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An Australian/UK comparison of the contemporary teaching and learning technologies

Sara Wilkinson  
*Deakin University*

Mark Shelbourn  
*Nottingham Trent University*


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An Australian/UK Comparison of Contemporary Teaching and Learning Technologies

Sara J Wilkinson
Faculty of Business & Law
Deakin University, Melbourne, Australia

Dr. Mark Shelbourn
School of Architecture, Design and Built Environment
Nottingham Trent University, Nottingham, United Kingdom

ABSTRACT

The last decade has delivered substantial changes in construction and property education in Australia and the UK. There has been an increase in the number of courses offered in built environment education and the profile of a typical student has changed. In both countries students are under pressure to balance study and work due to the higher costs of living and education. This has placed demands on providers to deliver teaching and learning which meets student, industry and professional needs. Simultaneously there has been an increase in the application of technology in the business and corporate world which has resulted in increased efficiencies and new challenges. This paper evaluates changes in construction and property education courses to embrace new technology. The focus is on the delivery of innovative teaching and learning materials and the interaction between students, staff and the community. Results from questionnaires from new and existing students at Deakin University and Nottingham Trent University were used alongside examples of teaching and learning as illustrative case studies, the emphasis is placed on pushing the boundaries of the conventional built environment education process. The findings show that by embracing technology there can be a ‘win-win’ scenario for students, staff and industry stakeholders. Whilst courses adopt varying levels of technology, it seems inevitable that educators must evolve the delivery of education to become efficient and effective as the century progresses.

KEYWORDS

construction, property, education, e-technologies, distance learning

INTRODUCTION

The components in any learning situation are the student, the teacher/lecturer, the subject, the teaching environment and the method of delivery. These are all inter-related and individual which makes it difficult to identify the one factor that makes for effective
learning or effective e-learning. Research shows when traditional teaching and learning methods are employed, students lack motivation and fail to progress beyond rote learning (Lavelle, 1992). The lack of motivation appears to be independent of intelligence (Day and Berlyne, 1971). A conclusion is that students should be stimulated during the process to optimise their attention, performance and learning. However this is not the whole picture, whilst stimulation is the lecturer’s responsibility; much rests with the student and their desires.

Little has been published into the feasibility of Computer-Aided-Learning (CAL) for Building and Construction assessment or in the creation of courseware on the subject (Shelbourn et al., 2001). This paper describes current use and student perceptions and use of technologies that support CAL at Deakin University in Australia and at Nottingham Trent University (NTU) in the UK. The thoughts of students in the use of the supporting technologies across both institutions are discussed.

**STUDENT ENGAGEMENT**

There have been changes in construction and property education in Australia and the UK over the last decade, for example the increased number of courses being offered. The expansion continues in Australia; however the Global Financial Crisis of 2008 has lead to UK budget cuts in 2010 which threaten some courses.

Moreover the profile of a typical student has changed. With changing demographics students are largely derived from Generation Y or Gen Y born between 1982 and 2000 (Crindle, 2002). Broadly speaking characteristics that set Gen Y apart from other generations are:

1. Pursuit of personal satisfaction
2. More entrepreneurial savvy and less concerned with permanence
3. Not as influenced by authority and role models
4. Peer group is important – learning how to operate in a group, connected to friends
5. More visual, kinaesthetic learners who want to avoid information overload (especially print)
6. Not compartmentalised (partitioned) a mosaic of expectations – all parts of their lives are woven
7. Values and self esteem need to be met in a workplace and in their learning.

These characteristics impact on learning and teaching styles. “The traditional chalk and talk won’t work with this generation. Our communication style is structured, yet they want freedom. We stress learning, they like experiencing. We react, they relate. We focus on the individual, while they are socially driven” (Crindle, 2002). Not all Generation Y will embody all of the characteristics and they vary from person to person, however the
broad concept holds true. The differences in characteristics between generations are compounded further in the tertiary sector where most teaching staff belong to the baby boomer generation.

Students are under pressure balancing study and work with high living and education costs. In Australia most students work casually or part-time, whereas in the UK it is less common for students to work during term-time. This may change as education costs will increase substantially in the UK, following the Browne Report (2010). With the Bradley Review in Australia, the sector is set for change post 2012 as the caps on universities for student numbers is removed and the free market prevails. There is the belief that some consolidation will occur with less viable courses closing. The need to attract, engage and retain students has never been more challenging.

