REDUCING THE EFFECTS OF ISOLATION AND PROMOTING INCLUSIVITY FOR DISTANCE LEARNERS THROUGH PODCASTING

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ABSTRACT

This article reports on an initiative to explore the potential of using supplementary audio podcast material to reduce the anxiety caused by isolation and to promote a sense of inclusivity amongst both undergraduate and postgraduate students studying an information technology subject in external mode with Australia's largest provider of distance education. The podcasts were structured as a series of short, 3 to 5 minute talkback radio-style segments, with senior students holding discussions on pertinent issues related to the subject and its content in a relaxed and informal style. Both quantitative and qualitative data was obtained through a web-based survey conducted at the end of semester to gain insight into the views, experiences and perceived learning value of the podcasts from the perspective of the student listeners.

Findings suggest that the approach was largely successful in achieving its aforementioned aims. In addition, the student listeners saw the podcasts as being especially effective in clarifying and enhancing their understanding of the subject; providing backup/reinforcement of what they had learnt; as well as supplying guidance on the direction in which to channel their study efforts.

Overall, the authors believe podcasting has tremendous potential to assist in acculturating distance learners and aiding them in moving towards complete social and academic integration into institutional life, despite the presence of physical separation. The authors' future research plans are also briefly outlined.

Keywords: **Isolation; alienation; inclusivity; equity; podcasting; audio; distance education.**

DISTANCE EDUCATION: A LONELY AND ISOLATING EXPERIENCE?

At most higher education institutions, distance learners have the highest risk of dropping out of their programmes of study (Peters, 1992). This can be attributed in large part to the isolation experienced by these students (Rogers, 1990; Peters, 1992; Okun, Benin & Brandt-Williams 1996; Hipp, 1997; Lake, 1999; Delahoussaye & Zemke, 2001).

Students of all kinds want to have a sense of belonging to a larger university community, rather than simply being an enrolee, or worse still, a statistic, in a course. For many on-campus students, their involvement in the campus community forms an important part of their social lives and plays an integral role in their personal and academic development.

The "distance" factor inherent in distance education has been identified as one of the major problems for students studying in this mode (Meacham & Evans, 1989; Suen & Parkes, 1996). This geographical isolation significantly detracts from the need for social interactions that are usually afforded by face-to-face situations. In addition to the practical problems of contacting academic and administrative staff, obtaining study materials and gaining immediate access to resources such as laboratory equipment and library books, distance learners endure the disadvantage of being unable to interact with other students, which can put a significant damper on their motivation and enthusiasm. As such, they are often denied the perception that they belong to a scholarly community (Galusha, 1997). "There are rarely 'class clowns', 'curve busters', or 'teacher's pets' in distance education" (Suen & Parkes, 1996, sec. 2., para. 2).

Another related concern for the distance student is the perceived lack of contact with, and timely feedback from, the lecturer. In a hybrid or mixed-mode class consisting of a combination of students studying in internal and external modes, this can raise serious concerns of fairness and equity. Even more so than other students, distance learners are more likely to have insecurities about learning (Knapper, 1988), and need both a level of guidance as well as assurance that they are on the right track. Because there is no regular, classroom-based instructor contact, students may face difficulty in self-evaluating their progress and their understanding of the subject material.

Time management can become a problem as they invest inordinate amounts of their study time in activities deemed to be unimportant by the lecturer, or in futile searches for answers to queries that could have been clarified or resolved in a matter of minutes by asking a simple verbal question. This can lead to considerable frustration with the distance education experience, and/or result in feelings of inadequacy, as well as a lack of self-confidence (Wood, 1995).

As a result of social change, large numbers of mature-age external students are entering universities with little idea of the institution's culture and few avenues that will enable them to acculturate (West & Hore, 1989; Lake, 1999). According to Lake (1999), these students include "recyclers" seeking to upgrade their vocational or industry qualifications; "deferrers" who failed to take up offers of university places upon graduation from high school; "returners" who discontinued their initial university studies, often as a result of perceived isolation; and "early school leavers" who typically have negative memories of their past educational experiences. In his well-known theory of distance education, Desmond Keegan (1996) asserts that the separation of student and teacher removes a vital link of communication between the two parties, which must be restored by means of explicit steps to "re-integrate" the teacher-learner interaction, albeit somewhat artificially, through measures like ongoing electronic or telephone communication. Without these measures, distance students are less likely to undergo acculturation into institutional life and hence are more likely to drop out (Sheets, 1992).

