.1 I concentrated better in lectures
 - 10.2 I found live lectures motivating
 - 10.3 I found the visual aids useful
 - 10.4 I could communicate/ interact with the lecturer
 - 10.5 I could have informal conversations with other students about the content
 - 10.6 I liked to meet my friends
 - 10.7 I liked an established routine
 - 10.8 I was on campus anyway
 - 10.9 There were group activities/ discussions in the lecture
 - 10.10 The presence of the lecturer added value
 - 10.11 I liked the atmosphere of the lecture theatre
 - 10.12 The lectures were necessary to prepare for follow-up tutorials
 - 10.13 I wouldn't have got around to listening to the lecture recordings
 - 10.14 I don't like using the technology
11. Please indicate your agreement with the following ways of using iLecture in this Unit. SA A N D SD N/A
- 11.1 I used iLecture as a back-up when I cannot attend class
 - 11.2 I listened to the lectures on a regular basis throughout the semester
 - 11.3 I listened to several weeks of iLectures at the one time
 - 11.4 I usually listened to the entire recording of the lecture

- 11.5 I deliberately chose particular segments of the iLecture to listen to
 - 11.6 I usually listened to the iLecture or parts of it more than once
 - 11.7 I generally browsed through the recording and stopped at points of interest
12. I used iLecture in this unit to support my learning in the following ways: SA A N D SD N/A
- 12.1 to revise for exams
 - 12.2 to pick up on things I missed in class
 - 12.3 to revisit complex material, ideas and concepts
 - 12.4 to pick up on announcements and exam hints
 - 12.5 to take comprehensive notes
 - 12.6 to work through the material at my own pace
 - 12.7 to revisit the material because English is not my first language
 - 12.8 to revisit the material because the lecturer did not speak clearly

Part II: Your Study Patterns

Part II – This part of the questionnaire contains a number of questions about your attitude to your studies and your usual way of studying *for this Unit*.

While you answer the questions in Part II, keep in mind that there is no right way of studying. It depends on what suits your own style and the subject you are studying. Answer each question as honestly as you can.

- 1 -- this item is always or almost always true of me
- 2 -- this item is *frequently* true of me
- 3 -- this item is true of me *about half the time*
- 4 -- this item is *sometimes* true of me
- 5 -- this item is *never or only rarely* true of me.

- 13.1 I find that at times studying gives me a feeling of deep personal satisfaction.
 - 13.2 I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied.
 - 13.3 My aim is to pass the subject while doing as little work as possible.
 - 13.4 I only study seriously what's given out in class or in the subject outlines.
 - 13.5 I feel that virtually any topic can be highly interesting once you get into it.
 - 13.6 I find most new topics interesting and often spend extra time trying to obtain more information about them.
 - 13.7 I do not find my subject very interesting so I keep my work to the minimum.
 - 13.8 I learn some things by rote, going over and over them until I know them by heart even if I do not understand them.
 - 13.9 I find that studying academic topics can at times be as exciting as a good novel or movie.
 - 13.10 I test myself on important topics until I understand them completely.
14. Part II: continued
- 14.1 I find I can get by in most assessments by memorising key sections rather than trying to understand them.
 - 14.2 I generally restrict my study to what is specifically set s I think it is unnecessary to do anything extra.
 - 14.3 I work hard at my studies because I find the material interesting.
 - 14.4 I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes.
 - 14.5 I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics.
 - 14.6 I believe that lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined.

- 14.7 I come to most classes with questions in mind that I want answering.
- 14.8 I make a point of looking at most of the suggested readings that go with the lectures.
- 14.9 I see no point in learning material which is not likely to be in the examination.
- 14.10 I find the best way to pass examinations in to try to remember answers to likely questions.

Part III: Overall Experience of iLecture

Questions 15 to 21 refer to your overall experience of iLecture in the University

15. I would use iLecture more often if (you can choose more than one option):
- The visual elements used in the lecture were captured (e.g. visualiser, whiteboard, diagrams, annotations)
 - Visual elements (including PowerPoint slides) and voice were synchronised
 - Discussions between lecturers and students were captured
 - The lecture presentations were more polished
 - The iLectures were podcasted for use on a portable device (e.g. ipod)
 - Other, please specify
16. In general, do you think using iLecture has helped you to achieve better results?
- Yes - in a significant way
 - Yes - in a moderate way
 - Not sure if it made any difference to my results
 - No - it did not help me achieve better results
 - No - it was detrimental to my results

17. In general, do you think using iLecture makes it easier for you to learn?
- Yes - in a significant way
 - Yes - in a moderate way
 - Not sure if it made any difference to my learning
 - No - it did not help my learning
 - No - it was detrimental to my learning

18. If iLecture was taken away next semester, how would that affect you?

19. If you were to give advice to a lecturer on using iLecture effectively, what would it be?

20. Have you experienced changes in the way you interact and communicate with your fellow students and teaching staff. Please explain these changes.

21. Please add any further comments.

Part IV: Demographic Information

Q22-28 are questions about you. Please choose the options which best describe you.

22. Year of birth

- 1900-1945
- 1946-1964
- 1965-1982
- 1983-1991
- Other

23. Gender

- Female

- Male

24. I am enrolled in a:

- undergraduate degree
- postgraduate degree

25. Which year of your current degree are you undertaking?

- 1st year
- 2nd year
- 3rd year
- 4th year
- 5th year
- 6th year +

26. Is English your first language?

- Yes
- No

27. Are you enrolled part time or full time?

- Part time
- Full time

28. How many units have you studied at Macquarie where you have used iLecture?

- 1
- 2
- 3
- 4
- 5 or more

Appendix 6 - Staff survey

When answering this survey, please think of all the units you are teaching/ have taught using iLecture.

1. Which of the following enrolment modes apply to your students?
 - Fully on-campus classes
 - Mixture of on-campus and distance
 - Distance/ Off-campus only
2. In which discipline area would you classify the majority of your teaching?
 - Architecture and Building – including Urban Design and Regional Planning, Building Construction Management, etc
 - Arts, Humanities and Social Sciences – including Languages, Literature, Political Science, History, Indigenous Studies, Media and Communication Studies, Social Work, Women’s Studies, etc
 - Psychology
 - Law – including Legal Studies, Justice Studies, etc
 - Computer Science
 - Economics – including Politics
 - Business and Commerce – including Marketing, Tourism, Real Estate Management, etc.
 - Education
 - Engineering and Surveying – including Manufacturing, Process, Resources, Automotive, Mechanical, Civil and Electrical and Electronic Engineering, Design, etc.
 - Health and Medicine – including Nursing, Pharmacy, Public Health, Applied Gerontology, Palliative Care, Rehabilitation Therapies, Chiropractic, etc.
 - Life Sciences – including Biology, Environmental Science, Zoology, Biodiversity, Biotechnology, Biochemistry, etc.

- Physical Sciences – including Mathematics, Chemistry, Physics, etc.

3. For this question, think of a subject or context that reflects the way you go about teaching.

Consider your approaches to teaching in this subject. For each item, please indicate how frequently the statement is true of you.

1 = almost always 2 = frequently 3 = about half the time
4 = sometimes 5 = only rarely

- 3.1 I design my teaching in this subject with the assumption that most of the students have very little useful knowledge of the topics to be covered.
- 3.2 I feel it is important that this subject should be completely described in terms of specific objectives relating to what students have to know for formal assessment items.
- 3.3 In my interactions with students in this subject I try to develop a conversation with them about the topics we are studying.
- 3.4 I feel it is important to present a lot of facts to students so that they know what they have to learn for this subject
- 3.5 I feel that the assessment in this subject should be an opportunity for students to reveal their changed conceptual understanding of the subject.
- 3.6 I set aside some teaching time so that the students can discuss, among themselves, the difficulties that they encounter studying this subject.
- 3.7 In this subject I concentrate on covering the information that might be available from a good textbook.
- 3.8 I encourage students to restructure their existing knowledge in terms of the new way of thinking about the subject that they will develop.
- 3.9 In teaching sessions for this subject, I use difficult or undefined examples to provoke debate.

- 3.10 I structure this subject to help students to pass the formal assessment items.
- 3.11 I think an important reason for running teaching sessions in this subject is to give students a good set of notes.
- 3.12 In this subject, I only provide the students with the information they will need to pass the formal assessments.
- 3.13 I feel that I should know the answers to any questions that students may put to me during this subject.
- 3.14 I make available opportunities for students in this subject to discuss their changing understanding of the subject.
- 3.15 I feel that it is better for students in this subject to generate their own notes rather than always copy mine.
- 3.16 I feel a lot of teaching time in this subject should be used to question students' ideas.

4. The next set of questions relates to the role of lectures in your teaching. First, indicate your agreement with each statement about how you use lectures. Second, indicate whether the use of iLecture has enhanced or reduced your ability to perform the role.

	I use the lecture to:					iLecture has enhanced / reduced my ability to:				
	SA	A	N	D	SD	SEn	Enh	N/C	Red	SR
4.1 impart a lot of information related to the subject	o	o	o	o	o	o	o	o	o	o
4.2 build a conceptual framework with students	o	o	o	o	o	o	o	o	o	o
4.3 inspire and motivate my students	o	o	o	o	o	o	o	o	o	o
4.4 establish a connection between me and my students	o	o	o	o	o	o	o	o	o	o
4.5 provide a routine for my students	o	o	o	o	o	o	o	o	o	o
4.6 provide a structured experience of the unit content	o	o	o	o	o	o	o	o	o	o
4.7 demonstrate processes	o	o	o	o	o	o	o	o	o	o

- and/or procedures
- 4.8 provide group feedback to students o o o o o o o o o o o
- 4.9 gauge students' understandings and then respond accordingly on-the-fly o o o o o o o o o o o
- 4.10 make use of visual aids, video, or other props to explain the content o o o o o o o o o o o
- 4.11 make announcements to keep students up to date with events and course administration o o o o o o o o o o o

5. Below is a list of common reasons for using iLecture. Indicate which, if any, apply to you. (You may choose more than one response)

I use iLecture:

- to support students who can't come to class
- because students learn just as well using iLecture compared to face-to-face lectures.
- to help students cope with my delivery style or accent
- to support students from non-English speaking backgrounds (NESB)
- to support known or unknown students with disabilities
- because my department required me to use it
- because my students pressured me to use it
- so I don't have to repeat lectures
- to provide another tool to help students learn

6. Please comment on these or any other reasons you may have for using iLecture

7. The use of iLecture may have changed your lecturing style or what you do in lectures. Please indicate which of the following, if any, apply to you. (You may choose more than one response)
- I have reduced students' questioning opportunities
 - I have reduced the amount of interactive activities between students
 - I have adjusted activities/ interactions to cater for students who are present as well as those using iLecture.
 - I have adopted a more didactic style of lecturing
 - I have become more aware of my spontaneous comments in lectures
 - I have reduced multimedia content due to copyright restrictions
 - I have scripted the lecture more tightly to provide a more controlled presentation
 - I have reduced my movement around the lecture theatre
 - I have listened to my lectures and adjusted my performance
 - I have made changes to the content because the lecture could be re-used or monitored
 - I have not made any substantial changes to my lecturing style
 - I have not made any substantial changes to what I do in lectures
8. Please comment on these and any other changes that have taken place.
9. Has iLecture has raised your level of concern about these academic issues? (You may choose more than one response):
- moral rights
 - reuse of my lectures
 - disaggregating the lecture and using bits out of context
 - confidentiality and privacy issues, in case they are listened to by people not enrolled in the class
10. Please comment about these and any other concerns you may have.
11. Have you changed the way you structure your units as a result of the introduction of iLecture? For example, has it changed: the role of lectures and other teaching activities (e.g. tutorials); assessment; the way you provide feedback to students; or the use of online technologies?
- Yes
 - No
12. Please comment on how you have changed the way you structure your unit.
13. Have you experienced changes in the way you interact with and communicate with your students?
- Yes, the impact on communication has generally been positive
 - Yes, the impact on communication has generally been negative
 - No, I have not noticed any significant change
 - Not sure
14. Please comment on your response to the question above.
15. In general, do you think using iLecture has helped your students to achieve better results?
- Yes - in a significant way
 - Yes - in a moderate way
 - Not sure if it made any difference to their results
 - No - it did not help them achieve better results
 - No - it was detrimental to their results
16. In general, do you think using iLecture made it easier for your students to learn?
- Yes - in a significant way
 - Yes - in a moderate way
 - Not sure if it made any difference to their learning
 - No - it did not help their learning
 - No – it was detrimental to their learning
17. Is there a class you teach where you wouldn't use iLecture (e.g. because of student characteristics, type of content or learning

activities, class size)? Please comment

18. Please indicate your agreement with the following statement: 'Student attendance in my lecture has decreased as a result of using iLecture'
- Strongly Agree
 - Agree
 - Not Sure
 - Disagree
 - Strongly Disagree
19. Please comment on any changes you have observed in student attendance patterns. If there have been changes, what strategies have you developed to cope with them?
20. What do your students miss if they do not attend the face-to-face lecture?
21. The following list identifies ways the iLecture service could be improved. Which of these would you use to enhance teaching and learning if they were available? (You may choose more than one response)
- For iLecture to be able to capture visual elements used in the lecture
 - For iLecture to be able to synchronise visual elements (including powerpoints) and audio
 - For iLecture to be able to capture the discussion between me and my students
 - For me to be able to edit iLecture files
 - For me to be able to more easily use copyrighted multimedia materials
 - None - the current facility suits my needs
22. Please comment on the list in the previous question or add any other suggestions you may have to improve iLecture.

23. Overall, my experience of using iLecture for teaching and learning has been positive
- Almost always
 - Frequently
 - About half of the time
 - Sometimes
 - Rarely or almost never
24. Please make any other comments about the use of ilecture for teaching and learning
25. How long have you been teaching at university?
- Less than 1 year
 - 1-5 years
 - 6-10 years
 - More than 10 years
26. How long have you been teaching online (e.g. using discussion board, course pages, iLecture)?
- Less than 1 year
 - 1-5 years
 - 6-10 years
 - More than 10 years
27. Year of birth
- Before 1946
 - 1946-1964
 - 1965-1982
 - After 1982
28. Is English your first language?
- Yes
 - No

Appendix 7 - Student data

Frequency Information on Student Data

Demographic Variable

Table A7- 1: Frequency data for university of respondent

University					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Flinders	350	42.9	42.9	42.9
	Macquarie	124	15.2	15.2	58.2
	Murdoch	235	28.8	28.8	87.0
	Newcastle	106	13.0	13.0	100.0
	Total	815	100.0	100.0	

Table A7- 2: Frequency data for age of respondent

Year of Birth					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1900-1945	3	.4	.4	.4
	1946-1964	75	9.2	10.4	10.8
	1965-1982	236	29.0	32.6	43.4
	1983-1991	408	50.1	56.4	99.9
	other	1	.1	.1	100.0
	Total	723	88.7	100.0	

Table A7- 3: Frequency data for gender of respondent

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	508	62.3	70.7	70.7
	Male	211	25.9	29.3	100.0
	Total	719	88.2	100.0	

Table A7- 4: Frequency data for postgraduate/ undergraduate level of respondents

Postgraduate/ Undergraduate					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undergraduate	657	80.6	91.1	91.1
	Postgraduate	64	7.9	8.9	100.0
	Total	721	88.5	100.0	

Table A7- 5: Frequency data for current year of study of respondents

Current year of study					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1st	333	40.9	46.1	46.1
	2nd	213	26.1	29.5	75.5
	3rd	131	16.1	18.1	93.6
	4th	39	4.8	5.4	99.0
	5th	4	.5	.6	99.6
	6th +	3	.4	.4	100.0
	Total	723	88.7	100.0	

Table A7- 6: Frequency data for respondents with English as first language

Is English your first language					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	613	75.2	85.0	85.0
	No	108	13.3	15.0	100.0
	Total	721	88.5	100.0	

Table A7- 7: Frequency data for respondents enrolled full-time / part-time

Full/part time enrollment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Part-time	137	16.8	19.1	19.1
	Full-time	580	71.2	80.9	100.0
	Total	717	88.0	100.0	

WBLT and Lecture Use

Table A7- 8: Frequency data for the number of units in which respondents have used WBLT

Number of units using WBLT					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	137	16.8	19.3	19.3
	2	112	13.7	15.8	35.0
	3	107	13.1	15.0	50.1
	4	89	10.9	12.5	62.6
	5+	266	32.6	37.4	100.0
	Total	711	87.2	100.0	

Table A7- 9: Frequency data for the level of difficulty of the unit of interest

Level of difficulty					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very easy	13	1.6	1.6	1.6
	Mod easy	65	8.0	8.0	9.6
	Average	302	37.1	37.1	46.7
	Mod diff	363	44.5	44.6	91.3
	V difficult	71	8.7	8.7	100.0
	Total	814	99.9	100.0	

Table A7- 10: Frequency data for the number of students enrolled in the unit of interest

No of students in course					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-20	19	2.3	2.3	2.3
	21-50	91	11.2	11.2	13.5
	51-100	150	18.4	18.4	31.9
	101-500	379	46.5	46.6	78.5
	501+	27	3.3	3.3	81.8
	Not sure	148	18.2	18.2	100.0
	Total	814	99.9	100.0	

Table A7- 11: Frequency data of enrolment modes of respondents

Study mode internal/ external					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ext/Dist	113	13.9	13.9	13.9
	Internal	699	85.8	86.1	100.0
	Total	812	99.6	100.0	

Table A7- 12: Frequency data for the area of study

Area of study					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Humanities+	178	21.8	21.8	21.8
	Psychology	131	16.1	16.1	37.9
	Law	72	8.8	8.8	46.7
	Comp Sc.	23	2.8	2.8	49.6
	Economics	44	5.4	5.4	55.0
	Business+	96	11.8	11.8	66.7
	Education	80	9.8	9.8	76.6
	Engineering+	3	.4	.4	76.9
	Health	59	7.2	7.2	84.2
	Life Sciences	96	11.8	11.8	96.0
	Maths/Physics+	33	4.0	4.0	100.0
	Total	815	100.0	100.0	

Table A7- 13: Frequency data for the length of lecture

Length of lecture					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 hour	514	63.1	63.2	63.2
	2 hours	272	33.4	33.5	96.7
	3 hours	25	3.1	3.1	99.8
	More than 3 hours	2	.2	.2	100.0
	Total	813	99.8	100.0	

Table A7- 14: Frequency data for Q7a - Online notes, readings and other resources available in the unit

Online notes etc					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	33	4.0	4.1	4.1
	Yes	772	94.7	95.9	100.0
	Total	805	98.8	100.0	

Table A7- 15: Frequency data for Q7b - Online administration available in the unit

Online administration					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	250	30.7	31.1	31.1
	Yes	555	68.1	68.9	100.0
	Total	805	98.8	100.0	

Table A7- 16: Frequency data for Q7c - Online communication available in the unit

Online communication					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	120	14.7	14.9	14.9
	Yes	685	84.0	85.1	100.0
	Total	805	98.8	100.0	

Table A7- 17: Frequency data for frequency of lecture attendance

Frequency of lecture attendance					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always/Almost always	314	38.5	38.8	38.8
	Frequently	141	17.3	17.4	56.2
	About half the time	108	13.3	13.3	69.5
	Sometimes	63	7.7	7.8	77.3
	Rarely/Almost never	145	17.8	17.9	95.2
	No lectures available	39	4.8	4.8	100.0
	Total	810	99.4	100.0	

Table A7- 18: Frequency data for respondents not attending lectures because it is the only class on campus

Only class on campus					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	118	14.5	39.6	39.6
	Agree	88	10.8	29.5	69.1
	Neutral	23	2.8	7.7	76.8
	Disagree	22	2.7	7.4	84.2
	Strongly Disagree	47	5.8	15.8	100.0
	Total	298	36.6	100.0	
Missing	Not applicable	98	12.0		
	System	419	51.4		
	Total	517	63.4		
Total		815	100.0		

Table A7- 19: Frequency data for respondents not attending lectures because they are not able to attend

Not able to attend					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	194	23.8	50.5	50.5
	Agree	95	11.7	24.7	75.3
	Neutral	45	5.5	11.7	87.0
	Disagree	22	2.7	5.7	92.7
	Strongly Disagree	28	3.4	7.3	100.0
	Total	384	47.1	100.0	
Missing	Not applicable	55	6.7		
	System	376	46.1		
	Total	431	52.9		
Total		815	100.0		

Table A7- 20: Frequency data for respondents not attending lectures because they could not concentrate in class

Could not concentrate in class					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	36	4.4	12.8	12.8
	Agree	76	9.3	27.0	39.7
	Neutral	43	5.3	15.2	55.0
	Disagree	46	5.6	16.3	71.3
	Strongly Disagree	81	9.9	28.7	100.0
	Total	282	34.6	100.0	
Missing	Not applicable	98	12.0		
	System	435	53.4		
	Total	533	65.4		
Total		815	100.0		

Table A7- 21: Frequency data for respondents not attending lectures because the material was simple

Material was simple					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	17	2.1	6.0	6.0
	Agree	38	4.7	13.3	19.3
	Neutral	64	7.9	22.5	41.8
	Disagree	74	9.1	26.0	67.7
	Strongly Disagree	92	11.3	32.3	100.0
	Total	285	35.0	100.0	
Missing	Not applicable	94	11.5		
	System	436	53.5		
	Total	530	65.0		
Total		815	100.0		

Table A7- 22: Frequency data for respondents not attending lectures because they can learn as from from WBLT as attending lectures F2F

Learn as well from WBLT as F2F					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	118	14.5	35.6	35.6
	Agree	108	13.3	32.6	68.3
	Neutral	53	6.5	16.0	84.3
	Disagree	33	4.0	10.0	94.3
	Strongly Disagree	19	2.3	5.7	100.0
	Total	331	40.6	100.0	
Missing	Not applicable	64	7.9		
	System	420	51.5		
	Total	484	59.4		
Total		815	100.0		

Table A7- 23: Frequency data for respondents attending lectures because they concentrate better in lectures

Concentrated better in lectures					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	122	15.0	23.6	23.6
	Agree	194	23.8	37.6	61.2
	Neutral	155	19.0	30.0	91.3
	Disagree	36	4.4	7.0	98.3
	Strongly Disagree	9	1.1	1.7	100.0
	Total	516	63.3	100.0	
Missing	Not applicable	35	4.3		
	System	264	32.4		
	Total	299	36.7		
Total		815	100.0		

Table A7- 24: Frequency data for respondents attending lectures because they find live lectures motivating

Live lectures motivating					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	128	15.7	24.7	24.7
	Agree	241	29.6	46.5	71.2
	Neutral	94	11.5	18.1	89.4
	Disagree	44	5.4	8.5	97.9
	Strongly Disagree	11	1.3	2.1	100.0
	Total	518	63.6	100.0	
Missing	Not applicable	30	3.7		
	System	267	32.8		
	Total	297	36.4		
Total		815	100.0		

Table A7- 25: Frequency data for respondents attending lectures because they find the visual aids useful

Visual aids useful					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	195	23.9	37.8	37.8
	Agree	253	31.0	49.0	86.8
	Neutral	50	6.1	9.7	96.5
	Disagree	15	1.8	2.9	99.4
	Strongly Disagree	3	.4	.6	100.0
	Total	516	63.3	100.0	
Missing	Not applicable	34	4.2		
	System	265	32.5		
	Total	299	36.7		
Total		815	100.0		

Table A7- 26: Frequency data for respondents attending lectures because they can interact with their lecturer

Interact with lecturer					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	107	13.1	21.5	21.5
	Agree	164	20.1	33.0	54.5
	Neutral	136	16.7	27.4	81.9
	Disagree	64	7.9	12.9	94.8
	Strongly Disagree	26	3.2	5.2	100.0
	Total	497	61.0	100.0	
Missing	Not applicable	47	5.8		
	System	271	33.3		
	Total	318	39.0		
Total		815	100.0		

Table A7- 27: Frequency data for respondents attending lectures because they can have informal conversation with other students

Informal conversation with other students					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	106	13.0	20.8	20.8
	Agree	237	29.1	46.6	67.4
	Neutral	103	12.6	20.2	87.6
	Disagree	38	4.7	7.5	95.1
	Strongly Disagree	25	3.1	4.9	100.0
	Total	509	62.5	100.0	
Missing	Not applicable	36	4.4		
	System	270	33.1		
	Total	306	37.5		
Total		815	100.0		

Table A7- 28: Frequency data for respondents attending lectures because they like to meet their friends

Liked to meet friends					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	102	12.5	20.6	20.6
	Agree	190	23.3	38.3	58.9
	Neutral	135	16.6	27.2	86.1
	Disagree	41	5.0	8.3	94.4
	Strongly Disagree	28	3.4	5.6	100.0
	Total	496	60.9	100.0	
Missing	Not applicable	48	5.9		
	System	271	33.3		
	Total	319	39.1		
Total		815	100.0		