Working students benefit from flexible study options. Globally there are issues with attendance which demonstrates lack of engagement with studies or time management and work-life balance issues. In Australia lectures are scheduled in two hour blocks; a long time in which to attract, engage and retain interest and attention. The UK model involves a one hour lecture followed by a one hour seminar. During lectures staff compete with technology in the form of laptop computers and smart phones to an extent where many ask: is the face to face lecture losing its impact, and should we look to other forms of delivery? Furthermore the style and content of communications with students needs to be relevant to a generation who are visually educated and this involves researching the most appropriate format for those we purport to educate (Crindle, 2002). In short; a quality outcome is dependent on our understanding of our students’ generation. Course providers are evolving more flexible study options to accommodate Gen Y needs and this paper examines the nature of these options and the students’ perceptions of the use of technology to enhance education.

**STUDENT ENGAGEMENT**

Student feedback allows lecturers to understand whether efforts to improve the educational experience lead to improvement (George and Cowan, 1999). Both institutions use end of module questionnaires to feedback student satisfaction consistent with international practice (Kahn et al., 2003). The weaknesses of the approach, is that it rarely results in a modification for that cohort and depends on uncorroborated opinion. Finally it may be based on feedback from a limited number of students with others affected by questionnaire fatigue (Gibbs, 1982). Questionnaire feedback can provide an uninformative view of what is occurring (Gibbs, 1982); for example, the data may not be relevant to a particular module (Heywood, 2000). At worst feedback is perceived as ‘form
filling’ without direct benefit and merely complying with quality procedures (McDowell, 1991).

Whilst the benefits of feedback studies are well documented, appropriate information must be generated (Gibbs, 1982). It is vital to obtain the feedback in a manner that enables students to voice opinions (Hounsell et al., 1997). Students need to provide reflective, constructive opinions to preclude the emergence of a blame culture with a focus on the learning experience (McDowell, 1991) and how it might be improved. With an emphasis on understanding how students perceive and value different aspects of the course improvements are possible - here the focus was on use and experience of technology in learning. At Deakin University, the experience of web supported unit teaching and learning materials provided on Deakin Studies Online (DSO), the real time lectures via the internet (through eLive) and the pre-recorded lecture (Camtasia) technology. At Nottingham Trent University (NTU) the focus was on the use of the Nottingham Trent University Workspace – NOW, a bespoke version of the Desire2Learn (D2L) online learning environment. NTU uses Camtasia technology to produce online material for off campus external students. A considerable body of research posits how useful student feedback can be (Marton et al. 1984; McDowell 1991; Gibbs 1982). Though many lecturers concentrate on the content of lecture materials with reference to feedback, there is much to be learned about how students manage approach and structure to their learning.

Not all student issues can be accommodated in teaching and delivery modes, partly due to external factors, such as professional body requirements, physical resources of the university and the human resources of the faculty. However it is important that the educational infrastructure and course delivery mode takes student perceptions, needs and the barriers to learning into account (Crindle, 2002). Previous studies demonstrate that student feedback leads to improved performance (McDowell, 1991).

TECHNOLOGY AND LEARNING

Computers are ‘powerful tools’ to enhance learning and can make ‘good teachers’ creating a strong educational case for usage (Cuthell, 2002, Barker et al., 1985). Computer assisted learning has been used widely in the tertiary sector for many years and is known as computer-based learning (CBL), computer managed learning (CML), e-learning, on-line learning, and Blackboard. At Deakin University Blackboard is known as DSO. NTU has used D2L technology since 2007. This paper is concerned with the use of the software programmes DSO running on a ‘Blackboard’ platform (Blackboard, 2008), eLive (Elluminate, 2008) and Camtasia Studio (Camtasia, 2010). From a UK perspective
the use of the NOW, Camtasia, and Microsoft Live Meeting are the main focus in gaining the student experiences for enhancing their learning.

The arguments for computer technology are that learning quality is enhanced and instruction is improved (Barker et al., 1985). Other benefits are supplementing traditional methods, accelerating learning, experimenting with course development. CAL provides remedial instruction, individualised instruction, enrichment materials, on demand instruction and achieves higher teaching standards, (Barker et al., 1985; Joliffe, 2001; Cuthell, 2002). Blackboard can be used in all of these ways (Blackboard, 2008) via DSO, where eLive facilitates delivery of synchronous lectures via the internet (Elluminate, 2008) and Camtasia Studio software allows staff to pre-record lectures for download when convenient. At Deakin University DSO, eLive and Camtasia Studio are used in some of the ways noted above. Furthermore students now enter tertiary education with experience of CAL from primary and secondary schools, are familiar with IT in learning and have expectations about CAL and the quality of materials (Barker et al., 1985).