Another resounding issue in the distance education literature is the criticality of factoring into account the significant proportion of students who enrol with little or no experience in studying in this mode. This problem is compounded by the fact that many of these students may have had little or no experience with tertiary study in general, and/or have had prolonged absences from study.

Wood (1995) claims that these students are at considerable risk of withdrawing or failing unless they quickly develop academic "survival skills". Of particular importance is the design of distance study materials (Meacham & Evans, 1989; Race, 2005; Simonson, Smaldino, Albright & Zvacek, 2005), which must carefully consider the special needs of these students. Galusha (1997) does an excellent job at painting a broad overall picture of the abovementioned and other issues, by listing six major categories of problems from the distance student's perspective (in no particular order of precedence):

- **the balance between costs (monetary and time) and motivators;**
- **availability of feedback and teacher contact;**
- **access to student support and services;**
- **feelings of isolation and alienation;**
- **lack of experience (in tertiary education in general, or distance education in particular); and**
- **lack of (technical) training.**

Nevertheless, Morgan and O'Reilly (1999) urge educators to view distance education from an "opportunity" model rather than a "deficit" model (p. 23), reminding them that distance learners bring a wealth of experience, abilities, enterprise and resources to learning encounters that can and should be leveraged. Willis (1992) maintains that the challenges posed by distance teaching are countered and potentially outweighed "by opportunities to reach a wider student audience; to meet the needs of students who are unable to attend on-campus classes; to involve outside speakers who would otherwise be unavailable; and to link students from different social, cultural, economic, and experiential backgrounds" (sec. 2, para. 1).

Modern information technologies, including both synchronous and asynchronous online communication tools, have tremendous potential to help mitigate many of the aforementioned barriers, particularly those that fall into the categories relating to teacher contact and student support. Yet at the same time, used inappropriately and in the absence of appropriate strategies, they run the risk of further isolating and alienating distance learners, in addition to introducing technical overhead that acts as a further impediment to learning. This paper reports on an effort at the authors' institution, a regional university and Australia's largest provider of distance education, to explore the potential of using carefully designed podcasts containing audio supplementary material to help alleviate the feelings of isolation experienced by distance learners, and to promote inclusivity for them within a mixed-mode cohort.

THE USE OF AUDIO IN ONLINE AND DISTANCE EDUCATION

Historically, radio has been used in open and distance learning ever since it became available. In combination with tutorials, print materials, local listening groups and face-to-face meetings, it has been used to teach a wide range of subjects at various levels. Audio cassette tapes, and more recently, 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 distance learners are geographically distributed over too large an area, or where radio air time is simply not readily available. Cassettes are perceived by learners as being more personal and informal than radio, and have been found to be more appropriate for controlled, didactic teaching (Power, 1990, citing Bates, 1981). While audio is certainly not new as a teaching and learning medium, it has been neglected and underused in recent times (Bates, 1981; Romero-Gywnn & Marshall, 1990; Scottish Council for Educational Technology, 1994).

Predominant platforms in online learning, such as course delivery systems like WebCT and Blackboard, as well as their constituent collaborative tools like discussion boards/forums and chat, focus on text as the primary medium. However, "[t]he use of audio…is experiencing a renaissance fueled by the ubiquity of portable audio players, broadband Internet, and software tools that allow the relatively easy creation and distribution of audio files" (Schlosser, 2006, sec. 2, para. 1).

It appears that according to the popular view, "[listening to audio is] not learning…[because it] is not synonymous with comprehension and action" (Walsh, 2004, p. 25). But as noted by Smaldino, Russell, Heinich and Molenda (2005), the use of audio in education presents numerous advantages. These include but are not limited to: the fact that it is inexpensive and readily available; its ease of production and use; the qualities of repeatability and reproducibility; the ability to stimulate listeners and to provide a verbal message for non-readers; and the portability of this medium. Furthermore, Clark & Walsh (2004) argue specifically in favour of the efficiency of learning by listening:

> ***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. (p. 4)***

They add that 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. They also 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; they "hard-wired" with the skill.

