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Podcasting: Does it enhance flexible delivery?

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Abstract

Podcasting occurs when audio content is made available for download to a subscriber's computer or automatically downloaded to a subscriber's computer for the subscriber to listen to at their convenience. This paper contains a report on podcasting used in two subjects offered by the School of Accounting; ACC100 Accounting 1 and ACC341 Accounting Theory. Also included in this paper is a literature review and discussion of the educational benefits provided by podcasting, an identification of the demand for podcasts, a description of the process of preparing the files, and reflections by the lecturers and students on the process and the results in order to attempt to answer the question—does it enhance flexible delivery?

Keywords: accounting education; podcasting; distance education

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Podcasting: Does it enhance flexible delivery?

1. Introduction

The authors' interest in podcasting was stimulated in 2005 by the ubiquity of the iPod and other MP3 players and newspaper reports (Cook, 2005) about their use in education. Podcasting occurs when digital audio files are made available for download to a subscriber's computer or automatically downloaded to a subscriber's computer or MP3 player for the subscriber to listen to at their convenience. The term podcasting is a misnomer in that it implies that iPod must be used to capture the material whereas any device capable of receiving MP3 files can be used. It has been suggested (Bull, 2005) that podcasting only occurs when the distribution of the files is automated through an RSS feed but the term podcasting has come to be used when the MP3 files are made available on the internet for download.

Podcasting has been happening for some time in education. Latham (2001), a former lecturer in the School of Accounting at Charles Sturt University (CSU), had recorded lectures in RealAudio format and had posted them on the Tax subject website for his students. That initiative had not been followed up within the School as at the time the level of staff knowledge and technology could not support a wider adoption. With the acceptance of the MP3 format across a number of different makes and models of audio recording and playback equipment there is now a technology that can support a wide use of podcasting in education and particularly in distance education.

Student interest in podcasting was gauged by reviewing the CSU on-line forum, 'Flexible Learning in an E Environment' available to all staff and students. Of the 59 postings to the forum in the 2006 calendar year, there were 25 postings that discussed the use of podcasting for distance education students. Five of these posts were from 3 lecturing staff, the remainder (20) were from students expressing an interest in having lectures recorded and made available to them. Students made such comments as:

> It would be an initiative that would really break down the DE barriers and provide enhanced learning opportunities for all. I am a very auditory learner as are many others and need to listen repeatedly to the material to learn it. (30/01/06)

> It would be good if CSU could show some leadership and innovation (being such a large distance education provider) and consider podcasting as source of communication to enrich the educational experience for students who are paying unprecedented fees to get a tertiary education. (31/01/06)
>
> This is the aspect of DE I find the toughest… not hearing the lecturer talk through examples or discussing topics that are not present on the slides. I would really like to see CSU push this particular use of technology. I am certain it would improve the experience of DE students. (01/03/06)

The awareness of these students of podcasting and the benefits they thought that it would bring them was a further impetus for the application of this teaching technology in the accounting subjects.

This paper contains a report on projects developing and using podcasts for two subjects offered by the School of Accounting; ACC100 Accounting 1 and ACC341 Accounting Theory. Section 2 of the paper is a review of the literature on podcasts and a discussion of some of the educational issues relating to podcasting, the methodology used in the podcasts and in data collection is contained in Section 3. The results of the project are outlined in Section 4, while Section 5 contains a discussion of the results in order to attempt to answer the question—does it enhance flexible delivery?

2. Literature Review

The literature review conducted by the authors found little written on the use of course websites, podcasts and their impact on student's perceptions and performance in accounting (James and Subramaniam, 2005). There is though extensive reporting on the existence of podcasts and their use in education in general (Flanagan and Calandra, 2005; Bull, 2005; Birkner, 2006; Agnvall, 2006; Fenech, 2006; Alexander, 2006). At this relatively early stage in the use of podcasts in education these reports provide descriptions of how podcasting works and give examples of the types of podcasts being prepared rather than attempt to identify the impact of podcasting on the learning that takes place.