The web can be used to deliver learning events and provide an archive for students unable to attend (Joliffe et al., 2001), and eLive was used at Deakin partly for this purpose. Since 2008 all property units use eLive technology to deliver some lectures. An advantage is that students can individualise their learning thus improving the student experience (Burke and Rumberger, 1987). In 2009 pre-recorded lectures were piloted to provide further flexibility and in 2010 this provision was extended to other units. The post graduate course is externally supported with weekly pre-recorded lectures and self paced tutorial exercises. Outside of core teaching, IT can transform the teacher from subject specialist to a broader director of studies role as students take more responsibility for their learning. This aspect is a core goal of the programs at Deakin, based on the belief that students need to develop skills as independent lifelong learners.

Other benefits of IT-based tools include discussion facilities such as chat rooms and a variety of learner administrative information (Joliffe et al., 2001). Whilst the DSO sites host chat rooms, provide announcements and notices and set out trouble shooting materials for learners, eLive enables student chat to occur in ‘breakout rooms’ created on the site. Joliffe et al. (2001) argued there must be some face-to-face interaction between the student and lecturer for the maximum advantage to be derived from IT based learning materials, and eLive events occur five times (out of twelve) each trimester (table 1). In the graduate course face to face interaction occurs via optional video supported tutorial sessions using eLive technology in weeks 1, 6 and 12, in addition to telephone and email contact.
### Table 1 – Deakin University lecture delivery mode

<table>
<thead>
<tr>
<th>Week number</th>
<th>Undergraduate</th>
<th>Postgraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On campus</td>
<td>Pre-recorded lecture, live video seminar</td>
</tr>
<tr>
<td>2</td>
<td>On campus</td>
<td>Pre-recorded lecture</td>
</tr>
<tr>
<td>3</td>
<td>eLive</td>
<td>Pre-recorded lecture</td>
</tr>
<tr>
<td>4</td>
<td>On campus</td>
<td>Pre-recorded lecture</td>
</tr>
<tr>
<td>5</td>
<td>eLive/ Pre-recorded lecture</td>
<td>Pre-recorded lecture</td>
</tr>
<tr>
<td>6</td>
<td>On campus</td>
<td>Pre-recorded lectures, live video seminar</td>
</tr>
<tr>
<td>7</td>
<td>eLive</td>
<td>Pre-recorded lecture</td>
</tr>
<tr>
<td>8</td>
<td>On campus</td>
<td>Pre-recorded lecture</td>
</tr>
<tr>
<td>9</td>
<td>eLive/ Pre-recorded lecture</td>
<td>Pre-recorded lecture</td>
</tr>
<tr>
<td>10</td>
<td>On campus</td>
<td>Pre-recorded lecture</td>
</tr>
<tr>
<td>11</td>
<td>eLive/ Pre-recorded lecture</td>
<td>Pre-recorded lecture</td>
</tr>
<tr>
<td>12</td>
<td>On campus</td>
<td>Pre-recorded lecture, live video seminar</td>
</tr>
</tbody>
</table>

What are the disadvantages student learning of IT? There are concerns about over reliance and dependency on IT (Burke and Rumberger, 1987). It is vital to use IT ‘appropriately’, to consider the needs of the students and to balance IT based materials and traditional methods (Barker and Yeates, 1985; Crindle, 2002).

There can be misconceptions about technology in teaching; it can be time consuming producing the learning materials (Joliffe et al., 2001). Thus if a provider is seeking to reduce staff preparation and teaching time, substantial development in CAL may not be the way forward (Joliffe et al. 2001). This was considered in the development of materials at Deakin. Much focus on CAL material has been with the Master’s programmes at NTU where there is a support team for lecturers to develop CAL material. The experience of NTU staff with this team has not been a success, although the e-learning team were the experts there was no flexibility in their approach to the development of materials, with one lecturer stating: “if it is not their way (the e-learning team) then there is no way – why should I bother?” The time to develop such material is often underestimated with the lecturer expected to develop the CAL material and carry out their day-to-day work.