Table A7- 29: Frequency data for respondents attending lectures because they like an established routine

Liked established routine					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	112	13.7	21.8	21.8
	Agree	227	27.9	44.2	66.1
	Neutral	118	14.5	23.0	89.1
	Disagree	36	4.4	7.0	96.1
	Strongly Disagree	20	2.5	3.9	100.0
	Total	513	62.9	100.0	
Missing	Not applicable	36	4.4		
	System	266	32.6		
	Total	302	37.1		
Total		815	100.0		

Table A7- 30: Frequency data for respondents attending lectures because they are on campus anyway

On campus anyway					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	80	9.8	16.1	16.1
	Agree	187	22.9	37.7	53.8
	Neutral	101	12.4	20.4	74.2
	Disagree	75	9.2	15.1	89.3
	Strongly Disagree	53	6.5	10.7	100.0
	Total	496	60.9	100.0	
Missing	Not applicable	53	6.5		
	System	266	32.6		
	Total	319	39.1		
Total		815	100.0		

Table A7- 31: Frequency data for respondents attending lectures because they want to participate in the group activities / discussions in lectures

Group activities/discussions in lecture					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	30	3.7	6.6	6.6
	Agree	113	13.9	24.9	31.5
	Neutral	133	16.3	29.3	60.8
	Disagree	125	15.3	27.5	88.3
	Strongly Disagree	53	6.5	11.7	100.0
	Total	454	55.7	100.0	
Missing	Not applicable	88	10.8		
	System	273	33.5		
	Total	361	44.3		
Total		815	100.0		

Table A7- 32: Frequency data for respondents attending lectures because the presence of the lecturer added value

Presence of lecturer added value					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	130	16.0	25.0	25.0
	Agree	237	29.1	45.7	70.7
	Neutral	96	11.8	18.5	89.2
	Disagree	41	5.0	7.9	97.1
	Strongly Disagree	15	1.8	2.9	100.0
	Total	519	63.7	100.0	
Missing	Not applicable	33	4.0		
	System	263	32.3		
	Total	296	36.3		
Total		815	100.0		

Table A7- 33: Frequency data for respondents attending lectures because they like the lecture atmosphere

Liked lecture atmosphere					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	66	8.1	13.0	13.0
	Agree	153	18.8	30.1	43.0
	Neutral	184	22.6	36.1	79.2
	Disagree	70	8.6	13.8	92.9
	Strongly Disagree	36	4.4	7.1	100.0
	Total	509	62.5	100.0	
Missing	Not applicable	35	4.3		
	System	271	33.3		
	Total	306	37.5		
Total		815	100.0		

Table A7- 34: Frequency data for respondents attending lectures because they needed to attend the lectures for later tutorials

lectures needed for later tutorials					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	83	10.2	17.0	17.0
	Agree	173	21.2	35.5	52.5
	Neutral	126	15.5	25.8	78.3
	Disagree	74	9.1	15.2	93.4
	Strongly Disagree	32	3.9	6.6	100.0
	Total	488	59.9	100.0	
Missing	Not applicable	56	6.9		
	System	271	33.3		
	Total	327	40.1		
Total		815	100.0		

Table A7- 35: Frequency data for respondents attending lectures because they would not have listened to the lectures later

Wouldn't have listened to lectures later					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	83	10.2	16.8	16.8
	Agree	144	17.7	29.2	46.0
	Neutral	95	11.7	19.3	65.3
	Disagree	90	11.0	18.3	83.6
	Strongly Disagree	81	9.9	16.4	100.0
	Total	493	60.5	100.0	
Missing	Not applicable	50	6.1		
	System	272	33.4		
	Total	322	39.5		
Total		815	100.0		

Table A7- 36: Frequency data for respondents attending lectures because they do not like using technologies

I don't like using technology					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	11	1.3	2.3	2.3
	Agree	19	2.3	4.0	6.3
	Neutral	48	5.9	10.1	16.4
	Disagree	114	14.0	23.9	40.3
	Strongly Disagree	284	34.8	59.7	100.0
	Total	476	58.4	100.0	

Table A7- 37: Frequency data for respondents who used lectopia as a back-up when they cannot attend

Used lectopia as back-up when I couldn't attend					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	339	41.6	49.5	49.5
	Agree	232	28.5	33.9	83.4
	Neutral	30	3.7	4.4	87.7
	Disagree	46	5.6	6.7	94.5
	Strongly Disagree	38	4.7	5.5	100.0
	Total	685	84.0	100.0	

Table A7- 38: Frequency data for respondents who listened on a regular basis

Listened on a regular basis					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	178	21.8	24.4	24.4
	Agree	184	22.6	25.2	49.5
	Neutral	141	17.3	19.3	68.8
	Disagree	159	19.5	21.8	90.6
	Strongly Disagree	69	8.5	9.4	100.0
	Total	731	89.7	100.0	

Table A7- 39: Frequency data for respondents who listened to several weeks at one time

Listened to several weeks at one time					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	97	11.9	13.9	13.9
	Agree	178	21.8	25.5	39.3
	Neutral	102	12.5	14.6	53.9
	Disagree	183	22.5	26.2	80.1
	Strongly Disagree	139	17.1	19.9	100.0
	Total	699	85.8	100.0	

Table A7- 40: Frequency data for respondents who listened to the entire recording

Listened to entire recording					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	268	32.9	36.7	36.7
	Agree	250	30.7	34.2	71.0
	Neutral	81	9.9	11.1	82.1
	Disagree	93	11.4	12.7	94.8
	Strongly Disagree	38	4.7	5.2	100.0
	Total	730	89.6	100.0	

Table A7- 41: Frequency data for respondents who chose particular segments to listen to

Chose particular segments to listen to					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	43	5.3	6.2	6.2
	Agree	168	20.6	24.3	30.5
	Neutral	132	16.2	19.1	49.6
	Disagree	200	24.5	28.9	78.6
	Strongly Disagree	148	18.2	21.4	100.0
	Total	691	84.8	100.0	

Table A7- 42: Frequency data for respondents who listened more than once

Listened more than once					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	136	16.7	19.0	19.0
	Agree	263	32.3	36.7	55.6
	Neutral	98	12.0	13.7	69.3
	Disagree	144	17.7	20.1	89.4
	Strongly Disagree	76	9.3	10.6	100.0
	Total	717	88.0	100.0	

Table A7- 43: Frequency data for respondents who browsed and stopped at points of interest

Browsed and stopped at points of interest					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	77	9.4	11.1	11.1
	Agree	184	22.6	26.4	37.5
	Neutral	113	13.9	16.2	53.7
	Disagree	179	22.0	25.7	79.5
	Strongly Disagree	143	17.5	20.5	100.0
	Total	696	85.4	100.0	

Table A7- 44: Frequency data for respondents who used WBLT to revise for exams

Used to revise for exams					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	288	35.3	40.2	40.2
	Agree	260	31.9	36.3	76.4
	Neutral	64	7.9	8.9	85.4
	Disagree	69	8.5	9.6	95.0
	Strongly Disagree	36	4.4	5.0	100.0
	Total	717	88.0	100.0	

Table A7- 45: Frequency data for respondents who used WBLT to pick up things missed in class

Used to pick up things missed					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	251	30.8	37.1	37.1
	Agree	281	34.5	41.5	78.6
	Neutral	47	5.8	6.9	85.5
	Disagree	65	8.0	9.6	95.1
	Strongly Disagree	33	4.0	4.9	100.0
	Total	677	83.1	100.0	

Table A7- 46: Frequency data for respondents who used WBLT to revisit complex ideas and concepts

Used to revisit complex ideas and concepts					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	270	33.1	37.1	37.1
	Agree	284	34.8	39.1	76.2
	Neutral	62	7.6	8.5	84.7
	Disagree	72	8.8	9.9	94.6
	Strongly Disagree	39	4.8	5.4	100.0
	Total	727	89.2	100.0	

Table A7- 47: Frequency data for respondents who used WBLT to pick up announcements and exam hints

Used to pick up announcements and exam hints					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	190	23.3	26.7	26.7
	Agree	253	31.0	35.5	62.2
	Neutral	121	14.8	17.0	79.2
	Disagree	106	13.0	14.9	94.1
	Strongly Disagree	42	5.2	5.9	100.0
	Total	712	87.4	100.0	

Table A7- 48: Frequency data for respondents who used WBLT to take comprehensive notes

Used to take notes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	241	29.6	33.0	33.0
	Agree	216	26.5	29.5	62.5
	Neutral	110	13.5	15.0	77.6
	Disagree	121	14.8	16.6	94.1
	Strongly Disagree	43	5.3	5.9	100.0
	Total	731	89.7	100.0	

Table A7- 49: Frequency data for respondents who used WBLT to revise for exams

Used to work at my own pace					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	276	33.9	37.9	37.9
	Agree	263	32.3	36.1	73.9
	Neutral	77	9.4	10.6	84.5
	Disagree	79	9.7	10.8	95.3
	Strongly Disagree	34	4.2	4.7	100.0
	Total	729	89.4	100.0	

Table A7- 50: Frequency data for respondents who used WBLT to review because English is not their first language

Used to review as ESL student					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	39	4.8	11.9	11.9
	Agree	28	3.4	8.5	20.4
	Neutral	23	2.8	7.0	27.4
	Disagree	65	8.0	19.8	47.3
	Strongly Disagree	173	21.2	52.7	100.0
	Total	328	40.2	100.0	

Table A7- 51: Frequency data for respondents who used WBLT because the lecturer was unclear

Used to revisit as lecturer was unclear					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	32	3.9	5.7	5.7
	Agree	84	10.3	15.1	20.8
	Neutral	109	13.4	19.6	40.4
	Disagree	144	17.7	25.9	66.2
	Strongly Disagree	188	23.1	33.8	100.0
	Total	557	68.3	100.0	

Table A7- 52: Frequency data for respondents who would use WBLT more if visuals were captured

More use if visuals captured					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	167	20.5	23.4	23.4
	Yes	546	67.0	76.6	100.0
	Total	713	87.5	100.0	

Table A7- 53: Frequency data for respondents who would use WBLT more if visuals were synchronised with audio

More use if visuals synchronised					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	204	25.0	28.6	28.6
	Yes	509	62.5	71.4	100.0
	Total	713	87.5	100.0	

Table A7- 54: Frequency data for respondents who would use WBLT more if discussions were captured

More use if discussions captured					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	354	43.4	49.6	49.6
	Yes	359	44.0	50.4	100.0
	Total	713	87.5	100.0	

Table A7- 55: Frequency data for respondents who would use WBLT more if the presentations were more polished

More use if presentations more polished					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	534	65.5	74.9	74.9
	Yes	179	22.0	25.1	100.0
	Total	713	87.5	100.0	

Table A7- 56: Frequency data for respondents who would use WBLT more if it was podcasted

More use if podcasted					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	388	47.6	54.4	54.4
	Yes	325	39.9	45.6	100.0
	Total	713	87.5	100.0	

Learning Styles

Table A7- 57: Frequency data for respondents' scores on adopting deep approaches to learning

Deep approach quart.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Least Deep	79	9.7	11.8	11.8
	2	322	39.5	48.1	59.9
	3	226	27.7	33.8	93.7
	Most Deep	42	5.2	6.3	100.0
	Total	669	82.1	100.0	

Table A7- 58: Frequency data for respondents' scores on adopting surface approaches to learning

Surface approach quart.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Least Surface	11	1.3	1.8	1.8
	2	124	15.2	20.8	22.7
	3	277	34.0	46.5	69.1
	Most Surface	184	22.6	30.9	100.0
	Total	596	73.1	100.0	

WBLT overall attitudes

Table A7- 59: Frequency data for respondents' overall experience as being positive

Overall positive experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Almost Always	358	43.9	44.0	44.0
	Frequently	262	32.1	32.2	76.3
	About Half the Time	103	12.6	12.7	88.9
	Rarely	62	7.6	7.6	96.6
	Almost Never	28	3.4	3.4	100.0
	Total	813	99.8	100.0	

Table A7- 60: Frequency data for whether WBLT has helped respondents to achieve better results

Has WBLT helped to achieve better results					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes-significantly	262	32.1	35.1	35.1
	Yes-moderately	236	29.0	31.6	66.8
	Not sure if any change	174	21.3	23.3	90.1
	No-didn't help	64	7.9	8.6	98.7
	Detrimental	10	1.2	1.3	100.0
	Total	746	91.5	100.0	

Table A7- 61: Frequency data for whether WBLT makes it easier to learn

Does WBLT make it easier to learn					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes-significantly	351	43.1	47.1	47.1
	Yes-moderately	245	30.1	32.8	79.9
	Not sure if any change	100	12.3	13.4	93.3
	No-didn't help	42	5.2	5.6	98.9
	Detrimental	8	1.0	1.1	100.0
	Total	746	91.5	100.0	

Appendix 8 - Staff data

Frequency Tables

Demographic Variables

Table A8- 1: Frequency data for university of respondents

University of respondent					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Flinders	23	14.8	14.8	14.8
	Murdoch	53	34.2	34.2	49.0
	Macquarie	67	43.2	43.2	92.3
	Newcastle	12	7.7	7.7	100.0
	Total	155	100.0	100.0	

Table A8- 2: Frequency data for enrolment mode of respondents' students

Enrolment mode of most students					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Oncampus	71	45.8	45.8	45.8
	Mixed	84	54.2	54.2	100.0
	Total	155	100.0	100.0	

Table A8- 3: Frequency data for discipline of respondent

		Discipline			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Arts Humanities	42	27.1	27.5	27.5
	Psychology	15	9.7	9.8	37.3
	Law	12	7.7	7.8	45.1
	Computer Science	6	3.9	3.9	49.0
	Economics/politics	1	.6	.7	49.7
	Business/commerce	15	9.7	9.8	59.5
	Education	22	14.2	14.4	73.9
	Health Medicine	13	8.4	8.5	82.4
	Life sciences	17	11.0	11.1	93.5
	Physical Sciences	10	6.5	6.5	100.0
	Total	153	98.7	100.0	

Table A8- 4: Frequency data for years respondents have taught in university

		Q25-How long teaching at Uni			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1 year	1	.6	.7	.7
	1-5 years	33	21.3	24.4	25.2
	6-10 years	32	20.6	23.7	48.9
	More than 10 years	69	44.5	51.1	100.0
	Total	135	87.1	100.0	

Table A8- 5: Frequency data for years respondents have taught online

		Q26-How long teaching online			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1 year	9	5.8	6.7	6.7
	1-5 years	91	58.7	67.4	74.1
	6-10 years	31	20.0	23.0	97.0
	More than 10 years	4	2.6	3.0	100.0
	Total	135	87.1	100.0	

Table A8- 6: Frequency data for age of respondents

Q27- Year of birth					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	pre 1946	11	7.1	8.2	8.2
	1946-1964	81	52.3	60.4	68.7
	1965-1982	42	27.1	31.3	100.0
	Total	134	86.5	100.0	

Table A8- 7: Frequency data for respondents whose first language is English

Q28- English first language					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	129	83.2	96.3	96.3
	No	5	3.2	3.7	100.0
	Total	134	86.5	100.0	

Table A8- 8: Frequency data for respondents using lecture to impart knowledge

Q4.1.1 I use the lecture to-impart a lot of knowledge					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	48	31.0	34.0	34.0
	Agree	68	43.9	48.2	82.3
	Neutral	15	9.7	10.6	92.9
	Disagree	9	5.8	6.4	99.3
	Strongly Disagree	1	.6	.7	100.0
	Total	141	91.0	100.0	

Table A8- 9: Frequency data for WBLT has reduced respondents' ability to impart knowledge

Q4.1.2 WBLT has enhanced/reduced my ability to-impart a lot of knowledge					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	15	9.7	10.7	10.7
	Enhanced	52	33.5	37.1	47.9
	No change	58	37.4	41.4	89.3
	Reduced	11	7.1	7.9	97.1
	St. Reduced	4	2.6	2.9	100.0
	Total	140	90.3	100.0	

Table A8- 10: Frequency data for respondents using lecture to build a conceptual framework

Q4.2.1 I use the lecture to- build a conceptual framework					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	83	53.5	58.9	58.9
	Agree	50	32.3	35.5	94.3
	Neutral	6	3.9	4.3	98.6
	Disagree	2	1.3	1.4	100.0
	Total	141	91.0	100.0	

Table A8- 11: Frequency data for WBLT has reduced respondents' ability to build a conceptual framework

Q4.2.2 WBLT has enhanced/reduced my ability to-build a conceptual framework					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	10	6.5	7.2	7.2
	Enhanced	38	24.5	27.3	34.5
	No change	66	42.6	47.5	82.0
	Reduced	21	13.5	15.1	97.1
	St. Reduced	4	2.6	2.9	100.0
	Total	139	89.7	100.0	

Table A8- 12: Frequency data for respondents using lecture to inspire and motivate students

Q4.3.1 I use the lecture to-inspire and motivate my students					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	96	61.9	68.1	68.1
	Agree	39	25.2	27.7	95.7
	Neutral	6	3.9	4.3	100.0
	Total	141	91.0	100.0	

Table A8- 13: Frequency data for WBLT has reduced respondents' ability to inspire and motivate students

Q4.3.2 WBLT has enhanced/reduced my ability to-inspire and motivate my students					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	8	5.2	5.8	5.8
	Enhanced	34	21.9	24.6	30.4
	No change	43	27.7	31.2	61.6
	Reduced	41	26.5	29.7	91.3
	St. Reduced	12	7.7	8.7	100.0
	Total	138	89.0	100.0	

Table A8- 14: Frequency data for respondents using lecture to connect with students

Q4.4.1 I use the lecture to-establish a connection with my students					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	80	51.6	56.7	56.7
	Agree	52	33.5	36.9	93.6
	Neutral	8	5.2	5.7	99.3
	Disagree	1	.6	.7	100.0
	Total	141	91.0	100.0	

Table A8- 15: Frequency data for WBLT has reduced respondents' ability to connect with students

Q4.4.2 WBLT has enhanced/reduced my ability to-establish a connection with my students					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	11	7.1	7.9	7.9
	Enhanced	27	17.4	19.3	27.1
	No change	30	19.4	21.4	48.6
	Reduced	44	28.4	31.4	80.0
	St. Reduced	28	18.1	20.0	100.0
	Total	140	90.3	100.0	

Table A8- 16: Frequency data for respondents using lecture to provide a routine for students

Q4.5.1 I use the lecture to-provide a routine for my students					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	13	8.4	9.4	9.4
	Agree	41	26.5	29.5	38.8
	Neutral	52	33.5	37.4	76.3
	Disagree	26	16.8	18.7	95.0
	Strongly Disagree	7	4.5	5.0	100.0
	Total	139	89.7	100.0	

Table A8- 17: Frequency data for WBLT has reduced respondents' ability to provide a routine for students

Q4.5.2 WBLT has enhanced/reduced my ability to-provide a routine for my students					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	6	3.9	4.3	4.3
	Enhanced	16	10.3	11.6	15.9
	No change	75	48.4	54.3	70.3
	Reduced	31	20.0	22.5	92.8
	St. Reduced	10	6.5	7.2	100.0
	Total	138	89.0	100.0	

Table A8- 18: Frequency data for respondents using lecture to provide a structured experience to the unit content

Q4.6.1 I use the lecture to-structure					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	52	33.5	37.1	37.1
	Agree	74	47.7	52.9	90.0
	Neutral	11	7.1	7.9	97.9
	Disagree	2	1.3	1.4	99.3
	Strongly Disagree	1	.6	.7	100.0
	Total	140	90.3	100.0	

Table A8- 19: Frequency data for WBLT has reduced respondents' ability to structured experience to the unit content

Q4.6.2 WBLT has enhanced/reduced my ability to-structure					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	18	11.6	12.9	12.9
	Enhanced	43	27.7	30.7	43.6
	No change	58	37.4	41.4	85.0
	Reduced	13	8.4	9.3	94.3
	St. Reduced	8	5.2	5.7	100.0
	Total	140	90.3	100.0	

Table A8- 20: Frequency data for respondents using lecture to demonstrate processes

Q4.7.1 I use the lecture to-demonstrate					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	33	21.3	23.4	23.4
	Agree	62	40.0	44.0	67.4
	Neutral	28	18.1	19.9	87.2
	Disagree	13	8.4	9.2	96.5
	Strongly Disagree	5	3.2	3.5	100.0
	Total	141	91.0	100.0	

Table A8- 21: Frequency data for WBLT has reduced respondents' ability to demonstrate processes

Q4.7.2 WBLT has enhanced my ability to-demonstrate					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	10	6.5	7.2	7.2
	Enhanced	19	12.3	13.7	20.9
	No change	74	47.7	53.2	74.1
	Reduced	28	18.1	20.1	94.2
	St. Reduced	8	5.2	5.8	100.0
	Total	139	89.7	100.0	
Missing	System	16	10.3		
Total		155	100.0		

Table A8- 22: Frequency data for respondents using lecture to provide group feedback to students

Q4.8.1 Lect-feedback					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	21	13.5	15.0	15.0
	Agree	55	35.5	39.3	54.3
	Neutral	34	21.9	24.3	78.6
	Disagree	18	11.6	12.9	91.4
	Strongly Disagree	12	7.7	8.6	100.0
	Total	140	90.3	100.0	

Table A8- 23: Frequency data for WBLT has reduced respondents' ability to provide group feedback to students

Q4.8.2 WBLT-feedback					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	11	7.1	7.9	7.9
	Enhanced	18	11.6	12.9	20.9
	No change	82	52.9	59.0	79.9
	Reduced	17	11.0	12.2	92.1
	St. Reduced	11	7.1	7.9	100.0
	Total	139	89.7	100.0	

Table A8- 24: Frequency data for respondents using lecture to gauge students' understanding and respond on the fly

Q4.9.1 Lect-respond					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	33	21.3	23.4	23.4
	Agree	64	41.3	45.4	68.8
	Neutral	24	15.5	17.0	85.8
	Disagree	17	11.0	12.1	97.9
	Strongly Disagree	3	1.9	2.1	100.0
	Total	141	91.0	100.0	

Table A8- 25: Frequency data for WBLT has reduced respondents' ability to gauge students' understanding and respond on the fly

Q4.9.2 WBLT-respond					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	4	2.6	2.9	2.9
	Enhanced	14	9.0	10.0	12.9
	No change	58	37.4	41.4	54.3
	Reduced	34	21.9	24.3	78.6
	St. Reduced	30	19.4	21.4	100.0
	Total	140	90.3	100.0	

Table A8- 26: Frequency data for respondents using lecture to use visual aids and other props to explain content

4.10.1 Lect-Vis/aids					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	75	48.4	53.6	53.6
	Agree	55	35.5	39.3	92.9
	Neutral	8	5.2	5.7	98.6
	Disagree	1	.6	.7	99.3
	Strongly Disagree	1	.6	.7	100.0
	Total	140	90.3	100.0	

Table A8- 27: Frequency data for WBLT has reduced respondents' ability to use visual aids and other props to explain content

4.10.2 WBLT-Vis/aids					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	16	10.3	11.6	11.6
	Enhanced	25	16.1	18.1	29.7
	No change	33	21.3	23.9	53.6
	Reduced	38	24.5	27.5	81.2
	St. Reduced	26	16.8	18.8	100.0
	Total	138	89.0	100.0	

Table A8- 28: Frequency data for respondents using lecture to make announcements

4.11.1 Lect-announce					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	63	40.6	45.0	45.0
	Agree	51	32.9	36.4	81.4
	Neutral	18	11.6	12.9	94.3
	Disagree	6	3.9	4.3	98.6
	Strongly Disagree	2	1.3	1.4	100.0
	Total	140	90.3	100.0	

Table A8- 29: Frequency data for WBLT has reduced respondents' ability to make announcements

4.11.2 WBLT-announce					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	St. Enhanced	28	18.1	20.0	20.0
	Enhanced	38	24.5	27.1	47.1
	No change	54	34.8	38.6	85.7
	Reduced	13	8.4	9.3	95.0
	St. Reduced	7	4.5	5.0	100.0
	Total	140	90.3	100.0	

Table A8- 30: Frequency data for respondents who use WBLT to support students who cannot attend lectures

Q5(1)- can't come					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	127	81.9	81.9	81.9
	Not ticked	28	18.1	18.1	100.0
	Total	155	100.0	100.0	

Table A8- 31: Frequency data for respondents who use WBLT because students can learn just as well with WBLT as with attending face-to-face lectures

Q5(2)- learn as well					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	3.2	3.2	3.2
	Not ticked	150	96.8	96.8	100.0
	Total	155	100.0	100.0	

Table A8- 32: Frequency data for respondents who use WBLT to help students cope with their accents

Q5(3)- help cope with me					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	15	9.7	9.7	9.7
	Not ticked	140	90.3	90.3	100.0
	Total	155	100.0	100.0	

Table A8- 33: Frequency data for respondents who use WBLT to support students from non-English speaking backgrounds

