

Good Practice in Practice

AN MP3 A DAY KEEPS THE WORRIES AWAY: Exploring the use of podcasting to address preconceptions and alleviate pre-class anxiety amongst undergraduate information technology students

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Creating a productive and satisfying learning experience involves actively engaging students and having them take responsibility for their own learning. However, the anxiety students bring into the classroom, along with their preconceptions about subject content and other course-related matters, often works as an immediate impediment to effective learning, even prior to the commencement of a course or subject. This paper describes, with reference to relevant literature, the rationale and design of a pilot study involving an investigation into the application of podcasting to address these issues and foster “good practice in practice” in university teaching and learning with first year information technology undergraduates. The authors believe that given the large uptake of portable music players, the use of a series of informal, talkback radio-style audio clips, delivered in a timely fashion through podcasting, can help alleviate some of the pre-class anxiety and allay student concerns about issues such as assessment, and do so more flexibly and effectively than the traditional methods of using subject websites and printed handouts.

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The impetus for the research described in this paper stemmed from an informal teaching evaluation effort, in which the first author implemented a variation on the Harvard “Minute Paper” as part of his own reflective teaching practice. Essentially, the Harvard Minute Paper (Mosteller, 1989; Cross & Angelo, 1993) involves students responding to some variation of the following two questions: “What was the most important thing you learned during this class?” and “What important questions remain unanswered?” (i.e., “What is the ‘Muddiest Point?’”). Students return their anonymous responses on paper to the lecturer, who can analyse the information fairly quickly. This type of impromptu evaluation is useful as it is relatively

simple to administer and therefore can be conducted at various stages of a subject, allowing the lecturer to elicit and respond to student feedback in a timely fashion formatively throughout the semester. Students’ areas of misunderstanding or non-comprehension can be identified and targeted as they occur, rather than simply at the very end.

IITC125 Information Superhighway is a first year undergraduate information technology (IT) subject offered in on-campus mode by the School of Information Studies at Charles Sturt University. A questionnaire was distributed at the very first meeting with the new students of the subject in the Autumn 2005 (February to June) semester. Prior to commencing the les-

son, students were asked to respond anonymously in writing to the open-ended question, “What are the concerns you have about this subject?” At the end of the lecture, a second questionnaire was distributed, posing the question, “Have your concerns been addressed at this opening lecture?”, and asking students to list the concerns that had yet to be addressed.

Although the results of the post-lecture questionnaire indicated that most of the students’ initial concerns had been addressed by the end of the first meeting, many students appeared to have a number of preconceptions about the subject, even before the lecturer had begun formally introducing it (Table 1). Identifying the source of these preconceptions is beyond the scope of this paper; however it was evident that they caused a degree of anxiety about the subject. For example, over one quarter of the respondents (8 out of 28) indicated that they already found the subject too difficult to understand.

Table 1: Concerns raised by ITC125 students in the Minute Paper, administered prior to the commencement of the first lecture in the Autumn 2005 semester (N = 28)

Category of concern	N	%
Too difficult to understand	8	28.6
No concerns	7	25.0
How to code/validate XHTML	3	10.7
Worried about assignment and exam	3	10.7
Detailed subject description needed	3	10.7
Don’t like Friday class	2	7.1
Subject is too easy	1	3.6
Set up of practicals and tutorials	1	3.6

The preconceptions and anxiety that students bring into the classroom act as barriers that must be overcome before effective learning can take place. This prompted the authors to explore strategies to help alleviate students’ pre-class anxiety and address their preconceptions prior to attending lessons. The remainder of this paper explores the potential for the use of podcasting technology to address these issues by providing a mechanism for disseminating a series of informal, talkback radio-style clips in MP3 format to students for listening

prior to attending class, via a “just-in-time” delivery model.

