Adopting Synchronous Audiographic Web Conferencing – A Tale from two Regional Universities in Australia

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EXECUTIVE SUMMARY

This chapter provides a comparative study of two Australian regional universities with a similar student profile as they investigate the use of synchronous audiographic web conferencing as a learning and teaching tool. In both universities, the trials of the web conferencing tool, Elluminate Live! (Elluminate) were initially driven by individual academics with an interest in new technologies. While similar in some aspects at the beginning, the two universities then approached the software trials in different ways. As part of this comparison, issues and challenges relating to software trials in educational environments are highlighted, and recommendations provided for others who may be considering the adoption of similar technologies.

KEYWORDS

Software trial, technology enhanced learning, web conferencing, Elluminate Live, distance education

ORGANIZATION BACKGROUND

The two regional Universities under reference in this case currently have similar student and delivery profiles, with a high proportion of off-campus (distance) students. The two universities are similar in that they both have small on campus and large distance student populations, and have track records for exploring the use of emerging technologies to improve the student experience.

One regional university has more than three quarters of the 26,000 enrolled students studying at a distance in local, national and international locations, while in the case of the second regional university, distance proportion is just over half of their 15,000 enrolled students. For both universities, many students live in remote areas with no physical access to libraries or face-to-face study groups. Moreover, a large percentage of students are of mature age, working full-time and fitting part-time study into their busy schedules.
SETTING THE STAGE
This chapter adds to the emerging literature on the use of modern audiographic tools identified in a review by de Freitas and Neumann (2009). It brings together approaches adopted by two regional Australian universities – the University of Southern Queensland (USQ) and Southern Cross University (SCU) as they investigate the use of web conferencing as a learning and teaching tool. A comparison is made of the paths to, adoption of and lessons learned from the use of web conferencing to provide education and development opportunities at USQ and SCU. The web conferencing tool, Elluminate, was trialled at both universities, with the process in both institutions being initially driven by individual academics (teachers) with a desire to investigate the pedagogical benefits of new and emerging technologies. While the trials were in some aspects alike at the beginning, the two universities then continued along different paths. Although the pedagogical considerations were comparable, the processes of evaluation, promotion of the technology to create a user base and the decision to adopt a web conferencing tool following the trials took quite different paths. For instance, at SCU the use of Elluminate has continued to expand while at USQ, despite the success of the trial, a different web conferencing tool has been adopted. Consistent with the aim of this book, these adaptations will be explored using the STEP dimensions, and the issues and challenges faced in each dimension will be highlighted.

The chapter is structured as follows. First, an overview of the organisational background of the two universities sets the stage by providing information on technology use for learning and teaching before the trials and then outlines the institutional moves to flexible modes of delivery. Information about the university contexts is provided as well as the motivations for using the web conferencing technology. Descriptions of the trials at institutional level are followed by more detailed case studies of two courses (one at each university) where the technology was implemented to support enhanced pedagogical outcomes. The chapter concludes with a discussion of issues and challenges identified by each institution along with a variety of recommendations.

USQ moved into distance education via dual mode teaching in 1977 as a viable alternative to the offerings at traditional universities (Reushle & McDonald, 2000). SCU entered this realm much later in the early 1990s but for similar reasons. This provision of distance education as well as classroom-based teaching has given both institutions a “multimodal” label. In traditional Australian distance education, a typical learning package consists of print-based materials sometimes supported by audio, video and computer-based resources. The package is designed to enable learners to interact independently with the materials. Frequently distance students were also supported by teletutorials and/or face-to-face workshops once or twice a semester. The emergence of learning management systems (LMS) around the turn of the century provided opportunities to address the traditional independence and isolation of distance learners largely through the use of asynchronous discussion features available within the LMS. This has generally led to a requirement for students to have reliable Internet access.

