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Streaming Lectures: enhanced pedagogy or simply 'bells and whistles'?

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Abstract

This paper analyses one of the more problematic aspects of the migration of higher education lecture content from traditional print based and face-to-face modes to those of a digital nature. The paper looks specifically at issues stemming from increased pressure on academics to embrace the delivery of their lecture content online. The point is made that currently an over-emphasis on online 'delivery' has come at the expense of online pedagogy. An account of a pilot study undertaken to digitalize videotaped undergraduate lectures is presented along with a report of both the technical and human resource-related issues encountered. The paper concludes by arguing that if the streaming of lectures is to be successfully undertaken on anything more than a token level, it is essential for universities to support the funding of local professional development structures that allow academic staff to engage with a number of 'new technologies'.

Introduction

Sustained publicity associated with 'new technologies' - usually channelled through the conduits of the media and the marketplace - has resulted in the Information Super Highway becoming one of the most enduring metaphors of university life during the latter 20th and early 21st Centuries. For Australian universities, the issue is not one of keeping pace with the speed with which 'new technologies' are emerging, as often universities are at the forefront of such developments. Rather, the challenge can be found at the chalkface, where a dilemma exists of providing suitable and sustainable resources that enable academics and students to integrate new technologies into their teaching and learning. As the strategic diversion of resources within universities is increasingly directed towards macro or university-wide information technology initiatives, the predicaments that confront traditional face-to-face pedagogy within the academy become more pronounced. Due to central university policies demanding greater online teaching presence, it has become impossible for academics to successfully argue that their teaching areas are immune from the advance of technology. Indeed some academics within the academy - many of whom have recently struggled to integrate email and the static delivery of PowerPoint slides into their teaching - are now faced with centrally driven policies that dictate the inclusion online of readings, chat rooms, discussion forums and even entire lectures and associated notes.

Although the stimulus for this transformation is multifaceted, it is possible to argue that two main influences are essentially driving the change. On the one hand there is the persuasive 'hype' related to the Internet which appears to have so totally overwhelmed the consciousness of some university administrators that they falsely equate advances in technology with a panacea not only for their pedagogic problems but also for their institution's 'market-share'. On the other hand, are the expectations of an increasingly technologically literate body of students who progressively demand greater online access to course content. Pressure from both administrators and students for a speedy transformation to online teaching is clearly inherent in a new 'futures' like discourse where the Internet is positioned as already having transformed from "a bastard offspring of the print media into a full entertainment and information medium combining all the strengths of past media types with interactivity" (Rule 1999, http://webreview.com/1999/06_04/designers/06_04_99_2.shtml). Interestingly, not only are academics largely absent from the debate, but also missing is the fact that most students still use (and will continue to use) dial-up bandwidths of 28.8Kbps or 56kbps to access course content from their homes. Thus, for the vast majority of university students, the feasibility of exploring options beyond the mere delivery of small sized files to their home computers is for all practical purposes impossible. Nonetheless this paper does concede that, given advances in compression technology, progress in the bundling of data so that it can be transferred more efficiently and the speed in which broadband is making its way into the consumer market, a multitude of new delivery possibilities will present themselves in a relatively short period of time.

One of the central aims of the paper is to generate discussion around a range of issues that have arisen as information technology (IT) and computer mediated communication (CMC) are increasingly integrated by non-IT specialist academics into their teaching and learning. The first section of the paper begins with a brief review of what it means for students and staff to engage with new technologies and then moves on to examine specific policy initiatives undertaken within Queensland University of Technology (Australia). This is followed by a discussion of the macro and micro problems encountered as the academy moves toward the delivery of content online. It is the position of this paper, that effective online pedagogy will not occur until staff and students reach minimum levels of literacy within this new medium. The point is made that, one of the keys to an online pedagogical revolution is for academics to remain focused on the fact that as in all 'good teaching', interactivity remains central to effective learning. In short, academics must strive to find ways where students are still taught in instructive ways within this medium and should not fall into the trap of allowing technology to dictate that the debate revolve solely around delivery. This is followed by an account of a pilot study undertaken to digitalize videotaped undergraduate lectures with an analysis of both the technical and human resource-related issues encountered. The paper concludes by arguing that if the streaming of lectures is to be successfully undertaken on anything more than a token level, it is essential for universities to support the funding of local professional development structures that allow academic staff to engage with a number of 'new technologies'.