Furthermore the lecturer needs IT knowledge and discipline knowledge to design an effective learning environment for students (Joliffe et al., 2001). The teaching staff had some experience of teaching software but additional training was undertaken and there was a decision to commence at a low level and to build up. A further issue is teaching materials may be static and do need regular updating. Although this is not the case with all courses, many lecturers use online technology to make lectures and information available to students in real time and then the lecture notes are uploaded onto the DSO and NOW sites for subjects.
Other problems arise when users have equipment with limited capacity to download materials. Joliffe et al. (2001) noted that some materials require users to have ‘state of the art’ PCs and browsers. Finally, in order to make the most of effective learning IT-based materials and the most effective use of IT, lecturers and students need training which requires time and resources (Joliffe et al., 2001).

RESEARCH QUESTIONS
To compare student perceptions and the use of technologies to supplement and/or enhance the student experience, a number of questions are addressed:

- How technology is used in the two institutions?
- What are the students’ perceptions of technology whilst studying?
- What are the students’ expectations of these technologies?

RESEARCH METHOD
Questionnaires were used to gather quantitative and qualitative data at Deakin and NTU; a well known and frequently used method. Naoum (2006) describes quantitative data as “objective” in nature, with the results being “hard and reliable; …tangible, countable, senate features of the world” (Bouma and Atkinson, 1995). On the other hand qualitative data is “subjective” in nature (Naoum, 2006) with an emphasis on “meanings, experiences, descriptions etc.” The questionnaires used in this paper to gather the raw data were different in structure and length, but they were all designed and developed following the principles described by De Vaus (1996; 2001) and Naoum (2006). The surveys used were the NTU Pre University Student perception questionnaire 2009, the NTU wide student satisfaction survey 2010 about NOW and surveys of Deakin University Property and Real Estate students.

RESULTS
How technology is used

In 2008 a three year bachelor degree in property and real estate (PRE) commenced at Deakin University with 61 students. The way students perceive IT in teaching is affected by their composition and social background. Deakin students are primarily local, with others coming from rural and regional Victoria. Over 60% of the cohort is mature age or non-year 12. The PRE units include students from other disciplines including commerce, construction management, arts and science.

At undergraduate level, there are three primary ways staff interacts and engages students. The traditional approach is face-to-face on-campus in lecture theatres followed by face-
to-face tutorials, although there is sometimes overlap between the modes – for example within a lecture there may be a problem-based exercise. The third mode is delivering lectures over the internet via the program eLive (Elluminate, 2008). These three delivery modes were employed to create synergy (i.e. acknowledging the strengths and weaknesses of each mode) and to provide multiple learning approaches and flexibility.

When designing the delivery mode there were options, such as using eLive to deliver the lectures over the internet. Synchronous eLive lectures are delivered to students, either based on-campus using university computers or off-campus at work or home (Elluminate, 2008). It is a convenient mode of accessing lectures for part-time or working students. As with a typical lecture, PowerPoint is used to introduce materials and theoretical concepts. Depending on how the lecturer wishes to use the technology, the students can type in questions, make comments on screen or write on the slides. Students can use microphones, with up to six people conversing simultaneously. There is access to URLs and the ability to play video files which some lecturers find useful.

Camtasia allows lecturers to record and create a full motion video presentation or tutorial. It can be published in the format of choice, at Deakin MP4 format enables students to download the materials onto iPads, iPhones, and PCs. The teaching and learning materials comprise PowerPoint format with audio and inserted video clips. The advantage is that students can pause, rewind and replay segments. Furthermore students are able to see the application of software and websites in ‘real time’ and literally follow the lecturer’s mouse as key relevant software is demonstrated.

After consultation with PRE staff and Faculty teaching advisers, a number of approaches were adopted. For undergraduates eLive sessions commence with a topical or unit-related question for students to reflect upon. The lecturer sees all participants as they log in. High levels of visual materials were used as a catalyst for discussion adopting a style Gen Y favours, and students are frequently asked to examine images to consider certain aspects. A polling tool enables participants to answer questions anonymously; questions may be posed as closed or multiple choice options. Participation rates are high, higher than found in the face-to-face lectures given to the same cohorts. PowerPoint slides are available on the DSO before sessions.

With pre-recorded lectures a question and answer style is adopted where questions are posed on the text of the PowerPoint and the audio provides the answers; such an approach requires students to view and listen in order to note relevant information. The recorded approach advantages students with English as a second language who can replay lectures as many times as needed for a full understanding. At undergraduate level a mix of pre-recorded lectures are used in years two and three of the course in weeks five, seven, nine and eleven. Pre-recorded lectures were deemed to be a technology overload for first year
students and were part of the philosophical approach of gradually introducing technology throughout the course.