One such evaluation was conducted at Duke University (Belanger, 2005) and focused not on podcasts but on iPods. Duke University issued the iPods to its first year students in August 2004. These iPods were used in a number of ways, including the delivery of digital audio content in the form of course learning materials such as lectures. Whether these lecture recordings improved students' performance remained unknown as measurement of the usefulness and educational effectiveness of providing recorded lectures to students was affected by the limitations of the Duke system for tracking student use of recorded lectures and problems with the recording quality. Students though did respond positively to being able to listen to the recorded lectures:

> I loved being able to listen to the lectures at my convenience, to be able to listen to difficult portions several times, and just hear the material again—while working out, or running other errands—and I think the value of listening to the lectures showed through with a high score on the first exam.
>
> (Belanger, 2005, p.7)

Listening to material has great benefits for those students who are poor readers. As Clark and Walsh (2004) suggest, listening is something we do automatically, people are hard wired with this skill. People have had to learn to read, i.e. to translate the symbols they see into words that they would normally hear. When they don't have to translate, i.e. when they are listening, it is much easier and more efficient for people to understand from many more words than can be understood from reading in the same time. Instead of having to read and translate each word from a page, listening to a voice allows the students more time to think about whole concepts (Bradey and Henderson, 1995).

Hearing the voice of the lecturer can also personalise the learning (Chan and Lee, 2005). Distance education students often feel disconnected from the university as they are not on campus and don't attend lectures. Having a more direct connection to the lecturer by listening to their voice may play a significant part in changing this feeling of disconnection to one of greater connection and this in turn may help improve learning.

Sound has also been identified as an ideal medium for students to remember general opinions, attitudes and arguments and it is these that the students in Accounting Theory need to remember and consider. When detail and facts need to be learnt

sound needs to be used in conjunction with other media (Chan and Lee, 2005) and this was taken into account in preparing the podcasts for the students in Accounting 1 where facts, detail and problem solving are an important part of the course.

Recorded material also gives greater control to the students as they can listen then pause and replay material to help them develop greater understanding (Laurillard, 1993; Belanger, 2005). Using MP3 files enables the students to listen to the material in a number of ways: they can play the material from the subject web site; they can download the files and play them on their computer, either Apple or IBM compatible; and they can copy the files to CD's and to their MP3 players and play them at any time. Students can listen to the material while travelling to work, working out at the gym or doing the housework. This makes these files an important tool in providing flexible learning materials to the distance education students. It is this flexibility in time, place, access and pace of study that is reflected in point one of CSU's description of flexible delivery.

Flexible delivery at Charles Sturt University has been identified as referring to:

- providing learning opportunities that are flexible in terms of time, place, access and pace of study and responsive to students' financial, geographic and employment circumstances;
- enabling students to study in the most effective manner including their own way of navigating through learning materials;
- enabling academic innovation in learning and teaching practice using an array of learning technologies;

(Tulloch *et al*., 2005, p.5)

The podcasting projects described in this research are ones of academic innovation as the academics involved used innovative learning and teaching practices for distance education accounting students in that they developed and provided MP3 audio files for student learning, thus meeting point 3 of the CSU description of flexible learning.

Podcasting will also enable students to select from a wider range of learning media so that students have a greater chance of being able to select a learning media that more appropriately matches the way they learn. Providing learning materials in a wider range of forms also helps to broaden the students understanding of the topics being studied (Gardner, 1999).

There has been extensive research (Dunn and Dunn, 2005; Honigsfeld and Dunn, 2003; Fine, 2003; Rambruth and McCormick, 2001; Marton and Saljo, 1997; Gee, 1990; Biggs, 1987) on learning style preferences of students using frames encompassing cognitive, affective and physiological/environmental dimensions. The general aim of learning style research has been to identify the preferred learning style or approach of students and then to identify and or provide instruction that matches that learning style. In the cognitive and affective domains the aim has sometimes been to provide instruction that attempts to move the learning a surface approach to a deep approach to learning (Biggs, 2003). The end result of all of these different ways of viewing student learning is to find ways which can be used to help students improve their learning.

Research in the physiological/environmental dimensions of learning style examined whether students had preferences for learning materials that used auditory, visual, tactual and kinaesthetic senses and whether this preference impacted upon their learning. Ramburuth and McCormick (2001) identified that Australian internal undergraduate students in Arts, Education and Science had a stronger preference for auditory learning than Asian students. The high dependence on auditory learning is contrary to the results found in secondary students (Dunn and Dunn, 2005) and may reflect a difference in the sample based perhaps on educational experiences or some other factor which has not been identified. Combining auditory, visual, tactual and/or kinaesthetic resources has not been identified as beneficial to all students. Dunn and Dunn (2005) suggest that students attempting to master new and complex material should initially do so through their own perceptual strength and that teachers should provide material which matched their students preferred sensory modes.