Theorising 'new literacies' and pedagogies within university teaching and learning

Given the multifaceted changes to our lives as a result of advances in information technology, it is not surprising that there are a growing number of appeals for the nature of university teaching and learning to evolve in conjunction with 'new technologies'. This is an extremely controversial debate that contains widely divergent positions as to the benefits and speed of such change (Rossen 2002). At one end of the spectrum are those who claim 'new technologies', and their associated forms of literacy, are detrimental to traditional classroom learning and should therefore be prevented from being allowed entry into 'high-stakes', formalised educational programs (eg. Birkerts 1994; Stoll 1995). Critics argue that putting lectures online,

> robs students of the incentive to attend class, threatens the livelihood of the instructor, puts too much emphasis on presenting information rather than on interaction between students and instructors, and deprives faculty of their rightful intellectual property

At the other end of the spectrum are those who openly embrace 'new technologies' claiming that it is imperative for universities to reposition their pedagogical programs by integrating new notions of literacy into their curriculum as quickly as possible (i.e. Bruce 1997 and Johnson, 1997). Although the winner of the dispute has never really been in doubt, many academics are concerned that the move online is occurring so quickly that there is often little or no time to reflect on the pedagogical implications of utilising 'new technologies' in their teaching and learning. To adequately reflect on the appropriateness of 'new technologies', it is important to first understand how such technologies fundamentally change the ways we communicate and interact within teaching and learning environments within the academy.

Formalised schooling has historically privileged a specific notion of literacy that has been the nucleus of all foundational components of education. Literacy in this sense is the "first major function of formal education both historically in the origins of modern, institutional education and in the life history of every child or adult learner as the centre the modern education process" (Kalantzis and Cope 2000: 121). This confined understanding of literacy has for the most part being aligned with the reading and writing of text/page-based forms of the language used by the dominant cultural group within that society. Achieving the status of being literate has embodied the possession of what Kalantzis and Cope (2000) term symbolic capital. The use of the term 'capital' is significant, as not only has literacy signified mastery of the ability to encode and decode the dominant script-based classification, it has also been the foremost indicator of the possession of cultural sophistication and knowledge.

Clearly a fundamentally altered notion of literacy is emerging as a result of 'new technologies', and in particular, the multifaceted changes which they have brought to patterns of communication (Meek 1991). The traditional and established concept of literacy is increasingly under pressure, predominantly because 'new technologies' have enabled an array of textual forms to undermine the foundations of print and chirographic literacy traditions. Kalantzis and Cope (2000: 147) portray the 'basics' of traditional literacy, as almost 'vacuous', "because the main ground has shifted from the old-fashioned page-bound written texts and the dislocated 'standards'". Not only is this transformation tied to the ability to digitalise data and subsequently use such data in the generation of new textual forms, it is also tied to the fact that such contemporary digital texts are in social and cultural terms far removed from print-based texts. This disparity extends to their form, and in particular, the manner in which people access, encode and transmit them. No longer do digital texts follow an established chirographic tradition, nor are digital texts required to possess the time-honoured linear designs of narrative construction or modes of thinking (Bolter 1991).

The transformation in the higher education sector brought about by developments in technology extends across the full continuum of university life. By adopting software packages such as Callista or SyllabusPlus, universities have forced staff and students to engage with 'new technologies', and by implication, to engage with 'new literacies'. In addition to word-processing and email (the two most exploited technologies), students and staff are increasingly required to engage with technologies tailored to increase administrative efficiency - i.e. enrolling online, electronic entry of results etc.. In terms of pedagogy it is possible to observe a larger 'bundle' of technologies, which target web-based information resources and services aimed at promoting learning online - ie. databases, lecture notes, chat and discussion rooms.