Focus on Learning Management Systems
In the early days of online deliberations at USQ and SCU, the tendency was to focus on learning management systems (LMS), with online material delivery and asynchronous and synchronous text-based discussions. While asynchronous discussion groups have been shown to be very successful in socio-constructivist learning paradigms, for example in the context of business courses (Birch & Volkov, 2005; Rowe, 2003) and those with primarily an education focus (Reushle & McDonald, 2004), they tend not to be utilised as much for symbol-based communication in disciplines such as sciences, mathematics or statistics. One of the reasons for this is that these disciplines require specialised tools for online communication not necessarily available through standard LMS, for instance the option to write or draw on a (synchronous) shared whiteboard while being able to talk about a topic through a text or voice-based channel.
The lack of such tools and frustration for instructors and students led to experimentation by individuals at USQ with a variety of web collaboration tools. A free synchronous chat client using text-based posts was tested in the disciplines of mathematics and statistics (Loch & McDonald, 2007). Other studies were conducted exploring innovative tools including the work by de Byl and Taylor (2007) who investigated the Web 2.0 ethos with respect to the pedagogical applications of 3D online virtual environments, and the research by Hafeez-Baig and Danaher (2007) into using mobile learning technologies. Web conferencing was seen as promising technology to explore as it offers a variety of tools in one package, such as voice, video, text, shared screen and whiteboard.

At SCU, the use of LMS began in the late 1990s. Despite a slow uptake due to some less than promising initial trials (Hayden, Saenger & Parry, 1999), a good deal of experience and knowledge about online course delivery was learned (Statham, 2001) as well as the impact on assessment, especially for distance students (Morgan & O’Reilly, 1999). Once a stable LMS was in place, it was used, as at USQ, for online support, material delivery and asynchronous and synchronous text-based discussions (Newton & Ledgerwood, 2001). A range of uses of asynchronous text-based discussions in social sciences and business showed their value for flexible assessment and non-assessment activity encouraging student choices and improved time management (O’Reilly & Newton, 2002; Rowe, 2004; Vitartas & Rowe, 2003).

From Audiographics to Web Conferencing

Given the regional spread of students, reduction of the gap between services provided to on-campus and distance students has been a long term consideration at both universities. After early trials at USQ and SCU with audiographics in the 1990s, this technology was abandoned as it required student and teacher to attend sessions in dedicated physical spaces at agreed times and therefore lacked flexibility, did not reach all students and there was no provision to record and play back sessions which excluded those who could not attend.

Audiographics largely disappeared as the Web moved from institutional to private and commercial use and carried more educational content, allowing students to search and interact with resources and with each other. This change saw the standalone audiographic facility being replaced by web-based audiographics.

From the second half of the 1990s, many technology limitations evaporated as the use of the Internet grew and the technical capabilities of the Web evolved (Rowe, Ellis & Bao, 2006). Some of these technical improvements included cheaper, more reliable hardware and faster Internet connections for private use, allowing access to a broader range of participants from a wider range of physical locations. Emerging audiographic tools also worked across different platforms (Macs and PCs) allowing participation on computer equipment familiar to the participant. Very importantly, dramatic advances in storage capacity and compression techniques allowed the ability to record and playback sessions adding considerable learning opportunities for flexible review of the live session activity for those unable to participate.

Recent research has shown students have a strong appreciation for the flexibility and convenience offered by lecture recordings in an increasing variety of formats (Williams & Fardon, 2007). Current research reinforces what has been known (for example Dekkers & Cuskely, 1990) about the reasons students give for their need and appreciation of the flexibility and convenience of recording of classes. These include a backup for when they are not able to attend classes due to illness, disability, work and family commitments, travel constraints, an additional study tool for revision of content and comprehension of complex concepts, ability to study at their own pace or to manage timetable clashes, and to minimise language barriers (McElroy & Blount, 2006; Phillips, Gosper, McNeill, Woo, Preston & Green, 2007).
Current **web conferencing** tools incorporate VoIP (Voice over Internet Protocol) for natural communication, a whiteboard and other integrated applications. The **synchronous** and asynchronous features of web-based **audiographics** when used in conjunction with a LMS enable a similar experience for all users without being constrained by access to institutional teaching and learning infrastructure. These technologies offer a fresh opportunity to explore richer, more student-centred learning environments and offer the potential to fulfil the purposes of the learning paradigm proposed by Barr and Tagg (1995, p. 16): “… produce learning, elicit student discovery and construction of knowledge, create powerful learning environments, improve the quality of learning and achieve success for diverse students”.