The distance education material students in ACC100 Accounting 1 and ACC341 Accounting Theory are required to master is complex and difficult and is provided in a visual textual form. It would therefore appear that by providing some of this material in an auditory form through MP3 files and podcasts that the lecturers are going some way to matching learning materials with student preferences and are achieving point 2 in the CSU description of flexible delivery.

3. Methodology

3.1 Project methodology

The initial part of the projects was to determine the technology and hardware to be used. The criteria were that the technology should be cheap, easy to use and save the files in MP3 format, as this was the format used by iPods and other MP3 players and could also be used on a range of personal computers. It became apparent that file size was going to be a limiting factor as in general 1 minute of voice recording equated to 1 megabyte of digital storage and considerable download time for those using dial up internet access. This fitted with the aim of the project, which was to not reproduce or record a complete lecture for distance education students, but to focus on a number of key concepts and areas traditionally found difficult by students that the students needed to understand and to present these concepts and problems in a very clear and accessible way. It was therefore decided to produce mini-lectures of between 5 and 7 minutes duration which would focus on areas of conceptual difficulty.

Web searches had resulted in identifying free download software, *Audacity*, which could be used to record the mini-voice lectures directly to the computer, edit the files and then convert them to MP3 format and this coincided with advice received from others in the university that Audacity was an easy to use piece of software suitable for recording and editing audio files and which had a capability to transfer the files into MP3 format. Cheap headset microphones were trialled but the poor sound quality resulted in the purchase of a MicFlex USB microphone.

Funding of $2000 was granted from the Commerce Faculty Scholarship in Teaching Fund for each of two projects: one using podcasts in Accounting I and the other using podcasts in Accounting Theory. The following section provides a description of these projects.

Accounting 1 project description

Accounting 1 is a first year subject usually undertaken in a student's first semester of study. It is compulsory for all students undertaking Bachelor of Business or Bachelor of Business Studies Degrees and is also undertaken by many other students from outside the business discipline. For most students this subject represents their first encounter with the 'language of accounting'. As a result many of them find a number

of the key concepts, crucial to obtaining a basic understanding of accounting, difficult to grasp in the time required. Students studying the subject by distance currently rely solely on written material. This consists of a subject outline providing a study schedule, details of texts and assignments and other administrative information; a study guide which guides the students through each topic in a plain English conversational style interspersed with activities and discussion questions that sought student interaction with their peers and the lecturer on the online subject forum. Students were also asked to purchase a text.

Podcasting in this subject was therefore being undertaken to:

- Help the distance education students achieve a deeper engagement with the subject by providing learning materials which rely on their listening skills as well as their reading skills.
- Help the distance education students develop a clearer understanding of the subject content particularly in areas which students find difficult to understand.
- Develop an understanding by the lecturers involved of the effectiveness of this method of subject delivery.
- Develop skills by the lecturers in the method of content delivery which may be later passed on to the other lecturers.

The podcasts were intended to be a supplement to rather than a substitute for the study guide, textbook and online forum. Nor did they replicate the content of a lecture given to internal students; an impossible task in any event given the average length of a podcast was seven minutes. Instead, a key concept within a topic that students had traditionally found difficult was focused on. Each podcast was designed to follow a similar pattern and begins with a brief review of the concept covered in the previous week. The nature of the material covered in the podcasts generally allowed a logical link to be made between the current material and the material covered previously. The topic was then discussed in greater detail with references made to key pages of the study guide and/or textbook thus linking the sound directly to other media to help reinforce the facts and techniques being learnt. Simple examples and analogies were then given to illustrate the concept before a final summary was made

Six topics that students had traditionally found difficult to grasp were selected for a tailored five to seven minute mini-lecture. In order these were:

- Cash versus accrual accounting
- Type of financial statements – revenue statement v statement of cash flows v balance sheet
- Interpreting financial statements
- Recording transactions – debits and credits
- Bank reconciliations
- Preparing the Statement of Cash Flows

There were some similarities between this project and the Accounting Theory project described in the next section.

Accounting Theory project description

Accounting Theory is a third year subject usually undertaken in a student's last semester of study. It is compulsory for all students undertaking Bachelor of Business (Accounting) Degree and introduces students to a number of concepts that question the infallibility of accounting and provides a range of different viewpoints on accounting that many students find difficult to comprehend. In general the aims of this project were the same as those listed for Accounting 1 above but the analysis reflects the discursive nature of the subject.