To effectively manipulate such technologies requires that academic staff and students possess new skills. However, 'skilling-up' staff and students is not merely a process of training them to send and receive email, or to point a web-browser at a specific URL. Rather, the training of academics and students must encompass a broad range of additional forms of expertise and knowledge that collectively constitute the notion of 'new literacy'. It is important for both students and academics alike - many of whom are teaching and learning online for the first time - to have a solid theoretical understanding of the similarities and differences between computer-mediated communication and

interaction, and, the more traditional, face-to-face print-based modes which they have used in the past. In addition to an obvious set of minimum IT skill levels, there is the need for students and academics to be cognisant of the implications of 'new literacies' for pedagogy. New or additional literacies in universities constitute a series of social practices that vary considerably depending on the social context in which they occur. In this sense, students and academics alike, must come to terms with a process of social semiotics that is closely tied to the ways technology has changed the process of meaning making in both teaching and learning.

The notion that there are a number of 'new literacies' has also challenged conventional classifications such as 'literate' or 'illiterate'. Leu (2001) makes the case that literacy is now an ongoing endeavour that has no final destination. This, Leu maintains, is due to the need for us to constantly renew our skills as 'new technologies' emerge. This understanding of literacy - as something deviating from a single linear activity - is incorporated in the term 'multiliteracy'. The notion of multiliteracy was first used by the New London Group - a small multi-disciplinary group of academics - who met in 1994 to discuss the multiplicity of communication channels and media, and the increasing relevance of cultural and linguistic diversity. Two primary arguments emerged from the New London group's initial work, which was subsequently published in 1996 in the *Harvard Educational Review* under the title of 'A Pedagogy of Multiliteracies: Designing Social Futures'. The first of these was associated with the "increasingly multiplicity and integration of significant modes of meaning-making, where the textual is also related to the visual, the audio, the spatial [and] the behavioural" (Cope and Kalantizis 2000: 5). Here, it was argued that meaning is increasingly being produced by the electronic hypermedia, the mass media and by multi-media in a multimodal fashion where traditional script-based text modes and patterns of linguistic meaning are blended with visual, spatial and aural modes and patterns. This is significant in terms of the current discussion, due to the relationships that 'new technologies' have to modes of Computer Mediated Communication (CMC) and the subsequent manner in which CMCs are transforming the way in which language is used in teaching and learning.

The second line of reasoning proposed by the New London Group was somewhat paradoxical in that it was argued that the English language is increasingly diverse on a local level, yet at the same time, is connected globally via technological advances such as the Internet and email. Despite English having become an unquestioned lingua mundi (world language) and lingua franca (common language used across diverse regions), traditional English - in its agreed single standard rule-governed form - was argued to have been replaced by a hybrid set of multiple Englishes and their associated patterns of communication which were no longer bounded by cultural or national borders. This is also significant within the context of this paper in that the contributions which 'new technologies' have made to modes of Computer Mediated Communication (CMC) can once again be seen to be transforming the way in which language is used in a host of teaching and learning situations. It is therefore essential for academics, attempting to improve the pedagogical 'edge' of their online material, to engage with the changing nature of what constitutes digital texts, and in so doing, move closer to understanding what their students need to decode and encode online content. The work of the New London Group and particularly the notion of multiple literacies are useful starting points to explore online education, for they encapsulate many of the fundamental changes to literacy and facilitate the unpacking of contemporary digital texts, as well as multiple means by which students engage with and process them. University educators, wishing to move beyond the delivery of online content and in the direction of effective online pedagogy, must consequently be responsive to a range of literacy based concerns that emerge from an analysis of digital textual forms.

Macro policies and micro practices: the changing landscape of online teaching

While historical notions of literacy, tied to the ability to read and write alphabetic based scripts, still hold considerable currency as the fundamental prerequisite for academic advancement within universities, it is interesting to observe the inroads being made by new notions of literacy in formal academic programs. Frequently framed by the boundaries of technology and information, it is possible to see all Australian universities making strategic policy decisions that allow for the diversion of considerable funding directed at promoting 'new literacies'. The Information Literacy