**Flexibility Agenda**
Most of the technology explorations at USQ and SCU described above were conducted by individuals with interest in these tools, and have since moved into mainstream use. This is reflected at both universities by recent institutional efforts to move towards flexible study modes facilitated through technology, where the boundaries between on campus and distance students are increasingly less rigid. Both universities have realised the importance of **flexibility** across all disciplines and included provision of “**flexible learning** experiences” as a direction in their strategic plans (USQ Strategic Plan 2009-2013; New Directions for Delivery at Southern Cross 2007). The use of web-based **audiographics** is mentioned in particular as offering a “virtual classroom” where **synchronous** communication is available in text, audio and shared media (USQ L&T Plan, 2009; Clark, 2009).

Further descriptions of the two university contexts follow including how the incorporation of **web conferencing** software and adaptation of the traditional distance delivery model has improved education and development opportunities for students and staff irrespective of their geographical location.

**PEDAGOGICAL CONSIDERATIONS ADDRESSING THE STEP DIMENSIONS**

**Approaches to the Trials**
The trials of the **web conferencing** tool described in this paper originated from a need by teachers to fulfil certain pedagogical and technical requirements. In the USQ context, the teachers initially experimented with the tool with postgraduate education and undergraduate mathematics students primarily studying at a distance. Results were reported to university management, who acknowledged that a more unified, university supported trial was essential, open to every staff member and not only the technologically curious and proficient. This university-wide trial of the tool aimed to identify faculty-specific pedagogical requirements and the suitability of the tool in meeting those requirements. Preliminary findings from the trial were reported by Reushle and Loch (2008) and Loch and Reushle (2008) and initial recommendations were made to the university community. A second tool, Wimba, was then trialled over the short summer semester and consequently adopted across the institution from the following semester. Table 1 illustrates the timeline for the USQ trials.

<table>
<thead>
<tr>
<th>Period</th>
<th>Stage</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. 2006-Feb. 2007</td>
<td>Individual trials of Elluminate</td>
<td>Trial licences, in two courses (education and mathematics)</td>
</tr>
<tr>
<td>Feb. 2007</td>
<td>Report provided</td>
<td></td>
</tr>
<tr>
<td>July-Nov. 2007</td>
<td>Institutional trial of Elluminate</td>
<td>All volunteering lecturers</td>
</tr>
<tr>
<td>Aug. &amp; Oct. 2007</td>
<td>Reports provided</td>
<td></td>
</tr>
</tbody>
</table>
Nov. 2007- Feb. 2008  Institutional trial of Wimba  All volunteering lecturers
Since Feb. 2008  Decision to adopt Wimba, roll out  Available to all lecturers

Unlike USQ, the trial at SCU was very informal and moved through stages from individual interest, to School, to Faculty and finally University-wide in terms of both use and funding. Equally there was no requirement for any formal evaluation - rather the growth resulted from "word of mouth" and evidence of success and value directly from student and staff experience through informal channels. Table 2 summarises the expansion of the license and use at SCU.

Table 2: SCU Elluminate Live! License and Usage Growth 2005-2008

<table>
<thead>
<tr>
<th>Period</th>
<th>License</th>
<th>Sessions Recorded</th>
<th>Recorded Sessions Downloaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>July-Dec. 2005</td>
<td>25 seats</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Jan.-Dec.2006</td>
<td>50 seats</td>
<td>413</td>
<td>3,239</td>
</tr>
<tr>
<td>Jan.-Dec.2007</td>
<td>Unlimited seats</td>
<td>812</td>
<td>12,602</td>
</tr>
<tr>
<td>Jan.-May 2008</td>
<td>Unlimited seats</td>
<td>732</td>
<td>12,544</td>
</tr>
</tbody>
</table>

During the first half of 2005, vendor demonstrations by Wimba and Elluminate resulted in the latter being chosen for a 6 month, 25 seat trial until the end of 2005 funded by the School of Commerce and Management at SCU. The success of this initial trial led to the license being extended to 50 seats for all of 2006, funded by the Faculty of Business. Rowe & Ellis (2006) reported the expanding range of uses and users during 2006 that underpinned the decision by the Vice-Chancellor to adopt and centrally fund an annual university-wide, unlimited seat license from 2007. Table 2 offers a glimpse of the continued growth in use resulting from that decision.