Q5(4)- support NESB					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	73	47.1	47.1	47.1
	Not ticked	82	52.9	52.9	100.0
	Total	155	100.0	100.0	

Table A8- 34: Frequency data for respondents who use WBLT to support students with disabilities

Q5(5)- support disabilities					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	76	49.0	49.0	49.0
	Not ticked	79	51.0	51.0	100.0
	Total	155	100.0	100.0	

Table A8- 35: Frequency data for respondents who use WBLT because they are required by the department

Q5(6)- required by dept					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	27	17.4	17.4	17.4
	Not ticked	128	82.6	82.6	100.0
	Total	155	100.0	100.0	

Table A8- 36: Frequency data for respondents who use WBLT because of pressure from students

Q5(7)- student pressure					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	18	11.6	11.6	11.6
	Not ticked	137	88.4	88.4	100.0
	Total	155	100.0	100.0	

Table A8- 37: Frequency data for respondents who use WBLT to avoid repeating lectures

Q5(8)- so No repeat					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	8.4	8.4	8.4
	Not ticked	142	91.6	91.6	100.0
	Total	155	100.0	100.0	

Table A8- 38: Frequency data for respondents who use WBLT to provide an extra tool to learn

Q5 (9)- provide extra tool					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	100	64.5	64.5	64.5
	Not ticked	55	35.5	35.5	100.0
	Total	155	100.0	100.0	

Table A8- 39: Frequency data for respondents who have reduced opportunities for students to ask questions as a result of using WBLT

Q7(1)- reduce Q opport.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	15	9.7	9.7	9.7
	No	140	90.3	90.3	100.0
	Total	155	100.0	100.0	

Table A8- 40: Frequency data for respondents who have reduced interaction between students as a result of using WBLT

Q7(2)- reduce interact between S.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	25	16.1	16.1	16.1
	No	130	83.9	83.9	100.0
	Total	155	100.0	100.0	

Table A8- 41: Frequency data for respondents who have adjusted activities as a result of using WBLT

Q7(3)- adjusted activities					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	47	30.3	30.3	30.3
	No	108	69.7	69.7	100.0
	Total	155	100.0	100.0	

Table A8- 42: Frequency data for respondents who have become more didactic as a result of using WBLT

Q7(4)- more didactic					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	7.7	7.7	7.7
	No	143	92.3	92.3	100.0
	Total	155	100.0	100.0	

Table A8- 43: Frequency data for respondents who have become more aware of spontaneous comments as a result of using WBLT

Q7(5)- aware spont. comments					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	70	45.2	45.2	45.2
	No	85	54.8	54.8	100.0
	Total	155	100.0	100.0	

Table A8- 44: Frequency data for respondents who have reduced the use of multimedia content due to copyright restrictions when using WBLT

Q7(6)- reduce MM due to copyright					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	41	26.5	26.5	26.5
	No	114	73.5	73.5	100.0
	Total	155	100.0	100.0	

Table A8- 45: Frequency data for respondents who have scripted their lectures more tightly as a result of using WBLT

Q7(7)- scripted more tightly					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	35	22.6	22.6	22.6
	No	120	77.4	77.4	100.0
	Total	155	100.0	100.0	

Table A8- 46: Frequency data for respondents who have reduced movements around the lecture theatre as a result of using WBLT

Q7(8)- reduced movement					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	45	29.0	29.0	29.0
	No	110	71.0	71.0	100.0
	Total	155	100.0	100.0	

Table A8- 47: Frequency data for respondents who listened and adjusted their performance as a result of using WBLT

Q7(9)- listened and adjusted					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	36	23.2	23.2	23.2
	No	119	76.8	76.8	100.0
	Total	155	100.0	100.0	

Table A8- 48: Frequency data for respondents who made changes to their lectures as a result of using WBLT for reusing them in the future

Q7(10)- changes due to re-use					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	15	9.7	9.7	9.7
	No	140	90.3	90.3	100.0
	Total	155	100.0	100.0	

Table A8- 49: Frequency data for respondents who have not changed their lecturing style as a result of using WBLT

Q7(11)- No change to lect style.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	60	38.7	38.7	38.7
	No	95	61.3	61.3	100.0
	Total	155	100.0	100.0	

Table A8- 50: Frequency data for respondents who have not changed what they do in lectures as a result of using WBLT

Q7(12)- No change to what I do					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	51	32.9	32.9	32.9
	No	104	67.1	67.1	100.0
	Total	155	100.0	100.0	

Table A8- 51: Frequency data for respondents who are concerned about moral rights when using WBLT

Q9(1)- concern moral rights					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	26	16.8	16.8	16.8
	No	129	83.2	83.2	100.0
	Total	155	100.0	100.0	

Table A8- 52: Frequency data for respondents who are concerned about others reusing their lectures when using WBLT

Q9(2)- concern reuse					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	54	34.8	34.8	34.8
	No	101	65.2	65.2	100.0
	Total	155	100.0	100.0	

Table A8- 53: Frequency data for respondents who are concerned about others disaggregating their lecture and using bits out of context

Q9(3)- concern disaggregate					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	38	24.5	24.5	24.5
	No	117	75.5	75.5	100.0
	Total	155	100.0	100.0	

Table A8- 54: Frequency data for respondents who are concerned about confidentiality and privacy when using WBLT

Q9(4)- concern privacy					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	44	28.4	28.4	28.4
	No	111	71.6	71.6	100.0
	Total	155	100.0	100.0	

Table A8- 55: Frequency data for respondents who have changed the structure of their unit as a result of using WBLT

Q11 - Change structure					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	34	21.9	24.6	24.6
	No	104	67.1	75.4	100.0
	Total	138	89.0	100.0	

Table A8- 56: Frequency data for respondents who have noticed changes in the way they communicate and interact with their students as a result of using WBLT

Q13 – Changes in Communication					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Impact positive	29	18.7	21.3	21.3
	Not sure/No change	81	52.3	59.6	80.9
	Impact negative	26	16.8	19.1	100.0
	Total	136	87.7	100.0	

Table A8- 57: Frequency data for respondents who think that students have achieved better results with WBLT

Q15 - Better results?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes-significantly	11	7.1	7.9	7.9
	Yes-moderately	31	20.0	22.3	30.2
	Not sure	76	49.0	54.7	84.9
	No-didn't help	13	8.4	9.4	94.2
	No-detrimental	8	5.2	5.8	100.0
	Total	139	89.7	100.0	

Table A8- 58: Frequency data for respondents who WBLT makes it easier for students to learn

Q16 - Easier to learn?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes-significantly	17	11.0	12.2	12.2
	Yes-moderately	51	32.9	36.7	48.9
	not sure	53	34.2	38.1	87.1
	No-didn't help	10	6.5	7.2	94.2
	No-detrimental	8	5.2	5.8	100.0
	Total	139	89.7	100.0	

Table A8- 59: Frequency data for respondents who thinks lecture attendance has decreased as a result of WBLT

Q18 - Decreased Attendance					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	40	25.8	29.4	29.4
	Agree	35	22.6	25.7	55.1
	Not sure	33	21.3	24.3	79.4
	Disagree	16	10.3	11.8	91.2
	Strongly Disagree	12	7.7	8.8	100.0
	Total	136	87.7	100.0	

Table A8- 60: Frequency data for respondents who would use WBLT more if visuals are captured

Q21(1)improve - capture visuals					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	80	51.6	51.6	51.6
	No	75	48.4	48.4	100.0
	Total	155	100.0	100.0	

Table A8- 61: Frequency data for respondents who would use WBLT more if visuals are synchronised with the audio

Q21(2) improve - visual sync					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	89	57.4	57.4	57.4
	No	66	42.6	42.6	100.0
	Total	155	100.0	100.0	

Table A8- 62: Frequency data for respondents who would use WBLT more if discussions are captured

Q21(3) improve capture discuss.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	82	52.9	52.9	52.9
	No	73	47.1	47.1	100.0
	Total	155	100.0	100.0	

Table A8- 63: Frequency data for respondents who would use WBLT more if they are able to edit the recording

Q21(4) improve- edit files					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	42	27.1	27.1	27.1
	No	113	72.9	72.9	100.0
	Total	155	100.0	100.0	

Table A8- 64: Frequency data for respondents who would use WBLT more if it is easier to use copyrighted materials

Q21(5) improve- ease of copyright use					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	70	45.2	45.2	45.2
	No	85	54.8	54.8	100.0
	Total	155	100.0	100.0	

Table A8- 65: Frequency data for respondents who thinks the current facility suits their needs

Q21(6) improve-none					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	4.5	4.5	4.5
	No	148	95.5	95.5	100.0
	Total	155	100.0	100.0	

Table A8- 66: Frequency data for respondents whose overall experience is positive

Q23 - experience positive					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Almost always	40	25.8	29.9	29.9
	Frequently	33	21.3	24.6	54.5
	About half the time	25	16.1	18.7	73.1
	Sometimes	20	12.9	14.9	88.1
	Rarely or almost never	16	10.3	11.9	100.0
	Total	134	86.5	100.0	

Table A8- 67: Frequency data for respondents on the *Information Transfer/ Teachers-Focussed* scale from the *Approaches to Teaching Inventory*

NTILES of ITTF					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	33	21.3	23.2	23.2
	2	36	23.2	25.4	48.6
	3	39	25.2	27.5	76.1
	4	34	21.9	23.9	100.0
	Total	142	91.6	100.0	

Table A8- 68: Frequency data for respondents on the *Conceptual Change/ Student-Focussed* scale from the *Approaches to Teaching Inventory*

NTILES of CCSF					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	40	25.8	28.4	28.4
	2	25	16.1	17.7	46.1
	3	45	29.0	31.9	78.0
	4	31	20.0	22.0	100.0
	Total	141	91.0	100.0	

Appendix 9 - Vignettes

Amy

Amy	Student
Discipline	Physical Sciences
Enrolment mode	External
Level	Undergraduate
Experience with WBLT	Negative

'I'm trying to use it this semester, but I haven't had any success. I need to contact my technological mates (for help).' Amy

Amy's story

Amy is working full-time and currently enrolled part-time in the eighth year of an undergraduate degree in Physical Sciences. Although she lives in the same city as her University, she is enrolled as an external student. She describes herself as *'like many students...very poor and, if they're older, not particularly technologically competent'*.

WBLT and learning

Although technologies were particularly important for the external students interviewed during this project, not all found WBLT helpful. Amy has tried using WBLT but found it was *'totally not coherent'*.

It just took a very long time to load' and came through 'in drips and grabs and bits and pieces and makes it very disjointed... so instead of taking an hour to listen to a lecture, it would take an hour and a half or something...I gave up after ... 10 minutes or so.

Amy prefers the DVDs now offered for external students because she finds them easier to access and control how she listens to the lecture.

Impressions of using WBLT

Amy's experience of WBLT was negative. She sees it as a technology barrier which she and other students without fast and reliable access cannot overcome. She finds the DVDs a useful study tool and has given up trying to use WBLT:

Hideous... I've never been able to return to (WBLT).

Learning Futures

Amy is concerned with the growing inequity of technology use in education. She feels strongly that older students and those in more remote areas will be increasingly disadvantaged:

I just think that whoever thought that was a good idea has rocks in their heads.'

Charles

Charles	Lecturer
Discipline	Marketing
Delivery mode	Internal students
Level	Undergraduate
Experience with WBLT	Negative

I don't think it has anything to do with education or to do with work patterns for students; it has to do with putting less responsibility on students and putting more responsibility on the lecturers. Charles

Charles' story

Charles teaches an undergraduate elective subject in Marketing. He has been teaching for 17 years and describes himself as an early adopter in using learning technologies:

I put everything up on WebCT back in 1999. I've been using it for quite a while now, but I always used it as a supplement to learning, not a mode of delivery.

WBLT and teaching

Although Charles initially used WBLT in his subject he has stopped using it due to a marked drop in attendance he attributes to WBLT. He is concerned that his students don't come to lectures, listen to the recordings or look at the notes and, as a result, the use of WBLT is detrimental to their grades. He also finds he has less opportunity to communicate with his students:

You've really got a cohort of students now who are almost in external mode. That is, they are not really engaged in the course and they don't really look at the materials regularly. They may not get some of the nuances of what you are doing because they are not going to the lecture and then they come to the workshop what I might call, cold. So if they come into the workshop, they haven't done the reading, they haven't followed the notes and they are really behind. I'm spending more time with them at the workshop to compensate that sometimes.

Web-based students were less motivated than before, but I can't change their motivation because they are not there.

Because of this impact on attendance, Charles has now changed his delivery from lectures to tutorials to engage his students and encourage them to attend:

The idea that you can just listen to something and gain information is not true. In marketing, the examples I'm showing are websites, or on consumer behaviour. Video clips and advertisements are visual!

Prior to his changing to workshops, Charles found that the use of WBLT also impacted on his lecturing style. He acknowledges that he became more aware of spontaneous comments and reduced his movements around the lecture theatre:

You are limited by what you can do with humour in the university. You have to be very careful (about) cracking jokes, so it has really narrowed my tools to motivate and inspire right down.

Charles acknowledges that there is subtle pressure from his institution to use WBLT and it is 'you sign up voluntarily'. However he's concerned that,

'the students can lodge an appeal saying I didn't provide notes on (WBLT)e, and they couldn't get to the lectures, so didn't understand the unit... you leave yourself wide open.

Impressions of using WBLT

Charles is concerned about WBLT's impact on student learning. He has experienced changes in the way he interacts with his students because it seems they have adapted external modes of study, despite their enrolment as internal students. He suspects that they don't listen to the recordings throughout the semester and rely on cramming *'the day before the exam.'*

Learning futures

I'd say that the way things are going, (students) won't have go into lectures or workshops, and these are sort of beamed out to wherever (students). That would make a teaching job very difficult because you now have to interact with people out there (rather than in the lecture).

Charles sees the future of learning as requiring academics to spend less time on (knowledge) and more on delivery and that's the problem. He suggests that instead of showing up to the lecture, talking about the materials and maybe having a handout, academics have to change things to be able to fit into the online space more effectively:

I'll give you an example. Now I do two unit outlines – a printed one, because the students must have a printed unit outline. That's fair enough and then there's an online version, which is a series of webpages. So I do two! I used to do one. So why don't I just put it up and download it? That's not good enough because that's not using the medium properly.

Charlotte

Charlotte	Student
Discipline	Psychology
Enrolment status	Full time, on campus
Year	3 rd Year
Experience	Positive

'There are times in a Statistics lecture where they're talking about certain terms and equations where it would actually be helpful to have the visuals, but I just don't actually have the capacity at the moment' .Charlotte

Charlotte's story

Charlotte is currently in the third year of a Psychology degree. She is enrolled as a full time student, but her part time work commitments rarely enable her to attend on-campus lectures. She describes her course as 'moderately difficult' and although she does attend practicals, she relies on WBLT for 'almost all' of the lectures:

(WBLT) gives me flexibility, which I can't stress the importance of enough. I would probably have to drop a whole subject otherwise.

WBLT and learning

Charlotte listens to WBLT recordings as a replacement to attending face-to-face lectures however she also finds them a valuable study tool:

When it's getting close to exams, I often have them on whilst I'm driving.

The capacity to rewind and repeat complex materials is also beneficial:

There's a lot to write and I can pause (the recording). I can capture a lot more information from each lecture than if I was actually just attending the lecture.

She usually listens to the entire recording and review particular segments if required.

Attending on-campus sessions so infrequently, Charlotte acknowledges that there are social aspects of university life that she misses:

It is a little bit of a shame to miss out on the lecture atmosphere and the face-to-face with the lecturer or the teacher. If you're actually at the lecture, you can ask more questions and you can become acquainted with the teaching staff, which are all positive things to add to learning.

Impressions of using WBLT

Charlotte has had generally positive experiences with WBLT and agrees with the statement that she could learn just as well from the technologies as from attending face-to-face lectures. Although she considers the social aspects of on campus learning as beneficial, she acknowledges that this is less important to her than maintaining her part time work:

I wouldn't drop a subject, I would use iLecture over those (social) things.

Her suggestions for improving the use of WBLT include the inclusion of visuals, however she acknowledges that her computer does not have sufficient capacity for such extras. She usually downloads the recordings onto her MP3 player.

Darcy

Darcy	Lecturer
Discipline	Law
Delivery mode	Mix of internal and external students
Level	Undergraduate
Experience with WBLT	Positive

'...(WBLT) has provided me with an opportunity to treat our external students as well as the internals, I've worried for many years that our externals get (a) much poorer deal than our internals.' Darcy

Teaching Context

(I) try to get the motivation levels up, because most of them don't want to be there. At the beginning of the unit they can't see why they're there in the first place.

Darcy teaches a Law subject to a mix of internal and external students in an undergraduate Life Science program. During his 20 years of University teaching Darcy has experimented with technologies for flexible learning. He currently uses many of the communication features of the institution-wide Learning Management System (LMS) and praised *'the seamless nature of the lectures, the tutes and the forum...I'm keen for lots of opportunities for interactions with the students because it's all brand new and scary stuff for them.'*

Darcy describes his approach to teaching as having changed from *'transmitting factual stuff'* to assisting the students to *'understand the underlying concepts so that when they start reading their own legislation in other courses or in their careers, they've got the tools to understand it.'*

WBLT and teaching

This is Darcy's second year of using WBLT and he describes his experience as *'always positive'*.

I started directly talking to the external students during (WBLT) recording...I could ask questions in a lecture and within an hour or two externals have heard the lecture, heard the question and posted on the discussion forum their responses to the questions, so it's more of a united group of students now.

He comments that *'particularly in the last couple of years I found that the students are helping each other more and more, not just with concepts but also supporting each other emotionally.'*

Darcy provides the MS PowerPoint slides about a week ahead of each lecture:

My experience is that they then scribble all over those. It means they can focus on the interesting bits rather than the mundane bits.

Impressions of using WBLT

'I think, internal/ external divide is much less than it used to be. That's really the main benefit I see from my use of (WBLT) now.'

Darcy describes himself as using the lectures to motivate his students and encourage their engagement. There has been a *'net positive effect'* in enabling external students to participate

more immediately. Even for internal students he sees that communication has increased by the integrated use of WBLT and the online discussion forum in the LMS:

They question much more in (the online discussion forum) than they ever would've in lectures...and with 150 odd students, you don't get much discussion (in lectures).

He attributes the combination of WBLT and the online discussion forum as having contributed to more collaborative learning by the students:

Collectively they did better. In one part of the exam last year, everybody passed with flying colours. (That) doesn't normally happen.

Darcy strongly disagrees with the suggestion that attendance may have decreased in his lectures as a result of using WBLT, however he does recognise the changes he has made to his lecturing style:

I used to do lots of additional things in lectures that would take me away from the computer and away from the screen...now I'm confined to the length of the microphone cord. Some of the stuff that I used to do I now feel I can't do. Some of the materials I used to use I can't use so freely for copyright reasons. Probably there's way around it, but it gets semi-awkward.

Learning Futures

I suspect in terms of making university budgets balanced, we're going to have to access students from a wider range of backgrounds with more flexibility being demanded by them. And therefore, online stuff, be it (WBLT) or (an LMS), or whatever will be more and more required to manage all of that.

David

David	Lecturer
Discipline	Biological Sciences
Delivery mode	Internal students
Year	Undergraduate
Experience with WBLT	Negative

I would like to see students having to pay eg., \$20/lecture to access the notes on (WBLT) unless they can show cause as to why they cannot attend the lecture (work, family, unit incompatibility); in which case they get it for free.

David's story

David has been teaching undergraduate programs in the field of Biological Sciences for almost ten years. He is passionate about his subject and receives positive feedback about his teaching from his students.

In recent years he has noticed the numbers in his units growing significantly. For example, in one of his 2nd year units, there are 120 – 170 student enrolled. To help manage the larger numbers, he supplements the three 1 hour lectures plus one 3 hour lab session per week with WebCT readings, resources and discussion:

I use WebCT discussion pages a lot, but it's become a lot less personal.

WBLT and teaching

David uses WBLT because he feels pressured by his students and his University:

The philosophy of the university is that we must do everything to appease students. However, I don't think appeasing students has anything to do with quality education. We are not able to challenge the students, to stimulate them. Everything is geared towards getting the weaker students through their program.

David is concerned about the falling standards of his students and has been keeping a spreadsheet of results to enable him to compare student groups over recent years. He has noticed a significant rise in the number of students who withdraw from the unit late in the semester or fail to sit the final exam. He attributes this trend, at least in part, to the students' falling behind in listening to the lectures during the semester and then being overwhelmed when they are confronted with the final exam.

What they are doing is filing away their iLectures with the idea that they will just study them before the exam but by then it's too late.

David sees lecture attendance as an important part of student learning throughout the semester:

When students come to lectures they most often take notes. By doing that they absorb some of the material. So by the end of semester they have absorbed quite a lot. If they don't come to lectures they miss that.

Maintaining some spontaneity during his lectures is important to David and he often adds extra parts to the overhead projections he uses to demonstrate concepts:

In lectures I often use the overhead project to supplement the material. These are spontaneous additions that occur to me as I'm giving the lecture. A lot of students like

this and I get good feedback from this. Some students don't like it, probably the ones who don't come to lectures because they miss this.

Impressions of using WBLT

Students need to be stimulated and challenged, they need to be pushed otherwise they won't learn.

Although he sees online environments as very useful for providing figures, diagrams and source material, David is concerned about the impact of technologies such as WBLT on students' learning:

I think that e-learning has a place but I don't think it should mean that we just hand everything to students on a plate. It should be used as a learning aid, not to replace conventional learning but to support it. It seems that we are where the United States was 20-30 years ago. It didn't work for them then, it won't work for us now.

Learning Futures

I would also like to develop more (online) items that challenge and stimulate students. I don't know what these are but I'm excited by the potential.

I would like to see access to (WBLT) material restricted to those who for valid reasons cannot get to the lectures. I also think they should not be downloadable as its too easy. For those who without a valid reason just miss a lecture, they should pay for the access, and again it should not be downloadable.

Dominique

Dominique	Student
Discipline	Life Sciences
Enrolment status	Part-time, external
Year	3 rd year
Experience	Positive

'I'm an external student, so (WBLT)'s the only way I get to listen to the lectures.'
Dominique

Dominique's story

Dominique is working full-time and currently enrolled part-time in the third year of an undergraduate degree in the field of Life Sciences. She finds WBLT an invaluable aid in helping her manage external studies with part-time work. She has established a routine to listen *'as soon as the recordings are available'*.

WBLT and learning

Dominique described her experience of using WBLT as positive and found the lecture recordings a valuable supplement to the materials she receives as an external student:

'I always find it the first lecture really gets you grounded in what you're studying for the rest of the semester.'

When the technology works and she can access WBLT successfully, Dominique finds the first lecture of the semester to be crucial. She also uses WBLT to review the materials as often as required to develop a full understanding of the concepts.

Impressions of using WBLT

WBLT has been a useful study tool for Dominique and she has found it has helped her achieve better results in her studies.

On the negative side, Dominique saw WBLT as *'a work in progress'* and commented on her frustration at finding the recordings unavailable. She commented that this sometimes happens in the first lecture, which makes it hard for external students to get the introductory comments and sometime administrative information.

Learning Futures

Flexibility is important to Dominique and she sees this as being a growing need in future learning environments, *'so you can actually accommodate university study with other aspects of your life'*.

Edwina

Edwina	Lecturer
Discipline	English
Delivery mode	Mix of internal and external students
Year	Undergraduate
Experience with WBLT	Negative

To be honest I encourage my students to attend and I take a roll that they think I check. They're absolutely desperate to get onto that roll if they're there. Edwina

Edwina's story

Edwina has been teaching English for almost 13 years. Her students are a mix of internal and external students, for example in one second year unit there are 125 on-campus students and 35 external students.

Edwina has thought extensively about the curriculum in her units and has made considerable changes to the timetabling and components of the face-to-face sessions:

My subject was timetabled as not having any lectures. It was just a 2 hour interactive seminar every week. (Eventually) I found that there were certain concepts that the students were not grasping- that they simply weren't getting them or that we were repeating because we were all in separate seminars- me and the other tutors. We felt we needed to (convey) certain basic concepts and bring the students together for a certain amount of teaching. So I implemented 6 lectures- fortnightly lectures in order to bring the students together and to make sure that everybody is at least getting something of the same. It's creating a unifying thing.'

From Edwina's perspective, the lectures provide the foundation concepts for the students and the tutors can then 'have quite a lot of freedom to use their own style'.

WBLT and teaching

Edwina resisted using WBLT at first and still has some reservations about the impact of the technologies on student learning, 'especially undergraduates'. Part of her resistance is due to the feeling that she had little control over whether to use the technologies. She agrees that she would have recorded the lectures for her external students, but feels disempowered by the pressure put on her by her department:

We were told we had to use it.

The transition into using the MS PowerPoint slides accompanying WBLT also caused Edwina some concern:

I use overheads when necessary, but using slides was not appropriate for my kind of use. I might have long quotes which I put on an overhead and then discuss... PowerPoint doesn't take long stuff and I just resisted that need to break anything up into small bites.