Framework and Syllabus for example, developed by Queensland University of Technology (QUT), goes as far as to link such 'new literacies' to key competencies which are interpreted as integral to the "teaching, learning and research focus of the QUT community" (Information Literacy Framework and Syllabus, 2001: 5). Using the American Library Association's widely acknowledged classification of Information Literacy, QUT has incorporated into its Teaching and Learning Plan new forms of information literacy (particularly those used to effectively locate, evaluate and use information effectively) as a central and critical component of a student's ability to engage in lifelong learning. In addition most Australian universities have responded to the new digital terrain by adopting policy that in some way mandates a migration from traditional print and face-to-face teaching modes towards those that are web-based in nature. Although this shift in policy may be as much to do with market share as with sound pedagogical foundations, the following discussion is limited to how such policy has filtered down from its original macro or university wide level, to the micro level of the faculty and individual teaching academic. While enormous amounts of time and money have been directed towards the development of software packages and web-based templates that facilitate content delivery online, it is argued that online pedagogy can only be achieved when staff reach certain levels of fluency within the new digital medium in which they are teaching. It is proposed that the key to the ultimate success of the current migration of content online is the development of local support structures for staff who are not proficient in the areas of 'new literacies' and 'new technologies'.

Micro migration practices: the example of digitalising lectures

Technological advances have occurred so rapidly that it is often difficult for lecturers within the academy to adequately assess the pedagogical merits before the technology is rushed into use. Over the last decade, Cofield (2001) for example, argues that there have been at least five distinct generations of new technologies and software with those technologies centred around the delivery of audio and video offering the most potential for instructional design. Currently there are three broad possibilities that enable lecturers to deliver online audio or video to their students. The first is the traditional 'download' where students download and save a whole file to their own computer. Prior to the introduction of streaming technology, video or audio files had to be downloaded in their entirety before being played. Given the size of the files involved, together with the dial-in communication/connection speeds the majority of students use, this was a painstakingly slow process. Nonetheless, the procedure retains certain benefits in that the student retains the file for future reference (this method is not however recommended for files over 2-3 MB in size or files containing copyright restrictions due to the fact that the file resides on the students' computer). The second method is termed a progressive download. The progressive download is similar to the process described above - however in this case the file begins to play before the download is complete. The benefits and disadvantages of this method are similar to those discussed in relation to the traditional download. The final option is that of streaming where specific software (usually either QuickTime, RealPlayer or MediaPlayer) begins to play the file almost as soon as transmission begins. Here both the students' computer and a central university server collaborate and allow for seamless and unbroken playback of audio or video data residing on the server. The metaphor of streaming is used as audio/video data is transmitted in packages in a constant flow or 'stream' from one computer to another. Hence the remote computer (i.e. the client's or student's machine) buffers several seconds of video/audio data before beginning to play. This allows or compensates for delays as new packets of data are delivered (Cofield 2001).

Documenting the digitalisation process

This project emerged from a desire to transpose previously taped videos of lectures into digital formates that could be viewed by students on PCs. The aim of the project quickly evolved into the creation of a PC-based format of lectures that could be viewed in several ways and used by various cohorts of students. It was envisaged, for example, that open-learning or distance students would be able to download the lecture directly off the Internet, while on-campus students or those studying in intensive block modes over Winter or Summer would be able to borrow a CD from the library and view the lecture in either a computer lab or at their home. In addition, a CD would be able to contain

more than one lecture and possibly depending on the degree of compression may in fact be able to contain the full series of lectures for a particular subject or unit.

The data used consisted fundamentally of two components, a video of the lecture and a PowerPoint presentation that the lecturer had used in that lecture. To convert both into a usable package required time, hardware, and software in addition to specialist skills at manipulating the software packages. In a very short period of time three broad considerations of ease of use, cost and time began to crystallise. In this sense, 'ease of use' referred to both for the author (university lecturer) and for the end-user (student), cost referred to an initial outlay for the purchasing of software and time referred to the amount of time required by both the lecturer to generate the product and the end-user or student to download and view the lecture. The following software packages were reviewed before deciding on a final combination.