In addition, audio can also be a time-saver from an instructor's point of view. Simply put, "[w]hile text certainly spells out information, sometimes it is just quicker to talk about something" (Schlosser, 2006, sec. 2, para. 4).

Nicola Durbridge (1984) of the UK Open University emphasises the distinct pedagogical 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) 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 text]" (sec. 2.1, para. 1).

Along similar lines, Barnes (1995) points out that despite all the capabilities of the cyber classroom, one of the elements still missing still is the non-verbal communication: the confused look, the attentive posture, the "light bulb" coming on. By contrast, "spoken words through heightened intonations or subtle nuances can communicate…emotions and create a sense of intimacy at the same time…allow[ing] a learner to identify…[and] interpret audible nuances that personalize [the] content" (Power, 1990, sec 2.1, para. 2).

Kates (1998) proposes the use of voice recordings, distributed on audiotape cassette, to provide feedback on student writing assignments, and discusses the advantages of this method over the traditional, written form, particularly for commuter students. Amongst other benefits, such an approach can leverage the ability of audio to address the emotional aspects of learning by conveying immediacy and a connection with the teacher.

Still (2006) advocates a more technologically sophisticated and up-to-date approach to providing voice commentary on assignments, which involves using Microsoft Word's commenting feature for embedding audio comments. In a another project by Woods and Keeler (2001), tutor-driven audio embedded into e-mail messages was found to yield greater levels of student participation in group activities, an added a sense of online community and increased satisfaction with the overall learning experience.

More complex 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 and packaged, they may be optimised for reuse between cohorts 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, enabling educators to address distance learners' needs and concerns as they surface. Moreover, for the 21st century distance learner, learning is intermingled with a multitude of other activities and tasks related to his/her personal and professional life. Although the portability of other digital media forms is becoming increasingly viable with portable video players, 3G mobile phones and smart phones, the true mobility of users is severely restricted due to the need for visual fixation on a screen. This is not the case with listening, which "frees eyes and hands" (Clark & Walsh, 2004, p. 8) to perform other tasks. As such, it is an unobtrusive activity that can be integrated with other activities in our lives, paving the way for true mobile learning.

Table: 1
The strengths and weaknesses of audio as a teaching and learning medium (Scottish Council for Educational Technology, 1994)

Strengths of audio	Weaknesses of audio
➢ The equipment is cheap and robust. It is also widespread and familiar. ➢ 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. ➢ They are interesting, personal and intimate. They can be used to provide human contact and advice. ➢ They can be used to incorporate sounds and music and can be a powerful stimulus to the imagination. ➢ 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. ➢ They are convenient to use. There is a large degree of learner control. ➢ They can be recorded on by the learner and returned to the tutor to provide feedback.	➢ Access to a player is necessary, restricting portability. ➢ Complex branching and routing is difficult. ➢ The information conveyed is intangible and, as a result, learners require concentration to absorb facts. ➢ It is difficult to absorb complex information, e.g. a logical argument may be hard to follow and will need confirmation from print or another visual medium for maximum effect. ➢ It can be difficult to find the relevant point of a tape. They cannot necessarily be used everywhere without headphones, e.g. in a library.

The Scottish Council for Educational Technology (1994) outlines the strengths and weaknesses of audio technology for learning and teaching (Table 1).

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 substantial 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 has been the major focus of 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)***

EDUCATIONAL PODCASTING: POSSIBILITIES AND CURRENT APPLICATIONS

Podcasting is a low-cost, low-barrier technology, based on Really Simple Syndication (RSS–see RSS Advisory Board, 2005), that allows audio content from user-selected feeds to be automatically downloaded to one's computer as it becomes available, then later transferred to an iPod or other portable MP3 playback device for listening at a convenient time and place.

The automated nature of this process greatly simplifies the process of obtaining podcasts. On top of this, by having a computer that is continuously online so that bandwidth-intensive content can be "dripped in" and made available when ready, the "click and wait" situation common in streaming (i.e. playing media as it downloads) can be eliminated (Curry, 2004), even over slower (e.g. dial-up) connections.