Instead of using MS PowerPoint slides, Edwina now puts her overhead slides or materials shown on the visualiser onto the course WebCT site, which is available for both internal and external students.

Another concern Edwina has about WBLT is the impact on student attendance. Edwina noticed a drop in lecture attendance when she began using WBLT four years ago:

I am really concerned about lecture attendance and a lot of my colleagues have found lecture attendance has dropped since (WBLT).

Reduced student attendance works directly against Edwina's attempts to build a sense of community in her classes:

(When attendance was dropping) I wondered why I was bothering to stand up and prepare and give this lecture instead of just going to the studio and recording it if they're not going to come. It is only 6 lectures and they're told it's compulsorily (to attend).

Edwina is concerned that students who do not attend the lecture either miss out on the foundation concepts altogether or wait until close to their assignments to listen:

I've structured the course so that lectures are on Monday and all the seminars follow that week and the week after when there's no lecture.

She acknowledges that this makes it difficult for the tutors to structure the workshops to follow on from the lecture content and to accommodate the different students' familiarity with the content:

If they ever listen to the lecture ...they might do it just before their assessment which is not how I've designed it to happen.

In recent semesters she has decided to work to encourage students to attend:

I wouldn't have bothered with the roll before but I started taking the roll as a response to (WBLT)... then some of them started coming in, signing the roll and leaving, so I now will do the roll later in the lecture.

She also insists that students telephone her to let her know if they can't attend lectures:

It's just reinforcing that expectation, because I do think it's important (that they attend).

Although she acknowledges that there are some benefits for students in using WBLT, for example catching up on missed lectures, Edwina would rather find alternatives to WBLT. One tactic she has considered is making tapes of the lectures available for loan from the library or her office, as back up when the occasional lecture is missed by students.

WBLT have also impacted slightly on the amount of dialogue Edwina includes in her lectures. She does endeavour to 'repeat student questions for the recording' but acknowledges that she has reduced the amount of student questioning as a result of the technologies.

Impressions of using WBLT

Edwina recognises that she has had both positive and negative experiences using WBLT. She has noticed that the external students appreciate being able to access the lectures almost in real time: *There's a kind of immediacy that they seem to like.*

The flexibility WBLT add to students' learning, particularly those juggling part-time work is also seen as a positive:

It's all very tight for (the students) - they have to work out their days they can work, when they can do their shifts and when are their uni times. I'm prepared to accommodate them a bit because I can see how tough it is for them. It's tough for them now.

While recognising that students appreciate the back up that WBLT can provide, Edwina is concerned about the impact on the learning experiences of internal students:

It's great flexibility for the students, but it's too easy for them to just simply not do it. The conscientious ones will listen and they're the ones who contact me and say I can't come and ask to use the (WBLT). But, you know, there're all kinds of students and it gives some an easy out.

An expected benefit for Edwina and her department is in the recording of visiting lecturers for staff to access:

Sometimes we've had (well-known) guests come and take a session- we've actually used (WBLT) to record these and then we've put them up on our department website. So we've created a resource for staff as well as students.

Learning Futures

'I think a lot more of it will be online and I think we could suffer unless it's done properly. I'm quite committed to the quality use of the online resources and I can see there's a danger of easy online learning which gets a bad name.'

Elinor

Elinor	Student
Discipline	Psychology
Enrolment status	Part time, internal
Year	3 rd year
Experience	Positive

'The only problems I've ever had (with WBLT) are problems with lecturers and their attitudes to people that are using it.' Elinor

Elinor's story

Elinor is currently completing the third year of an undergraduate Psychology degree. She is enrolled as an internal student and studies part time in order to help manage her family commitments. She lives over an hour's drive from campus and sometimes listens to the recorded lectures to avoid travelling.

WBLT and learning

Elinor appreciates the flexibility WBLT offers her when she studies and the reduced need for her to travel to campus. In fact she describes herself as attending face-to-face lectures 'rarely or almost never' and being able to 'learn from WBLT as from face-to-face lectures.'

'I might just have 1 lecture on a certain day, so it would've taken me two hours travelling to go to attend. Very often I would listen to it on iLecture instead of attending.'

WBLT is a useful study tool for Elinor. She describes the unit she's studying as '*moderately to very difficult*' and often uses WBLT to revise complex materials. Listening to the materials again and reinforcing them makes Elinor '*feel a bit more confident, being able to read and go over it again.*'

Impressions of using WBLT

'It makes it so much easier, especially for people like me who come in late in life, don't find it very easy and also have a family.'

Elinor's experiences of using WBLT are almost always positive and she strongly agrees that the tools make it easier for her to learn and enable her to get better results. She acknowledges that some lecturers' disapproval of WBLT is evident in their comments. For example,

'in the recording, one lecturer very often made comments about people just listening WBLT, (suggesting) they were going to do a lot worse. That almost made me feel like I'm being lazy... if the students are listening rather than attending, I think maybe some lecturers think it reflects on them personally.'

Learning Futures

Elinor's vision of how learning might be in the future includes replacing some of the 'lecture' time with recordings to free up timetabling space for smaller and more frequent tutorial groups:

'In quite a few of my units that if they had WBLT instead of live lectures, and spent more time in tutorial work, that'd be a great benefit.'

Elizabeth

Elizabeth	Student
Discipline	Life Sciences
Enrolment mode	External
Level	3 rd year
Experience with WBLT	Positive

'I transfer the lecture onto my Ipod and listen while my daughter's at ballet.' Elizabeth

Learning Context

Elizabeth is mother of two small daughters and is undertaking the third year of an undergraduate Education degree. Most of her studies have been as a part time student, but this semester she has a full time load. She lives in the mountains and *'wouldn't spend the time or the petrol driving down to campus every day'*.

WBLT and changes to learning

WBLT have been valuable learning tools for Elizabeth. She finds, as an external student, they provide a *way of attending lectures* and reduce her sense of isolation. She previously listened to the CDs sent out by the Uni, but she always felt *'at least a week behind.'*

Elizabeth listens to the lectures regularly throughout the semester, as soon as they are available. Being able to *'repeat missed concepts'* means that she feels her notes are much more comprehensive:

It's fantastic – I love the flexibility, having two little children. I can listen early in the morning or late at night.

Learning Futures

Elizabeth recognises many of the benefits of WBLT for both students and unis and sees that in the future these technologies may be more prevalent in learning environments:

'eLearning may be a common, financially savvy way of unis offering courses, but I still believe the face-to-face component of any unit is vital...we still need to speak to lecturers and tutors.'

Emma

Emma	Student
Discipline	Arts/ Law
Enrolment status	Full time, on campus
Year	6th
Experience	Positive

*'I worked at least part time through most of my degree, so I really rely on that technology being available, because I haven't always been able to get to my lectures'.
Emma*

Emma's story

Emma is currently enrolled her sixth year of an undergraduate Arts/ Law degree. She has studied as a full-time student during her course but has frequently had part time work and has 'many friends outside Uni'. She describes using WBLT in a blended environment, with online notes, presentation slides, photos and an active discussion board.

WBLT and learning

Living only ten minutes' drive from University, Emma describes herself as 'almost always' attending face-to-face lectures, however she acknowledges that there are times when it is not possible to attend. One example she cites is in recent weeks when she was on a 'work placement'. She used WBLT to catch up on the six lectures she would have otherwise missed. In the lead up to exams, she also uses the technology to revise content and to review aspects she may have missed during the lecture.

Impressions of using WBLT

The technology's been pretty good for most of my subjects at Uni.

Emma's experiences of using WBLT have been generally positive. Although she enjoys the atmosphere of the lecture and finds the chance to communicate with the lecturer motivating, the main reasons she ascribes to attending face-to-face lectures are around time management; she enjoys the routine of attending the lecture and then the tutorial later that day and admits she *'would not have got around to listening to the lectures and then would have crammed at the last minute'*.

The flexibility offered by WBLT is seen as Emma as being valuable when there are timetabling issues:

'In fields such as Arts, you can prioritise about lecture attendance...a tutorial trumps a lecture due to compulsory attendance.'

Learning Futures

Emma sees the future of University learning as utilising technology more to enable flexibility. She sees the growing use of discussion boards as continuing to build communication opportunities to reduce isolation for those students who can't attend.

Julia

Julia	Lecturer
Discipline	Law
Delivery mode	Internal students
Level	Undergraduate
Experience with WBLT	Negative

(If students are) using (WBLT) as a substitute to coming to the actual lecture, then they're actually missing out on that active learning. Julia

Teaching Context

Julia teaches fully on-campus classes in the discipline of Law. She has been teaching for only two years but has developed a strong commitment to her teaching philosophy of engaging students in 'active learning'. She teaches in an area that she considers to be 'highly sensitive' and uses lectures to gauge student responses to the content and to provide support as required.

Julia's lectures change throughout the semester. At the beginning of the semester she uses the lecture to 'impart a lot of information' but later when the students have some basis for discussion, the info becomes less important than the dialogue in the class.

Communication between students is one of the key benefits Julia sees in on-campus lectures:

I throw them some really weird examples and let them try and work them out, and why these are occurring, I throw out something quite controversial and let them fight about it. It's always fun when you have (people with opposing views) together.

WBLT and teaching

Julia has stopped using WBLT this semester, as a result of her concerns about student attendance. She is also concerned that students need support when dealing with the often confronting materials that are in her unit:

'It's a subject area where people need support while at the same time, getting information and learning. I don't want a school leaver, a young girl listening to that at home. I want her in the room with me so that I can see their reactions, and usually, on average I have one or two people run from the room crying.'

She realises that some students want to use the recordings for revision and often finds rows of digital recorders on the lectern as she presents:

At the lecture, I have half the students' MP3s lined up. If they want to listen to it later, then they can tape while they are there.

Julia is concerned about the University's push to blend on-campus and external delivery using technologies such as WBLT. She considers that external units should be developed and delivered differently from on-campus units:

There is the perception that (WBLT) creates an external unit. I have no problems with students studying externally, but if you're studying externally, it has to be set up correctly, so you have a study guide that essentially (guides your learning). I see (WBLT) would contribute towards that beautifully, but it's not a case of simply recording lecture and having it as an alternative. It has to be set up according to what we know what makes a successful externally taught unit.

As a result of these concerns, Julia has avoided making changes to her lecture delivery to accommodate WBLT and has instead restructured her unit to encourage attendance:

I just do what I'm doing, and I feed off the people in the room, I react to their questions, I can see when they're getting bored with something, I can see when they would find something quite interesting, which I haven't quite expected. So I very often follow that.

Impressions of using WBLT

Julia describes her experiences of using WBLT as rarely or almost never positive. She disagrees that the tools have helped students achieve better results because of what she sees as a 'passive' style of learning that is encouraged. As a result of these concerns, she has stopped using WBLT in favour of more active 'workshop' style classes:

I guess my perspective on that is I know what good teaching is, and I'm going to do good teaching, and if you don't like it, don't do my unit.

Learning Futures

Julia describes the future of learning as 'worrying', because of two competing forces at work:

'One is the economic realistic force on teaching, which is increasing your student numbers, making it so that students who have to work full time can also study full time, and all of those things eat away good pedagogy. But at the same time, we've got this force that says we've got to be better teachers, we need to be more interactive, lots of stuff written in the literature about how passive learning is not providing good, deep learning. And I don't know how they are going to be reconciled. I think we'll end up with two types of universities.

Margaret

Margaret	Student with a disability
Discipline	Social Work
Enrolment status	Full time, on campus
Year	2 nd year
Experience	Positive

'I have a learning disability, but I'm not alone in getting overloaded on lectures – the lecturer can talk until the cows come home and I won't be able to remember or take down enough notes to cover all that's been said.' Margaret

Margaret's story

Margaret is currently enrolled in her second year of a postgraduate Social Work program. She has studied as a part-time student while working in the past, but for this degree is studying part-time and working part time.

Margaret has a memory-related learning disability and also a mild case of RSI (do we need to spell this out?). Although she attends most on-campus lectures, she has trouble summarising as a result of her condition and can't write very fast to take effective notes during lectures. She describes herself as *'enjoying coming to lectures and hearing lecturers and guest speakers present their ideas and viewpoints'*. She also enjoys meeting fellow students on campus.

WBLT and learning

Margaret uses the lecture recording technologies in conjunction with the online presentation slides, readings and other resources to supplement her lecture attendance.

Margaret usually downloads the lecture to her own computer and listens to the whole lecture. She listens to WBLT recording regularly throughout the semester and frequently revisits the lecture recordings more than once to ensure she has grasped the main concepts. An example she offered was when preparing for an assignment she may go back and review several different theoretical approaches to make sure she has covered all that is required. She used WBLT to revise for exams toward the end of the semester.

Impressions of using WBLT

'I have done online courses before the introduction of (WBLT) and it wasn't as good – I didn't like online without lectures; having to just plough through the pages of readings by myself.'

Margaret's experiences of WBLT have been positive. The technologies provide her with a valuable *'safety blanket'* to take pressure off her note taking and summarising skills:

I really love the fact that I can go back and listen to lectures again and again - especially for revision, for understanding of difficult concepts, for clarification of ideas and assessment tasks.

She also appreciates the flexibility the technology offers:

'You can listen at your own time; at 2 o'clock in the morning if you can't sleep.'

Learning Futures

Margaret acknowledged that the University experience is changing:

I have already seen changes since my first degree in 1980's in that small workshops (10-12 students) are now a thing of the past. I would hate to think that listening to lecturers and guest speakers in lecture theatres would change too much.

Margaret appreciates the flexibility offered by WBLT but would like future learning environments to retain some on-campus lecture experiences:

The only thing I wouldn't want to see is videos being shown instead of "real live" lecturers - as there may be the tendency to cut costs and show the same videos over and over again - causing stagnation and courses that are no longer relevant to today's issues (which is what happens when lecturers don't update their material and give the same lectures year after year). It is also very hard to ask questions of a lecturer who is not there. I have tried online learning through discussion forums and I still prefer to come to lectures and meet people face-to-face.

Maria

Maria	Student
Discipline	Life Sciences
Enrolment status	External
Year	3 rd Year
Experience	Positive

'I did two degrees in the 1990s. Coming back to uni now and finding (WBLT) is there has really added a lot to my ability to study and to work. It's actually been really good.'
Maria

Maria's story

Maria is currently in her third year of an undergraduate degree in Life Sciences. For some of her units she is enrolled as an external student but she sometimes attends lectures on campus. She is very interested in the field she studies, *'but it's usually time that makes me restrict my study. So... it's a time factor in there rather than an interest factor'*.

WBLT and learning

Maria finds she has *'a lot more control'* over her learning with WBLT. In one unit, she *deliberately skipped lectures and did it all on (WBLT) because (the lecturer) mumbled too much.* She could repeat the parts of the lecture that were unclear the first time she heard them.

The lecturer's attitude to technology also has an impact on whether Maria uses WBLT to replace face-to-face lectures:

I think this may sound very funny, but I tend to pick my iLectures based on the lecturer. If the lecturer is like one lecturer that I have who absolutely hates anything remotely technological and is a real visual person, using overhead projectors and lots of things on the board, I find I've really got to be there. But if the person is really up to date with their technology, and has very clear PowerPoint slides, then I know I can miss it and catch it later on at night.

WBLT as a back up when the unexpected happens was also seen as valuable by Maria:

Yesterday I got a flat tyre, and I was half an hour late to a lecture. I missed a whole raft of important announcements, so I listened (later using WBLT). I was really grateful that I could do that, because (the flat tyre) was beyond my control.

Maria commented that not all lecturers are happy to use the new technology:

We do have one lecturer that complains every time (he) puts the microphone on. So, there's still a little bit of resistance in some areas of academia to that particular technology.

Another (lecturer) I spoke to said that she admitted that she could've made better use of (WBLT) and lecture slides and all these sorts of things, but chose not to because she thought students needed an academic challenge in some other way to finding out the information themselves. I thought that was a bit weird.

Impressions of WBLT

Maria has found that WBLT has had a positive impact on her communication with the lecturers and other students:

I tend to have a lot less face-to-face time and I don't need to go and see a person in their consultation hours. If I miss something I listen to it on (WBLT) and if I've got any questions, I email them. That's probably a broader technology thing. I find I would take up less of my lecturer's time as a consequence of that. In terms of interacting with fellow students, discussion boards are really good when they've been made use of. For example, when people would ask a question about an assignment and a fellow student would answer. So sometimes you'd get some interesting debate relevant to the subject on discussion boards

Despite the efficiency WBLT enables, Maria also sees benefits in attending face-to face lectures when she can:

I pick and choose who I (use WBLT) with, depending on the lecturer, and in a sense, it depends on how dynamic they are. There're some courses that are very well structured and you can really use (WBLT) comfortably with discussion boards and you feel like you're participating in the subject. There are other (subjects) where being able to meet your fellow students and go down to the coffee shop and discuss things, or ask questions, or get things very quickly resolved is important. I think this is very much lessened by not being able to have that face-to-face lecture time.

Learning Futures

Maria is concerned that, whatever happens with technologies, the on-campus experience should not be lost to students:

I think that as human beings one of the things that we all like to do is to feel we belong somewhere. If you replace that with technology, then you might still get your nice graduates, but perhaps some of the richness which universities are supposed to be about, might go.

Mary

Mary	Student
Discipline	Social Work
Enrolment status	Full time, on campus
Year	2 nd Year, post graduate
Experience	Positive

'It's so fantastically good that the audio files are there' I just did an intensive course a month ago and I missed a day due to a car accident- that's 30% of the course.' Mary

Mary's story

Mary is currently in the second year of a post-graduate Social Work degree. She studies full-time although there's a requirement for a field placement during her course.

She lives 45 minutes drive from University but almost always attends on-campus lectures. She finds live lectures motivating and enjoys communicating with the lecturer and other students.

WBLT and learning

'As far as I'm concerned, so much of the lecture actually comes from verbal content that's an addition to any kind of written material you're given. So basically you're stuffed if you miss too much lecture content.'

Mary considers the content of lectures to be very important for her learning and mainly uses WBLT as a back-up when she can't attend class. Some of her courses are structured to include an 'intensive' block of classes, conducted '9-5 for a week to get the content out of the way.' She recently had a car accident during one of these scheduled 'intensives and found WBLT invaluable:

'I wasn't able to go on one of the days so I missed 30%, 8 hours worth of lecture time which is a massive chunk. I haven't actually listened to it yet but I am able to access that information.'

She also uses WBLT as a study tool to review complex materials, pick up on things missed in class and to revise for exams.

Impressions of using WBLT

Mary has had generally positive experiences with WBLT during her studies and recalls earlier degrees when no such back-up was available:

'It's a really great idea having audio files available for download, so if for some reason we can't get to a lecture we can actually access them later.'

One limitation she recognises is the time required to download on slow connections:

'I've got dialup at home and it can be very slow to download some of them. Some of them you can stream but some of them you do actually have to download. For me it would take a good hour minimum to be able to download an hour-long audio file.'

Learning futures

Mary anticipates that technology will provide additional support for students in the future:

'I think it's becoming more difficult to be a uni student in terms of the cost and the contact hours. If technology can be used in a way that supports independent learning- for example online lectures then... I think that's absolutely vital that they're available and I think it's brilliant that they're there. I have friends that would not have passed their degrees without them. Because they couldn't attend lectures, they would not have been able to pass their degrees had they not been able to get access to audio files online.'

Phil

Phil	Lecturer
Discipline	Life Sciences
Delivery mode	Internal students
Level	Undergraduate
Experience with WBLT	Positive

'I like having the lectures on (WBLT) because I feel I'm providing a better service for the students.' Phil

Phil's story

Phil teaches on-campus, undergraduate classes in the discipline of Life Sciences. He has been teaching at University for over 11 years and has explored new technologies since he began teaching.

WBLT and teaching

Phil's impressions of using WBLT have been positive and he sees them as tools for making learning easier and more efficient for students. Although he recognises that face-to-face lectures give him a chance to motivate his students and interact with them, he sees the need for flexibility in how the courses are delivered. He cites examples of students who have other commitments and would miss lectures altogether if WBLT was not available:

(If I) look at the numbers of people enrolled and the number of people in the lecture theatre, attendance isn't 100%. A significant number wouldn't turn up for lectures. The people I definitely know I'll never have are, for example, people who are in the elite athlete sporting programs. They're not always even in the state, so they find it fantastic that they can pick up (WBLT) whenever they want. So there are some people whose other interests prevent them from coming to a lecture.

Phil considers it important that students come to university to *'meet people with different opinions and from different backgrounds'* however he doesn't take any measure to encourage attendance:

Why should they come and sit in the lecture theatre where they're not interacting with anyone? I'd rather they came in for coffee and chatted with their buddies and then just sped off again.

Even attendance at lectures does not ensure student engagement, according to Phil, as he sees that writing extensive notes during the lecture does not necessarily mean that the contents will be recalled.

He sees opportunities for WBLT to benefit staff, for example, as part of the 'induction' for new teaching staff members. He has also used it in emergency cases, such as when the lecture theatre was unexpectedly and suddenly unavailable. Rather than spending time rescheduling the lecture, last year's archive was offered using WBLT.

Impressions of using WBLT

Phil has had positive experiences using WBLT and he considers it to be a tool to assist his students in their learning. He has experienced no notable drop in attendance, but he sees that there should be no need to make students attend:

(WBLT) would take the edge off the inspirational part of the lecture. In a normal lecture I'm expecting to build some sort of identity with (the students) I guess with the larger classes it's a little bit more them to me than me to them- but you certainly see familiar faces.

Although he does admit that students need flexibility, he sees that they would miss out on the 'wider social and cultural university experience if they don't come to campus at all. He acknowledges that students miss out on the live performance if they don't attend.

Phil raises a point about the difficulty of using traditional methods to obtain student feedback on his teaching, as required for 'promotion' and for 'developing one's teaching positively':

If you have students who are never coming along to lectures you have to somehow get your survey to them online.

Learning Futures

'I'll think there'll be a hugely increased flexibility in delivery- along the same lines I imagine that we have now but more of it. I suspect also that they'll be a far greater chance to make degrees that comprise of units from different institutions. One unit (could be) offered by one university and the other by another university and somehow either get a double-badged degree at the end of it or some other institution would then award the overarching sort of degree that you picked up from all sorts of different places- either by physically being there or by subscribing or purchasing the material online. Very much a virtual learning place and maybe no attendance at all.'

Sacha

Sacha	Student
Discipline	Life sciences
Enrolment status	Full time, on campus
Year	6 th (Honours)
Experience	Positive

'Living a good hour's drive away from uni means that it's not always practical for me to drive in to attend lectures, so it's a lot easier being able to attend them at home at my own pace when I want and where I want. And it's also handy in that I can go over and repeat things if I had been not paying attention or not understood something I can repeat it so even if I do attend the lecture, I can occasionally go back and listen to a certain section if I need to'. Sacha

Sacha's story

Sacha lives on the coast an hour's drive from Uni. She is currently enrolled in her sixth year of an undergraduate program, (Honours) as an internal student in the Life Sciences discipline area. She has studied as a part-time student during her course but is undertaking full-time study this year. The uses she describes of WBLT are during a unit which included off-campus work-based practicals. Other online components of this Unit include online lecture notes, readings and resources; online announcements and communications through a University-wide learner management system.

WBLT and learning

Like many university students, Sacha works part time. She also attends off-campus practical sessions as part of her program. Sacha describes herself as attending face-to-face lectures for this unit 'sometimes' although she regularly attends the face-to-face tutorials on campus. Her main reason for non-attendance is to avoid travelling to campus for only one class, but she also cites the commitment to off-campus practicals as a reason. She describes herself as being able to learn just as well from WBLT as from face-to-face delivery.

Sacha listens to WBLT recording regularly throughout the semester and usually listens to the whole lecture. She describes the Unit content as 'moderately difficult' and will repeat short sections if the lecture to make sure she understands the content. WBLT help her to take comprehensive notes.

Impressions of using WBLT

Sacha's experience of WBLT was positive. She sees it as a valuable study tool, although attributes her higher grades to '*working hard as well*'. It has also made it easier for her to learn, adding flexibility to her studies.

Suggestions for improvement include improving access to visual elements, such as charts or diagrams. She also found the online communication tools such as discussion boards helpful as an accompaniment to WBLT.

Learning Futures

Sacha's future for learning includes improvements in online facilities and communication.

Sophia

Sophia	Student
Discipline	Psychology
Enrolment status	Part time, internal
Year	4 th year
Experience	Positive

'If WBLT was taken away, I'd feel let down by the university ... it's like taking away the library or something.' Sophia

Sophia's story

Sophia is studying part time and is primary care-giver for two young children. She is currently in her 4th year of an undergraduate Psychology program, enrolled as an internal student.

Although she tries to come to campus for lectures, there are times when the timetable clashes with school drop off times or it is impossible to drive across the city and be back in time for school pickup in the afternoon.