Social Accessibility

Initial evaluation findings from USQ reveal that distance students feel engaged and connected through web conferencing, which may lead to better student evaluations, higher university ranking and additional government funding (Reushle & Loch, 2008). Initial student feedback at SCU (Rowe, Ellis & Bao, 2006) mirrors these findings. The extension of the license outlined above has allowed SCU to successfully extend the use of web conferencing for on-campus as well as distance students. The change in pattern of contact with students from (phone) teletutorials to Elluminate sessions between 2005 and 2006 across approximately 50 courses offered in the Faculty of Business is evidence of this (Rowe & Ellis, 2007). The number of teletutorials conducted declined from 61 hours with 314 students to 26 hours for 135 students. The number of Elluminate sessions conducted increased from 31 (50 hours for 142 students) to 295 (446 hours for 1500 students) demonstrating that web conferencing has increased and resulted in more accessible communication between students and staff.

Some of the capabilities of the software extend what is possible in a physical classroom with far fewer resources, by providing students with access to virtual rooms for social activities, self-directed study groups, assessable group tasks or presentation practice, all without the need for direct staff involvement. The Elluminate breakout room feature caters for in-session small group activity that would normally only be available if students were in the same physical location. The rooms can also be used for formal and informal consultations and interviews between staff and students.

The following example serves to demonstrate the strength of web-based conferencing in terms of accessibility. In 2007, a SCU student moved to a remote property without running
water and power 400 miles west of the main institutional campus. She and her family were living in a shed while their house was being constructed. She joined weekly web-based conferencing sessions with enthusiasm using her laptop, powered by the car battery, on the NextG (3G) mobile phone network.

**Technological Adaptability**

A significant development during 2007 that complemented the adoption of the university-wide **Elluminate** license at SCU was the decision to integrate web conferencing into the LMS. The creation and access of sessions (and recordings) became an easy process for staff and students within individual courses. The unlimited seat license could be used to run simultaneous sessions, thereby avoiding the constraints of a time-tableing process for booking virtual rooms at times when sessions were required. The continued expansion of use in the School of Commerce and Management has seen an informal calendar maintained by the course co-ordinator for course assessors to share their scheduled session times as a precaution to avoid clashes for students.

The usage data shown in Table 2 provides evidence of the successful integration of web-based conferencing into the LMS at SCU. The access of recordings by students for review of sessions and examination preparation offers strong evidence of the value of the asynchronous features of the tool. The number of recorded sessions downloaded follows the pattern of increase in the license shown in Table 2, with the number of downloads (12,544) nearly reaching the total for the previous year in the first five months of 2008 (Rowe & Ellis, 2008).

This high level of student activity supports the suggestion that staff are responding to challenges to explore new approaches to learning and teaching in order to offer greater autonomy and connectivity (McLoughlin & Lee, 2008). This allows learners to interact with peers, experts, and the wider community leading to opportunities for reflective, self-directed learning. The ability to review a recording of session activity is indicative that even the divide between synchronous and asynchronous contact is converging (Rowe & Ellis, 2007a).

**Economic Viability**

Australian universities currently follow a business model, which places a value for money or return on investment figure on a technological tool. Rowe and Ellis (2007) provide an analysis of cost savings during the early period of web-based conferencing adoption at SCU, pointing out the impetus this provided for the expansion of the license in subsequent years shown in Table 2. During the initial trial, the very limited active use for teaching was supplemented by taking every opportunity to demonstrate the web-based conferencing features at staff meetings across other Schools and seminars through the Teaching and Learning Centre. This extended to delivery of classes and seminars live from the UK and France using dial-up and wireless broadband connections to demonstrate and emphasise the potential of the anywhere, anytime functionality of improvements in connectivity. The strategy proved successful in terms of the expanded usage shown in Table 2.

Using the change in contact with distance students from teletutorials (and face-to-face weekend workshops) to web-based conferencing between 2005 and 2006 in the Faculty of Business at SCU, Rowe and Ellis (2007) calculated savings of approximately $A50,000. This was powerful evidence to support the decision to continue to extend the license because these savings more than covered the annual cost of the 50 seat license for 2006. That these savings were for only one of several potential uses of web-based conferencing across a multi-campus university carried even more weight with management.