Podcasting combines the benefits of the broadcast nature of radio with the flexibility, listener control and personalisation of recorded audio. 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, can optionally be transferred to a variety of mobile devices to be listened to on the move. These devices include dedicated music players such as iPods, as well as many modern mobile phones, handheld computers and personal digital assistants (PDAs), all of which have a high level of social cachet amongst students, who already use them on a daily basis for work, communication and/or entertainment purposes. As mentioned earlier, this also bodes well for the realisation of true mobile learning.

Podcasting has enjoyed and continues to enjoy phenomenal growth in mainstream society, as well as higher education (Campbell, 2005). Since Fall 2002, various courses at 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 (2006) distributed 20-gigabyte iPods to its 1,650 commencing students, pre-loaded with orientation information. Administrative and academic materials in MP3 format are available for students to download from the Duke Web server and via Apple iTunes. In a smaller-scale project, Drexel distributed iPod Photo players to its School of Education freshmen in September 2005 (Read, 2005). Also in 2005, Apple launched iTunes U (Apple Computer, 2005), a free, hosted service for colleges and universities that provides easy access to audio and video content such as lectures and interviews, using the same technology as the commercial iTunes Music Store.

Since the genesis of podcasting in 2004, hundreds of other colleges and universities have adopted it at an institutional level, with countless individual educators at these and other institutions attempting to integrate the technology into their teaching practice in creative ways (see for example, Apple Computer, 2006a; 2006c; Beyond Distance Research Alliance, 2006). Many existing educational applications of podcasting focus on the use of the technology to deliver instructional content such as recorded lectures, which can lead to questions of pedagogical soundness. Used appropriately, however, podcasting can enhance both face-to-face and virtual classroom learning by engaging students in the material and adding yet another modality of learning (Carson, 2006). The authors believe the real potential of this technology ultimately lies in its community-building value, and its use as a vehicle for disseminating student-generated content.

THE STUDY

Background

The study reported on in the present paper forms part of a larger project in the broad area of educational podcasting, which originated in early 2005 as an attempt to use pre-class listening material as a means to address the preconceptions and anxiety that traditional, on-campus university students bring into the lecture hall.

The scope of the project was initially limited to students studying an undergraduate information technology subject in internal mode at one of the university's main regional campuses, but it has since expanded to encompass a range of IT subjects as well as subjects in other disciplines, involving both undergraduate and postgraduate students, studying at other campuses of the university as well as off-campus in various locations around Australia and overseas. The authors' emphasis was not and is not on recording full-length lectures, but instead on producing short, 3 to 5 minute audio clips that students could casually listen to in their "wasted" time or "dead-time" while waiting, traveling or doing household chores. Although additional research is needed to ascertain the optimum lengths for various types of podcasts, the idea of a 3 to 5 minute audio clip is consistent with the views of Walsh (2004), who believes in 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. (p. 24)***

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. He identified three types of designs:

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

The authors used this work to help them decide on the design of the podcasts. It was felt that the latter two categories were less appropriate, since the podcasts would not, by any means, act as a primary method of instruction–The intention was not to use audio to teach complex concepts. A far more important design goal was to maximize interest and appeal to students, as well as promoting ease of listening.

It was decided that the podcasts should be structured as talkback radio-style segments, with student-presenters holding discussions on pertinent issues related to the subject and its content in a relaxed and informal style.

The lecturer and/or other subject matter experts were occasionally brought in as "guests" to offer insight into, or clarification of, the more difficult or complex issues and topics. The material contained in the podcasts is supplementary in nature and not directly examinable, although it was designed to provide background material and expose students to terminology used in the subject, in addition to allaying their concerns about issues such as assessment.

The scriptwriting, editing and recording process of the podcasts was driven by a group of volunteer students who were not presently enrolled in, or who had previously completed, the subject (Lee, Chan & McLoughlin, 2006b). There was minimal lecturer intervention in the process.

Aims/Objectives of the Study

In the study that forms the topic of the present article, the authors set out to evaluate their podcasting approach and efforts from the point of view of distance education students, in the following areas (amongst others not presented in this article):

- **Level of uptake of the podcasts;**
- **Ease of use of the technology;**
- **Perceived effectiveness and impact of the podcasts on their learning (both cognitive, i.e. in relation to subject content; and affective, in terms of reducing anxiety levels and feelings of isolation);**
- **Other benefits gained, including other knowledge/skills acquired, from listening to the podcasts.**

Context and Participants

The participants of the present study were from a convenience sample of students enrolled in an undergraduate information technology subject, ITC204 *User Interface Design and Evaluation*, as well as its postgraduate version, ITC504 *Interface Usability*, in the Autumn 2006 semester.