Again the podcasts were designed to supplement the material already provided to the students. The students had a text, a subject outline, a study guide and a booklet of supplemental readings. The study guide directed the students through each topic in a plain English conversational style interspersed with activities and discussion questions that sought student interaction with their peers and the lecturer on the online subject forum. It was decided to record the mini-lecture material in the form of an interview making the recordings of more interest and value to the students as the question and answer format could be used to better focus students' attention on the areas of conceptual difficulty. It was also hoped that by preparing the lectures in an interview format with a naïve student asking questions of an all knowing lecturer that it would provide a model to the students for thinking about the topics by asking themselves questions about the topics.

Key concepts or difficult areas in each of the eleven topics were selected for the podcasts. These key aspects were:

- ways of constructing and verifying theories;
- relationship of ethics to accounting theory development;
- accounting as socially constructed and socially constructing;
- reliability of measurement in accounting;
- theories of accounting regulation;
- advantages and disadvantages of normative accounting theories;
- implications of positive accounting theory;
- the power of accounting;
- implications of international accounting standardisation;
- theories underpinning social and environmental accounting;
- theories underpinning management accounting.

Team members' reflections on the process

The ability to edit and re-record lectures and the tendency to strive for perfection initially led to some frustration, but both teams resolved this by writing out the entire script of the lectures before delivering them. An additional driver for the Accounting Theory project team to fully script the lectures was the interview format being used. It was only by following a script that they felt that they could ensure that all the difficult concepts would be effectively covered.

This led to the greatest challenge, determining the content of the lectures. The limited duration for each lecture (5 to 7 minutes) was in constant tension with the need to clearly convey concepts that the students had traditionally found difficult. It was important to both teams that the script was written in a conversational style so that it did not come across to the students as a 'wooden' textbook style delivery. The process of converting lecture materials into a conversation also made it easier for one of the lecturers to articulate the concepts during a face to face class because he had already thought about how to articulate them while writing the script.

Whilst the writing of the scripts took several hours, the process was crucial in sharpening the focus of the lectures to ensure that the key points of each topic were

communicated. Indeed once the script was written it was a relatively straightforward process to record the lectures. Overall each lecture took approximately half a day to plan, record and deliver but as one lecturer commented that often this is done in conjunction with preparing for the face to face lecture and as a result the additional time was marginal.

One team member further commented on the positive impact of this project on his teaching face to face classes:

> Hearing my own recorded voice also makes me aware of the fact that speaking clearly and slowing down my pace is also something I need to work on, not just for the recorded voice lectures, but also my other classes. I feel that my lecture and tutorial performance has improved because I now take the time to ask myself some of the questions that the students may have when studying the material–and I then set about trying to answer these questions in a clear manner.

A large factor in all the teams' members' positive approach to the process was the view that the lectures were meeting the student needs—namely that they were enabling them to achieve a deeper engagement with and develop a clearer understanding of the difficult subject content.

3.2 Data collection

Two methods of data collection were used, initially students were asked to comment on the podcasts on the online subject forum. This was designed to enable the project teams to resolve any issues that may arise during the project. The more formal data collection process took the form of a questionnaire distributed with the feedback from the second assignment that students had to complete. Therefore the complete population of active students in each subject were asked to complete the questionnaire. A copy of the questionnaire is found in Appendix A.

Questions 1 to 7 were designed to gather information about the way in which the podcasts were or were not used. Question 8 was designed to have students self assess their preferred learning modality. There are limitations in getting students to self assess a learning modality as they may not self assess accurately and they may have

adapted their learning modalities for so long that they report on adapted preferences (Reid, 1987) consequently the results of this question need to be read with caution.

Question 9 was designed to get the student to assess how much the podcasts helped them with the subject and helped them to combat the isolation of the distance education student. Question 10 was designed to identify any sound quality issues.

Questions 11 and 12 were opportunities for students to comment on way in which the lectures could be improved and ways in which the lectures helped them over and above those items identified in question 9. The questionnaire was tested on academic staff before it was distributed to the students.

The completed questionnaires were coded and recorded and descriptive statistics calculated. The open ended questions were transcribed and reviewed to determine any common themes (Cresswell, 2002). These responses were then reanalysed by another researcher who seperately determined themes. These themes were then compared and no significant differences in themes were found.