The availability of participation over the Web by students and staff, independent of geographical location, allowed decisions to be made about limiting course offerings in individual locations to avoid low enrolments. Instead, the decision could be more
appropriately made based on total course enrolments. The ability to take advantage of audiographic web conferencing to reduce the duplication of delivery across multiple locations allowed staff time to be liberated for scholarship and their own professional development. These are important elements that can then be explicitly explored in workload model variations.

On the other hand, at USQ at trial stage, it was found to be difficult to measure if web-based conferencing was a worthwhile innovation from institutional and economic points of view as all participants volunteered time and web conferencing was regarded as an “add-on”. For instance, participation in online classes was sometimes lower than one would experience in face-to-face classes. However, since recordings can be made available, a measure of value should take into account live participants as well as those who accessed the recording afterwards. In addition to identifying value for money for the tool at the institutional level, each faculty needed to determine if the workload could be justified if only a handful of students attended the online sessions.

**Political Agreeability**

A very powerful indication of the political agreeability of the SCU adoption of web-based conferencing was the 2007 decision by the Vice-Chancellor to centralise the responsibility and funding for the annual license. Effective and innovative use of web-based conferencing was seen as contributing to the University's reputation and competitive edge in distance and online education and was also seen as supporting exploration of new ways of enhancing learning and teaching. The receipt of university, national and international recognition in the form of awards and citations of SCU staff involved in the integration of Elluminate provides additional evidence of this.

The burgeoning use for cross-campus, regional, national and international meetings and staff collaborations for research are further evidence of enhanced visibility and support that web-based conferencing offers. Examples of these from an SCU perspective include establishing an online forum for Elluminate users at SCU and The Open University (UK), hosting Carrick Institute (now Australian Learning and Teaching Council) committee meetings and forums, enabling PhD and Masters candidate progress presentations online in addition to their regular support group meetings, the hosting of blended sessions for the national professional accounting body (CPA Australia) as part of their web-based conferencing trials in the delivery of professional development activities, sharing expertise with other non-university educators and presenting in the annual web-based Elluminate user group conferences. Combined with the economic viability factors discussed above, a picture of effective and viable flexible learning and teaching options using web-based conferencing begins to crystallise.

**DISCUSSION**

This section presents snap shots of two courses that have implemented web conferencing, one at each institution. While the use of web conferencing declined in the USQ course after the change to a different tool occurred and technical issues ensued, SCU shows a more structured approach through consecutive semesters and is able to report on the advantages of consistency and being able to plan ahead for future semesters.

**Case 1: USQ - Foundation Course in Computing**

Foundation Computing is a large first year service course offered by the Department of Mathematics and Computing. The course provides an introduction to computers, and covers applications such as word processing, spreadsheets, presentation software, but also operating systems, hardware, the internet, graphics and multimedia and basic web design. It is offered three semesters each year, to on-campus students at the main campus in Toowoomba and distance students.
Foundation computing attracts a wide spectrum of students: some are fairly computer literate while others, mainly mature age, have not used a computer before and face a steep but necessary learning curve to enable them to be successful with computer use throughout their studies and later professional life.

The course material is presented in multi-modal format produced in USQ’s in-house Integrated Content Environment (http://ice.usq.edu.au/), i.e., printed study materials, on CD, as well as online, where the latter two include screencasts of concepts students find difficult to understand. The course uses USQ's LMS, Moodle, to provide access to this material and to recordings of lectures from a previous semester in Macromedia Breeze (now Adobe Connect) format. The Moodle site also hosts assignment instructions and an electronic submission system. It provides asynchronous discussion forums that have traditionally been used extensively in this course, with students encouraged to help each other rather than wait for a teacher’s response. If not via the Moodle forum, student requests are responded to via email and phone. Since the lack of visual aids during a phone conversation made it difficult to explain, for instance, how to write code in HTML for the web design module, the need for a tool to share the screen with students outside a face-to-face situation was identified.