ITC204 and ITC504 are offered to both on-campus as well as distance education students. The two versions of the subject are identical in content, with the core teaching and learning strategies being based around face-to-face lecturers and tutorials (for on-campus students only); readings from a set textbook, web-based notes and other readings; as well as a series of online tutorial and practical exercises. In addition, students are urged to supplement these learning activities with wide reading of academic literature such as journals and conference proceedings, as well as other Internet sources beyond those prescribed or suggested by the lecturer.

Like most other distance education subjects at the university, the primary online communication method in ITC204/504 is an asynchronous discussion board ("subject forum"), which is used by the lecturer to post announcements on administrative and other subject-related matters, and by students to obtain support from one another and from the lecturer.

The students are encouraged to participate in a continual class dialogue on the forum, sharing their reading, experiences, ideas and questions with their classmates. For issues of a more personal nature, such as matters relating to a student's own assessment, distance education students are able to contact the lecturer directly via email, with telephone and facsimile-based support available as added alternatives.

In Autumn 2006, the ITC204 and ITC504 students were provided with access to the same podcasts, with a new episode released each week. Podcast episodes were recorded progressively over the semester, with the content and design of the later episodes taking into account both informal student feedback received in response to the earlier episodes, as well as the results of a formal mid-semester survey (the results of which are partially published in Lee, Chan & McLoughlin, 2006a).

The podcast episodes released included the following:

- **Various "topic trailers" providing a lead-in to and broad overview of each topic to prepare students for the core learning activities;**
- **Summary or "re-cap" material to provide revision and reinforcement;**
- **Assignment tips, hints and post-assignment feedback from the lecturer;**
- **An interview, conducted over Voice-over Internet Protocol (VoIP), with the author of the textbook, based in the United Kingdom.**

The students had the option of either downloading the MP3 files manually via hyperlinks on the online subject outline, accessible through a portal within the university's proprietary learning management system (Lee, Chan & McLoughlin, 2006a), or configuring their podcast-capable aggregators ("podcatchers") to periodically check for new files and download them automatically.

Data Collection Methods

At the end of the 13-week semester, email invitations were issued to the distance education students enrolled in ITC204/504 to participate in a survey, which was advertised as being completely voluntary and anonymous. A similar survey was conducted for on-campus students, but only a subset of the data collected from distance education students appears in the present article. The other results will be published in further publications.

The survey consisted of a mixture of close-ended (multiple choice and Likert rating scale) as well as open-ended items, and was administered using a web-based tool. At the time of conducting the survey, a total of nine podcasts had been made available for download. Students were requested to respond regardless of whether they had downloaded or listened to any of the podcasts. The survey was kept open to collect responses for approximately 10 days.

Data Analysis Methods

While simple descriptive statistics were performed on the data collected for a majority of the survey items, which were close-ended questions, content analysis was the technique used to analyse the responses to the two open-ended questions in the survey. Content analysis is a generic name for a variety of means of textual analyses that involved comparing and categorising a corpus of data (Nuendorf, 2002).

Although it originated in communications research, it is now widely used in the analysis of computer-mediated conferencing (CMC) transcripts across a variety of disciplines, including education.

A simple thematic content analysis approach was adopted in this case. For each question, all responses were first read at face value to produce a preliminary (candidate) list of themes or issues.

This list was gradually refined as subsequent passes were made through the data, with the content being reviewed in greater detail and common strands factored out. As part of this iterative process, categories were added, deleted, renamed, combined and divided as necessary. Eventually, each response was categorised according to the themes/issues identified, to reveal those themes/issues that appeared to be the most pertinent, or worthy of mention. At this point it should be noted that the categories were not mutually exclusive; some responses did not fall neatly into a single category, but rather spanned two or more categories. Conversely, other responses did not fit into any of the categories at all and were thus assigned to the category "OTH" (Other). The incidences of the distilled themes/issues are reported on in the latter part of the next section. All in all, the aim of the process was to attempt to present a broad, overall or birds' eye view picture of the distance education students' attitudes and reactions towards the podcasts, as seen in the responses submitted.