4. Results

Students were asked to comment on the podcasts initially through the on-line subject forums so that the lecturers could make changes to the methods or format of the podcasts if problems were found. These initial student responses to the podcasts were very positive with examples shown below including original spelling:

> I downloaded the first podcast & i think it is brilliant! (ACC100 student forum posting)
>
> The podcasts are a great idea!! I listened to the first one and the theory behind the idea is great, it will really allow you to communicate the hard pionts to the group as a whole. (ACC100 student forum posting)
>
> It gives a human touch to a learning method that can often be isolatating. (ACC100 student forum posting)
>
> Many thanks to both you and Nick for putting together the voice lectures they are a real help! (ACC341 student forum posting)

> The MP3 format is excellent - as I feel as though I am attending a lecture. It helps guide the thought process and enables me to better understand the readings. (ACC341student forum posting)

Statistics showing the numbers of students who accessed the podcasts were not automatically collected by the On-line Subject Management System but the system could identify the number of hits to the podcast web pages. For ACC341 the average number of hits per MP3 file was 136 with 115 students completing the last assignment and therefore entitled to sit the exam. Students in ACC100 scored an average MP3 file hit rate of 98 with 110 completing the last assignment. While a number of students may have accessed these pages a number of times it still indicates a high level of interest in the MP3 files.

Summative quantitative and qualitative student feedback on the podcasts was collected through a questionnaire (Appendix A) sent to the students with the feedback on their last assignment for the semester. Descriptive statistics from this questionnaire are summarized below in Table A.

(Insert Table A here)

The response rate to the questionnaires was good with 24% of ACC100 students and 31% of ACC341 students responding. Non response bias was tested by comparing early responders with late responders on the questions 1, and 9b. There were no statistically significant differences between early and late responders as to whether or not they downloaded the podcasts (U=374.500, N_1=45, N_2=17,p=.843, two-tailed). Nor were there any statistically significant differences between early and late responders as to whether they considered that the podcasts helped them understand the topics (U=258.500, N_1=45, N_2=17,p=.390, two-tailed).

The high percentage of responders, 84% (ACC100) and 83% (ACC341) who downloaded the files is also supported by the high hit rate identified by the On-line Subject Management System indicating that the majority of students

accessed the MP3 files and knew how to download them, 88% (ACC100) and 94% (ACC341). That not all students who knew how to download the files did so reflects in part the time taken to download files for those who did not have broadband internet connections. Student comments included:

> I only have dial up internet and because it took so long to down load each MP3 (about 1 hour) I only got the first couple. I could not justify the time and money it cost to download them all. (ACC341 questionnaire response)

Many students, 61% (ACC100) and 92% (ACC341), even if they knew how to download and did not find the down load time an issue, still would have preferred to get the files on CD-ROM with the learning package at the start of the semester. This suggests that podcasting itself is not what students particularly want—they want someone to talk to them about the subject:

> Sometimes I can read something over and over and it still doesn't sink in. When you hear somebody say it, it seems to make more sense and you grasp the concept. (ACC341 questionnaire response)

The majority of students played the files on their computers, 69% (ACC100) and 61% (ACC341) and some played the files on their MP3 players, 23% (ACC100) and 19% (ACC341) while one student played the files on his mobile phone. Most of the listening occurred at home, 85% (ACC100) and 81% (ACC341) but it also occurred while students were doing a number of different activities:

> I can play it on the bus or in the car over & over till we hope it comes clear in the head. (ACC100 student forum posting)

> I was walking my dog tonight and listening to my iPod, to your pod casts. I was seeing if there was somthing I had missed. (ACC100 student forum posting)

One student in ACC341 even commented that she listened while doing the housework.

Learning by listening rather than reading was recognized by some students as one of their preferred learning strategies;

> Personally I recall information better hearing it than reading it so thanks for your extra effort. The more podcasts the better. (ACC100 student forum posting)

> Yes good to hear a voice, and I often find it easier to understand a concept when someone explains it to me rather than reading it. (ACC100 student forum posting)

> Good hearing it explained. I did most of my subjects on campus, full time attending face to face lectures. Found distance much more difficult. Voice lectures helped as easier to listen to someone explain a topic, rather than read it in a textbook. (ACC341 student questionnaire feedback)

Verbal learning was identified by 50% (ACC100) and 83% (ACC341) as a key learning mode and many, 65% (ACC100) and 67% (ACC341), identified visual learning as a key mode. Of these 27% (ACC100) and 55% (ACC341) used both visual and verbal modes of learning. These results therefore indicate that by providing material in a verbal form the researchers were matching the different learning modes of the students and thus creating greater flexibility in subject delivery.

