# Tuning into podcasts: Collaborative research into the value-adding nature of podcasts in teacher education

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## Abstract

Digital pedagogy has become an increasingly viable, popular and effective component of higher education teaching and learning at Edith Cowan University and elsewhere. Components of digital pedagogy are diverse with new examples, such as podcasts, regularly being created, released for use and adopted in educational, recreational and business contexts. Consequently, university students use much of this technology both in their employment and recreational lives. This study explored processes of using and developing the students' existing technological skills within their university studies.

This paper documents the processes and findings of a collaborative research project that was implemented across six units of study during two semesters in an undergraduate teacher education course. During this period, podcasts were produced and broadcast to purposely increase student reflection and involvement in their own learning processes. These podcasts included question and answer sessions, teacher-student and student-student conversations, lecture presentations, summaries and reviews. Students were provided with opportunities to contribute to and nominate the content of these podcasts. Data were gathered and analysed from both the students' and the teachers' perspective about the perceived effectiveness of podcasts. Findings from this data were considered especially in terms of the value-adding nature of podcasts in undergraduate courses to better engage students. Finally, the research study's results will be compared with findings from other recent studies using podcasts for educational purposes.

## Introduction

Educators are often quick to embrace new technologies in an attempt to motivate students and improve opportunities for learning. University students, especially those entering directly from high school, are often early adopters of technology, with many arriving at lectures and tutorials in a 'wired' state, with an MP3 player, of which the ipod is one, clipped to an arm or belt (Chan, Lee, & McLoughlin, 2006; DeBell & Chapman, 2006; Maag, 2006). The researchers wondered whether this perceived interest in using this type of technology could be harnessed for more than listening to 'head thumping, heavy metal'. Perhaps the dulcet tones of a lecturer waxing lyrical about educational philosophy or, better still, the thoughts of a fellow student distributed via the web to MP3 players would resonate with students and improve learning. Hence the following research was born – out of a desire to improve learning outcomes, a desire to try something new – and the chance to play with an iPod!

Initial discussions among the researchers indicated that each researcher had different ideas of what a podcast was and how the technology might be used to support and enhance the learning of our students. The range of views can be plotted on a continuum with simply recording a lecture at one end to student-generated podcasts at the other. This continuum represented a change in the locus of control of the content. It was decided to try variations within these parameters and gauge student reactions via a survey and, later, interviews and focus groups. As the researchers were also participants in the research, phase two of the research will involve the lecturers being interviewed to elicit their own beliefs about the value, or lack thereof, of podcasting as a support for learning.

## *Background*

Podcasting is still in its infancy in educational contexts, however, there is clear evidence that this technology is being embraced in a variety of education settings (Cebeci & Tekdal, 2006; Chan et al., 2006; Leaver, 2006; Read, 2005b) as well as being questioned (Atkinson, 2007). A brief summary of some of the podcast related literature is provided as background to this study and the thinking behind it.

Podcasting is a way of accessing and distributing audio files over the internet via a method of online subscription or "syndication feeds". Most podcasts combine audio technology, used to create sound and voice files, with web-based broadcasting technology whereas the production and dissemination of video files is commonly referred to as vodcasting.

Schools have already identified that iPods are a technology that appeals to young people (Australian Associated Press, 2006). One school library, for example, produced podcasts in order to promote reading with the podcasts including comments from both librarians and students (Balas, 2005). In Tasmania a school has been selected by an 'elearning' company 'Etech' to work with other schools internationally to trial incorporating the iPod into part of the learning platform in schools (Australian Associated Press, 2006). Primary school children in Perth are also broadcasting their podcasts worldwide with their program called "Podkids Australia" (Fuller, 2007).With this infiltration of podcasting and iPods into the Australian school system, a conflict of opinion is emerging, ranging from the desire to ban them totally to making use of them as a valuable learning tool. Also, iPods are currently being used in foreign language lessons, sport and to record life histories (Lallo, 2007).