In semester 2 of 2007 with an enrolment of about 280 students (half in distance mode), it was decided to trial Elluminate tutorials for all students. In that semester, this was one of a number of changes made to the previous format of the course. No lectures were offered: mini-lectures in computer labs replaced the need for lecture theatre classes. The lectures were cancelled for strong pedagogical reasons as this course required more hands-on training than a standard lecture could provide. Web conferencing was trialled not with the aim to replace face-to-face classes, but to create an on-campus experience for distance students by offering additional regular tutorials, and to include these students in synchronous activities.

Weekly Elluminate tutorials were offered to all students, and an emphasis was placed on student-focused and peer-supported learning where the teacher became a facilitator or moderator, rather than delivering material. Students were encouraged to show other students how to perform tasks on the computer. For instance, a student sharing her screen and asking for help with a particular task in the word processor relinquished control over her computer to a fellow student, who then “walked” everyone through the required steps.

Students attended from as far as Hong Kong, but attendance at these tutorials was low, although it was offered to all students. However, recordings were made available for those who could not attend or wanted to view the session again. At the end of semester, students were asked to rank the learning tools most useful to them. Those who had attended Elluminate classes ranked these highly. Other students who had not attended but viewed the recordings asked for more sessions and recordings to be made available.

The mode of communication used most was audio, with quite a few students typing text messages to ask or answer questions so as not to interrupt the speaker. The student from Hong Kong appeared to be shy and was more comfortable typing answers, and microphone issues also prevented some students from using the audio capability.

**Case 2: SCU - Core Course of Quantitative Analysis**

Quantitative Analysis is a core first year course in the Bachelor of Business degree. The course is a mixture of business and financial mathematics and statistics with an Australian enrolment of 300 to 400. The course is offered on four campuses with approximately 40% distance students. All Australian students, and increasingly off-shore international students, have access to a common LMS site (Blackboard), which contains the curriculum for the course. The site includes links to the study guide, assessment items including online tests, sample assessment items and discussion boards.
Prior to 2006, on-campus students had face-to-face lectures and tutorials in addition to the LMS. Additional support for distance students consisted of teletutorials and/or face-to-face workshops once or twice a semester. These workshops were held in limited locations hence were not easily accessible to all distance students. Given that they did not have a visual component, teletutorials were of limited use in explaining the concepts required in the course and this support for distance students was far from ideal.

A sizable proportion of students entering the Bachelor of Business have extremely poor numeracy skills. These students require additional support to succeed in the course. In particular, many distance students require frequent real-time interaction with teaching staff to be successful. This was often provided on a one-to-one basis by either email or phone.

Finally, an objective of the course is to “demonstrate the use of a spreadsheet package such as Excel in quantitative calculations”. However, many students have poor Excel skills and/or are visual learners. They often found that the study guide and textbook instructions were not sufficient to acquire the necessary Excel skills.

In semester 2 of year 2005, it was decided to run an initial trial of web conferencing sessions to test the feasibility of replacing teletutorials and face-to-face workshops with Elluminate workshops for distance students and to test the effectiveness of Elluminate as a tool for showing and teaching Excel skills. However, rather than trialling Elluminate in this course, a second year statistics course, Statistical Analysis, was chosen for this trial. This course had the same issues as Quantitative Analysis but a more manageable enrolment of approximately 100 students.

During the trial, the weekly Elluminate sessions were accessed not only by distance students but also on-campus students who could not attend the weekly tutorials due to a timetable clash. These successful weekly sessions were a mixture of content, examples and Excel demonstration. One of the conclusions of the trial was that Elluminate sessions were superior to both teletutorials and face-to-face workshops for distance students by providing the opportunity for frequent real-time interaction with both peers (other students) and teaching staff. It was also concluded that Elluminate was an ideal method of demonstrating/teaching Excel skills, allowing students to see the steps, with the possibility of attempting them themselves at the same time.

At the conclusion of the trial, it was decided to use Elluminate sessions to support students in Quantitative Analysis from Semester 1 2006. During 2006 and 2007, Elluminate sessions provided supplementary support for all students enrolled in Quantitative Analysis. This was in addition to the usual lecture tutorial format for on-campus support.

These sessions included revision workshops on basic algebra and calculation skills at the beginning of the semester and exam revision sessions at the end. During the semester, several sessions, using application sharing, demonstrated the Excel skills required for the assessment tasks. In these sessions, students were encouraged to run Excel and follow the instructions. These sessions were recorded so students could review them if they could not attend. It was found that these sessions provided the additional support in revision and learning Excel required by students with poor numeracy and/or Excel skills.