Real: In late 2001, Real Slideshow (http://www.realnetworks.com/) was probably the most impressive package on the market. It did not require a steep learning curve to manipulate the software and more importantly it was able to initiate images at particular audio cues. This meant that after encoding the audio of a lecture, the lecturer would only need to add their presentation slides where necessary. It was unclear if this software supported the direct insertion of PowerPoint slides, which would have required the lecturer to alter their presentation. Although Real Slideshow is no longer a program supported by Real Networks, some of their other software products currently available look equally promising. These include *Accordent's Presenter One* (http://www.realnetworks.com/products/presenterone/index.html) and *Show and Tell* (http://www.realnetworks.com/products/showandtell/index.html) both of which support the insertion of PowerPoint into the presentation and the cueing of these slides with audio files. The application required to view this format is *RealPlayer* (http://www.real.com/ or *Real One* as it is presently titled). RealPlayer was not at the time (nor currently) supported within the QUT environment and the cost of acquiring group licensing or of building the software into the Standard Operating System was prohibitive. Hence, despite a workaround solution where students would have been able to download the RealPlayer software every time they wished to view a lecture, this software package was not considered viable.

Flash: The second option considered was Flash. Macromedia's Flash (http://www.macromedia.com/software/flash/) is a powerful web tool that creates presentations in the same way a movie is created. End-user viewing is achieved through a standard web browser with an appropriate plug-in and hence requires little cost on behalf of the student. Working with the assumption almost all PCs come pre-bundled with some form of web browser the notion of creating a lecture presentation which would be viewable through the web browser seemed both feasible and functional. However we immediately found that the levels of expertise required to create events and synchronize these with audio within the program would exclude all but the most technologically literate academic staff. The cost of training staff or hiring a programmer to carry out the activity rendered this software package prohibitively expensive. This was unfortunate for Flash offers the possibility of creating extremely interactive lecture material, which is not restricted to merely video and audio.

PowerPoint: Despite clear advantages of software packages such as Adobe Acrobat, Macromedia Flash and Liquid Media (Waldman 2002), PowerPoint has established itself as the

leading 'click-and-talk' presentation platform with the vast majority of academics having at least some familiarity with what is basically an 'electronic page-turning' program (Jones and Jo 1998, cited in Jones, Jo and Cranitch 2001). PowerPoint also has the advantage of a university licensing agreement covering all Microsoft Office programs. In short PowerPoint allowed access to an uncomplicated presentation program that enabled web publishing and the insertion of media content such as audio. For this reason PowerPoint was chosen the base software platform.

Process undertaken

Starting with raw VHS video and copies of the PowerPoint lectures, we used Windows Media Player encoding pack to encode the audio. This pack is a free download from MSN (http://www.msn.com/). The audio was captured in Wave format and encoded at approximately 128kbps. This frequency is lesser than CD quality sound, however it is more than sufficient for speech. Encoding audio was accomplished by recording the audio through a sound card microphone jack directly from the VCR (here we used a Hercules sound card with stereo RCA inputs). While this was occurring the times when each PowerPoint slide changed was recorded. Writing down the times is a critical stage due to the need to later know when the transition between slides occurs. We also found that it was beneficial to write down the sentence that occurred as the slide changed as this further helped us locate the exact transition between slides.

Having saved the encoded audio of the lecture, the next step was to use a program called CoolEdit (http://www.syntrillium.com/cep/). CoolEdit works with wave sound files, which are large in file size although unaltered in quality. Using the times written down as guides, the sound file was sub-divided into various lengths which corresponded to each slide. For example, if the first slide began at 01:06 and ended at 03:42, we would select the audio between the two figures and send it to a new audio file, thus creating a sound 'bite' titled Slide One. It was important to listen to the audio to ensure each captured the exact moment of transition (here is where the sentence which was written down earlier became critical). We then took this file and converted it into a highly compressed mpeg file, which we experimented with between 8 and 40kbps. Given that mpeg files cut out all frequency levels that are not used, the result was a reduced file size to that of around 1000kb per slide. Compression at 8kbps (in the case of a specific lecture entitled Dividing Practices) brought the file sizes down to approximately 300kb per slide. Although the sound quality in such a compressed file may result in a digital echo, it was nonetheless clear and quite comprehensible.