Because of the distance she travels to campus and her family responsibilities, flexibility and convenience have been two main benefits of using WBLT for Sophia:

I could've organised things, my husband could've taken the kids to school but it was just much easier that (WBLT) was there.

WBLT and learning

Most of the lectures in Sophia's program are two hours long and she describes the materials as *moderately difficult*. Although she does attend most face-to-face lectures, she finds that using WBLT has had a positive impact on her grades and has made it easier for her to learn.

When she attends the face-to-face lectures of lectures with complex materials, she uses WBLT to review:

My preference is always to go along to a lecture, but (when) I attend, I make little notes through the lecture so if I don't quite understand something when I'm looking back at my notes, I can go back to it on WBLT.

WBLT has enabled Sophia to *pick up questions that later have been part of the exams*. In one subject *there was one significant part that I didn't get, and didn't realise how much of it I hadn't got until I listened to it again*. *Listening prompted me to email the lecturer and ask him more questions. It really cleared up a lot of stuff that I didn't realise I hadn't understood.*

There are some units that Sophia considers too difficult to study without attending face-to-face lectures. Sophia always attends the first lecture in each Semester to *make sure I can actually do this course through(WBLT)*. The lecturer's style of delivery is also important in determining whether Sophia will rely solely on WBLT. For example, *the course I'm doing this*

year, I wouldn't do through (WBLT) because, I couldn't manage it the way he teaches. The lectures have too many different slides that aren't necessarily on the web. She considers she would miss out on too much in this particular lecture if she didn't attend.

Sophia always listens to the whole lecture if she doesn't attend and sometimes just for revision if she has attended:

Lectures that I do go to, face-to-face, I'd still use (WBLT).

Learning Futures

Sophia is concerned that technologies such as WBLT may be used to replace face-to-face lectures in future learning environments:

I think there's a real temptation to record and put them on iLecture so people didn't come in. And then have tutorials where people come in and do face-to-face stuff that way.'

In her opinion, that wouldn't be a good thing:

...because I still like the interactions and the questions that people ask in the lecture and that they add more than the lecturer brings it out. I don't necessarily think that'd be an advantage but I certainly got the sense from a lot of our lecturers that they were concerned that people (wont come to face-to-face lectures). They encourage us to come to lectures and say it's not enough just to come to (WBLT).

I can see such great advantage with face to face so I wouldn't want that lost either.

Thomas & Michael

Thomas & Michael	Lecturers
Discipline	Life Sciences
Delivery mode	Mix of internal and external students
Level	Undergraduate
Experience with WBLT	Negative

'The (WBLT) technology encourages students to postpone their learning to a "more convenient" time. But then unfortunately for many of them, especially the weaker students and/or those with heavy paid employment commitments, that more convenient time turns out to be much less than an hour, or worse, it never occurs at all.' Michael

Teaching Context

Thomas and Michael are experienced senior lecturers in the field of Life Sciences. They have been teaching for 20 and 12 years respectively at universities in Australia and overseas. Both are enthusiastic teachers and, according to Michael, enjoy 'the performance'.

Both Thomas and Michael teach a range of unit sizes and levels, from large first year cohorts with a mix of internal and external students, to practical classes for approximately 25 third-year, internal students.

Their faculty has been at the forefront of their university's online presence and has introduced initiatives such as the online weather station. While both lecturers acknowledge the benefits of initiatives such as these, they have observed changes in student behaviour since the introduction of WebCT for lecture notes, forums and culminating with WBLT.

WBLT and teaching

Both Thomas and Michael have concerns about the changes they have noticed in student behaviour and results in recent years and they attribute these changes to WBLT:

'We can see the obvious benefits of the flexibility that comes with the technology, but I think that flexibility is premised on the technology being used intelligently by students,...and sometimes that assumption is misplaced.' Thomas

The drop in student attendance at lectures was a major concern for both Thomas and Michael:

We've been (delivering online) for a long time...but we all agree that (attendance) took a nose dive when the (WBLT) came out. Michael

Because of the time spent during the fieldwork components of their units, Thomas and Michael have the opportunity to communicate with their students and to hear about how they use their time:

I come to that conclusion that a lot of students are comforted by the safety net of (WBLT). They know it's there, they know they can get to it, when it suits them, anytime. But not right now because they've got a bit of a hang-over from a party on the weekend, or they've got work or something, but they never seem to be able to find the time. They don't have that self-discipline. Michael.

The reality is, the ones who aren't there are the ones that really needed to be there. The ones who are there probably could've been somewhere else and been fine. Thomas

The loss of skills that lecture attendance encouraged, such as note taking and synthesis were also seen as aspects for concern when the technologies were used:

When I was an undergrad, we learnt how to take notes. People don't seem to be able to take notes anymore; they are very reticent to take notes because that's not part of their training. So note taking I think is probably a dying art, as a result of (WBLT and the provision of notes, online).

Both saw note taking as an important component in the learning process:

'It does focus their attention on what you're actually saying and putting it into their own words. Thomas

'They don't do that now, so they're immediately less engaged. If they're not fiddling around with their mobile phones, there are some other student distractions. They're not focussed as intensely as they used to be. Michael

Both are concerned that their roles as teachers and 'performers' are less rewarding because of the drop in attendance. They both acknowledged that they reflected on possible reasons for the poor attendance, including the time of the lectures and their own proficiency at lecturers. Thomas recounted his experiences when reflecting on the turnout of 6 of the 26 students enrolled in week 4 of his course:

I quickly realised when I started to get a feedback across the group (of lecturers on the unit), that it wasn't necessarily me. I hadn't given a lecture yet, so I hadn't bugged it up myself yet. And it could be partly 9 o'clock and 10 o'clock lectures, but I suspect it's mostly (WBLT). Thomas

The difficulty of satisfying student expectations was raised as an issue and there was agreement that *'the more we provide, the more they want'*. Both Michael and Thomas recognised the changes in students' circumstances, which in turn impacted on the learning environment:

And the problem isn't what we're doing at all, it's (the students). They are the problem. They've got way too much paid employment. This is really the core of the problem. And why they've got way too much paid employment? Because the ...cost of their university degrees are so horrific, and because the cost of living is horrific, and we can't solve those things. It's not our problem, but we cop it in the neck for all of the things that are wrong in their lives. Michael

Thomas and Michael both saw WBLT as adding to the flexibility of students, but were concerned that it reduces the flexibility of teachers:

We're talking about flexible learning, but I think we've decreased our flexibility, at least as teachers. We're now so hardwired into technology, and hard wired into the way that we teach and the lecture notes need to go up, so therefore how far are you allowed to deviate from the script? It's a very difficult balance, because you've got to be equitable with the people off campus (and) on campus. They're buying a product and you're attached to that product. Michael

Impressions of using WBLT

Both Thomas and Michael described their experiences with WBLT as 'rarely or never positive' They both teach small third year groups this semester and have decided not to use WBLT at all due to their concerns.

Learning Futures

Thomas and Michael are convinced that the future of learning and teaching lies in encouraging more communication and participation among students:

I'm going to make a bold prediction. I think it's going to go backwards. I think the students are going to get really cynical about all this stuff. They'll want contact with people. I'm finding that they're getting a bit cynical about the web now. When it first came out they just thought (the web) was fantastic. And we did something quite radical, back in the nineties, offering a unit with lectures only- with no tuts, no pracs- just lectures- two lectures a week, because all the rest of the learning was packaged up onto the web. We thought the students would really go for that and it would save us time and human resources. It worked for a couple of years, but now we'd be shot-ripped to shreds.

They want face-to-face contact. I think this iLecture stuff is a bit of a fad. It doesn't enhance learning outcomes and sooner or later (the students) going to cotton-on.
Thomas

William

William	Lecturer
Discipline	Marketing
Delivery mode	Separate cohorts of internal and online students
Level	Undergraduate
Experience with WBLT	Positive

WBLT's hugely helpful for NESB students and part-timers, 'cause it give them confidence that if they have not got it right the first time, they can go home and listen to it on Sunday night. William

William's story

William teaches several units in an undergraduate Marketing program. His students are all on-campus and come from a range of language backgrounds. There are about 50 students in his lectures and he has not encountered a drop in attendance since introducing WBLT 2 years ago.

William has had an extensive career in Marketing prior to his lecturing role and his passion and enthusiasm for his subject are evident.

WBLT and teaching

William describes himself as using the lectures to impart lots of information, but also to inspire and motivate his students and help them build a conceptual framework. He has found that WBLT has had little negative impact on his ability to do these things. In fact, with such a large number of NESB students from a range of language backgrounds, he finds that WBLT helps him support students' different needs individually:

I'm talking to people from cultures all over the planet. Last year I had a guy from Greenland!

Some students say lectures are too fast, and slides turn too quickly and that they're not keeping up; others say 'Get on with it'. I can tell them (the ones who need extra help) to go back and replay the lecture and they can hear it explained.'

He devotes half of the first lecture to administration, including telling students to use WBLT to 'translate (his) flat vowels' especially if they have difficulty understanding his Aussie accent.

At the end of some lectures, Bob asks his students to consider the 'muddiest point' of the materials and suggests that his students use WBLT as a study tool to review the unclear materials.

William also uses WBLT to help overcome the differences in his students' experience with Marketing. For example, the postgraduates are,

older, more mature, and often they have business experiences, but they've never done the compulsory units in marketing. They're doing accounting or a master of international business or something, and often they're doing marketing because it's fun kind of thing... they're not geared for marketing. Whereas the undergrads, 3rd years have already had to do certain specialised first and second year, and for my classes, they've got to have done 2 second year units in marketing. They're marketing geared, so it's easier to talk to them.

Even though (the postgrads) are older, more mature, and maybe more business experienced, they're not as sharp as the younger kids. So (WBLT) is hugely important for the postgrads

His lectures are three hours long and he admits that 'everyone wears out; I wear out!' so having WBLT as tool for note taking is helpful for the students. He also recognises the benefits of WBLT as a back up if students can't attend lectures:

If they can't make it to class for whatever reason, it's very supportive. It might be a business requirement, or they might just have a flu or something. I think it's terrific to have that support. They don't feel cheated, and they don't have to miss out. They are interested. I don't feel any of my people come because they have to.

Impressions of using WBLT

William's experiences of using WBLT have been positive. He uses the roving mic to move around the lecture theatre and has not found that WBLT has had a negative impact on attendance in his classes:

I always have full turn ups, and I don't take rolls. I only have classes of 50 and it's rare thing that I don't have 45 or 40 students (turn up). I think it's terrific that the room's full every time.

*They are there because they find it interesting. It **is** interesting, I find it interesting.'*

Learning futures

While William recognises the need for future learning environments to cater for students' need for flexibility, he acknowledges that studying using WBLT is not the same as coming to on-campus lectures, William suggests,

they miss the personal theatre. You can play the radio version of Macbeth back, that's good, but it's not the same.'

Appendix 10 - Case studies

Case Study I: The Professor and the Lectopians

Discipline context	Aim	Results
Environmental	Using Lectopia to build community between on campus and external students.	Although the two cohorts did collaborate using Lectopia and the online communication tools, other factors such as the lack of a champion student and technical issues affected the level of interaction.

The teaching context

The unit is a second year unit in an undergraduate Life Science program. In semester two, 2007, there were 150 internal students and 50 external students. The unit is not considered as a core unit by the students, so engaging them is considered to be a significant issue for the unit convenor.

The unit integrates Lectopia with many of the communication features of the institution-wide Learning Management System (LMS). The curriculum is organised to encourage online dialogue between students through module discussions online and to engage the students without a law background to build their conceptual understanding of environmental law, writing skills, law vocabulary and research skills. The lecturer aimed to introduce a new level of interactivity through using Lectopia as a way to link questions posted to the unit forum with responses in lectures. This represented a move away from the transmission mode within which many lecturers use the Lectopia tool.

The impetus for this particular case study arose from a desire to encourage dialogue between on-campus and off-campus students and promote collaborative learning across the whole cohort. The lecturer's primary aim in this study was to deepen his understanding of how the integration of Lectopia with other elements of the unit was working to promote inclusiveness and blur the divide between internal and external students. Breaking down the isolation of external students and building relations with the whole cohort involved using Lectopia as a tool to increase interactivity between the lecturer and students. The lecturer set out from his first lecture to represent himself as Dumbledore, from the Harry Potter books and referred to anyone not physically present at lectures as the Lectopians, a name that those using Lectopia coined for themselves. Thus the title:

Issues to be explored

After the success of the first cohort in 2006, who embraced the communication tools available within this learning environment, this case study aimed to replicate this level of engagement with a second cohort recording the experiences of the lecturer and students.

The research methods

Narrative inquiry was used in this study to bring together field information (such as unit guides and LMS discussion comments) with written and visual texts to the form of a story for the

purpose of research. In-depth, situated interviews were conducted with the lecturer and student participants from both the current and the previous semester.

A key student from 2006 who was visiting from interstate was interviewed on video for the study. Current students were invited to participate via email, through the discussion forum and at lectures (recorded to Lectopia). Two students from 2007 volunteered to attend the university for a interview on video. Three external students participated via email statements. In total six students participated.

Other assets collected to aid the story telling were photographs of the academic lecturing and working online, scene snaps of the unit website, discussion forum pages, excerpts from the study guide, lecture notes, Lectopia recordings, LMS announcements and power point screens. The idea was to build a rich tapestry of contextual data across multiple mediums to match the 'thick' data from the in-depth interviews about student's experiences within this environment.

Summary of findings and discussion

The lecturer described himself as grappling with the challenge of engaging students when university is often not at the centre of a student's universe. As such he is focussed on engaging them with the context, while recognising their need for flexibility.

One of the strategies the case study 'The Professor and the Lectopians' explored was the success of a discussion forum when closely linked with WBLT. In the previous semester, the forum was 'the most vibrant since he started using WebCT with up to 100 postings a day in the study week before the exams.' Prior to the case study, he suspected that the success of forum in 2006 was partly due to a key external student who many mistook to be a tutor.

She was ... so frequent a poster of messages, her responses were so elaborate, so deep, so detailed and she was so enthusiastic that she really carried the forum.

The findings of the case study confirm that this key student did play an important role in sustaining the active discussion, however other issues during the semester also contributed to the differences between the semesters. Changes to university's LMS meant that students spent time familiarising themselves with the next form tools rather than engaging with the course content to the same extent. As suggested by Gilly Salmon (2000) there are stages of participation students go through in discussion forums. In order to progress to the construction of knowledge, they need first to be familiar and confident with the technologies themselves.

The lecturer approached the introduction of WBLT from a curriculum-wide perspective. Responding to requests from students in 2006, he designed the online forum to mimic the organization of the unit into modules with *study questions* and *module activities* linked to lectures and readings. In this way, the lecturer scaffolded and guided the online discussion providing the equivalence to module discussions in tutorials.

Facilitating of collaboration between external and internal students was another priority for the lecturer. While he encourages interactivity in lectures, the lecturer also structures his lectures to meet the needs of the listeners. For example, he refers to listeners as 'Lectopians' in introductory lecture to set the scene and repeats the questions and answers of in-class students for benefit of listeners. He also developed strategies for involving external students in in-class activities, for example, encouraging external students to post photos online when on campus students brought in items for class activities.

The findings of the study indicate that the students in the unit were positive about WBLT and its impact on their learning. Most respondents were positive about the integrated approach used by the lecturer and many comments demonstrated their appreciation of his sense of

humour in lectures and his obvious concern for their learning. Some comments criticized the quality of recording or mic problems.

Although the students were generally positive about WBLT, many comments seemed to conflate the WBLT experience with the difficulties accompanying the rollout of the new institutional LMS. As reflected by the lecturer:

At the time of doing this case study the university had migrated from WebCT to CE6 as the technical issues tended to mask other reasons why students may not have engaged.

Student engagement with the discussion using WBLT was not as high as last semester, partly due to the technical issues. Another obvious change was the lack of a 'champion' student. Without this student maintaining the momentum in the forum, the discussions focussed much more on administrative aspects of the course rather than sustaining the collaborative construction of knowledge that had emerged in the previous semester.

Lecturers planning to implement technologies such as WBLT need to take into account the dynamic nature of learning context and appreciate that each semester will be different. This dynamic nature needs to be considered in evaluation processes.

Issues emerging

The case study highlights the complex nature of research into technologies such as WBLT. While the study aimed at exploring the factors leading to successful implementation by comparing two semesters, there were several variables that affected the results. These included:

- The conflation of the WBLT tools and the wider technology infrastructure. While most students were positive about the impact of WBLT on their learning, many conflated the lecture recording tools and the problematic rollout of the new campus-wide LMS.
- The different student cohorts. In the previous year, a single 'champion student' acted almost in the capacity of tutor, initiating and sustaining the momentum in discussions. There was no such student in the following semester, which meant much more work for the lecturer in taking up this role;
- The institutional rollout of the new LMS had an impact on the 'level of engagement' of the students in the second cohort. The lecturer surmised that whereas in the previous semester, they had no difficulty in using the tools such as discussion forums, the new LMS meant that they had to master the new, 'clunkier' discussion tools before they could engage with the content and higher order learning.

Future plans

The case study illustrated several considerations for future practice, including: The need for critically reflective practice and student feedback to inform practice. The lecturer will work to overcome some of the issues identified by students in the next semester, including the need for technical support; and the need for a robust communication loop between different departments on campus, for example, academics and technical support staff to minimize disruption to learning where possible.

Case Study II: Learning and Teaching using Lectopia with a Large Cohort

Discipline context	Aim	Results
Accounting	Investigating student and staff perceptions of Lectopia in a large lecture environment	Students in surveys and interviews generally appreciated the technologies as providing flexible study tools. Attendance at lectures remained high but students used WBLT as back up. Staff perspectives were less consistent.

The teaching context

This second year unit was designed to be issues based, using a performance or competency based approach rather than a content approach. The unit aimed to equip students to apply accounting information systems concepts as well as a range of generic skills such as problem solving and critical analysis skills.

The unit was presented face-to-face via a two hour lecture and a one hour tutorial. Assessment tasks consisted of two learning portfolios, two MYOB assignments and a final exam.

There was a total cohort of 671 students in the unit in Semester 2, 2007. Many were from a non English speaking background, undertaking their first degree and with little work experience; however there were also part-time students with considerable experience in corporate Accounting environments.

To assist in ensuring an equitable learning experience across such a large and diverse student cohort, the university Learning Management System (LMS) was used to provide additional resources, communication and support. Examples include a discussion forum, announcements, uploading of assignments, uploading of lecture notes, tutorial questions and answers (delayed) resources such as eReserve in the library, access to a mock exam and answers (delayed). Lectopia was also provided, along with the accompanying slides for students to download.

Lectopia was introduced into the unit in semester 2, 2005 so that students could have the flexibility of listening to lectures anytime they chose. It was not intended to replace the face-to-face lecture per se but to provide a way of obtaining access to the lecture if the student was unable to make the face-to-face times. That is, Lectopia was seen by the lecturers in the unit as enhancing the learning experience by providing additional options to students.

Since introducing Lectopia, the Unit Convenor designed and administered surveys each semester to gather data about how students in a large accounting second year unit use the tools. These surveys were undertaken in Semester 2, 2005, Semester 1, 2006, Semester 2, 2006 and Semester 1, 2007 with some preliminary analysis completed.

The issues to be explored

This case study was designed to build on the research undertaken over the previous semesters, exploring in more detail student and staff perceptions about the extent to which Lectopia added value to the student learning experience as well as teaching experience.

The research method

The case study used both a survey and interviews with students and staff to gather data. The survey used in Phase One of the project '*The impact of web-based lecture technologies on current and future practice in learning and teaching*' was modified to more specifically target the unit's cohort and administered in a lecture.

To enable more detailed investigation of the issues from the survey, students were asked if they would participate in an interview. Staff that had worked on the unit as lecturers were also asked to participate. The aim was to give the researchers detailed and rich descriptions of the specific issues relating to the use of Lectopia by both students and staff in this particular unit.

Summary of outcomes and findings

From the 671 students in the unit, 199 responses to questionnaires were received (29.66% response rate). Four student in-depth telephone interviews and one staff interview were conducted. These findings are based on the interview data and supported by the analysis of the surveys.

Student choice

Students used Lectopia as a support technology, that is, students still came to face-to-face lectures most of the time (63.5%). Students used Lectopia when they could not attend (26.4%). A small percentage used WBLT most of the time (4.6%). Students could use Lectopia and not be disadvantaged if they could not attend a face to face lecture. A student in one interview commented that:

'I just use Lectopia to get a summary of the lecture if I miss the lecture but I just don't think it's effective to study. I think maybe for study – reading up on tutorials and asking the lecturer and your tutor would be better'

Students found that they could choose how they studied and were not forced into attending a lecture. One student commented in an interview that:

'Well at the start of the semester I always go to the lecture. But as soon as I've figured out if I can use Lectopia – like if the lecture enables to use Lectopia then, like (this unit), I don't go to the lectures. But for my other subjects ... some lecturers – they'll leave out notes so you have to attend the lecture.'

A comment from a questionnaire response also supported this point:

'Lectopia is extremely beneficial as it allows students the freedom to choose what learning style works best for them.'

Students found Lectopia useful as a backup technology when they could not attend a lecture (79.1%). This indicates that students like the choice and do not like being forced to use a technology or be forced into attending face to face lectures.

Student lecture experience

"Nothing beats face-to-face for motivation, but I listen to Lectopia to take notes and review before exams.'

Most of the students who responded to the survey were positive about Lectopia, but also liked to attend lectures. Students believed that they concentrated better in lectures (78%). Students also found the visual aids useful (80%) and found attending face to face lectures

motivating (77.9%). The students said that the presence of the lecturer added value (71.5%). One student commented in an interview that:

'I always try and be there because there is nothing like being there and being live when they talk about things. But then it's good to listen to it. And I find that when you go into a lecture you can't take notes. It's just – you know, you can listen or you can take notes....'

Students found that if they turned up for lectures this was a more efficient use of their time. Relying on Lectopia makes the process a good deal longer. This is because students have to download the lecture, stop and start the recording, pause to take notes or replay to find out what was said. One student in an interview noted that:

'Whenever I listen to it – a two hour lecture normally takes me maybe three hours or four hours to go through because I constantly stop and start and I write down a lot of points.'

Another student spent a considerably large amount of time using Lectopia after attending face to face lectures to write noted that it took a whole day to listen to a two hour lecture.

Staff lecture experience

The staff member interviewed found that being aware of being recorded initially led to feelings of disorientation and did not feel comfortable with the thought of peers listening into potential mistakes. This staff member admitted that other lectures by colleagues were listened to because he wanted to know what they said in lectures.

This staff member thought that he had to be more careful in what he said and admitted to being “self-conscious”. This person was also concerned about the “politics in the department” and felt that it could be used against him if a mistake was made.

Another comment was:

'I don't agree with the idea of just being able to listen to it [the lecture] and not come to the lecture at all ... if there are students relying completely on Lectopia then they shouldn't be coming to this university.'

This indicates that it depends on the lecturer as to how they see Lectopia fitting in to their overall learning and teaching strategy.

Key points emerging

The Unit Convenor's main priority is engagement; she realises that attending lectures does not necessarily mean students are engaged and many students will make decisions not to attend. The Unit Convenor uses Lectopia to provide flexibility for students and tried to enhance the learning experience for all.

One student interviewee believed that lecturers' attitudes and how they utilized Lectopia was crucial to whether it added value for students. This student summed it up as:

'I think this unit is really good because you know the Lectopia is going to be good. But I think for other subjects – I think if you're going to make Lectopia hard to use – like not putting up notes or skip things or stuff then you shouldn't have it at all. I think if it's going to be available you should make it useful.'

This research supports previous research (McElroy and Blount, 2006³) where Lectopia was considered by students to be a good support technology that students believed was important to their learning experience.

These findings assist teaching staff in this unit to provide learning and teaching environment that students with different learning styles and busy lives can utilise to choose the best options for each individual student situation.

As shown by the staff interview, some colleagues are still wary of the technology and believe that if the unit is offered face to face then the students should attend.

The main surprise in the study was that students make a choice about whether to come to the lecture or not based on what they think they will get (that is, an opportunity cost decision).

Future plans

'In my teaching, I will continue to think of things that will resonate with students in the lecture and try and make sure the students get as much of that experience on Lectopia as possible'.

1. ³ McElroy, J., Blount, Y (2006). "You, Me and iLecture." Proceedings of the 23rd ASCILITE (Australasian Society for Computers in Learning in Tertiary Education) Conference, December 3-6 2006 **E1**

Case Study III: WBLT and supporting students with disabilities

Discipline context	Aim	Results
Disabilities Studies	Investigating perceptions of students in a Disabilities Studies unit about the impact of WBLT on their learning	Students in this unit, whether or not they had disabilities or significant health issues, appreciated the technologies for the flexibility provided and as study tools.