Furthermore, primarily for distance students, weekly Elluminate sessions were held. These sessions introduced a topic, worked through several examples, and allowed time for questions. They replaced the teletutorials and face-to-face workshops previously held for distance students, thus reducing staff travel time and expense. The Elluminate sessions also provided distance students with more frequent contact with staff and other students. On-campus students also could, and did, attend and from 2007 recordings were available for all sessions.

With supplementary support still provided, in 2008 Elluminate online lectures replaced face-to-face lectures for on-campus students and the weekly Elluminate sessions for distance students. That is, all students were expected to attend or review the weekly Elluminate lecture
and on-campus students were also to attend a weekly 1.5 hour, increasing to 2 hours in 2009, tutorial each week.

The online lectures followed the same pattern as the previous weekly Elluminate sessions for distance students, introducing a topic, working through several examples, and allowing time for questions. This introduced consistency of delivery as all students had access to the same lectures and supplementary sessions, while on-campus students still had the face-to-face contact in the tutorials. Efficiencies for academic staff were also introduced as only one lecture needed to be prepared and delivered, with no travelling between campuses.

There was considerable resistance by on-campus, especially first year, students to the online lectures in 2008, leading to a decrease in the level of student satisfaction with the course. Student satisfaction increased in 2009, but not to the 2007 level. This increase was possibly due to increasing weekly tutorial sessions from 1.5 to 2 hours, and better communication about the advantages of online lectures, in particular the flexibility due to the ability to review recorded sessions and provision of recordings in several multimedia formats.

While a limited number of students attended the live sessions, many more students reviewed the recordings. From formal and informal feedback, students found the Elluminate sessions and recordings beneficial and supportive of their learning. In particular, students found reviewing a recording at their own pace, pausing, rewinding or fast forwarding as required extremely helpful. PowerPoint slides are provided before a session and a copy of the completed Elluminate whiteboard is provided after the session. Therefore, students know they can concentrate on the lecture or sessions and need not take notes during a live session or when watching a recording.

While many students are not comfortable with using the audio tools within the Elluminate session, they are comfortable using the text tool to ask questions of the presenter or each other. Use of the text tool enables the instructor to answer questions in a timely manner without disrupting a train of thought. Students are also comfortable using the text, polling or whiteboard tools to answer questions from the instructor. This enables the instructor to obtain feedback from all students in the session on their level of understanding of the material, which is difficult to do in a large lecture situation.

**Summary of Student Outcomes**

Important student outcomes from the adoption of web conferencing software at USQ and SCU include the establishment of social presence, particularly at the beginning of a semester, which means that students are more aware that they are part of a cohort of students who are experiencing the same challenges and can support each other. A reduction in student anxiety in statistics courses has been observed, and direct help in using software in computing courses has replaced long, imprecise written or verbal instructions. Visual explanations of symbol-based courses such as mathematics have been made possible and some students have experienced increased awareness of assessment methodology and teacher expectations.

**CURRENT CHALLENGES AND RECOMMENDATIONS**

This section outlines issues and challenges experienced during these web conferencing trials and provides recommendations for policy makers and educators embarking on trials of emerging tools to support learning and teaching.

**Institutional Trial**

A comparison of the SCU and USQ take up of web conferencing indicates the importance of carefully selecting a tool for a university-wide trial and continuing the use of this tool if the trial proves successful. While Elluminate is now used widely at SCU, its use was not continued at USQ. Technical issues with the adopted tool, Wimba, and the change from one tool to another meant that teaching staff had to become accustomed to another system.
**Technology Adoption**

As new technology moves from trial stage to mainstream use, student expectations need to be managed. At SCU, in the School of Commerce and Management, ten hours of Elluminate sessions are mandated per semester for each course. As some courses offer more sessions than others in the form of pre-recorded sessions, consultation or student support, there have been student complaints about the lack of online content if only the mandated ten hours are provided. This, of course, needs to be placed in context as this is more support than distance students received before the introduction of the new technology.