ADDRESSING STUDENTS’ PRECONCEPTIONS AND ANXIETY

The constructivist classroom is founded on the premise that students learn by reflecting on their experiences and social interactions, from which they formulate “mental models” representing their own understanding of the concepts. The provision of effective instruction is therefore highly dependent on comprehending the mental models that students use to perceive the world and the assumptions they make to support those models (Brooks & Brooks, 1999). In the words of Powers & Powers (2000), “the new knowledge affects the new” (Introduction section; para. 6) – Students’ existing knowledge is used as the starting point in guiding them through their search for understanding, and quest of making personal meaning. Their preconceptions therefore have a profound impact on the learning process, right from the outset, as one author notes: “...[I]t is necessary...to take into account the learner’s ideas. This may mean revising what we consider to be the starting points in our teaching – the ideas we can assume pupils have available to them.” (Driver, Guesne & Tiberghien, 1985; p.199)

Powers & Powers (2000) present a collection of common preconceptions held by students of Computer Science and Information Systems (CSIS), and discuss the constructivist implications of these preconceptions for teaching methods. Research in other disciplines demonstrates that there are numerous prevalent preconceptions among students, and that educators can tackle these preconceptions through the careful selection of appropriate learning experiences (Powers & Powers, 2000, citing Tobin, 1993). The bulk of this research appears to have been in the mathematics (eg. Gourgey, 1984; Harvey, Plake & Wise, 1985; Gal & Ginsberg, 1993) and science (eg. Clement, 1982; Kass & Lambert, 1983; Aguirre, 1988; Carlsen & Andre, 1992; Camp & Clement, 1994; Kokotas, Vlachos & Kardaidis, 1998) domains. Tanimoto, Carlson, Husted, Hunt, Larsson, Madigan & Minstrell (2002)

suggest that one way to draw out these preconceptions is to ask students leading questions and have them answer the questions in small-group discussions. Driver, Guesne & Tiberghien (1985) say that once student ideas have been identified and understood, they can be used to improve learning by helping to guide the sequencing and timing of the teaching of specific concepts, as well as how the learning experiences for particular concepts may be adapted. The authors take this one step further by proposing that student preconceptions can and should be confronted *before* formal instruction begins, so that the learning that occurs in class can be as productive and meaningful as possible.

Ramsden (1992) asserts that any anxiety students have about a subject will affect the learning styles they exhibit. Research has shown that the same student can have “deep”, “surface” or “strategic” learning styles, even within the same subject (Prosser, 1994). Biggs (1987) suggests a close association of deep learning strategies with active participation and social interaction in an “affective” setting. This affective domain of student learning is often left to chance by university educators, but the issue of student anxiety in an introductory subject, indeed any subject, warrants serious consideration. For new students, recognising and addressing concerns about anxiety is critical in assisting them with their integration into the tertiary learning environment.

Many articles refer to student anxiety, but there have been few definitive studies conducted in this area (Roiter & Petocz, 1996). Stevens (1982), Gourgey (1984) and Harvey, Plake & Wise (1985) are some of the authors that have investigated this issue in depth within the statistics education realm; however, Roiter & Petocz (1996) reports that current literature on anxiety does little to provide suggestions that can be easily incorporated into daily practice.

Another issue that has surfaced in recent years is the effect that students’ attitudes or beliefs about a subject have on their anxiety. Gal & Ginsberg (1993) argue that students’ preconceived ideas about the nature of a subject and its content can produce anxiety, and give a

critical review of two surveys that are designed to assess student anxiety towards statistics. A study by Ballantyne (2000) showed that 216 students (16%) had withdrawn from one of more units during their first semester at an Australian university and 398 (28%) had seriously considered withdrawing from the university altogether. Organisation and interest in the area of study are closely related to student success; the presence of anxiety adversely affects students’ interest in a subject and puts a damper on their motivation to learn and excel, in addition to interfering with memory, attention, and concentration and being emotionally draining (Chan, 2001).