**Students’ perceptions of the technologies**

Overall positive perceptions about technology in teaching and learning prevailed at Deakin. Crindle’s (2002) comment in respect of flexibility and convenience being important to Gen Y students was found to be true. Many students commented on the ‘ability to revisit recorded lectures’ and to take on new materials ‘and review the lecture again at your own pace. I found this method of delivery very good’. Others commented that eLive recordings were ‘convenient and well taught’. Some students could extract more content from recorded sessions by revisiting the materials, ‘I was able to gain more information from eLive and write more information than the face to face lecture’ as the distractions of the lecture theatre were sidelined.

A third reason favouring recorded materials was the ability to balance study and work and to give students choice. The experience of using the technology is positive and enjoyable which confirms that the quality of the experience is important (Crindle 2002). One stated that the eLive was a ‘creative and much liked way of providing a lecture’, another noted eLive was ‘a great thing, love the variation it provides and keeps the course interesting.’

The findings are that expectations have risen in terms of teaching and learning materials, and traditional approaches are seen as less innovative and interesting.

Not all students embraced the technologies. There were issues with the quality of downloads partly due to University and student equipment. Students need access to fast broadband internet for optimum quality and speed. A negative perception was the reliability of technology which is partly related to the comment on quality. Some found live links dropped out during transmission. Another frustration was the speed with which some lecturers uploaded materials onto subject websites as expectations, whether realistic or otherwise were unmet. Others preferred face to face contact above external provision which contradicts Crindle’s claim that convenience is the main driver for Gen Y (2002). One student stated that they found it difficult to ‘learn and understand in this forum’ but they did not articulate the reasons they found the learning harder. A summary of the findings is shown in table 2. When the lecturers analysed the amount of time students visited and spent on the unit DSO websites there was considerable variation, some had high and regular usage others rarely logged on and did not visit all parts of the site. As a result these students were disadvantaged in that they did get gain access to all of the teaching and learning materials provided by the lecturer.
Table 2 – Perceptions of technology use in property at Deakin University

<table>
<thead>
<tr>
<th>Positive perceptions</th>
<th>Negative perceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenience</td>
<td>Technology unreliable</td>
</tr>
<tr>
<td>Greater flexibility</td>
<td>Sound quality can be poor when used with older equipment</td>
</tr>
<tr>
<td>Better quality teaching and learning experience</td>
<td>Prefer to have option of face to face or eLive</td>
</tr>
<tr>
<td>Improves note taking</td>
<td>Difficult to learn from this method</td>
</tr>
<tr>
<td>Ability to balance study and work commitments</td>
<td></td>
</tr>
<tr>
<td>Creative experience</td>
<td></td>
</tr>
</tbody>
</table>

Technology expectations of incoming students

In 2009 the School of Architecture, Design and the Built Environment (ADBE) at NTU conducted a survey with 83 students (a response rate of 22%) who were either in the Sixth Form at School (48.5%), College (17.6%), at a Further Education College (27.9%) or already at a University (5.9%). The respondents were 64% male and 36% female. The aim of the survey was to gather knowledge and understanding of these students expectations of university life, so that ADBE can better manage the transition into the University environment. Amongst the questions asked were:

1. How much do you use computers?
2. How confident are you in the following use of technology at university?
3. Do you have access to your own computer at home?
4. Do you have access to broadband at home?
5. Will you have access to your own computer university?

It is the intention to use these results to show the expectations of students to use technology during their time learning and studying at NTU.

For question 1 the options for answers were “Never”, “Sometimes”, “Often” or “Very Often”. The results of the survey showed that Microsoft Office was the most commonly used technology, used “very often” with a score of 38.6%. The next most popular was Social Networking for studying with friends (25.3%). Those technologies that were “Never” used were firstly a quite specialist piece of software for creating videos etc. The second, and perhaps more telling result, was that 37.3% of those asked “never” use “Your School website for getting information about your studies or other school activities”. This has potential problems as many institutions rely on such websites to give students information as well as CAL material. Table 3 shows the results from the question; how confident or not confident the students are in using different technology at university?
Table 3 – Student confidence on using technology

<table>
<thead>
<tr>
<th>Confident in using technology</th>
<th>Not Confident in using technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion boards, wikis, blogs</td>
<td>Video conferencing</td>
</tr>
<tr>
<td>Contacting staff and students by email</td>
<td></td>
</tr>
<tr>
<td>Using a virtual learning environment</td>
<td></td>
</tr>
<tr>
<td>Learning new software applications</td>
<td></td>
</tr>
<tr>
<td>Sharing your work with students and staff</td>
<td></td>
</tr>
</tbody>
</table>

There is confidence with student’s ability to use almost all of the technology in all aspects of their university life, apart from the video-conferencing technology. This could reduce the usefulness of CAL material as face to face interaction is important to the success of IT in teaching and learning. The ability of the student to use such technology will become more common place as they are introduced to it at an earlier age.