The students considered that the audio material provided significantly helped them understand the topics covered in the material and engage with the subject matter. They also considered that it helped them realize the lecturers focus and prepare assignments.

Few students assesses themselves as tactile or kinaesthetic learners. This may be because they did not use these sensory learning modes or it may be that the learning materials have not been provided to match these modes so that these students have been unable to develop an understanding of their learning abilities using these modes.

Students, 73% (ACC100) and 72% (ACC341) made positive comments in the questionnaire in response to the question ‘which way do you think the voice lectures helped you the most’. The most common theme identified from both

groups was that the voice lectures complimented the other materials and made them easier to understand.

> Understanding the key areas of a topic, especially in regard to 'Topic 2 – Ratios'. They made some topics clearer to me as I would listen after reading through the text first. (ACC100 student written questionnaire response)

> Explanation of certain theories, e.g. induction and deduction, historical cost method, normative and positive theories. Felt more confident with the material can also clarify misinterpretation of reading materials, study and subject guides,etc. (ACC341 student written questionnaire response)

Being able to listen rather than read was also identified as a strong theme.

> I learn better from listening. (ACC100 student written questionnaire response)

> Added to the learning process by giving verbal delivery as DE is generally seen as self taught, i.e. little interaction with the lecturers. (ACC341 student written questionnaire response)

> Sometimes I can read something over and over and it still doesn't sink in. when you hear somebody say it, it seems to make more sense and you grasp the concept. (ACC341 student written questionnaire response)

These comments reinforce the suggestion made earlier that podcasting itself is not what students particularly want—they want someone to talk to them about the subject. Hearing someone talk to them also helped them feel less isolated:

> The voice lectures enable me to put a voice to my learning and made me feel not as isolated. It felt like he was speaking to a class, like I had recorded the lecture and was at home taking notes from my recording. It was a great help. (ACC100 student written questionnaire response)

> They gave a more personal interaction for correspondent students. This was useful because it was a point of reference straight from the lecturer. (ACC341 student written questionnaire response)

These comments again show that the podcasts have helped the students match the way they learn with the material that they are learning from, i.e. that podcasts have increased the flexibility of delivery in these subjects to the benefit of the students.

Students in both subjects made suggestions about improving the podcasts, the most common being to increase the length of the podcasts and to make the MP3 files available on CD-ROM at the start of the semester. They also indicated that the lectures could have been better related to the power point lecture files which were also made available to students.

It is difficult to validly compare the responses from students in ACC100 with students in ACC341 as the student groups are very different. Most of the students in ACC100 are not accounting majors, they are doing the subject as a core requirement in a broader business degree or will go on to other business specialisations whereas the students in ACC341 are all accounting majors. ACC100 students are at the start of their degree program while ACC341 students are generally in the last year of their program, ACC100 students generally would have had little experience with distance education while ACC341 students are likely to have completed a number if not all subjects by distance education in the past. The student groups are also likely to differ greatly in work, life and learning expereince as first year students will have had much less expereince than final year distance education students who are likely to have completed their first year 5 years ago. Therefore any differences identified are likely to reflect many of the unknown variables which affect students in their move from their first year to their last year of study in the degree program.

Given that the differences in student experience may be large it is interesting to note that there are many similarities in student responses between the groups—the major one being the positive response to the digital audio files provided.

5. Discussion and conclusion

All the student feedback for both projects has been positive, though there were some issues with the delivery; the students see the podcasts as a valuable resource providing them with an alternative source that can help them understand the areas covered. An important distinction identified in the analysis of the data is that it was the digital audio files which were what the students wanted, the delivery in the form of a podcast was not the preferred method as more that half the respondents in both groups preferred to receive the audio files in the form of a CD-ROM at the start of the year.

It is difficult to quantify the effectiveness of the audio material in helping the students to perform better in the subject because of the multiplicity of uncontrollable variables including such external factors as work and home pressures that impact on the students' performances in the assessments. The value that the students see in the podcasts can therefore be the only measure that we have at this stage of the usefulness of the podcasts. This is in some ways a valid measure as a positive reaction to the learning environment is more likely to generate more effective learning.