The issue of student anxiety can be addressed by the use of appropriate teaching methods, and the demonstration of effective teaching behaviours within the classroom (Murray, 1997). Active learning strategies such as peer instruction, mentoring and pair/groupwork have also been shown to help reduce anxiety (Owens & Walden, 2001; Tremblay & Rodger, 2003; Freeman, Jaeger & Brougham, 2004). Once again, however, as with students’ preconceptions the authors of the present paper advocate attacking their anxiety before they arrive in class, to as to maximise their ability to benefit from the formal instruction, and indeed from any learning activity. Modern methods based on social constructivist theory, such as discovery-based learning, problem-based learning and collaborative learning, have a significantly higher probability of success, particularly within the time constraints of the university timetable, if students are able to come to class already inspired to learn and willing to actively participate.

Traditionally, instructors have used a number of out-of-classroom support mechanisms to assist students in addressing their preconceptions and allaying their concerns, both about the subject content and on administrative matters. One-on-one instructor support for each student via face-to-face consultation, telephone or e-mail may be ideal in a small group situation, but for large cohorts such as those commonly found in introductory subjects, this method is impractical at best. For

this to be effective as a primary method of targeting students' preconceptions and anxiety, the time and resources demanded of the instructor would be prohibitive. Collaborative learning practitioners promote the use of computer-mediated communications (CMC) technologies like chat rooms, MOOs, threaded discussion boards (forums) and now Wikis to have students solve one another's problems. According to Tanimoto *et al.* (2002), through the use of an appropriate CMC tool, students can carry out their discussions in a way that facilitates the discovery of preconceptions and makes it easier for an instructor to provide appropriate guidance. However, Northover (2002) cautions that the overall effectiveness of such activities is largely dependent on their planning and implementation, and emphasises the instrumentality of the tutor or moderator in their success.

A popular solution is the production and distribution of supplementary material, usually in the form of printed handouts. The advent of consumer-level digital multimedia hardware and software have prompted the more technologically inclined instructors and educational designers to construct CD-ROM based resources to engage and excite students using the richness and flexibility of text, graphics, sound, video, animation and interactive content, as well as the combination of these elements. Many educators have also leveraged the pervasiveness of the World Wide Web by putting both text-based and multimedia content online on websites created specifically to serve the subjects they teach, and more recently taken advantage of the simple and informal nature of web logs (blogs).

MUSIC TO THE EARS:

THE CASE FOR AUDIO TECHNOLOGIES IN TEACHING AND LEARNING

Audio has been vastly neglected and underused as a teaching and learning medium in recent years (Bates, 1981; Romero-Gwynn & Marshall, 1990; Scottish Council for Educational Technology, 1994). Perhaps this is because according to the popular view, "[listening to audio is] not learning...[l]istening is not synonymous with comprehension and action"

(Walsh, 2004). However, in the words of Clark & Walsh (2004; p.4):

Hearing is a specific and powerful sensory channel. The 'cocktail party effect' allows us to home in on conversations and sounds ignoring other background noise. Our brains are acoustic analysers able to distinguish, select and interpret an amazing variety of sounds.

Clark & Walsh (2004) further add that human hearing is "an astoundingly efficient skill" as we are able to understand real speech at 10 to 15 phonemes per second for normal speech and up to 40 to 50 phonemes per second for artificially speeded up speech. Furthermore, they note that "listening is instinctual, [whereas] reading and writing are not" (p. 5) – linguistic psychologists have found that unlike with reading and writing, children do not learn how to understand the spoken word, but are hard-wired with the skill.

Durbridge (1984) emphasises the distinct educational advantages of audio over printed media, stating that "[a]s compared with a written text, the spoken word can influence both cognition (adding clarity and meaning) and motivation (by conveying directly a sense of the person creating those words)". Power (1990; para. 1) concurs: "The ability to adjust or modulate [the] frequencies [of the human voice] allows us to communicate in a correct and artistic way with words and sounds...[T]he ability to adjust intonation, inflexion, phrasing, pacing, volume, loudness and timbre [distinguish speech from print]." He points out that "spoken words through heightened intonations or subtle nuances can communicate...emotions and create a sense of intimacy at the same time"; by contrast, "[p]rint does not allow a learner to identify or interpret audible nuances that personali[s]e content because print cannot stimulate the auditory senses" (para. 2).