Mandating at least ten hours of Elluminate sessions for each course has meant that courses that may not have a pedagogical need for such sessions but would benefit from different technologies are not given the option to use an alternative. This leads to lecturers using web conferencing who do not see or have the need, and while this makes it easy to keep track of workload, it may not be a recommended pedagogical approach.

Change, particularly major change, often meets resistance. Negative responses from students are to be expected the first time new technology is used, particularly if it impacts on their comfort zone. In the SCU case, this was the removal of familiar face-to-face lectures for on-campus students. These responses need to be managed and monitored. At the same time, lecturers need to be open to changing formats and content in response to student needs and demands rather than using new technology in ways that were more appropriate before the technology was introduced. In the web conferencing context, the re-education of students and staff from traditional teaching-centred to student-centred pedagogy is an important task.

Faculty members have commented that synchronous sessions need to be built into the course from the outset, and not be treated as a last-minute add-on. Along the same lines, time commitment may be required to learn the pedagogical as well as the technical aspects of new technology. A well documented backup and support structure is essential when technical problems arise. While web conferencing has led to economic savings at SCU, the adoption of the tool should rather be seen as a way of using staff time more effectively and to improve student outcomes.

Since 2005, there has been only one recorded instance of misconduct in a web conferencing session at SCU which required intervention. This suggests respect for the process from participants, despite the opportunity of apparent anonymity. However, if accessed through an LMS, students are not anonymous and their use of the room and the tools can be tracked. Therefore, normal disciplinary procedures can be applied. It has been observed that attitude and ability of students of different cohorts varies significantly. Feedback about improvements of the use of technology obtained at the end of a semester may be taken on board and lead to modifications for the next offer. However, the next cohort may have different needs and expectations. This factor is difficult to cater for but remains a challenge that all teachers experience, irrespective of the learning and teaching context.

The ongoing debate about the need to provide on-campus classes to international on-campus students offers a very real opportunity to demonstrate the benefits of the features outlined in this chapter and challenges the view that face-to-face is the “best”. For example, video-conferencing is often accepted as equivalent to face-to-face. However, it offers little of the interactivity available with web-based audiographic conferencing. Therefore, why not demonstrate the equivalency, or superiority, of web-based audiographic conferencing as an alternative or supplement to face to face classes?

**CONCLUSION**

The chapter has presented how USQ and SCU have adapted a traditional distance delivery model to incorporate audiographic web conferencing to improve learning and teaching
opportunities for students and staff, irrespective of their geographical location. The USQ trial was successful as it demonstrated the need for this particular type of technology to support teaching activities for distance students. It influenced the decision by Senior Management to include web conferencing technology in the suite of available tools to support flexible learning. Following a short trial of a second web conferencing package, USQ adopted the Wimba web conferencing tool and this is now available to all USQ staff and students, with no seat limitations.

The informal trials at SCU demonstrated that Elluminate sessions were a practical replacement for teletutorials and face-to-face workshops for distance students. This enabled savings in travel and teletutorial costs exceeding the cost of the license. Based on the demonstrated usefulness of Elluminate sessions and in particular, student use of recordings, SCU now has an unlimited seat licence and in the School of Commerce and Management a mandated minimum number of hours of Elluminate sessions per semester for each course.

Network-enhanced interaction can fulfil some pragmatic human needs at certain points in time by providing access, convenience, flexibility, utility, speed, and cost-effectiveness. Education is a powerful tool in the global educational environment and the Internet has enabled a new era in human collective activity.

FURTHER READING


REFERENCES


II: A conference to explore the challenges for workplaces, colleges and universities (pp. 205-221). Gold Coast, Australia: Conrad Jupiters.


KEY TERMS & DEFINITIONS

**Audiographics**: Synchronous communication via audio and video or screen sharing. Not necessarily via the Web.

**Elluminate, Wimba**: Current all-in-one web conferencing tools.

**Flexible delivery**: Enabling students to study anytime and anywhere, synchronously or asynchronously.

**Technology enhanced learning**: Technology-supported approaches to enable improved students’ learning experience.

**Teletutorial**: Interactive tutorial activity conducted via telephone, usually led by the teacher.

**Web conferencing**: Audio, video, and shared whiteboard conferencing via the Web.