The teaching context

Disabilities studies is an area with an above average proportion of students with disability access plans – 10% where the average across Flinders University is 2%. Specific learning disabilities and mental health are the most common disability groups but some students have physical/motor disabilities and are wheelchair users. There have also been students with vision impairment or acquired brain injuries. The Unit Convenor acknowledges that while he often has a higher than average representation of students with a disability, there is a lack of clarity around terminology and his students may not describe themselves as such. For example, *‘the deaf don’t see themselves as being disabled’*.

On average there are between 30 and 50 students in Disabilities Studies classes. Units usually involve 3 hours of contact per week and Brian can determine the mix of lectures and tutorials. He recognises that this is more flexible than many other areas, for example Science which has a much higher contact requirement.

Students also do practica as major core topics in their degree. In the first year of the four year undergraduate degree students are required to do voluntary work for a relevant human service or disability agency, in the second year 1/3 of the topic requirements are taken in two practica (one day placement per week for each semester plus tutorials, course work, and a portfolio) and in the 3rd year an 8 week block placement in a disability/rehabilitation/education agency is undertaken in the middle of the year, which can cause attendance issues for specialist topics that run over this period in each semester.

Students are also encouraged to work to gain experience during their study if possible. Often by the end of the second year, students are working at least part time and support is needed during this time. Brian has seen students blurring the lines between internal and external study modes:

‘Students listen to lectures when they can’t come to due to work commitments. Then they (sometimes) elect to do an internal unit just to maintain contact with other students, even if it is not regular.’

Teaching with technologies

Brian recognises the changing university environment and his use of learning technologies is part of an adoption of flexible delivery and external education;

‘It’s not about technology but in response to pressure from the field. Regional SA has needs which haven’t been met and TAFEs are entering the market. Distance Education may enable the unit to attract more students.’

Brian was an early adopter of many learning technologies. Competition from VET providers and demands from regional centres for training of local residents have influenced him to explore how technologies can be used to help meet the needs of students, teachers and industry:

'They want someone from Denmark to do the course, because they might stay there after they finish studying. If they employ someone from Adelaide, that person will probably not stay.'

Brian uses a similar approach in all his topics and WBLT is part of a suite of tools he uses. He maintains the school webpage to put up resources for students. Guidelines for writing, extension forms and other documents are all available on this site. FLO sites have links to this core support material.

On the site for specific units, Brian posts a range of resources, communication tools and the lecture recordings. There are links to useful things such as great articles and marking rubrics. Lectures notes are also made available immediately after the lecture;

'I don't mind if students don't come to the lecture but I don't want them reading the notes before I've even finished.'

The notes are fairly detailed so students can read through notes 'in narrative way instead of just points'. Brian writes the notes to prepare for the lecture but doesn't always stick exactly to the script. If he runs out of time, he can refer students to the notes for the remainder of the content. This technique originally came from needing to support students with learning disabilities. Rather than preparing something specifically for them, he would put up the notes and refer the students to it. It was so successful that he kept it up.

Students can go online, read the notes, look at slides and listen to the recording. He tries to guide students through the presentation slides by mentioning which slide he's up to.

Every week there are activities which are released at the same time as the lectures. These are primarily for the external students who need to contribute to the activities in order to pass the topic.

Lectures have attendance requirements, although the Flinders policy is against this. He argues that this is a professional training course so students need to engage with the lecturers:

'These are called lectures/ seminars and you can make tutorials compulsory. No mark is allocated for attendance but the role can be used to influence the final grades in close cases, such as 64% being shifted to 65%, a credit rather than a pass.'

All students are encouraged to use the FLO website for the topic and it is a topic requirement for external students. Although the two groups can be separated in the FLO system, Brian sees that internal students can play a beneficial role for external students in encouraging them to be part of a "learning community" around the content of the topic:

'These cohorts can be split but there is some cross-fertilisation across the groups.'

He sees the next challenge for learning technologies as moving beyond content:

'Content can be easily transmitted using technology and print based resources are still sent out. Now there is a focus on how to do practical components in the external context.'

The communication tools such as the discussion forum are seen by Brian as essential in providing support for his students, especially those who cannot attend.

He has provided support for some of his colleagues in adopting learning technologies, although he recognises that there is still some resistance. Some staff have come on board, but some of the Disabilities Studies lecturers are not keen to use WBLT. For example, a colleague of Brian's mentioned that he *'couldn't use it for problem solving or discussion'*. This person had a bad experience in DE years ago and Brian suspects that this had influenced his perception.

In addition to benefiting students, Brian can see uses for WBLT for lecturers. Brian suggests that technologies such as WBLT can be used to assist teachers manage their workload. For example, last semester one of the lecturers was away for a few weeks which clashed with a time that Brian lectured. WBLT enabled Brian to record one lecture beforehand rather than requiring students to attend a lecture at a different time.

In the lectures

Brian acknowledges that there is much content to be covered in his lectures and concedes that he talks too much. He does encourage questions from students but this can be a problem for the listeners. He has tried to be more careful about strategies for students with special needs by imagining he has a blind student. For example, he'll be careful to introduce himself and the topic for the day, rather than relying on the slides. He tries to guide students through the slides and repeat the questions. He also talks his way through cartoons. He tries to use principles of universal design;

'What's good for students with a disability is generally good for all students'.

The unit studied

The topic (unit) chosen for the case study is DSRS2216, which involves addressing the issues that a professional needs to understand in order to plan for the health care needs of a person with a disability. This semester, the unit has 12 on-campus students. Brian is the Topic Coordinator.

Survey

During week 10 of semester, a survey was distributed during the lecture to explore students' perceptions about the impact of WBLT on their learning. The survey was based on that developed earlier in the WBLT project, with additional questions relating to Brian's specific context.

Of the 12 students enrolled in the unit, 10 responded to the survey.

As Brian expected all respondents indicated that they used the online services available to support their learning: online lecture notes, readings and other resources; online administrative tools and online communication such as the discussion board. All of these students attended lectures at least frequently and 50% agreed that they doubled up, attending face-to-face lectures and then revisiting the lecture using WBLT. Comments included:

- *I have used lecture recordings to re-visit points of lecture or where I felt unclear on points noted/raised;*

- *However, I do use lecture recordings and notes on FLO often to compliment face to face lectures and for study purposes;*
- *Use lecture recordings as a refresher and to reinforce learning before assignments/quizzes.*

The most frequently selected reasons chosen for attending the face-to-face lecture related to being able to concentrate better in class, access the visual aids and communicate with peers about subject content. The mean agreement with the statement that the presence of the lecturer added value was 1.4, with 100% of the students agreeing, as compared with a mean of 2.18 in the wider survey (N=519). 80% of the respondents agreed that they used WBLT when they couldn't attend; however in contrast with the wider survey where 68.3% agreed that they could learn as well from WBLT as face-to-face, none of these students agreed with this item.

As reasons for using WBLT, picking up on things missed in class and as a back up rated most highly, along with revising for exams and reviewing complex materials.

Mirroring the wider survey, these students indicated that they would use WBLT more if the visuals and audio were synchronized and if discussions between teacher and other students were captured, rated most highly.

For 80% of the respondents, their overall experience of the tools was positive, with 70% indicating that the technologies helped improve their results and 88.9% indicating that WBLT made it easier to learn. These results are similar but slightly higher than the wider survey.

Providing opportunities for online communication in addition to the lecture recordings has been a priority for Brian. Comments relating to this strategy include:

I have found most people in the class tend to browse through the material online and this makes it easy to talk about amongst friends.

and

It has allowed more opportunity to grasp context of lecture and then go back to online discussion to see where the thinking/understanding is of other students

One question asked students if they had a disability or a significant health issue. Interestingly, three students responded to this question, including one who was;

Currently pregnant - so having the option of lecture recordings available is handy if I need to miss a class.

Brian's students use the technologies in similar ways to the respondents of the surveys in wider university contexts; they mostly choose to attend face-to-face lectures but they appreciate the back up when they can't attend and the opportunity to revise for exams or review complex materials.

Future strategies

Brian recalls that one of his students commented that the recordings 'sounded like a monotone... but that this didn't come across if attending the lecture'. As a result, he plans to work on varying tone for his lectures. He is also keen to expand the use of audio snippets on particular issues. Over time, he would like to develop a bank of these, related to aspects of topics he teaches. He sees this as a possibility for adding variety for listening students.

Case Study IV: A Tale of Two Deliveries

Discipline context	Aim	Results
Marketing	Comparing online and on campus post-graduate student perceptions of Lectopia	Online students appreciated the tools as adding an element of communication previously unavailable. On-campus students used the tools as back up, but preferred to attend face-to-face lectures

The teaching context

This case explores student experiences in a Marketing unit, undertaken by two very different cohorts of students as part of their Master of Commerce and Master of International Business degrees.

All 50 students in one cohort attend on-campus lectures as full time and part time students. This cohort includes a large number of NESB students. 80% of these students speak English as a second language. 70% of them are Asian, of either Confucian (Chinese) or Buddhist (Thai) heritage. These cultural backgrounds influence many students' individual willingness to interact directly with their teacher in a physical classroom. The case study co-researcher has noticed that there is a natural reserve shown in that environment which disappears when they are outside the classroom speaking and interacting with each other. The other cohort has 23 students enrolled as external and studying online. Most of these are located outside Sydney, interstate or overseas. Some are on-campus students who find it convenient, for one reason or another, to do this unit online.

The lecturer describes himself as using lectures primarily to help build a conceptual framework for his students, to inspire and motivate them and to demonstrate procedures. He has found that WBLT has had little negative impact on his ability to do these things. In fact, with such a large number of NESB students from a range of language backgrounds, he finds that WBLT helps him support students' different needs individually.

There are 50 students in the on-campus lectures and he has not encountered a drop in attendance since introducing WBLT two years ago.

All students in both cohorts can access iLecture in the unit pages on the University's LMS, along with resources, useful links and announcements. The LMS communication tools are made available for students to correspond with the lecturer and other students via private email and the discussion panel. The Unit Convenor encourages students to use iLecture and suggests that keen ones will use it regularly; he suggests that:

'the others will leave it until the last couple of weeks in the semester to panic leading up to the exam'.

Issues to be explored

One aspect of this research was to explore how students perceive WBLT as a learning tool in Marketing across different delivery modes; online unit and face-to-face. The units have the same lecturer and same content but from the experience of last semester, communication and engagement patterns were different in the two groups.

The co-researcher wanted to investigate the usefulness to students of WBLT as a learning tool. He was interested to see if WBLT was of more importance to the online students than to on-campus students.

The research methods

The case study used surveys to investigate students' use of WBLT. The student survey developed in Phase One of the larger study was adapted for use with the two groups of on-campus and online students. A paper-based survey was delivered to on-campus students in the lecture of week ten, which was also made available online for those students who didn't attend this particular lecture. An online survey was used to gather responses from online students.

Summary and discussion of findings

Face-to-Face (f2f) Students

Student attendance at all on-campus lectures is consistently high, usually 90%. The survey confirmed that students who did attend lectures believe they concentrated better than they would have in a remote situation and found the lectures personally motivating. They valued their ability to interact personally with the lecturer, particularly when discussing details of their major assignment (worth 35% of marks).

Half those on-campus students claimed to have listened to lectures on WBLT regularly and most listened to lectures on iLecture part of the time or at least focused on selected segments to overcome misunderstandings of concepts or marketing terminology, or to clarify misunderstanding of the lecturer's English pronunciation. WBLT became particularly important to on-campus students when studying for their final exam (worth 50% of marks), with 87% agreeing that they used the tools to revise for exams.

Most claimed they would use iLecture more often if visual elements were fully captured and synchronised with the voice elements.

The results indicate that on-campus students prefer personal attendance at lectures and face-to-face interaction with teacher and fellow students. These students also view WBLT as a useful aid to learning and comprehension; always bearing in mind that most of them speak English as a second language with varying levels of competence.

Students from 'Confucian' and Buddhist backgrounds such as those from China and Thailand are more likely to ask questions in the online discussion forum than face-to-face in the lecture theatre, therefore the online environment provides useful opportunities for students who may be "shy" about personal communication. These students will raise issues and discuss them online, even though their names can be seen on the discussion. They willingly raise elaborate questions in the LMS Private Mail where they DO remain invisible to colleagues.

Online Students

Online students have no choice but to engage with WBLT and the LMS. They are forbidden by visa restrictions to attend on-campus lectures and, of course, many of them are too distant to do so anyway. A couple did attend on-campus classes regardless, without identifying themselves, wrongly confident that the lecturer would be unable to recognise them as "ring-ins"....strangers tend to stand out in the classroom environment after the first lecture and there is always a shortage of seating in a 50 person classroom.

Online students' pattern of use for WBLT was not dissimilar to their on-campus counterparts. They would listen to several weeks of lectures at the one time. They deliberately chose particular segments of a lecture to listen to and reported they often listened to parts of it more than once. WBLT proved to be a useful comprehension tool for non-English speakers and was a useful revision aid towards exam time. They mostly agreed that iLecture was useful to work through the material at their own pace. It puts them in control of their most hard-pressed asset: personal time. There is one important difference in use of WebCT facilities by online students compared to f2f on-campus marketing communications students: onliners respect their WebCT mail profoundly because it is their ONLY link to teacher and lessons. They check

it and use it regularly once or several times a day, seven days a week. That factor makes it easier and more reliable for the teacher to notify them anytime of sudden new developments in marketing that may break as stories in the daily papers or on TV or radio or on relevant websites.

Apart from the fact that some of them are simply unable to attend on-campus lectures because of distance or responsibilities, it does appear that online students enjoy employing the technology to be able to **control and manage their own time**, engagement with the teacher and studying, learning, revision, exam preparation processes. They recognise that WBLT demands a high level of personal **discipline** because there is no daily timetable for personal appearances to follow but recognise that has always been the case for those committing to distance education, in whatever form it may have been delivered.

The majority of online students found their online lectures motivating and enjoyed online exchanges with their fellow students as they supported each other in developing an answer to their 4000 word major assignment. It is true that online students are awarded up to 15% of their marks for active participation in online discussions, but that was not sufficient to motivate some of them who rarely, if ever, participated online.

Submitting assignments online and doing Final Exams online (by typing on a keyboard rather than handwriting, and sitting for an 'open book' format exam rather than a conventional closed book exam) also appealed to people accustomed to doing so much work in daily life on a keyboard in front of a screen.

Conclusions

Marketing postgrad students find WBLT a useable practical tool for studying a subject of ideas, much of which they will find themselves applying in the real world of commerce in which they already operate. Availability of lectures and supporting visuals online makes no diminishment in personal attendance at f2f classes for those committed to them.

Online students find WBLT to be useable, practical and convenient. It is a practical tool for time management as they pursue their education while fulfilling other responsibilities. They would, however, prefer to have visual materials synchronised with audio content. Perhaps this is a symptom of our annual apparent increase in consumer expectations of all services they enjoy. Each year seems to bring better services, more glamorous and entertaining graphics experiences, more "bang for our buck", especially where technology is concerned.

The lesson learned include that there are opportunities for producing more video content, incorporating the teacher demonstrating points of interest and making himself more of a visual presence online. The goal would be to provide more of a sense of intimacy and relationship for online or external students and to be more entertaining, thus engaging.

If the lecturer accepts responsibility for making full use of all the facilities available in the uni LMS and associated WBLT, the student experience can be enhanced beyond current levels of satisfaction, which are already quite high: there were no "Dissatisfied" students in online or f2f classes surveyed.

Future plans

Online students utilised private mail more regularly than on-campus students who enjoy more communications options with their (same) teacher. To make more efficient use of the LMS communication tools, the unit convenor will encourage on-campus students to use unit's online site and mail/communications facilities.

One idea to be explored in future is the offering of marks for Discussion Board participation and contributions. It will also be the case that extra information of interest and relevance to the unit will only be made available online.

Audio iLecture content will be modified to contain signals indicating PowerPoint slide changes and references that will make the audio better synchronised with audio. This will benefit on-campus and online students, making revision and study easier by facilitating speedy movement through the lectures

Attempts will be made to develop and publish video content for the lectures for online students so they feel more intimately connected to the “theatricality” aspects of the lecturer’s “performance”. Macromedia *Captivate3* software and *YouTube* facilities may be employed for this purpose.

Case Study V: Replacing live lectures

Discipline context	Aim	Results
Multimedia	Investigating student and staff perceptions about the use of pre-recorded multimedia lectures to replace live lectures	Students appreciated the recording as adding flexibility, but saw it as a supplement rather than replacement to face-to-face lectures. Several time-management issues were identified for staff

The teaching context

The unit is a second or third year unit in an undergraduate Multimedia program. It is a core unit with no prerequisites, therefore it attracts a wide range of students with differing levels of skill and experience in the field. The unit ran for the first time in semester two, 2007, with 31 students enrolled. The unit cohort is typically in the 18-24 age group and most have a relatively high level of computer literacy and access.

It is a relatively small course that promotes a very intimate lecture setting with a lecturer who encourages lecture interaction; be it questions, debate or general comment.

The unit is conducted on-campus (no external option is available) with one 1-hour lecture and one 1.5 hour tutorial for discussion of the weekly topic. There is an online component of the unit on Murdoch's LMS system, where students can access the Study Guide and presentation slides and audio of the lecture (Lectopia).

While iLecture recordings have been made available in the past, the researchers were keen to explore whether these recordings of face-to-face lectures could be replaced by a pre-recorded online multimedia presentation.

Issues to be explored

The case study explored the impact of curriculum changes in the Unit when easily created and modified online multimedia presentations were used to replace lectures.

In particular, themes to be explored included:

- How students' experience of lectures changes as a result of their use of WBLT;
- The impact of multimedia presentations to replace some lectures;
- Imbedding WBLT in a 'linked environment' to enable instant exploration of points of interest; and
- Integrating WBLT with other tools to enable students to contribute to the content of the lecture, through, for example, providing links they have found to be relevant or collaboration on shared documents.

Project Method

The case study involved an investigation of existing contemporary online lecture software packages to enable the creation of a linear video of the live lecture, supported by relevant video and PowerPoint slides. The aim was to create a seamless semi-documentary style informative production.

Rather than the recording of a face-to-face lecture, the recording was made of a to-camera presentation in the lecturer's office, interspersed with appropriately timed PowerPoint slides and relevant video pieces.

To avoid the temptation for students to download 200MB file over the internet, the file was distributed to students' thumb drives or laptops in the tutorial preceding the date of the scheduled face-to-face lecture that the multimedia lecture was replacing. Students that had neither were given a data CD of the video file.

In the week after the multimedia lecture was available, a survey was distributed to students in their tutorial groups. They were also given the opportunity to participate in a focus group to discuss their views about the multimedia lecture. Participation in the focus groups and completion of the survey was entirely voluntary, and the unit tutor was not present during the discussion.

Summary of survey findings

Twenty six students (out of 31) responded to the survey, with 24 between 18 and 25 years of age and working on average 11-20 hours per week with the usual occasional extreme. About 1/3 of the students would travel an hour or more to university and most students said they would miss at least 1 or 2 lectures for each unit at some stage during the semester.

In general, the students appreciated the flexibility offered by the multimedia lecture. About half of the students watched the multimedia lecture in more than one sitting. Many of these watched it over 3 or 4 sessions. Most watched it on their home PC or laptop in their bedroom. Exceptions were: iPod on way to beach (1), at Uni on a PC (5), the kitchen (1, 36+yo female with children). Only about 1/5 of the students did nothing else while experiencing the multimedia lecture. Other activities while watching the lecture included:

- eating or drinking
- doing family chores
- surfing the web on another screen or window
- talking to other students about the topic
- taking notes
- looking up definitions and unknown words
- home distractions
- looking through readings

About half the students didn't watch the whole multimedia lecture, but did listen to it. Of the ones who did not watch the whole thing, they watched about 1/3 of the time on average.

Every single student interrupted the multimedia lecture. Most of them rewound it at some stage while some just paused it. All the students that rewound were revising or reviewing to enhance their learning. All that paused were from distractions or to take a break.

Many students took the same amount of notes while watching the multimedia lecture as they would with iLecture or face-to-face lectures. A few students took more, and a few students took less.

Opinions were divided as to whether the multimedia lecture was better or worse than face-to-face lectures, with most stating the following reasons for and against (in order of popularity):

- Better because could review immediately and more easily
- Worse because of lack of interaction in terms of questions or debate
- Better because could watch in own time
- Better because could pause for breaks
- Worse because it is easier to get distracted

- Better because they could learn at their own pace
- Better because there was no travel

One student noted that they appreciated face-to-face lectures because they enabled them to get into the proper “head-space” for academic study, which made it easier for them to learn.

Though about ¼ of the students felt the multimedia lecture was adequate as is, some students thought the following could be used to improve the multimedia lecture (in order of popularity):

- More video and text inserts and less talking-head footage
- Chapter indicators to assist in revision
- More lecturer movement to increase interest
- Provision of lecture notes
- Subtitles

In terms of receiving the multimedia lecture, many students also thought it might be useful to be able to get it on DVD, as well as some thinking it might be useful to be able to stream it (it should be noted that the file was made available for downloading but not streaming).

Most students did not have any problems playing the delivered file, although a few had codec or QuickTime problems.

Impact on communication

Overall, in terms of the potential of multimedia lectures eventually replacing face-to-face lectures, a minor majority of students thought it not likely, desirable or possible (i.e. multimedia lecture should complement not replace face-to-face lectures), while a little less than half thought it was a viable replacement. The remainder saw it as an option for larger, less intimate lectures where there is little interaction, on the proviso that the content was more engaging (than a talking-head), and there was some way to address queries, like a forum or discussion list. A couple of students commented on the possibility of lacking motivation to study at home each week in their own time. One student commented that they pay more attention in face-to-face communication. One student mentioned they would miss the interaction with other students if there were no more face-to-face lectures. One student found it beneficial that there was no interaction because then one student didn't hold up the whole class with a question.

Group Discussion Findings

Half-hour focus groups were conducted with two separate groups of 15 students each. The focus group discussions were designed to explore the issues emerging from the written surveys in more detail.

In general multimedia lectures were considered great as supplementary aids rather than replacements for face-to-face lectures. Most participants appreciated face-to-face lectures because of the interactivity and opportunity for discussion they offer. Much debate was entered into as to whether online forums were a useful substitute for this interactivity, with some students seeing them as clumsy and slow, while some students thought they could use the forum adequately for their interactive needs.

There was some concern amongst the more vocal students in the group that the very scheduling and attendance of a lecture assisted with learning, and that the self motivation needed for learning in one's own time could be lacking.

The video part of the multimedia lecture made it more engaging than iLecture and also improved the student's ability to revise, as they could locate the relevant part of the lecture from sight. Chapter indicators in the multimedia lecture would assist here.

About half of the group thought that the video of the lecturer talking wasn't entirely necessary, but the timely showing of the PowerPoint text and game content video was extremely helpful, more-so than the same content in a face-to-face lecture. Others thought the video of the lecturer increased their engagement. Because some students didn't find the video of the lecturer talking overly necessary, they found they could multi-task while experiencing the lecture by doing other tasks. This included casually web-surfing, Googling definitions and terms and even looking after the kids. One student said he played computer chess while experiencing the lecture.

Some participants articulated a fear that leaving the responsibility of viewing/listening to lecture material up to the student may result in many students not experiencing the lecture at all. It seemed that some rely on the discipline of face-to-face lecture attendance for concentration, to ensure that the lecture is experienced and to make the cognitive transition into study mode.

It was also suggested that part of the Uni experience involves being social with other students, and it was suggested that we should strive to maintain face-to-face lectures in light of a general perception that people are spending more and more time communicating online and not in person.

It was agreed that there was no real equity problem with providing students with a multimedia lecture unless the only way of obtaining it were from online download, as this would currently be a problem for students on low bandwidth internet connections at home.

Conclusions and Further Thoughts

One important point that differed between the group discussion and the written surveys related to the need for interaction and discussion during a lecture. In the group discussion a need for interaction was expressed, although this view was argued most strongly by the more vocal members of the tutorial (i.e. these may also be the students who like to be vocal in a lecture). These were also the same students that were extremely vocal about not wanting to remove face-to-face lectures.

It was generally agreed that the multimedia lecture would make a good supplement to a face-to-face lecture, though chapter headings embedded within the video would be a great advantage. The ability to revise with the multimedia lecture would then be very strong, and provide more engagement, and hence understanding, than iLecture.

The experience of the lecturer creating the multimedia lecture was ultimately positive, though it was realised that there may be time-management problems if the lecturer was required to produce a multimedia version of the lecture plus deliver a live lecture. The goal then, as a supplement to face-to-face lectures, would be to video record the face-to-face lectures and then edit them marginally to include chapters, embedded video/audio and text. This revised/augmented/value-added multimedia lecture could then be provided to the students in the next tute or as a download (though it would still be reasonably large for bandwidth restrictions in the current broadband climate).