Historically, radio has been used in education ever since it became available, for a variety of purposes ranging from on-campus school and university broadcasts to in-service teacher support and training and adult literacy and basic education campaigns (World Bank, 2000). In combination with tutorials, print materials, local listening groups, and face-to-face meet-

ings, radio has been used to teach a wide range of subjects at various levels of the education system.

Audio cassette tapes, and more recently, optical recording media such as compact discs (CDs), have been used as a solution where the ephemeral nature and fixed transmission times characteristic of radio broadcasts (World Bank, 2000) pose a problem, where the audience is geographically dispersed over too large an area (for example, in a distance learning scenario), or where radio air time is simply not readily available. Learners see cassettes as more personal and informal than radio, and cassettes have also been found to be more appropriate than audio for controlled, didactic teaching (Power, 1990, citing Bates, 1981). Kates (1998) proposes the use of voice recordings, distributed on audiotape cassette, to provide feedback to student writing assignments, and discusses the benefits of this method over the traditional, written form, particularly for commuter students.

More sophisticated multimedia elements such as video, animation and interactive media like simulations and games may have a high success rate in terms of boosting attention, motivation and interest, but they are expensive and time consuming to develop, typically requiring a great deal of technical expertise. If well designed, they may be optimised for reuse from semester to semester, but are difficult to create or modify mid-semester to suit the needs of a particular cohort. Digital audio, on the other hand, is cheap and simple to produce and manipulate, due to the availability of basic sound recording and playback hardware and software in homes and educational institutions. This makes a “just-in-time” delivery model possible – Content can be produced on the fly in response to information obtained from formative feedback mechanisms (like the Harvard Minute Papers alluded to earlier in the present paper), enabling educators to address their students’ needs and concerns as they surface.

Moreover, although the portability of other digital media forms is becoming increasingly viable with portable video players, 3G mobile phones and smartphones, the true mobility of students is severely restricted due to the need

for visual fixation on a screen. Listening, however, “frees eyes and hands” (Clark & Walsh, 2004) to perform other manual tasks, including doing household chores, walking the dog or driving the car. As such, it is an unobtrusive activity that is able to integrate with other activities in our daily lives.

Table 2: Strengths and weaknesses of audio (Scottish Council for Educational Technology, 1994)

Strengths of audio	Weaknesses of audio
<p>The equipment is cheap and robust. It is also widespread and familiar.</p> <p>Audiotapes are easy, quick and cheap to produce and update. As a result there is a high degree of author control. Tapes are also cheap to distribute and store.</p> <p>They are interesting, personal and intimate. They can be used to provide human contact and advice.</p> <p>They can be used to incorporate sounds and music and can be a powerful stimulus to the imagination.</p> <p>They can be used more effectively than print to talk learners through a passage and to document discussions, case studies and language pronunciation at work.</p> <p>They are convenient to use. There is a large degree of learner control.</p> <p>They can be recorded on by the learner and returned to the tutor to provide feedback.</p>	<p>Access to a player is necessary, restricting portability.</p> <p>Complex branching and routing is difficult.</p> <p>The information conveyed is intangible and, as a result, learners require concentration to absorb facts.</p> <p>It is difficult to absorb complex information, eg a logical argument may be hard to follow and will need confirmation from print or another visual medium for maximum effect.</p> <p>It can be difficult to find the relevant point of a tape. They cannot necessarily be used everywhere without headphones, eg. in a library.</p>

The Scottish Council for Educational Technology (1994) outlines the strengths and

weaknesses of audio as a technology for learning and teaching (Table 2). The shortcomings of audio appear to be in the area of providing complex and/or detailed information that needs to be heavily processed, logically deconstructed, committed to memory, or otherwise requires a great deal of concentration. It is not the authors' intention to use audio for these purposes. The Council mentions a case study in which as part of a multimedia training package on how to write materials based on occupational standards, Kelvin Consultants included an audiotape as a means of allowing learners to hear about others' experiences. It is this type of application that audio is ideal and well suited to, and that inspires the research in this project:

Audio is an extremely powerful medium for conveying feelings, attitudes and atmosphere. It is less good at conveying detail and facts. In other words, you will not remember very many facts and figures after listening to a 30-minute audiotape. You will, however, be able to remember general opinions, and arguments. (Scottish Council for Educational Technology, 1994)

PORTABLE MEDIA PLAYERS AND M-LEARNING

The widespread popularity of portable media players, in particular MP3 players and other music-capable handheld devices such as mobile phones and personal digital assistants (PDAs) will help realise the vision of "anytime, anywhere" education. Furthermore, true mobile learning (m-Learning), also termed *nomadic* learning, is coming to fruition, since these modern devices eliminate the need for transporting physical media like audio tape cassettes and CDs. This is because these devices have their own digital storage capabilities, usually in the form of hard drives or solid state memory (eg. flash memory). Many of these devices are also network-ready, often with wireless functionality already built-in.

The explosive growth in sales of portable MP3 players suggests that these devices are becoming increasingly ubiquitous. The Informa Media Group predicts that worldwide sales of MP3 players will reach 20 million units in 2005,

with an average rate of 45 per cent growth for the next six years. They predict that a total of 194 million units will have been produced by the year 2010 (Macworld UK, 2004). Royall (2005) reports that in Australia, the sales of MP3 players, fuelled by the popularity of the Apple iPod (see Apple Computer, 2005a), increased seven fold in 2004. The sale of cheaper imports from China played a part in this growth (Royall, 2005). Already, 13,000 units of MP3 players were sold in the first quarter of 2005 (*Sydney Morning Herald*, 12 May 2005, Radar section, p. 2).

Clark & Walsh (2004) discuss the psychological advantages of "iPod-learning" in relation to lifestyle and society. Aside from the benefits of portability and ease of use, listening to an iPod or similar device in public is "socially acceptable". These devices have a tremendous consumer appeal that works to their advantage, particularly for younger students who may be impatient with traditional forms of teaching and learning.

Portable media players have already begun to be adopted in higher education spheres. Since the fall of 2002, various courses at the Georgia College & State University (2005), including a number of study abroad courses, have been "iPod-enhanced" to include a diverse range of audio material ranging from lectures and audio books to language study material and music. In August 2004, Duke University (2005) distributed 20-gigabyte iPods to its 1,650 new students, pre-loaded with orientation information. Administrative as well as academic materials in MP3 format are available for students to download from the Duke web server and via iTunes (see Apple Computer, 2005b). In a significantly smaller-scale project, Drexel University is planning on distributing iPod Photo players, which are capable of displaying digital photos as well as playing music, to its School of Education freshmen in September 2005 (Read, 2005).

PODCASTING: THE NEXT BIG THING?

A new and emerging technology known as *podcasting* may offer the "best of both worlds" in audio by combining the benefits of the broadcast nature of radio with the flexibility, learner

control and personalisation afforded by recorded audio. Podcasts may be thought of as time-shifted radio broadcasts over the web. Through podcasting, audio content from one or more subscribed feeds (channels) can be automatically downloaded to one's computer as it becomes available, then later transferred to an iPod or other portable media player, to be listened to at a time and place convenient to the owner. Users who do not have access to a portable music player can simply listen to the content on their PCs.

Podcasting has its roots in *RDF Site Summary* (RSS – formerly *Rich Site Summary*, and sometimes also known as *Really Simple Syndication*). RSS is revolutionising the way we view web-based information, in particular dynamic content. RSS-enabled web sites generate a feed of XML data summarising the content of the site, which may be anything as diverse as news headlines, stories, weather and stock market data, community-specific announcements and discussion board postings. Programs called *aggregators* periodically poll one or more subscribed feeds for updates and deliver or *syndicate* them directly to the user's desktop. RSS content can be filtered based on user-defined criteria, and content can be aggregated from across multiple feeds to suit the specific needs and interests of the user. RSS promises to be a time saver as the user does not have to manually plough through a plethora of sites for relevant content; nor is there a need for the even more tedious process of continually monitoring these sites for updates and additions.