As a result of the feedback from students they will be provided with CD-ROMS at the start of the semester which include the files which were originally podcast. Podcasting will only be used to cover topical issues that arise during the semester. What was identified from the feedback from these projects was the importance of providing verbal material to distance education students so that these students could match their preferred learning modes with the material available and with the content of the subjects being taught. Questions are also raised for the longer term about the need for everyone to read when everything that is currently written text based could be provided by voice, either computer generated or human.

That not many students identified tactile or kinaesthetic modes raised quesstions about student ability to use these mode and the need to provide materials in these modes for accounting students. This will be a focus of further investigation by the researchers.

The feedback on these projects clearly indicates that the use of podcasting has enhanced flexible delivery of subject matter to the students. The lecturers involved

have been able to develop some innovations that have improved their flexibility as teachers and given them opportunities to further refine and reflect on their teaching practice.

Appendix A
Mini voice lecture/Pod cast questionnaire

Please circle the most appropriate responses; more than one response may be appropriate for some questions:

1. Did you down load the pod casts/voice lectures?
   - A Yes
   - B No
   - C Don't understand the question

2. Do you know how to down load the lectures?
   - A Yes
   - B No

3. Do you think that it took too long to download the lectures?
   - A Yes
   - B No

4. What do you play the lectures on:
   - A Downloaded to a Computer
   - B MP3 Player
   - C computer linked to the New Resources web page for the subject
   - D Other, please provide a brief description……
     ……

5. Where/when do you listen to the lectures?
   - A At home
   - B At work
   - C While travelling
   - D While exercising
   - E Other, please provide a brief description……

     ……

6. How often do you listen to each lecture?
   - A Once
   - B 2-3 times
   - C More than 3 times

7. Would you prefer to get all of these mini voice lectures at the start of the semester on a CD?
   - A Yes
   - B No

Please complete the questions on the other side of the page

8. What would best describe the type of learner you are?
   - A Visual, i.e. reading, looking at pictures
   - B Verbal, i.e. listening, discussing, explaining
   - C Tactile, i.e. touching the material to be learnt,
   - D Kinaesthetic, i.e. whole body involvement with the material to be learnt
   - E Combination, please explain e.g. visual and tactile……
     ……..

The scale of 1 to 5 for the items below ranges from 1 being **none** to 5 being **great** or **very good**. Please insert **X** in the appropriate box.

	1	2	3	4	5
9. Did you find that the mini voice lectures helped you:					
A Preparing your assignments?					
B Understanding each of the topics?					
C Engage with the subject matter?					
D Feel more a part of the Charles Sturt University?					
E Realise what the lecturer was trying to get you to focus on?					
10. How did you find					
A The quality of the sound of the lectures?					
B The clarity of the voice of the lecturers?					

11. Indicate a way in which you think the provision of voice lectures could be improved.

12. Indicate what you think was the way which the voice lectures helped you the most.

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Table A

Questionnaire result summary

		ACC100		**ACC341**	
Number of students sent questionnaire		110		115	
		No	**%**	**No**	**%**
Response rate		**26**	**24**	**36**	**31**
Downloaded podcasts		22	84	30	83
Knowledgeable about downloading		23	88	34	94
Too long to download		2	8	8	22
Played on:	Computer	18	69	22	61
	MP3 player	6	23	7	19
	On subject website	6	23	7	19
	Other	0	0	3	8
Location of listening:	Home	22	85	29	81
	Work	4	15	5	14
	Travelling	3	12	7	19
	Exercising	2	8	1	3
	Other	1	4	3	8
How often played:	Once	6	23	6	17
	2-3 times	14	54	14	39
	> 3 times	4	15	11	31
Prefer to get files on CD		16	61	33	92
Type of learner:	Visual	17	65	24	67
	Verbal	13	50	30	83
	Tactile	0	0	3	8
	Kinaesthetic	3	12	2	6
	Combination	7	27	20	55
The below listed results are means on a 5 point scale with 1 being **none** and 5 being **great** or **very good**					
Helped in : Preparing assignments		3.30		3.4	
Understanding topics		3.92		4.06	
Engage with subject matter		3.77		4.03	
Feel a part of the university		3.5		3.5	
Realise the lecturers' focus		4.23		3.8	
The clarity of the sound of lectures		4.04		4.4	
The clarity of the voice of the lecturer		4.01		4.4	