Name	Size	Type ▲
📁 _derived		File Folder
📁 _fpclass		File Folder
📁 _overlay		File Folder
📁 _private		File Folder
📁 _themes		File Folder
📁 _vti_cnf		File Folder
📁 _vti_pvt		File Folder
📁 AudioMP3		File Folder
📁 AudioWave		File Folder
📁 images		File Folder
📁 managing2001_mp3_files		File Folder
📁 managing2001_wav_audio_files		File Folder
🌐 index.htm	12 KB	HTML Document
🌐 index.html	12 KB	HTML Document
🌐 managing2001_mp3.htm	3 KB	HTML Document
🌐 managing2001_wav_audio.htm	3 KB	HTML Document
📄 managing2001_mp3_audio.ppt	272 KB	Microsoft PowerPoin...
📄 managing2001_wav_audio.ppt	274 KB	Microsoft PowerPoin...
📄 managing the individual sem 1 2001.ppt	228 KB	Microsoft PowerPoin...

Figure 1: Above is an image of the files involved in one lecture. The top files with a '_' prefix are web folders that FrontPage automatically creates. Following those are folders to hold the Audio files and then the files themselves in various formats. The index file is created as both htm and html to support various server default pages.

Once each audio file was separated, there was the repetitive task of attaching it to the PowerPoint slide. All that was necessary during this stage was to insert the audio file (under the PowerPoint Insert menu) and to select the slide title. Two PowerPoint files were made for the task, one with the wave file, and the other with the compressed mpeg file. This was done due to the fact that the mpeg file would have much less of a problem being downloaded, as the file totals were only around 3 MB (this was approximately one third of the size of the wave file). Although the wave file is considerably larger, and the sound differentiation is only minor, for this reason it is strongly recommend that after deciding upon settings only the most compressed formate be created.

The final stage was to create a website which students would be able to access. PowerPoint's web converter although potentially problematic performed the task without incident and the files have tested without issue under several platforms. In this case the lecturer needed to only save the PowerPoint file as a web page, and specify publishing for IE 4 or greater. Although this process generated an extremely image intensive file, this process was avoided when the task was created in FrontPage (see Figure 1) or by using another web editor/composer. In this option however, for a single lecture PowerPoint is sufficient. In addition, if the files are being accessed via CD, then there is no advantage in attempting to reduce the intensity of the images.

Discussion: enhanced pedagogy or simply 'bells and whistles'?

As the bandwidth increases and compression technology advances we will be offered the opportunity

to increase the degree of animation included in lecture content offered online. Although some may argue that a 'talking-face' may be more interesting than merely listening to audio and staring at PowerPoint slides it is questionable if the average lecturer delivering their lecture from a podium is an animated enough subject to warrant the extra time, expense and bandwidth. Although most universities are moving toward providing services which digitalise or capture video the fact remains that specific software and adequate bandwidth are not readily available within most institutions. Other than in isolated cases carried out by what are termed 'online mavericks' (Ellis and Phelps 2000) it would appear that Australian universities have not embraced the notion of directly streaming lectures direct from the lecture theatre. In contrast, what appears to be emerging as a preferred method is one of the lecturer recording their presentation in isolation and then integrating the presentation with other course content to be delivered through a central institutional online conduit or directly from the lecturer's personal web page. Jones, Jo and Cranitch (2001) stress that it is the reality of restricted bandwidth which dictates the degree to which streaming will be adopted. Currently the vast majority of students are only able to access streamed content while on campus in computer labs. Jones et al. maintain that it is,

> the transfer speeds [which] presented a major problem, although there was some progressive improvement with the changes of applications and scripts. In 1999, many students were unable to receive the Web-lectures from home and were forced to travel to university during the off-peak lab times, such as in the evening and on weekends. (Jones, Cranitch and Jo, 2001 http://ausweb.scu.edu.au/aw01/papers/refereed/jones/paper.html)

For streaming to be pedagogically sound the single most critical aspect clearly appears to be the speeds at which the data reaches students. It would seem that streaming, in isolation, has a long way to progress until the bandwidth available to average students enables seamless transmission and reception of quality teaching aids (Zimmerman 2001).