THE BENEFITS OF PODCASTING

Podcasting provides a low-cost, low-barrier tool for disseminating content across the Internet. The prohibitively large bandwidth requirements of streaming audio and video, which by definition involves playing this media while it downloads from across the Internet, often lead to poor performance for many users, leading to a “click and wait” situation that negatively affects the quality of the listening/viewing experience. Podcasting overcomes this through what Adam Curry, of MTV fame and one of the pioneers of podcasting, calls

“The Last Yard” (Curry, 2004). This involves having a computer continuously connected to the Internet so that content that bandwidth-intensive content can be “dripped in” and made available when ready, thereby eliminating the “click and wait”. In this sense, podcasting has also been likened to a TiVo or similar digital video recorder (DVR) that uses a process of time-shifting to allow for flexible viewing a time convenient to the user.

Other advantages of podcasting include the fact that it is subscription-based and therefore not subject to unsolicited material like spam, and that subscriptions can be added or cancelled at any time. Because podcasting is based on RSS, users can filter and search content downloaded from a single feed, or across multiple feeds, opting to listen to only those podcasts that are of interest to them.

Last but not least, of course, podcasts, being MP3 files, are able to be transferred to a variety of mobile devices to be listened to on the move. As mentioned earlier, this promises to make true m-learning a possibility.

PODCASTING TO ADDRESS STUDENT PRECONCEPTIONS AND ANXIETY: PILOT STUDY AT CHARLES STURT UNIVERSITY

Based on their review of the literature and their own observations and experiences as tertiary educators, the authors put forward the following theses as a basis for further research:

- Short pre-class listening segments, delivered through podcasting, are more effective than (web or print-based) pre-class reading in addressing students' preconceptions and anxiety; and
- Podcasting of such audio material can be easily integrated into the professional practice of most university teachers.

The first thesis is based on the premise that student preconceptions must be addressed upfront. Assigning pre-class reading that is improperly planned or without appropriate guidance can do more detriment than good to students' understanding of the subject matter, and ultimately their confidence. This may lead to a vicious cycle where misconceptions lead to further misconceptions and anxiety.

The m-learning options facilitated by portable MP3 players mean that students are more likely to be able and willing to spare a few short minutes of their “deadtime” (eg. while travelling to and from or walking between classrooms) listening to audio than to read large amounts of text. Conversely, students who fail to successfully complete their assigned pre-class reading, or struggle to fully comprehend it, may come to class feeling ill prepared. This has a negative, compounding effect on their confidence and motivation to learn. Hence the authors propose that it is more educationally beneficial to students to simply whet their “learning appetites” by means of small, “bite sized” audio clips.

Although it is possible for MP3 files to simply be published on a web server for students to download using a standard web browser, or even distributed to students on CD at the start of semester, podcasting allows fresh content to be delivered to students’ desktops and handheld devices, as it becomes available. This makes it possible to tailor content “just-in-time” to suit students’ needs, and promotes a sense of currency and direct relevance of the content to the cohort, rather than distributing “one size fits all” material that is reused from semester to semester.

RESEARCH METHODOLOGY

The research methodology adopted in the project involves an Action Research (AR) case study in two cycles or stages. Stage AR-1 is being used to show “proof of concept” through a pilot study involving students enrolled in ITC125 Information Superhighway. In preparation, a questionnaire and a focus group were conducted with students in the Autumn 2005 offering of the subject, the same cohort mentioned earlier in the present paper. A trial podcasting implementation is being carried out in the subsequent offering of the subject (Spring 2005 semester), beginning in August 2005.

Reflection on the research in AR-1 will result in a revised plan and research questions leading to further actions, observation and reflection in the next stage, as per Kemmis and McTaggart’s (1988) iterative model. Further work in Stage AR-2 will see the project expand

to more subjects and involve the development of a resource kit to assist academics and students with podcasting.

RESULTS OF ITC125 AUTUMN 2005 END OF SEMESTER QUESTIONNAIRE AND FOCUS GROUP

In order to obtain an indication of students’ accessibility to MP3-capable equipment, as well as to gauge their willingness to partake in additional material made available in this format, an additional questionnaire was distributed to the students of ITC125 at the end of the Autumn 2005 semester. The results are summarised in Tables 3 and 4 below.