It would not be difficult to edit one of these augmented multimedia video lectures from an existing video lecture recording, though some lecturers would not have the digital media skills, or the time, to do this. However, this will become easier still as lecturers move towards presenting content in digital formats (i.e. playing audio and video as files on their laptops instead of playing a DVD, a VHS tape or a CD).

Besides compiling an enhanced multimedia lecture after the face-to-face lecture using lecture assets, the other alternative is to live record the lecture with automatically embedded audio, video and text. The Brian Hill Lecture Theatre at Murdoch University is indeed set up to do this and we recommend that further study into this approach is undertaken.

The vocal students in the group discussion did not see face-to-face lectures becoming redundant in the foreseeable future, though from the surveys we see that a few students see this as being an eventuality or at the very least, a possibility.

The need for a forum of sorts to address questions and for open discussion is required, though it's not clear what form this would take as a large portion of students found flaws in the usual forum format. One would almost think that the usual tutorial would cater for this need, but this also does not overcome the need for questions to be answered in a more spontaneous way (as they occur during the lecture).

Another concern that needs addressing is the students' fear of complacency and lack of structured lecture and hence learning times. If students have grown up with scheduled and located learning, and have rarely been solely responsible for their own learning experience, it is not surprising that they fear their lack of autonomous learning skills, or feel the need for a scheduled, on-campus learning time.

As the lines between work and play, learning and relaxing begin to blur with the increase of networked social activities and work-related online interaction this fear may prove unwarranted. That is, people may be forced to be more responsible for their own time management and blend these modes of working, learning, socialising and relaxing into a less structured daily routine. Until then, video multimedia lectures can at least provide students with a powerful revision tool, or even be a substitute for the face-to-face lectures in larger, first-year courses where interaction is not required or facilitated.

Case Study VI: One-Stop Unit Spot

Discipline context	Aim	Results
Health & Chiropractic	Investigating the impact of changes to the curriculum to centralise unit online materials, lecture recordings and communication into one location.	Students appreciated the centralised location. Although their overall satisfaction with Lectopia rose, students chose to attend lectures and accessed the recordings less.

The teaching context

The unit is a second year unit within the discipline of Health and Chiropractic. It is delivered in on-campus mode, with two lectures per week. One is focused on biomechanics and chiropractic principles. The other is centred on practical chiropractic skills. Assisting the Unit Convenor with the teaching were other lecturers who focus on their areas of expertise.

In Semester 2, 2007, this unit had 142 students enrolled. Although most of the students in the unit are enrolled for full-time study, many have competing demands on their time with some work part-time.

Since its introduction to the University in 2004, the use of Lectopia in the Department has grown consistently where lecture recordings are now available for the majority of units. The lectures are available for download shortly after the lectures, along with the accompanying slide presentations.

The student feedback regarding Lectopia has always been positive although accessing important information, including lecture recordings, from a number of locations was considered by students as problematic. The University's Learning Management System was not widely used in the Department and rather than in one centralised location, electronic information was available in different websites, each requiring different usernames and passwords. There were physical notice boards on different floors and in different buildings. It was difficult for the students to know which location had the information, when the information was posted, or even if the information was posted.

In recent years, the Unit Convenor has noticed some worrying trends in his student cohorts. Over recent years he has noticed a drop in lecture attendance, and although he is aware of students' need for flexibility, he is concerned that their learning is being adversely affected by their reduced attendance. He suspected that many students did not attend the lectures or access the online support available, including the lecture recordings.

In Semester one of 2007, the Unit Convenor was concerned that the number of students attending face-to-face lectures was noticeably low. Hits on the Lectopia were also low, with an average of 38% of the class accessing the lecture recordings. This percentage was a simple calculation based on the number of hits registered and the number of students enrolled in the unit. This low attendance at lectures combined with a seemingly low percentage of Lectopia hits suggested that the students did not take advantage of lecture material. The Unit Convenor suspected that this pattern contributed to the unusually high failure rate of 18% at the end of the semester.

In an effort to, *'save the students from having to hunt down important unit information'*, the Unit Convenor introduced an online unit using the University's LMS, with all information posted on the one site. The site was introduced in Semester 2, 2007, containing the unit

outline, a weekly unit schedule, lecture material, laboratory material, exam expectations, exam results, a discussion board, and a link to the unit's lectures. The students entered their username and password once and could then access any of their online units from the one point.

Another factor the Unit Convenor considered to have impacted on the failure rate of students was the dissatisfaction many had reported with one particular lecturer. Many students had complained of the poor quality of lectures, particularly the tendency for the lecturer to simply read from the notes. After receiving this student feedback, the Unit Convenor encouraged the lecturer to participate in a series of professional development activities to improve the lecture quality.

Issues to be explored

This establishment of the unit's online space was determined to be an opportunity to gather data about Lectopia utilisation and also students' perceptions about lectures, lecture recordings and the effects of these changes on their learning.

It was hypothesized that a central location for information with a singular login would facilitate student visits to Lectopia. Because they would regularly log in for necessary information, the students might also access the lecture recordings to review a lecture or as back up for a missed lecture. In addition to measuring the number of visits to Lectopia, this study investigated whether or not an introduction of a single online site to support the unit would affect the students' experience of Lectopia.

Research method

There were three sources of data for this study:

- 1) the number of hits as indicated on Lectopia;
- 2) the percentage of end of term student failures, and
- 3) two student surveys

The surveys were based on that used in Phase One of the wider WBLT study, modified to elicit data about student perspectives on the use of Lectopia and the impact of the changes to the overall online support for the unit. A survey was administered during the first lecture of Semester 2 to gather data about student experiences in the previous semester. The same survey was administered again at the end of the semester.

Summary of the findings

Students in this case study, like those in other aspects of the study, appreciated Lectopia as a back up when they couldn't attend and also as a study tool. Of those responding to the second survey, 94.4% of the students indicated they used Lectopia as a back up, 86.1% of respondents use the tool to revise for exams and 85.7% to revisit complex materials.

Results of the surveys indicate that students' overall perception of the impact of Lectopia on their learning had been positive, rising from 77.6% in the initial survey to 80.5% in the subsequent survey. Responses regarding the attendance at face-to-face lectures also increased.

When asked why they attended face-to-face lectures when WBLT were available, only 48% agreed that 'the presence of the lecturer added value' in the initial survey. This figure rose to 57.1% in the subsequent survey.

When asked why they didn't attend F2F lectures, 57.7% of those responding to the initial survey agreed that they could learn just as well from WBLT as from F2F, compared with 50% in the subsequent survey.

In both surveys, 100% of the respondents indicated that they accessed online resources and materials; however the comments were generally more positive after the addition of the LMS site. In semester 2, fewer student hits were recorded on Lectorpia and there was a reduced number of students who failed the unit.

Discussion

The Unit Convenor feared that the students were not attending face-to-face lectures or listening to Lectorpia recordings. The fact that 20.6% of respondents to the initial survey indicated that the audio quality of the recordings was poor may shed some light on this. Perhaps when students missed lectures, the lecture quality was not sufficient for them to sustain listening throughout the semester. Suggestions from students on how to improve the recordings included 'removing the buzz' from the recording and 'reducing the time taken to download'.

Also from the initial survey, many of the comments providing advice related to the quality of the lecture, such as speaking clearly, being well-prepared and displaying 'good slides'. Others were coded as 'acknowledging those students who are listening' or 'relating to technical proficiency' such as 'use the mic effectively'.

Whereas many comments in the initial survey related to the lecturer's style, for example being 'boring' or 'just reading off the slides', there were no such comments in the later survey.

The reported attendance to face-to-face lectures contradicts the subjective reporting of the lecturers. One explanation for this could be confusion about "regular attendance". There were two lecture sessions per week per unit. One lecture had an emphasis on skills while the other lecture focused on biomechanics and chiropractic principles. There were reports that student attendance to the skills lectures was good leaving the reports of poor attendance coming from the biomechanics and principles lectures. The students' weekly attendance to one lecture could be misperceived as 'almost always' attending lectures.

There is further evidence of the disproportionate attendance to the two types of lectures. That is, the number of visits to Lectorpia for the theoretical lectures is typically greater than that for the skills lectures.

From positive comments made by students on the Student Experience questionnaire and on the surveys, combined with the improved student performance, a discussion on the university LMS is warranted.

Key points emerging

Although the case study set out to investigate the impact of changes on students' results and their perceptions about the use of Lectorpia as part of a suite of online tools, the key findings reinforced the complex nature of research into curriculum contexts. In this context, it is difficult to separate out the factors affecting their success.

The results of the case study indicate that students appreciated the changes to the unit. In general, students were more positive about the impact of WBLT on their learning and also attended face-to-face lectures.

Contrary to the Unit Convenor's expectations, the introduction of a single online site did not increase the visits to WBLT and yet, the students performed better as illustrated by a

decrease in failing grades. Possible explanations for this, as suggested by the Unit Convenor, were 1) the weaker students were removed from the second semester cohort or spurred on by poor results, 2) the reported increase in attending face-to-face lectures, and 3) the centralised location for information made it easier for the students to know what was expected of them. The professional development support for one of the lecturers may also have had a positive effect.

The Unit Convenor acknowledged that setting up the centralised online site was 'a big job'. He required new computing skills and planned for optimum benefit and daily maintenance. As a positive, this extra work is offset with fewer emails and office visits from students. Student supporting each other was also a benefit:

An unexpected benefit from the LMS site was how students helped each other through the discussion board function, decreasing the convenor's need to intervene.

Future plans

Most of the reflections on how to proceed next semester relate to refinements to the unit's online site, including:

1. planning how to make best advantage of the communication tools for the site. For example, he will encourage students to use the forum tool rather than individual emails, which can lead to workload issues for the convenor;
2. introducing the students to the rules and format of the discussion board early;
3. using a limited number of discussion threads, with specific topics. Important information needs to be highlighted and not lost within the threads;

The Unit Convenor also noted that once student feedback was invited about the changed format of the unit, there was an increased flow of student comments regarding how the unit was progressing. Once the communication lines have been opened, he anticipates that they will continue to be explored by his students as they progress to the next unit.

Appendix 11 - Resource toolkits

This section includes Toolkits for:

- students
- staff



Making the Most of Lectures through iLecture

- Guidelines for Students

"I love iLecture and never miss a lecture if it is available. I believe my learning is far deeper in units where iLecture is provided." ~ student

"(If students are) using iLecture as a substitute to coming to the actual lecture, then they're actually missing out on that active learning." ~ lecturer

Macquarie University recognises that students of today lead busy lifestyles. The provision of flexible learning options is one way of helping you to achieve a high quality learning experience.

iLectures have been made available to enable you to listen to recordings of lectures in your own time. Some students choose to use iLectures as **an additional learning tool** to reinforce and review the lecture content.

Others use it as **a lecture substitute** if they are not able to attend. This may be for a variety of reasons - distance, work and family commitments, sickness or even timetable clashes. In this case iLecture can help you to catch up on missed lectures so you don't fall behind in your studies. Using iLectures can also help you to feel part of the class even though you are not physically present.

Lectures: to attend or not to attend ?

Even though your lecturers may have made iLecture available, unless you are a distance student, they usually expect you to be physically present at lectures. There are sound **educational reason** for this, for example:

- The lecture contains copyright materials, video, annotations on slides or other multimedia materials which cannot be made available on iLecture.
- The lecture incorporates problem solving in small groups, discussions or other interactions that are difficult to capture on iLecture.
- The content of the lecture is needed for a follow-on tutorial, practical session or similar.
- The lecture is used to get to know you, gauge your progress, identify problems you are encountering and give you immediate feedback.

When deciding whether to attend or not think about the educational advantages. Also think about:

The social advantages – you get to meet up with others in your unit, exchange ideas and make new friendships.

The convenience - attending lectures in a regular timeslot can help you to establish a routine for study. Some students find they don't get around to listening when they don't have an established routine.

Just ask - If you have the option of attending or not, and are unsure of what you should do, ask your lecturer why you need to attend and what you will be missing if you don't.

Why not do both? Remember - it is not an either / or decision. Attending lectures and using iLectures as a study tool can help to maximise your learning.

Maximising your learning through iLectures



“It is an extremely good service and a great way to supplement one's learning by being able to follow up on concepts raised in the lecture and being able to listen to lectures when one is sick and has not attended class”
~ student

If you are attending lectures, iLectures can be used to support your learning in a variety of ways. You can use browse through the entire recording or choose particular segments to:

- revise for exams
- revisit complex ideas and concepts
- work at your own pace and place of convenience
- pick up on things that you missed in class
- go back and take comprehensive notes after the lecture so that you can concentrate on what is happening in the lecture
- check what was said before approaching your lecturer for clarification of issues, ideas or misunderstandings

If you can't attend lectures, its good practice to:

- establish a weekly routine for listening to the lectures
- listen to the entire recording at least once, stopping or reviewing as required

As a student studying off-campus, iLectures can help you to feel part of the group and provide you with different ways of communicating with your lecturer and others in the class.

- You can feel part of the class by answering the questions the lecturer asks even though you are not there
- You can discuss issues raised in the lecture on the online discussion forum

Beware: Its easy to fall behind and hard to catch up. It is not a good idea to listen to several weeks of lectures at a time. The lecture is usually only one aspect of the entire course. Other learning activities often depend on an understanding of the lecture content. Try not to fall behind with the lectures - by doing so you will be placing the rest of your learning at risk.

More resources, including staff guidelines, are available at the project website at:
<http://www.cpd.mq.edu.au/teaching/wblt/overview.htm>

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Making the Most of Lectures through iLecture

- Staff Guidelines

INSIDE:

Why should I use iLecture?	2
Students' experience	2
Effective use of iLecture	4
Structuring a learning environment	6
Optimising learning	8
Lecturing process	10

Introduction

iLecture is one of the technologies available through the University's online learning platform to support students in their learning. These guidelines are based on the results of a national study on the impact of web-based lecture technologies such as iLecture on learning and teaching. They have been developed to explore some of the issues emerging from the study, including:

- ✦ [Why do lecturers use the technologies?](#)
- ✦ [How and why students use the technologies?](#)
- ✦ [Making the most effective use of the technologies](#)
- ✦ [Structuring an integrated learning environment](#)
- ✦ [Optimising learning with iLecture](#)
- ✦ [The lecturing process](#)

iLecture

iLecture is an automated recording system for digitally capturing face-to-face lectures for web delivery in close to real time. This service is free to all Macquarie staff. You may contact the Learning and Teaching Centre x7571 to find out how to access this service and for training sessions for using the AV lecterns.

Once you have arranged through the Learning and Teaching Centre to have your lectures recorded using iLecture for your unit, your lecture will be automatically recorded in the room you specified in your booking. Recordings start automatically from 5 minutes past the hour and finishes 5 minutes to the hour.

The recordings are delivered through the password-protected area your online units – almost immediately after the lecture finishes. There is also the facility to upload presentation slides for students to work through as they are listening.

Students have a range of options for accessing the recording by:

- ✦ streaming through their computer or
- ✦ downloading for use on their computer or mobile devices – mp3 , iPod

More details on technical support for using the technologies are available from the Learning and Teaching Centre <http://www.mq.edu.au/learningandteachingcentre/>.



“It’s also handy in that I can go over and repeat things if I was not paying attention or not understood something. Even if I do attend the lecture, I can occasionally go back and listen to a certain section if I need to.” ~ student



Why do lecturers use iLecture?

There are numerous reasons why staff make iLecture available. The most common reasons are:

- ✦ to support external students by giving them more timely access to lecture content as well as the course updates, feedback, anecdotes and other spontaneous communications that occur in lectures
- ✦ to support students who can’t come to class due to a variety of reasons – family and work commitments, sickness, timetabling clashes, transport difficulties
- ✦ to provide an additional learning resource for all students and especially to those with disabilities, learning difficulties, cultural and language differences.

In some cases a Departmental decision or pressure from students to provide iLectures has been the impetus for its use. While there may be cogent reasons for this action, the outcome is not always satisfactory. Where staff are free to make their own judgements and decisions, their experience of using the technology is usually far more positive.

What are students’ experiences?

Students who use iLecture tend to be positive about the experience; they perceive it supports their learning and helps them to achieve better results. Overall, their reasons for using iLecture largely mirror those that influence staff:

- *as a safety net* – when they can’t attend on a regular or one-off basis
- *for learning* – it is a study tool that helps them to take comprehensive notes, to revise for exams, and to pick up things they missed in class.
- *for flexibility and convenience* - with widened access and increasing cost to higher education, a large proportion of students have work and family commitments when they begin university. They require flexibility to fit study in with their busy lives and actively make choices about attendance. In some cases, the need for flexibility can also arise from the demands of the curriculum where they need to fulfill work experience requirements or participate in practicum off-campus.

However, there is one important difference between staff and students’ perception of iLecture. The findings from the study revealed that while a large number of students using iLecture perceive they learn just as well from listening to iLectures as they do from attending face-to-face lectures, staff do not perceive this to be the case.

Having said that, **using iLecture does not necessarily exclude lecture attendance.** Findings from the study also showed that Lecture attendance is still popular with many students because they:

- ✦ find lectures motivating
- ✦ value contact with lecturers and peers
- ✦ find the visual aids helpful

Some students choose to attend lectures then listen to iLectures to supplement their learning by:

- ✦ revising for exams
- ✦ revisiting complex ideas and concepts
- ✦ working at their own pace and place of convenience
- ✦ picking up on things that they missed in class
- ✦ going back and take comprehensive notes after the lecture so they can concentrate on what is happening in the lecture
- ✦ checking what was said before approaching their lecturer for clarification of issues, ideas or misunderstandings

To attend or not to attend

For students, the choice of whether to attend lectures or not is influenced by a range of factors. Apart from the need for **flexible access** there are three other broadly-based factors that will influence students' decisions:

Educational

- ✦ to pick up on copyright materials, video, annotations on slides or other multimedia materials which cannot be made available on iLecture.
- ✦ to participate in problem solving activities in small groups, discussions or other interactions that are difficult to capture on iLecture.
- ✦ to interact / communicate with the lecturer
- ✦ to ensure they have the materials/content needed for a follow-on tutorial, practical session or similar.

Convenience

- ✦ to establish a routine for study through the regular lecture timeslot - some students find they don't get around to listening when they don't have an established routine.

Social

- ✦ to meet up with others in their unit, exchange ideas and make new friendships – generally more important for younger students.



'At the start of the semester I always go the lecture. But as soon as I've figured out if I can use Lectopia – like if the lecture enables to use Lectopia then, like (this unit), I don't go to the lectures. But for my other subjects ... some lecturers – they'll leave out notes so you have to attend the lecture.'

~ student

Making the most effective use of iLecture

Introducing any new technology into a well established practice will change the dynamics of teaching and learning: the relationship between elements in the curriculum, the way you teach, the way students learn, the way you communicate and gain feedback from your students. In short, to make the most of a new technology including iLecture you need to take a whole of curriculum perspective.

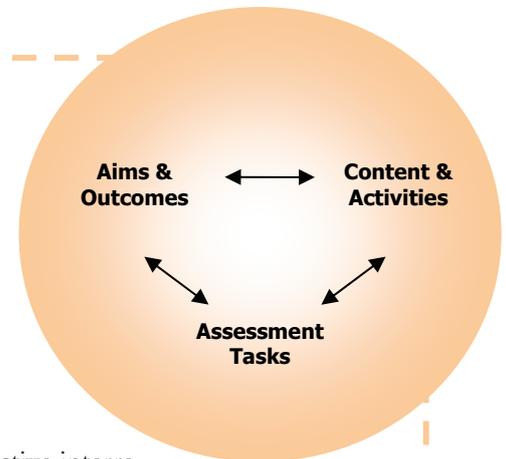
Curriculum alignment

If we interpret the ‘curriculum’ in its broadest sense then we need to think about:

1. the content or what is sometimes referred to as the syllabus
2. the teaching and learning activities - lectures tutorials etc organised by staff as well as the activities that students do in their own time either individually or in groups
3. the assessment and feedback provided

Each of these elements is interrelated. The organising principle to ensure effective interrelationships is ‘curriculum alignment’.

As described by John Biggs in his book ‘Teaching for Quality Learning at University’(2003) alignment involves two systems: the teaching system, which is what the teacher constructs and the learning system which is how the student reacts. When these two systems interact, they form their own system which, in turn, becomes part of the wider institutional system (Biggs, 2003). In an aligned system, there is compatibility between the learning outcomes, the learning activities and the assessment and feedback strategies around student achievement.



Blending internal and external delivery modes

The flexibility in access brought about by iLecture and other communication and social technologies has meant that delivering the curriculum is no longer confined to designing for either internal or external delivery modes – it is a matter of designing for a blend of both.

Online technologies allow external students an experience that more closely resembles that of internal students. The advantages of iLecture for this cohort of students are largely undisputed by staff.

The flip side is that these same technologies have allowed internal students to adopt the study habits and behaviours of externals. This is challenging a long held expectation that internal students will be based on-campus, attending lectures and other activities.

If iLecture is made available to students then many will use it. Some will continue to come to lectures; some will choose not to come; and others will come to lectures as well as use iLecture to support their learning.

Having to cater for this full range of attendance patterns and delivery modes adds complexity to the design of the curriculum. However, if all options are not factored into designs from the outset, the outcomes will be unsatisfactory for all and can lead to a range of problems including:

- ✦ students falling behind
- ✦ students missing out content/incidentals/discussions
- ✦ lack of continuity between lectures and follow-on tutorials
- ✦ poor communication between staff and students
- ✦ lack of spontaneous interaction and feedback

The reality is that increasingly we are having to consider curriculum designs that can cater for a blend of internal and external attendance patterns.



One Size Does Not Fit All

Making iLecture available to your students is not a decision that should be made lightly. Each program or unit has its own unique context arising from:

1. the nature of the discipline, the content, the experiences and learning experiences:
 2. student characteristics - enrolment modes, needs and expectations
- logistical arrangements - class sizes, timetabling and room ambience

Following are some insights into some of these issues that have been drawn from the experiences of staff and students who have used iLecture.

The philosophy and outcomes of the course – where learning experiences and outcomes are best achieved through a physical presence for social communication, networking, socialisation and collaboration then iLecture may not be appropriate.

Content - iLecture may not be appropriate if lecture material contains:

- ✦ confidential or sensitive content that is best not heard by anyone who is not enrolled in the course,
- ✦ confronting or disturbing content that is best discussed in an environment where students reactions can be monitored and responded to on the fly
- ✦ copyrighted elements that cannot be broadcast through the Internet
- ✦ video an other multimedia content that iLecture is not able to capture

Lecture context and dynamics - iLecture has been found to be useful when:

- ✦ the lecture is delivered in a traditional format based on largely on one-way communication
- ✦ class sizes are large and tend to be impersonal
- ✦ there are little to no there is little to no interactive elements where students communicate or collaborate with others
- ✦ there is difficulty in capturing student responses

iLecture has been found to be less appropriate for small classes where the face-to-face encounter is used for problems solving, discussions and other small group activities.

Student characteristics- iLecture is beneficial when students:

- ✦ cannot attend for bona fide reasons – sickness, timetabling, distance from campus
- ✦ are seeking flexibility due to work, family and other lifestyle arrangements
- ✦ come from non-English speaking backgrounds
- ✦ have special learning needs which make understanding and comprehending real-time lectures difficult

'It's a subject area where people need support while at the same time, getting information and learning. I don't want a school leaver, a young girl listening to that at home. I want her in the room with me so that I can see their reactions, and usually, on average I have one or two people run from the room crying.' ~ lecturer

Structuring an integrated learning environment



What is clear from the findings is that, while many staff recognise the limitations of WBLT and are concerned about the impact these technologies have on learning, they have been addressing these issues by attempting to maintain the status quo, by re-emphasising the importance of lectures and the need for students to attend them, rather than restructuring the curriculum to best achieve desired learning outcomes in the context of the reality of most students' lives.

The traditional lecture has been an enduring feature of University life around which staff workloads, curriculum designs and student experiences are constructed. With changing student profiles and attendance patterns, new technologies and new ways of communicating and accessing information there is the opportunity to review the role of lectures, and restructure the learning environment to provide a more integrated experience for students.

Why lecture?

A typical response will include some or all of the following – to:

- ✦ impart information related to the subject – facts, principles ideas etc.
- ✦ build conceptual frameworks with students
- ✦ provide a structured experience of the unit content
- ✦ illustrate and explain concepts using visual aids, video, or other props
- ✦ inspire and motivate students
- ✦ communicate and establish a connection between the lecturer and students
- ✦ make announcements to keep students up to date with events and course administration

For many, lectures have a multifaceted role, incorporating many of the objectives on the list. Reflecting this, the lecture is often the main point of contact between staff and students for formal communication about issues and problems encountered, changes to the program and important events.

With the introduction of iLecture, the lecture may no longer be a reliable focal point for managing the unit and students' learning experiences, particularly if students delay listening to the recordings or do not listen on a regular basis. New communication strategies may need to be developed. iLecture will work best if it seen by students to be integral to their learning and well connected to the activities and experiences that make up the learning environment, rather than as an add-on extra.