Universities are using podcasts as part of their teaching and learning programs (Kaplan-Leiserson, 2005). This has been a natural progression for universities who were already creating audio files for their students. Already lecturers are finding that podcasts may be used in a more versatile manner than simply recording lecture content. Concerns have been raised that students might stop turning up to lectures if they can simply download the content. There is an argument, however, that there is nothing quite like 'being there'. Cohen (2005) asserts that students are still turning up to the lectures using the podcast as a supplement to lectures rather than replacing them. With institutions such as Duke University still allocating 15% of student marks to attendance, podcasts are not necessarily intended to replace on-campus teaching and learning.

Other universities have created learning opportunities that are more active experiences (Read, 2005a). Students in the higher education setting can also be the voice in the podcasts and can use this technology to give peer feedback in student presentations (Kaplan-Leiserson, 2005). At Drexal University, podcasts are used to encourage creativity. For example, students have interviewed well known educators and used these as the basis of the podcasts. In this way students are being encouraged to be active participants in their learning (Read, 2005a).

One innovative way to use podcast audio files is to provide motivational encouragement which can be far more successful in the spoken rather than the written word. At the beginning of the course University of Illinois professor, Michael Cheney, welcomed his online students to class via podcast (Cheney, 2005). Alternatively, Psychology professor, Noland White, has found a new way to free up hours spent in the office: a podcast of the week's most asked questions (Bluestein, 2006). Other university lecturers are asking their students to complete their course assignments by using or creating podcasts (Leaver, 2006; Pownell, 2006; Read, 2005b).

Space does not permit in this paper for further discussion. However, suffice to say that just a cursory glance at the literature indicates that the potential for iPods is far ranging. What remains to be questioned is whether the potential will be realised. With this information in mind, and a preliminary review of the literature, the researchers involved in this study gathered together to design a research framework that would further extend our understanding of how educators and students are using podcasts to enhance their learning.

## *Research framework*

Teachers often embrace the ‘new’ without thoroughly considering the impact of the ‘new’ approach, or technology in this case. As part of this project a group of lecturers from various learning areas were keen to try the ‘new’, while still remaining circumspect as to the benefits in terms of the learning outcomes. Our exploratory research framework was informed by survey data and, later, interview data which was then deemed appropriate to inform the future direction of the research. As the research progressed, our understanding of the process of podcasting developed as did our conversations about our own epistemological beliefs and how these impacted on our use of podcasting technology.

To ensure rigour and a more comprehensive understanding of the phenomena, it was decided to consider three separate cases; a first year education studies/educational psychology unit, a first year ICT unit and a second year mathematics education unit. The use of podcasting varied across these three cases. A survey instrument was used across all cases with the aim of collecting some basic quantitative data. This data was then combined with some “richer” qualitative data which allowed us to construct a more complete picture of the value-adding nature of podcasts in education. This design enabled us to gain a better understanding of the phenomena from both the students’ and the lecturers’ points of view. Miles and Huberman (1994) noted that research findings become more meaningful and the validity of the research is

enhanced when multiple cases are used. The use of several cases allowed for differing approaches to podcasting to be tried, examined and evaluated.

As the research progressed, it became apparent that the study needed to be extended. A second and a possible third phase will need to be added to the research to further explore the issues that were raised as a result of our literature review, early feedback from the students and our own discussions. Phases two and three will be the subject of a later report. For the purposes of the extended study, the researchers plan to employ a discourse analysis method in order to delve far deeper into the data. This will assist with the triangulation of the data gathered to date.

## *The study*

This collaborative research study explored the processes of using and developing pre-service teachers' existing technological skills within their university studies. It involved university lecturers and students creating, broadcasting and evaluating podcasts across varied units of study. Rather than simply recording lecture content to broadcast to students, the process was made interactive. We felt that this would encourage more learning and reflection to take place than simply podcasting lecture content. As most lectures are interactive and involve much more than a talking head we felt a great deal of the "being there" would be lost on audio – much like listening to a comedian performing a live show.

To guide our research in this project, the following questions were used:

- Do our students know/understand what a podcast is?
- Is there a general interest in podcasting content?
- Does the flexibility of podcasting add to student motivation to actively reflect on lecture content?
- Are there notable differences in student behaviours in different year levels?
- Did our students access and listen to podcasts? How did they access them?
- How did our students' perceive the value of podcasts for their learning?