Table 3: ITC125 Autumn 2005 student responses Question 1 of MP3 questionnaire (N = 26)

	N	%
<i>a. Do you own or have access to an MP3 player?</i>		
Yes	26	100.0
No	0	0
<i>b. If yes, what type?</i>		
Portable audio player (iPod, mobile phone, PDA)	2	7.7
PC (desktop or laptop)	13	50.0
Both	11	42.3

Table 4: ITC125 Autumn 2005 student responses to Question 2 of MP3 questionnaire (N = 26)

	N	%
<i>a. If additional material (not covered in lectures/tutorials) were made available for download in MP3 format, would you listen to this audio material?</i>		
Yes	25	96.2
No	1	3.8
<i>b. If yes, how many minutes would you be willing to listen to such a recording per week?</i>		
3 – 5 minutes	7	29.2
6 – 8 minutes	6	25.0
9 – 10 minutes	11	45.8
Invalid response	1	-

All 26 respondents reported owning or having access to an MP3 player. A portable MP3 player, or both a portable as well as a PC-based player, was accessible to half (50%) of these students. Almost all (96%) of the respondents answered “yes” to a willingness to listen to additional audio material made available in MP3 format, and the data would suggest that these

students did not appear to be overly concerned with the length of the material within 3 to 10 minute range.

A number of volunteers from the cohort also participated in a focus group to help brainstorm ideas for the content of the podcasts. The focus group participants raised the following concerns that they had about the subject, which they felt could be addressed through the use of podcasts:

- Campus orientation – “finding my way around”;
- Time management, i.e. balancing work and play;
- Following the course content, taking notes and the fear of missing content;
- Social aspects of the subject (seating arrangements, different characteristics of students: talkers, note-takers, etc.);
- Fears of not being able to talk to anyone, leading to helplessness;
- Assignment details and submission procedures.

RESEARCH PLAN FOR TRIAL IMPLEMENTATION / PILOT STUDY IN SPRING 2005

The questionnaire and focus group data from Autumn 2005 will guide and inform the authors’ continuing research, including the trial implementation in the Spring 2005 offering of the subject. The authors’ intention is to perform a One Minute evaluation of the students at the beginning of the pilot and at the end of the podcasting experience on the same areas, as per Table 1 above. The “before” and “after” results will then be compared to ascertain whether podcasting had any effect on the preconceptions or anxiety of the students. Interim results will be presented at the conference.

INITIAL THOUGHTS ON THE STYLE AND FORMAT OF THE PROPOSED PODCASTS

In attempting to determine the optimum length of the podcasts to be used in the trial, the authors noted that students who reside on-campus at Charles Sturt University’s Boorooma campus in Wagga Wagga take 8 to 10 minutes each day to walk from their halls of residence or dormitories to the lecture block. Those who travel by university bus spend 10 to 30 minutes

in a bus, and those who travel by car will take at least 5 minutes to walk from any of the car parks to the classrooms. This “wasted” time or “deadtime” is too short to listen to a full music album. Hence, the idea of a 3 to 5 minute audio clip became a possibility. This philosophy is consistent with the views of Walsh (2004; para. 6), who advocates designing audio learning material in adherence to the metaphor of a song:

There’s a reason most songs are less than four minutes. If you haven’t gotten to the hook by then, you’re not going to make it in the next nine. People go to the bar during the drum solo. They do the same in their minds when you don’t tell it quick and tell it straight in your learning delivery, whatever the mechanism.

Referring to an analysis of 100 audio tape cassette productions at the Fern-Universität in Hagen (University of Hagen), Germany, Laaser (1986) undertook a classification exercise of these programmes’ designs in hope of assisting educational designers in selecting an appropriate approach:

- i. dramaturgical design, i.e. the interaction between persons participating;
- ii. the didactic function or teaching objective; and
- iii. the reciprocal relations to other media and to student activities.