RESULTS AND DISCUSSION

A total of 38 students (30 undergraduates and 8 postgraduates) studying ITC204/504 in distance mode in Autumn 2006 were invited to participate, of whom 18 completed the survey, representing a 47% response rate. The results of the survey were very encouraging. Uptake of the podcasts was excellent amongst the distance learner respondents (Table 2).

83% of the respondents reported that they had listened to seven or more of the nine available podcasts from start to finish, and a majority reported that they had listened to at least three of the episodes multiple times.

All but one respondent had downloaded at least seven of the podcasts. In terms of ease of use, as the data in Table: 3 shows, most respondents reported having little or no trouble both obtaining and listening to the podcasts.

Table: 2
Summary of survey data relating to the uptake levels of the podcasts (N=18)

How many of the nine available podcasts have you…	Mean	Median	Mode	Standard Deviation
Q2: Downloaded (whether or not you have listened to them)?	8.06	9.00	9.00	0.59
Q4a: Listened to from start to finish?	7.61	8.00	9.00	0.64
Q4b: Listened to in part only?	2.43	0.00	0.00	2.30
Q4c: Listened to multiple times?	3.19	3.00	2.00	1.29

Table: 3
Summary of survey data relating to the ease of obtaining and using the podcasts (N=18)

Please rate the following statements using the scale 1=Very Strongly Disagree, 2=Strongly Disagree, 3=Disagree, 4=Neutral, 5=Agree, 6=Strongly Agree, 7=Very Strongly Agree:	Mean	Standard Deviation
Q8j. I found it easy to access the podcast audio files.	5.94	0.46
Q8k. I found it easy to play the podcast audio files.	6.35	0.27

Table: 4 shows a summary of the results of the items in the survey that relate to the perceived impact and effectiveness of the podcasts.

Respondents were generally in strong agreement that the podcasts were of educational value to them, and that they were beneficial to their understanding of the subject content.

Table: 4
Summary of survey data relating to the impact and effectiveness of the podcasts (N=18)

Please rate the following statements using the scale 1=Very Strongly Disagree, 2=Strongly Disagree, 3=Disagree, 4=Neutral, 5=Agree, 6=Strongly Agree, 7=Very Strongly Agree:	Mean	Standard Deviation
Q8a. I found the podcasts useful for this subject.	6.17	0.36
Q8b. I found listening to the podcasts educational.	6.00	0.36
Q8c. I found the podcasts to be entertaining.	5.17	0.59
Q8g. I enjoyed the style and format of the podcasts.	5.28	0.68
Q8i. The topics selected were appropriate and useful.	5.56	0.45
Q8l. *Podcasting is not appropriate for this subject.*	2.24	1.04
Q8m. Listening to the podcasts helped clarify and/or enhance my understanding of the subject.	5.83	0.46
Q8n. I found the 3 to 5 minute podcasts to be of the right length.	5.44	0.56
Q8o. Listening to the podcasts made me feel less anxious about the subject.	5.17	0.68
Q8p. Listening to the podcasts helped alleviate my concerns about subject-related matters like textbooks and assessment.	5.72	0.46
Q8q. *I found the topics presented not appropriate to my needs.*	2.44	0.75
Q8r. *I felt that listening to the podcasts was not a productive use of my time.*	1.94	0.84
Q8s. I would recommend that other students undertaking this subject listen to the podcasts.	6.06	0.42

They largely saw listening to the podcasts as not only a worthwhile exercise, but also an enjoyable one, and would recommend the podcasts to other students studying the subject. The data also suggests that they found the length, format and style, as well as the topics chosen, to be suited to their needs and preferences.

Last but not least, the podcasting approach implemented by the authors appeared to successfully address the distance learners' anxiety and concerns about the subject.

Question 9 of the survey was open-ended item asking respondents what they learnt through listening to the podcasts, whether subject-related or otherwise. The results (incidence of themes) are reported on in Table: 5.

While no specific knowledge or skills were mentioned by the respondents, their responses provide insight into the perceived value of the podcasts in directly or indirectly helping them achieve the subject's intended learning goals and outcomes.