The final three questions concern the students’ access to basic computing technology and broadband to use such technologies. Of the respondents 96.4% have access to their own computer at home. 92.8% of the respondents will have access to their own computer at university too. The same number also has access to broadband at home. These results show that the students will have access to such technology that both Deakin and NTU rely heavily on to give student information and e-learning material.

**NTU NOW satisfaction survey**

In 2010 NTU conducted a number of surveys to determine staff and student satisfaction of using e-learning at the university. The student survey was conducted with outgoing students in May 2010. The ADBE School students were the least satisfied with the e-learning experience of NOW at 55% – the average across the university being 66%. It would seem from these results that the School has much to learn.

The overall usage of NOW was 81%, with student usage classed as frequent with more than two usages per week. Half of all the students felt that the age of the computers detracted from their overall satisfaction when using computers in the library, and this figure fell to just below half when asked about their satisfaction elsewhere in the university.

In terms of using NOW to access content for their learning, only 2% had no content whatsoever, with the remainder receiving content via NOW. 69% of all students agreed that they were satisfied with the ease of use of NOW. Only 38% of students were satisfied with the amount of online discussion activities that are available through NOW. Only 39% of students were satisfied with the amount of online feedback provided via NOW. Satisfaction rates for the submission of online assignments and reading lists was about two thirds of all students. Just over half of all students were satisfied with the amount of links to external sources. Students’ comments regarding NOW were mostly about the lack
of knowledge on behalf of staff, the lack of mandatory training courses in the first year of studies, navigation difficulties, and a lack of communication with tutors in NOW. Students were keen to be able to personalise the calendar, so that they could include important dates and deadlines for activities outside of lecture and seminar times. The students mostly felt that the usage of NOW by staff was the key factor affecting their satisfaction with e-learning. They felt that usage was inconsistent across staff, thus setting differing standards of usage, which students felt confusing. They wanted more online assessments, discussion activities, online feedback, and online submission. Most other comments related to the general usability of NOW and the fact that they did not have a mandatory training course. The study findings suggest that students at NTU are positive about e-learning tools, but feel their satisfaction is let down by the skills of teaching and learning staff, although they are keen to point out that where exemplary usage is evident their inspiration and satisfaction with their studies increases. The key findings were:

- The computer facilities meet current student needs
- Less satisfied with training and support – confusion over who to contact
- NOW is used by the majority of students on a daily basis
- Age of computers was a problem for students – especially the lack of support for smart phones and tablets
- Students satisfied with NOW, however they want staff to be better trained, and they want to be able to personalize the system, i.e. calendars
- Want more online discussions, submissions, and assessments
- They want a mandatory first year training module – some wanted this to be online, others wanted staff to complete

Perhaps the most important point made by the students, and should be taken away from this survey is that “…exemplary staff usage (of NOW) inspires my studies…”

CONCLUSIONS

There are similarities in the ways in which technology is used to enhance the teaching and learning experience in both institutions. Both institutions use blackboard supported technology to upload course materials and to communicate to students. Both institutions use Camtasia software to pre-record lecture materials for students. Both institutions have used support from teams with CAL materials though the experiences of the NTU staff were less satisfactory than the Deakin staff.

There is an issue with students usage of DSO and NOW with some students and this may be a responsibility of the university and lecturers to demonstrate unit or subject websites in lecture time so that students become more familiar with their layout and appearance
and the content of the sites. Lecturers should not presume students familiarity with DSO or NOW and other CAL materials.

Overall there is much to be commended in the development of recorded and on-line teaching and learning materials. Students value the flexibility such an approach gives them as well as the ability to re-listen to materials. The issues surrounding technology limitations and reliability need to be addressed within the university.

A key finding is that the lecturers need to provide a clear explanation of the way in which the materials are intended to be used and how the students should use them. Furthermore students expectations should be realistic in terms of what lecturers are able to do within reasonable timeframes, as is often the case it is the gap in communication and expectation wherein the problem lies. Overall there are high levels of confidence in the use of technology, which is a result of younger people having grown up with technology.

REFERENCES