The authors used this work to help them decide on the design and format of the proposed podcasts. It was felt that the latter two categories are less appropriate for the intended purposes of dispelling students’ erroneous or misapplied preconceptions and reducing their pre-class anxiety levels. The podcasts will not, by any means, act as a primary method of instruction, and will in no way replace face-to-face lectures and tutorials – As mentioned earlier, the intention is not to use audio to teach complex concepts. A far more important design goal is to maximise interest and appeal to students. It was also resolved that, as far as possible, the students themselves should be actively involved in the production of the podcast material.

To this end, it was decided that the podcasts be structured as a series of weekly, 3 to 5

minute talkback radio-style “shows”, with two or more students from the current and/or previous cohort holding discussions on pertinent issues related to the subject and its content in a relaxed and informal style. The lecturer and other subject matter experts may occasionally be brought in as “guests” to offer insight into, or clarification of, the more complex or difficult topics and issues. By listening to background material and being exposed to the terminology used in the subject, such as technical IT jargon, students will be better prepared to participate in formal classes, and to do so with motivation and confidence. The material will also help allay students’ concerns about issues such as the scheduling of classes and the subject’s assessment.

This model appears to be similar to what Gee (1992; 1996) terms socialising into a “Discourse”, and is reminiscent of the “legitimate peripheral participation” of newcomers to a community of practice portrayed by Lave & Wenger (1991). A prototype podcast, recorded with students from the Autumn 2005 offering of the subject, will be presented at the conference.

CONCLUSION AND FUTURE PLANS

The authors believe that the affective and cognitive benefits associated with audio, along with its cost-effectiveness, make it an ideal medium for producing material to address students’ preconceptions about a subject and its content, and to alleviate the anxiety that students bring into the classroom. The proliferation of portable, MP3-capable devices such as iPods opens up exciting new possibilities for mobile learning (m-learning) that will have a high level of social cachet and appeal amongst the target audience, and can deliver educational value in their “deadtime”. It is hoped that the aforementioned pilot study, set to commence in August 2005, will show that these factors, combined with the use of podcasting as a time-shifted, syndicated mechanism to “push” content to students’ desktops and mobile devices as it becomes available, hold massive potential in the way of producing and disseminating pre-class listening material targeted at addressing

students’ preconceptions and anxiety, so as to enhance their overall learning experience.

It is also hoped that the pilot study will help answer a number of questions relating to the use of podcasting to address students’ preconceptions and alleviate their pre-class anxiety. Amongst other things, the authors aim to identify the specific types of pre-class listening that are effective in addressing students’ preconceptions and anxiety, from a content perspective. It is envisaged that in part, this will entail delving deeper into content-specific anxieties faced by students within a particular discipline, such as information technology. There is much existing literature on the content-specificity of anxieties in areas such as mathematics and languages (eg. Marsh, 1988); these sources will be of assistance in analysing students’ anxiety to programming and IT/networking terminology, for example.

In the near future, the authors also hope to examine the following areas, possibly in collaboration with other researchers and organisations:

- the use of music to enhance the outcome of the pre-class listening material from a cognitive and affective standpoint, as well as improving its overall appeal;
- the distribution of post-class listening material for revision and reinforcement;
- the application of the technology to collaborative learning and teaching practice, by supporting the sharing of student-generated audio content through a model for community building and knowledge construction;
- the benefits of participation in this type of community in relation to enhancing subsequent face-to-face classes (see Dietz-Uhler & Bishop-Clark, 2001); and
- the use of podcasting to promote inclusiveness for distance education students who are part of a “mixed mode” cohort.

Finally, there are plans within the School of Information Studies, Charles Sturt University, for the development of a resources kit incorporating technical guides or “HOWTO’s” relating to MP3’s and podcasting, as well as a set of best practices for the design, creation and distribution of audio learning objects to act as

supplementary material to address students' preconceptions and anxiety. It is hoped the resources will ease the integration of these technologies and strategies into contemporary university curricula, and promote their uptake amongst tertiary teachers.

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