Following are some examples of how units have been restructured to integrate iLecture in an holistic way:

Treat the unit web site as the learning hub. If the lecture has been used as the main point of communication with students – announcements, and interacting with students you may need to create a new centralised location as the main point of contact. Your web site can be used as the learning hub in which you can regularly post updates and important messages to an announcements section.

Identify components of your course where attendance is essential. Reserve these for face-to-face sessions and ensure your students are aware of compulsory attendance.

Think about alternatives to lectures. If your lectures are primarily for imparting information there may be more strategic ways of doing this to accommodate your students' circumstances and meet their learning needs. You may even be able to substitute some of your lectures with pre-recorded sessions; introduce more small group tutorials to explore issues in detail; confine your lectures to coincide with the introduction of new topics; or limit lectures to strategic times throughout the semester – beginning, middle and end or prior to exams.

Integrate iLecture into a wider suite of online communication tools. Link the lecture to a discussion forum or blog to gain feedback. Invite students, whether present or using iLecture to identify points of confusion or areas of difficulty for addressing at the beginning of the next lecture. This will allow you to keep in touch, monitor progress and identify problems. In addition it will help students to keep in touch with each other

Link the lecture to follow-up activities or assignments that require students to reflect on the lecture material or use it in some way. For example problem solving tasks, quizzes, themes or issues for discussion on online forums, group or paired activities that can be posted to a unit wiki, blog or forum.

Maintain continuity between lectures and other activities. Where lecture content is a prerequisite for follow-on tutorials or practical sessions then review timetabling arrangements to ensure that students have time to listen to recordings beforehand. If this is not possible then try to:

- provide timeslots on the same day for those attending face-to-face and later in the week for those relying on iLecture; or
- devise other ways of providing students with tutorial stimulus material – e.g., podcast, readings, problems.

The unit outline is a key instrument in managing the integration of iLecture into your learning and teaching context. It is in this document that you can articulate the relationship between iLecture and other elements of the curriculum, communication and feedback strategies and your expectations of students.

Optimising learning with iLecture

Managing lecture attendance

While the benefits for external and part-time students are largely undisputed, some staff are not sure of the benefits for internals. Many have expressed unease about falling lecture attendance and concerns of students not engaging with their coursework, delaying listening to lecture recordings and reducing their opportunities for social learning in class. Restructuring the teaching and learning activities to integrate iLectures in an holistic way will alleviate this problem to some extent.

Nevertheless where attendance is falling, the reasons are usually multifaceted and may not necessarily be due to iLecture. Bear in mind that lecture attendance typically falls over the semester whether iLecture is available or not. Other reasons could include:

- timing of lectures in inconvenient time slots
- timetable clashes
- students can't come because of illness or other unexpected events,
- students choose not to come
- a belief by students that they can learn just as well from iLecture

Not all lecturers experience falling attendance; many have similar attendance patterns with or without iLecture. Students are more likely to come if they see it benefits their learning for example:

- they may need to participate in live discussions to achieve specific learning outcomes
- they may need to be present to see the visual materials or see how a process unfolds in a demonstration
- the content is sensitive and not appropriate to be listened to without the guidance of the lecturer.
- they find the lecturer and lectures motivating

Students choose to use iLecture for a variety of reasons. If attendance is necessary at all or some lectures, then let students know from the outset. Even if it is not, there may still be benefits gained from attending that students are not aware of. By informing students of your expectations and the benefits that can be gained from attendance then students will be able to make informed decisions.

This in itself may not be sufficient to guarantee attendance and you may need to introduce other strategies. Focusing on attendance and developing compliance oriented strategies is one response, but it does not address the fundamental issue of why should students come to lectures if they perceive they learn as well from listening to the recording.

A more enduring approach is to focus on strategies that will motivate students and support their learning, for example:

- ✦ provide more than a monologue where you read from prepared notes - acknowledge your audience, make eye contact, smile, pause for questions, let your personality and enthusiasm for your subject shine through
- ✦ make lectures interesting, introducing current examples or topical elements that can be used to generate discussion
- ✦ try to timetable your lectures at convenient times so the lecture is not the only event on that day.
- ✦ encourage students to socialise and communicate with each other before, during or after the lecture
- ✦ introduce interactive elements – paired or group discussions, Q and A sessions, student presentations, problems solving

“The only problems I’ve ever had (with WBLT) are problems with lecturers and their attitudes to people that are using it.”
~ student

“WBLT’s hugely helpful for NESB students and part-timers, ‘cause it give them confidence that if they have not got it right the first time, they can go home and listen to it on Sunday night” ~ lecturer

Supporting students who cannot attend

When developing strategies to encourage attendance, be mindful of the cohort of students who cannot attend and are relying on iLecture as their only option. Distance students, in particular value iLecture for its ability to

- provide up-to-date information;
- increase a sense of belonging; and
- provide opportunities for interactions between staff and other students.

For students not present:

- be aware that hands-on activities, discussions, and demonstrations may need to move to other components of the course (e.g. tutorials or pracs) if they cannot be captured using iLecture.;
- capitalise on the potential of online tools to allow students to communicate and interact

When listening to iLecture students adopt a range of strategies covering listening on a regular basis, listening to several weeks at a time, skimming lectures to pick up on salient points. Your particular context will determine which of these strategies is the most effective. Inform your students of preferred approaches in the unit outline.

If regular and systematic listening is important for learning then introducing other activities like MC quizzes, online discussions, tutorial exercises that relate to lecture content can be useful for helping to keep them up to date.

New ways of communicating for all

Many lecturers have expressed concern that the use of iLecture has reduced their ability to communicate with their students; taking away their opportunity to monitor the non-verbal cues from their students and thereby gauge understanding. As noted above (Section 5) there are strategies that can be put in place in an integrated curriculum to deal with this issue.

On the positive side iLecture offers the opportunity to develop new ways of communicating which can be inclusive of both internal and external students. Reported examples from staff and students include:

Utilising discussion forums - a lecturer who used to stop in his lectures to pose questions and give the students time to consider their answers has created a discussion forum for students and has found that the privacy of the forum (although not anonymous) gives students the time to compose 'good' questions which he can answer either online or in the next lecture. He also finds he has more time in lectures to devote to explore the content more thoroughly

Revisiting the lecture – students reported using iLecture to listen to the content again, reflect and refine their questions before asking the lecturer through discussion forums or email. This was more effective for all when compared to previous practice of asking impromptu questions in lectures.

Providing feedback – another lecturer gathered feedback from students at the end of the lecture by way of a short survey or one minute paper to identify issues and concepts not well understood. Students were then directed to the sections of the lecture recordings where these issues were dealt with.

“I tend to pick my iLectures based on the lecturer. If the lecturer is like one lecturer that I have who absolutely hates anything remotely technological and is a real visual person, using overhead projectors and lots of things on the board, I find I’ve really got to be there. But if the person is really up to date with their technology, and has very clear PowerPoint slides, then I know I can miss it and catch it later on at night.”
~ student



The lecturing process

Not only will the design of your curriculum change as you explore the most effective ways of integrating iLecture, so too will the actual delivery of the lecture as you devise new ways of accommodating those present and the virtual cohort. As part of the WBLT project we sought advice from students on ways in which lecturers could enhance their delivery. The suggestions emerging have been arranged around three areas of focus: *the structure and content of the lecture*; *the lecturing process* and *managing the technical aspects of WBLT*. You will see that many of the suggestions relate to basic requirements for good lecturing, whether in face-to-face or web-based contexts.



“Why should they come and sit in the lecture theatre where they're not interacting with anyone? I'd rather they came in for coffee and chatted with their buddies and then just sped off again.” ~ lecturer

1. The structure and content of the lecture

- ✦ Provide an outline of the content to be covered and major topics to be addressed
- ✦ Summarise key points
- ✦ Plan for the time allowed to avoid important points being ‘cut-off’ when the recording finishes – start and end on time
- ✦ Include announcements

2. The lecturing process

- ✦ Explain references to visuals and ensure they are available for listeners
- ✦ Indicate slide changes when moving through MS PowerPoint slides
- ✦ Describe what the attendees are doing
- ✦ Speak clearly and vary your tone to convey your enthusiasm for the topics
- ✦ Plan to use the microphone proficiently, such as minimising movement if it interferes with the sound quality
- ✦ If possible, capture student discussion, especially for external students. Repeat students’ responses if necessary
- ✦ Avoid long pauses, if possible
- ✦ Provide timely access to supplementary materials for students to use while listening

3. Managing the technical aspects of iLecture

- ✦ Synchronise visual and audio if possible and provide the PowerPoint file for students as backup
- ✦ Practise using the technology before the lecture and use it consistently
- ✦ Use a visualiser instead of OHP or Whiteboard [where there is one] in order for the image/ notes to be captured and made available to students using iLecture only
- ✦ Plan how you will manage activities, such as playing copyrighted materials or group discussions or, for those not attending. Examples include providing some commentary for listeners or suggesting they post a reflection online
- ✦ Upload recordings from previous semesters as backups
- ✦ Plan to offer a minimum of technical support to your students (such as online FAQs) or refer them to the right channel for help

More resources are available at the project website at:
<http://www.cpd.mq.edu.au/teaching/wblt/overview.htm>

Guidelines for students are also available at the project website.

For further information, contact one of the project team members:

Dr Maree Gosper

Project Leader

Email: maree.gosper@mq.edu.au

Tel: 02 9850 9752

Ms Margot McNeill

Research Manager

Email: margot.mcneill@mq.edu.au

Tel: 02 9850 9722

Mr Greg Preston

University of Newcastle Coordinator

Email: greg.preston@newcastle.edu.au

Tel: 02 4921 5891

Dr Rob Phillips

Murdoch University Coordinator

Email: r.phillips@murdoch.edu.au

Tel: 08 9360 6054

Mr David Green

Flinders University Coordinator

Email: david.green@flinders.edu.au

Tel: 08 8201 3096

Ms Karen Woo

Research Assistant

Email: karen.woo@mq.edu.au

Tel: 02 9850 9665

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Frequently Asked Questions

1. Should I use WBLT?

Consider the following:

Students

- If you have external students or many students who cannot attend, then WBLT is recommended.
- If you have students with disabilities, then WBLT may be crucial to their success.
- If you have students from non-English speaking backgrounds, then WBLT would be useful for their understanding

Class size

- WBLT is most useful for classes where one person does most of the speaking or one person speaks at a time, because of the technical difficulty in capturing multiple student responses. Large lectures are often like this.
- If you have a small class and plan to use the face-to-face time for discussion, then WBLT is probably not appropriate.

Content

- Visual material - If understanding your lecture depends largely on following dynamic visual information (other than still slides), then WBLT with audio only may not be appropriate. Ask your university's audiovisual services about the option of WBLT with video capability.
- Sensitive material - If your lecture contains sensitive content that students may find disturbing to hear on their own, then WBLT may not be appropriate.
- Copyright materials – materials such as commercial films may not be covered for use in WBLT, but do check the possibilities with your university's copyright unit.

Student expectations

- Students increasingly expect WBLT to be available – 75% of students surveyed indicated that they used WBLT because they 'couldn't attend'.
- If you choose not to use WBLT, it is important that you let the students know that the recordings will not be available and the reasons for your decision.

2. What can I expect when I use WBLT?

Your expectations

- The WBLT research suggests that your attitude might influence the outcome of using WBLT – if you have a positive attitude, you are more likely to have a positive experience.
- Think about the role of the lecture, how it relates to other components of the unit and how you communicate with your students. Lecturers who have changed the way they interact with their students have reported generally more positive experiences with WBLT.

Reframing your practice

- Expect a change in how and when you deal with students. Unit development can also be different.

Lecturing

- You may become more conscious of what you say and how you say it. Try not to lose your spontaneity, humour and enthusiasm.

Attendance

- You may experience a drop in student attendance. Some lecturers experience no change. Setting expectations with students, the nature of your lecture and factors outside your control all have an effect.

Student engagement

- You can also expect a range of behaviours from your students. Some will listen every week to the whole recording, others will dip in. In any case, many of students will be happy that you're meeting their needs for flexibility, and many of them will think they learn just as well using WBLT as in face-to-face lectures.

3. Will my students attend my lectures?

The WBLT research showed that 68% of the student respondents who do not attend lectures think they can learn just as well using WBLT as attending face-to-face lectures. They can listen online to:

- a structured experience of the unit content
- receive a lot of information related to the subject
- hear announcements

So why is it important for students to come to the lectures?

Educational reasons may include:

- experience first hand the enthusiasm of the teacher
- jointly build a conceptual framework
- participate in live discussions to achieve specific learning outcomes
- see the visual materials or see how a process unfolds in a demonstration
- establish a connection with the lecturer
- be able to ask questions about this and past lectures
- check their understanding and progress
- ask about announcements, events and course administration
- hear content that is sensitive and not appropriate to be listened to without the guidance of the lecturer.
- view and hear copyright material that can't be broadcast.
- Develop a study routine rather than leaving everything to just before exams.

Social advantages:

- Meet with others in the same unit
- Exchange ideas and make new friendships

As a lecturer, it is important that you let students know what they can gain from attending and what they may miss by just listening online.

4. Why don't students attend?

The WBLT survey indicated that 75% of respondents who do not attend lectures *cannot* come to class owing to factors such as time-table clashes and work or family commitments. To support these students, you can use WBLT, in combination with other technologies, to ensure that they can still participate as required to succeed in the course.

5. Where's the evidence that WBLT works/ helps students learn?

This depends on how you define "works". Three-quarters of students who reported they do not attend lectures said they are unable to attend. For these students, having WBLT certainly "works" for them.

The WBLT research acknowledged the complexity and variations between learning contexts. It therefore investigated the learning processes students employed rather than measuring specific learning outcomes.

The results show evidence of students employing deep learning approaches with WBLT. They used it to revisit complex concepts, to revise for exams, and to take comprehensive notes, while listening. Students generally perceived that using WBLT made it easier to learn and helped them achieve better results. A large proportion think they can learn just as well using WBLT as they can by attending a face-to-face class.

Students reported that lecturers who provide a clear structure for the lecture, repeat students' answers into the microphone, and provide timely and reliable access to lecture recordings and supporting materials are recognised as most helpful to their learning.

The research also found that WBLT is not appropriate in some instances, e.g. when students need to participate in oral discussion; when sensitive content is being presented; and when students cannot understand the lecture without seeing the visuals (when only audio recording is offered). Use of WBLT, therefore, should be part of a pedagogical strategy.

6. Can I change the way I conduct my unit to account for attendance difficulties?

Some lecturers have trialed alternative lecturing patterns. For example, instead of having weekly lectures, some lecturers changed to having a lecture at the beginning, middle and end of semester. They use these lectures for engagement rather than information transmission, as the latter can be successfully achieved through pre-recordings or text-based materials.

7. How do I instruct students to use this technology to benefit their learning?

- discuss the importance of active learning and collaborative learning. Students learn more if they are engaged and if they participate in the learning process;
- warn students of the workload required in the course and the dangers of falling behind on listening to lectures. They may not realise the self-discipline required to maintain focus while studying alone away from campus;
- provide students with a link to the [WBLT toolkit for students](#)

8. How can I tell if my students are learning if they are not attending?

Consider other ways of obtaining feedback about your students' learning and set some deadlines. Some examples for ongoing formative feedback are:

online discussions	pose questions in lectures and ask students to post responses to a discussion board
online quizzes and self-tests	include feedback and check where students make most mistakes
student wrapping topics	nominate groups of students to summarise a topic on the discussion board
muddiest point	ask students to post on the discussion board what they find most unclear (muddiest).

You can respond to this feedback in a following lecture.

Another source of feedback is in tutorials. It is useful to remind students of the importance of listening to lecture recordings before the tutorial if this is crucial for tutorial performance.

9. Isn't this just one of those technologies that stands in the way of my teaching?

There is an element of self-fulfilling prophesy in this. The WBLT survey showed that staff who have negative attitudes toward WBLT also find that it does not perform well in supporting their teaching. Those who have positive attitudes toward WBLT and consider it a tool for students to learn, tend to have more positive experiences about its ability to support their teaching. Learning to use a new technology always require time, especially in regard to how to integrate it into practice. It can be problematic if it's simply slotted into existing patterns without any consideration for what it can and can't do.

Because many students now cannot come to lectures, even when they want to, WBLT is increasingly important. Students who can attend also find WBLT a useful study tool.

10. Won't this increase my workload? What can I do?

Your workload (and level of anxiety) may increase initially when you implement changes. However, taking time to consider the best way to achieve the desired learning outcomes may result in more sustainable teaching practice.

Communication

- Some lecturers suggested their workload increases because they need to duplicate information (in lecture, discussion board, and email), and they find answering emails very time-consuming. Planning how you use tools and informing students of your way of working can help to avoid duplication.
- Conversely, some students indicated that they ask lecturers fewer questions using WBLT because they can refer to the recordings before deciding whether they really need to ask a question. Some suggested that they clarify their questions, or ask less administrative type of questions.
- **Strategies** include encouraging students to listen to the recordings or asking them to use the discussion board to answer each others' questions. The key is minimising one-to-one communication, especially when you have large classes.

Formative assessment

- Developing quizzes and self tests may initially increase your workload, but can provide you with formal evidence for your students' progress. Quizzes are reusable over semesters so it is a scalable solution.

Check local support for yourself and your students before making your decision about how you use learning technologies.

11. What is the best way for me to use WBLT?

Retain the richness of your face-to-face lectures and don't impoverish them just because they are being recorded. Most importantly, consider the role lectures play in your unit.

- Hands-on activities, discussions, and demonstrations may need to move to other components of the course (e.g. tutorials or pracs) as they cannot be captured using WBLT.
- Online tools can also provide opportunities for communication between students, rather than relying on campus-based experiences.

Consider the following when using WBLT:

Lesson planning

- Create an outline of the content to be covered and major topics to be addressed
- Plan how you will manage activities, play copyright materials, conduct group discussions, provide extra commentary for listeners or suggest posting reflections or questions online
- Summarise key points
- Include announcements
- Plan for the time allowed to avoid important points being 'cut-off' when the recording finishes – start and end on time
- Consider how you will use equipment and teaching aids and how their content will be transmitted
- Use titles and numbers on slides so you can refer to them
- Upload slides before the lecture and alert students to make a print out

Managing the technical aspects of WBLT

- Book your recording in time
- Use the staff tool to upload PowerPoint slides and provide titles and outlines for your lectures
- Make sure you turn on the microphone to trigger the recording
- Use a visualiser instead of OHP or whiteboard [where there is one] in order to capture the image/notes for students using WBLT.
- Practise using the technology before the lecture and use it consistently
- Keep recordings from previous semesters as backups

During the lecture

- Speak clearly and vary your tone to convey your enthusiasm for the topics
- Explain references to visuals and ensure they are available for listeners
- Indicate slide changes when moving through slides
- Describe what the attendees are doing
- Use the microphone in a way that minimise interference with the sound quality – buttons on shirts of brisk walkers and OHP fan noise can affect the recording.
- If possible, capture student discussion, especially for external students. Repeat students' responses if necessary or share the microphone.
- If there are to be long pauses (eg for a class activity) alert listeners and advise them of the duration so they can advance the recording.
- Provide listeners with the same or parallel activities to those occurring in class.

12. Should I teach my external students and face-to-face students as one cohort? Why?

Increasingly students perceive little difference between enrolling externally and internally. These days, internals expect the same access to technologies, structure and flexibility as externals. Equally, external students expect personal contact and interaction. Teachers have

shown they can successfully integrate discussion between external and internal students on the unit discussion board, so they interact as a single cohort.

At the same, it is useful to keep in mind that not all good practice in the face-to-face environment can be easily replicated online. So it is worth considering alternative strategies that will accommodate all students. (Think carefully about the workload implications for your choices.)

13. What about NESB students or those with a disability?

76% of students indicated they used recorded lectures to study for exams, and the same number indicated they used the recordings to revisit complex ideas and concepts. Whether they attended the face-to-face sessions or not, the recordings provided learning support for NESB students or those with a disability.

The guidelines for teaching with WBLT includes some tips on how to use the technology effectively.

14. What is the difference between WBLT and other technologies such as video or web conferencing?

WBLT records audio and sometimes visual components of a lecture, which is then made available online within 48 hours. Web-conferencing (e.g. LiveClassroom) offers real time voice, chat and visual interaction from diverse locations while the session is running. It can also archive interaction for future access.

Your teaching context and the needs of your students will affect the decisions you make about which technologies to use.

15. What other technologies can we use – together with WBLT/ rather than WBLT?

WBLT should be used in conjunction with complementary tools that support student-student, student-teacher and student-content interactions (Anderson, 2004). Because WBLT is essentially a one-way communication medium, some teachers have used other online tools.

Two way interaction	Discussion boards can fulfil this need asynchronously
Formative assessment	Lecturers have reported is their inability to gauge student understanding when students do not attend lectures. With formative assessment tools such as online quizzes, self tests, and activities in online discussion, students' understanding can be gauged.
Conferencing	Web-conferencing (e.g. Elluminate, LiveClassroom, Adobe Connect) can offer students real time text, voice and visual interaction from other locations while the lecture is running.

The best technologies to use will depend on your unit and the technology available in your area.

16. What support would I get? Who can I call when there are problems?

It is the university's responsibility to let all academic staff know where they can go for support. The standard support structure would include:

- mentoring
- examples of best practice
- FAQs
- guidelines

- workshops
- just in time technical support, and
- student support.

Our project website contains sample guidelines and examples of current practice that may be referenced.

17. Where can I find examples of good practice?

Our project website has a series of examples of good practice. We also encourage each university to promote its own examples of good practice to give its staff local examples.

Appendix 12 - Project outcomes and deliverables

The overall aim of this research was to enable an informed answer to the question of how iLecture and similar web-based lecture technologies could be used to best effect to support learning and teaching. More specifically, the initial project proposal also foreshadowed numerous other outcomes and deliverables. These are listed below, with comments about their status.

Overall, the research sought an understanding of:

Outcome	Status
How the technology is integrated into the curriculum, its role and relationship with other elements within the curriculum	These questions have been answered adequately in this report.
How the technology can effectively support learning and teaching in different contexts, taking into account disciplinary differences, student diversity, specific teaching aims and learning outcomes.	These questions have been answered adequately in this report.
The educational implications of its use for: <ul style="list-style-type: none"> ▪ the design and delivery of curricula ▪ academics and their teaching ▪ students, their learning and the establishment of effective learning environments ▪ professional development of academic staff ▪ academic policies and practices 	These questions have been answered adequately in this report. See also specific outcomes below.

Stage 1 Outcomes - Register of issues arising from student and staff surveys

Outcome	Status
Usage patterns and teaching and learning preferences	Achieved and reported here
The uses students are making of the technology to support their learning	Achieved and reported here
The uses teachers are making of the technology as a teaching and learning tool	Achieved and reported here
The changes taking place in the learning environment, from both a teaching perspective and a student learning perspective	There is evidence, from the student perspective, of a blurring between internal and external modes of study. There is evidence that some staff have changed the way they design and teach their subjects.
The changing role and place of lectures within the curriculum	WBLT is changing the role of lectures in higher education. This research affirms the role of lectures, but only as one tool in a broader teaching toolbox.
The impact of the technology on lecturing styles and lecture-room dynamics	WBLT have had an impact on classroom attendance rates in many cases. Students gain value from lectures, even if they do not attend in person.

Stage 2 outcomes

Outcome	Status
An expanded register of issues relating to the use of web-based lecture technologies for learning and teaching which build on the findings of the first stage research and take into account contextual differences	These issues have been summarised in chapters 6 & 7 of this report, and below.
An identification of strategies for dealing with these issues	The 'good practice guidelines' and 'frequently-asked questions' address these issues. See below.
Examples of how web-based lecture technologies can be used effectively to support learning and teaching in different contexts	The Case Studies and Vignettes identify examples of good practice. See deliverables.
Recommended guidelines for good practice	Guidelines for good practice include 'toolkits' for students, staff and administrators, as well as a set of frequently-asked questions. See deliverables.
Foreshadowed implications for policy and practice as it relates to academic practices, quality learning and teaching, and curriculum development	Guidelines for good practice include 'toolkits' for students, staff and administrators, as well as a set of frequently-asked questions. See deliverables.

Deliverables

Outcome	Status
Final report	Achieved
Vignettes	19 vignettes included in this report and on the project web site http://www.cpd.mq.edu.au/teaching/wblt/vignettes
Case studies	6 case study reports included in this report and on the project web site. http://www.cpd.mq.edu.au/teaching/wblt/casestudy A digital story from one case study is in the Carrick Exchange.
Frequently-asked questions	http://www.cpd.mq.edu.au/teaching/wblt/faq
Guidelines for students	http://www.cpd.mq.edu.au/teaching/wblt/toolkits/student.pdf
Guidelines for staff	http://www.cpd.mq.edu.au/teaching/wblt/toolkits/staff.pdf