So, in the first semester, students used reflective processes to review some of the weekly lectures in their tutorials, and passed on suitable questions to an Interview Panel of up to 5 volunteer students. These students compiled significant questions and submitted them to the lecturer. An interview between the lecturer and the panel was then recorded and podcast to the students through BlackBoard (online courseware). These podcasts included question and answer sessions, teacher-student and student-student conversations, parts of lecture presentations, lecture summaries and reviews.

Due to the trial nature of this study, as well as the unknown factor of how adept the students and teachers in the study were at using podcasts, the use of podcasts in these units was not compulsory. Rather, they offered an additional or alternative resource to assist students to revise unit material, to understand assignment and examination requirements, to ask questions about the unit content and to access lecture material in an audio format after the lecture event.

Once the podcasts were created and broadcast to a number of students across different units of study, questionnaires were distributed to students at the end of the second

semester in 2006 and, from this questionnaire, data were gathered from 178 first and second year undergraduate students. A small group of students were also interviewed via email about their experiences of using podcasts. Lecturers were also requested to record their use and ideas about podcasting in their own units of study.

The data were gathered primarily to explore the students' and teachers' perceptions of the nature of podcasts and how they were perceived as helpful or otherwise for their learning. The data presented in this paper have been drawn from open and closed questionnaire items, some interview data and lecturer reflections to determine perceptions of podcasting technology.

Due to some difficulty in gaining access to iPod technology and the time required to update our own skills and knowledge as researchers, the pilot study was completed across one semester with a repeat study planned for 2007. This phase of the project focuses upon repeating some of the strategies used in 2006 to enable comparative analysis of data and to effectively evaluate the success of the project through further collection of data. Data is currently being gathered and analysed from both the students' and the teachers' perspective about the perceived effectiveness of podcasts. As a result, the findings from this data will be considered, especially in terms of the value-adding nature of podcasts in undergraduate courses to better engage students.

## *Discussion and results*

The results from the data gathered during the first phase of this study provided us with information about both the lecturers' and the students' understanding of podcasts and the use of podcasting equipment. Although most of the data gathering strategies that took place during the project were focused on the students' perceptions of podcasts and their use patterns of such technology, the students' lecturers were also asked to reflect on their beliefs.

The five academic staff involved in this project documented their beliefs about the use of podcasting technology in education and they also reflected on how they used such technology in their own teaching in higher education contexts. An analysis of their comments revealed their purposes for using podcasts in their teaching were primarily related to intentions about providing students choice, utilising effective means of communication, providing interesting and educational resources, and encouraging student independence, as is evident from the following sample of their comments:

> *Our intention with this project was to find a way to make use of this technology that was interesting and educational. I believe that it needed to be more than just a matter of creating audio files of lectures for students.*
>
> *Often students asked important questions on an individual basis that other students would benefit from being part of, so we invited their questions and podcast both their questions and our responses on the Web. This became particularly pertinent immediately before assignment and exam time, when students were clarifying their understandings and reviewing the content of the unit.*
>
> *As a university teacher who uses podcasts for teaching and learning purposes, I find them to be particularly useful for providing an extra avenue to access and interpret content material. Because podcasting technology utilises technology*

*that many of our students are familiar with, I believe that podcasting is a useful way to "reach" our students.*

*I do not believe that they [podcasts] should be used alone - rather, they should be used in conjunction with other online, face-to-face and print-based learning and teaching materials.*

*One way to assist students to become independent learners and be proactive in their learning is to make information about teaching processes and curriculum content accessible in a time and space independent way and provide as many options as possible.*

*Students are given ample choice to use the information provided in the way they see fit. With this right to access lectures face-to-face, in print, through audio in combination or separately, there is an obligation to access the material in a way that is conducive to maximum learning..*

Like the academic staff involved in the project, the students' understanding of podcasts was varied and developing along with the technology itself. So, as well as investigating how students used and valued podcasts, our research firstly set about to determine students' familiarity with podcasts, their experience in listening to podcasts and their preferred method of accessing podcasts. The questionnaire data revealed that 81% of the 178 students (including 98% of first year students and 66% of second year students) involved in the project knew what a podcast was and 49% of students (including 70% of first year students and 30% of second year students) had listened to podcasts before.