Table: 5
Summary of survey data for the open-ended question Q9: "What did you learn through listening to the podcasts, whether subject-related or otherwise?"

Category code	Category description	N	%
EXP	Clarification of expectations / alleviation of doubts, especially in relation to the assignments	7	53.85
DIR	Guidance and/or "progress checking" mechanism to help channel learning efforts in the right direction	5	38.46
REI	Reinforcement/backup of information covered in other learning materials through the provision of a different perspective and modality	4	30.77
OTH	Other	3	23.08
TIP	General hints/tips/pointers in relation to the subject	2	15.38

The issue that spoke the loudest in the responses to this question was the usefulness of the podcasts in helping the students clarify what was expected of them, and to help alleviate their concerns, particularly in relation to the subject's assessment. For example:

> ***"[The podcasts helped clarify] exact details about the assignments, [so that I could] focus my work on...[achieving]...exactly what the lecture[r] is expecting"***

> ***"Bridges the learning gap between our perceptions of what we read and what is actually required..."***

Another resounding issue in the responses was that the podcasts were useful in supplementing the other resources, such as the textbook, study guide and subject outline, by providing reinforcement and backup of, and a different perspective on, information and concepts covered in these materials.

While they were not intended to be core instructional materials in the sense of being a primary means for imparting content, the podcasts served as a valuable study tool by providing guidance and direction to students, helping them self-evaluate their progress and make more efficient use of their time:

> ***"Although I cant say the...[podcasts]...allowed me to gain...[knowledge]...on the subject it did back up what I had learnt in the text. Much like a phone call to the lecture[r] to see if I was progressing in the right direction."***

> ***"...[It was] just good to hear the information explained differently (spoken and by a different person than the textbook)"***

Table 6 encapsulates the themes/issues apparent in the responses to the final question of the survey, which sought to provide deeper and richer insight by allowing

the respondents freedom to expand on issues that they felt warranted further discussion, elaboration and/or explanation.

Table: 6
Summary of survey data for the open-ended question Q10:
"Do you have any other comments or suggestions you wish to make about this podcasting effort, or about podcasting in general?"

Category code	Category description	N	%
CON	Suggestions on content and design of the podcasts	5	38.46
OTS	Requests to see podcasting implemented in other subjects	5	38.46
BEN	Perceived benefits of listening to the podcasts	5	38.46
MED	Desire to see inclusion of other media forms, in particular video	3	23.08
SCH	Comments/suggestions on release schedule of the podcasts	2	15.38
BAN	Bandwidth considerations	2	15.38
OTH	Other	1	7.69

In general, responses to this question offered high praise on the podcasting effort, and expressed a desire to see similar initiatives introduced in other subjects offered by the university. Several students put forward suggestions on how the content and design of the podcasts could be modified to better suit their needs. A few of them lamented that the podcasts lacked depth of coverage in relation to topic-specific information, and one even wanted to see the on-campus lectures recorded and podcast:

> ***"[I would have liked to see]...[s]ome more topic specific information/discussion or clarification of subject areas, assignments etc...I understand...[the podcasts] couldn't give an advantage to those listening to them over others; but I found the areas covered by these podcasts a little generalised. [However they were] [s]till useful...[and] I see great potential for them in the future!"***

> ***"It would be of value recording raw au[d]io of lectures and providing these to students...[especially] distan[ce] ed. [s]tudents"***

While the provision of podcasts such as full-length lectures that contain substantial, detailed instructional content is not in line with the authors' original philosophy, these students' views certainly warrant further consideration. Other suggestions on possible applications/approaches to podcasting in ITC204/504 included using self-assessment quizzes or discussion/focus questions in conjunction with the podcasts to promote more active learning (cf. Gachuhi & Matiru, 1987):

> ***"I understand the podcasts can't include new content, but I feel the podcasts didn't sufficiently review course content. For example, a weekly podcast would be more effective if it ignited discussion or prompted thought on the text covered for that week."***

> ***"They could be used in conju[n]ction with questions, which could be sent p[ri]or to the production of the podcast."***

In other words, many of the suggestions for improvement and extended application could be linked back to the latter two of the three categories of audio productions identified by Laaser (1986), alluded to earlier in the present article (namely, "the didactic function or teaching objective"; and "the reciprocal relations to other media and to student activities"). Yet another recurrent suggestion was that the use of video be explored, through the use of videocasting or vodcasting. Gardner's multiple intelligences theory supports the use of audio to address one of many learning modes (Smith, 2002).