Support and training

Faculties of Education offer an interesting window of analysis in support and training for although the academic staff within such faculties could be said to possess relatively high levels of pedagogical expertise, many do not necessarily possess the same levels of IT 'capital' as staff from faculties such as Information Technology. The aim of the final section of this paper then is to outline some of the professional development programs and support structures which have been implemented to enhance the technological skills and understandings of Education Faculty staff, and thus enable them to be better positioned for the online teaching environment.

With the initiation of university wide policies which mandated that all units within the university reach a minimum online presence by March 2001, there was the need for a more strategic and systematic approach to the dedication of resources, and a concerted effort to persuade staff to move their material online. The Faculty of Education at QUT was able to achieve the migration of content online relatively easily in cases where the controlling staff were technologically 'savvy'. However, there was a core group consisting of up to 50 percent in some schools, who clearly lacked the necessary technological fluency to (a) migrate pre-existing content to the central OTL Website, and (b) maintain the site and adequately utilise the medium to enhance their teaching and learning.

Due to such disparity in the 'new literacy' levels of staff, the Faculty was forced to develop several structures to facilitate Professional Development (PD) across the full staffing profile. The key to this PD program was the creation of two distinct support configurations. The first is web-based and takes the form of a dedicated Online Professional Development Website (http://education.qut.edu.au/olpd/). Here online teaching exemplary practice is showcased and a variety of hints and new ideas are provided for staff who are in the process of migrating traditional content into the new online environment. One of the most innovative components of the site has been the creation of what is termed the 'Sandpit' where it is possible for staff to 'play' and become more accustomed to online teaching conduits - such as forums and discussion lists - in a non-threatening environment well beyond the critical eyes of students.

In addition to web-based support structures there is also a two-pronged network of support personnel. These consist of the FSG (Faculty Systems Group) who are made-up of IT specialists in dedicated non-teaching positions providing technical support and advice for academics and, SOTAs (School Online Teaching Advisers) who act as informal peer-level advisers. SOTAs receive funding that allows them to reduce their teaching load and are usually more technologically proficient or have a particular interest in online education. Within each division of the Faculty there are additional support structures called PEGs (Professional Engagement Groups). In general, a PEG is formed as a result of demand from staff who request assistance in some aspect of online teaching and learning. It is a "model of online professional development designed to overcome problems of information overload, time management and change related stress by providing an organically forming, situated and on-demand learning environment that rewards current exemplary practice and promotes peer communication and support" (Duncan 2000 http://education.qut.edu.au/olpd/).

The structure of the PEG and the SOTA have been extremely well received within the Faculty, as both are peer-based and located within the informal structure and geographical location of the workplace setting. SOTAs have been responsible for the running of many workshops for staff within their schools. It is significant that such workshops target a specific aspect or requirement of online teaching (ie. the submission of results online or the manipulation of the centralised tutorial allocation system). Interestingly, such professional development workshops, organised at the local level of the school, are much better attended than those facilitated by IT specialists and controlled by core centrally funded staff development structures. It is the position of this paper that the Faculty of Education has been able to achieve quite remarkable improvements in the 'new literacy' levels of individual teaching staff as a result of developing support structures which are first perceived to be informal in nature, and second target the direct needs of staff at key times when such needs are interpreted as relevant.

Conclusion

Given the policy direction taken by university administrators in Australia it is unlikely that there will be any backing away from current directives mandating an increased online presence in higher education. It has been argued in this paper that the move from online delivery to online pedagogy can only be achieved through a coordinated approach which not only tackles the technical/application side of shipping huge amounts of content to large cohorts of students, but also addresses the need for professional development in staff and students. The paper has specifically examined issues flowing from policies that compel academics to deliver more and more of their lecture content online. It has presented an analysis of various digitising options available as well as a step-by-step description of how videotaped lectures have been converted into a useful teaching tool.. The paper has argued that centrally organised seminars and support workshops are often interpreted, by less technically literate staff, as decontextualised and missing the very sorts of information they require to achieve their online teaching and learning goals. Localised professional development structures, on the other hand, have proven to offer a more sustainable form of support. This is one that can be accessed at the local level and provided by colleagues with whom rapport has already been established.

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