Although using video would be a departure from learning that "frees eyes and hands" (Clark & Walsh, 2004, p. 8), this feedback from the students reminds us that while auditory learners benefit from sound alone, others that are visual or multi-modal might benefit from audio combined with either still or moving/animated visuals. This having been said, recent research on learning styles (Coffield, Moseley, Hall & Ecclestone, 2004; Krätzig & Arbuthnott, 2006) reveals there may be little or no truth in the premise that matching instruction to an individual learner's sensory strengths is more effective than designing instruction that is content-appropriate.

A number of responses to Question 10 focused on the perceived benefits afforded by listening to the podcasts. Here, there was a reiteration of some of the themes and issues seen in the responses to the previous question (Table 5 above), including the usefulness of the podcasts as a medium for providing tips/hints and acting as a guide to help keep their study on track. In addition, respondents reacted very positively to being exposed to different perspectives on the subject content, including those of the author of their prescribed textbook:

> ***"...as a DE [distance education] student, it's nice to hear a tutor touch on subject matters. I was also pleasantly su[r]prised to hear [the textbook author]...[Hearing] comments from such an authoritative source was...uplifting."***
>
> ***"The podcast with [the textbook author] was insightful and great to listen [to] – good work!"***

Last but not least, a small number of respondents volunteered suggestions on the release schedule of the podcasts, and were in favour of seeing more frequent episodes. Two students alluded to concerns about bandwidth requirements, although both appeared to be of the opinion that in their current (short, 3 to 5 minute) form, the bandwidth demands of the podcasts were not prohibitive:

> ***"[I] would like to see length[ier] podcast[s]. Transcripts can be made available to dial up users [if file sizes become too large]."***
>
> ***"...[I] think 3-5MB is reasonable...but more than 5[MB] is not good for some countr[ies] especially [my country]...because the internet is very slow [here]..."***

CONCLUSION AND FUTURE WORK

The authors believe podcasting can form part of a practical solution to counteract the negative implications that result from distance students' physical separation from their lecturer, peers, and the university. Appropriately designed podcasts can play an assistive role in "re-integrating" (Keegan, 1996) the teacher-learner transaction in distance education. Anecdotal feedback from students as well as the more objective data obtained from the survey suggests that the authors' approach to podcasting was effective in reducing isolation-induced anxiety and promoting a sense of inclusivity and of belonging to a learning community for the distance education students.

The survey respondents saw the podcasts as being beneficial to the these affective aspects of their learning, as well as the cognitive aspects, by clarifying and enhancing their understanding of the subject material, providing backup/reinforcement of what they had learnt, as well as supplying guidance on, and a mechanism of self-evaluation of, their independent study efforts.

The authors are currently trialling the use of tools such as YackPack (2006), which allows the establishment of asynchronous audio-based discussion groups through a simple, web-based interface.

This will enable distance education students to respond to the instructor-disseminated podcasts, taking both teacher-learner and learner-learner interaction to the next level, and facilitating the formation of mentoring relationships.

In the next offering of the ITC204/504 subject, the students will also be empowered to create their own podcasts and enhanced podcasts (audio podcasts with synchronised images such as photos or slides – see Apple Computer, 2006b; Humble Daisy, 2005) to showcase their assignment work, as an alternative to face-to-face oral presentations traditionally done solely by on-campus students.

A collaborative blog will be used to facilitate the distribution of the presentations, as well as acting as a vehicle for self and peer evaluation, as per the alternative assessment model proposed by Lee, Lever and Eustace (forthcoming, 2007) and the technology model suggested by Lee (2006).

According to Delahoussaye and Zemke (2001, cited in Differding, n.d., sec. 2, para. 1) online education is "an isolating and lonely experience". However, as one distance education student who recently graduated from the authors' university aptly observed: "Studying via DE [distance education] can either be an isolating experience *or* a real online community connection." The authors believe that in conjunction with the appropriate strategies, podcasting can go a long way towards helping to build an inclusive learning community for all students, notwithstanding the previously seemingly impermeable barriers of time and distance.

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