Data from the questionnaires showed that, despite the popularity of mobile players such as iPods and MP3 players, 81% of students in the study reported using computers as one of the methods used to listen to podcasts and more than half of the students (53%) used their computers as the only method (Figure 1). Almost half of the students (48%) used iTunes to listen to podcasts on their computers whereas 8% used another software program. These results mirror those found by Maag (2006) who investigated the podcast listening habits of a group of undergraduate and postgraduate healthcare students. Maag found that more than half (55%) of the participants in her study reported using their computer as the primary means of accessing and listening to podcasts. So, although mobile players are very popular with today's students, this research shows that most students use computers to listen to podcasts. When the participants in the study were asked "Do you listen to podcasts more than once?" half of them reported that they did not, one third responded "sometimes", 8% responded "yes" and a further 8% indicated that they were unsure.

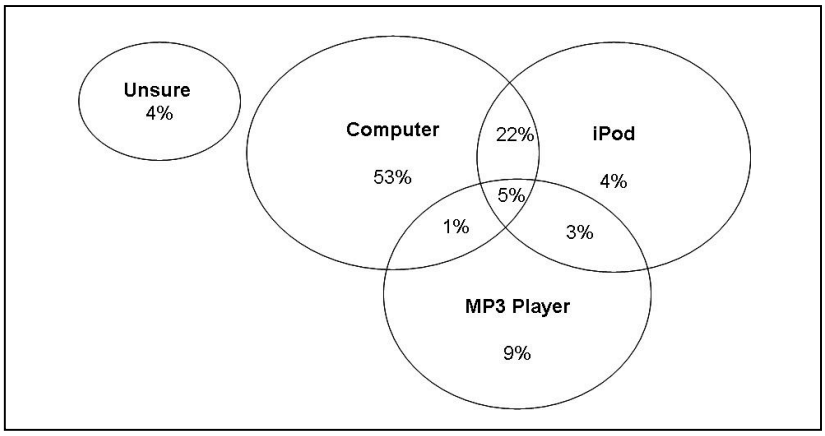



Figure 1: Method of Listening to Podcasts

Overall, these results, which related to the students' familiarity with podcasts and podcasting equipment, indicate that students are relatively familiar with the concept of podcasting, are reasonably skilled in using and accessing podcasts, and have access to a number of software and hardware alternatives for listening to podcasts.

Students were asked to evaluate the value of podcasts for their learning in general as well as for how valuable they considered podcasts to be for each unit of study which used podcasts. When the participants in the study were asked "In general, how valuable do you find listening to podcasts for your learning?" and "For this unit, how valuable do you find listening to sound files or podcasts for your learning?" their responses indicated that they found the podcasts valuable but the unit-specific podcasts were perceived as being particularly valuable for their learning (Figures 2 and 3).

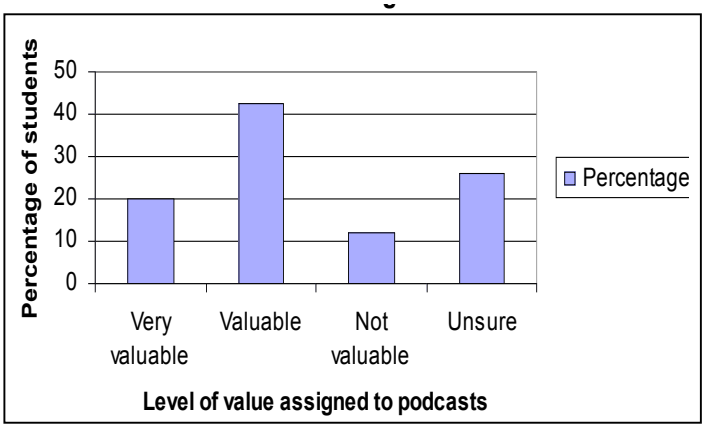



Figure 2: Perceived Value of Podcasts for Learning (in General)

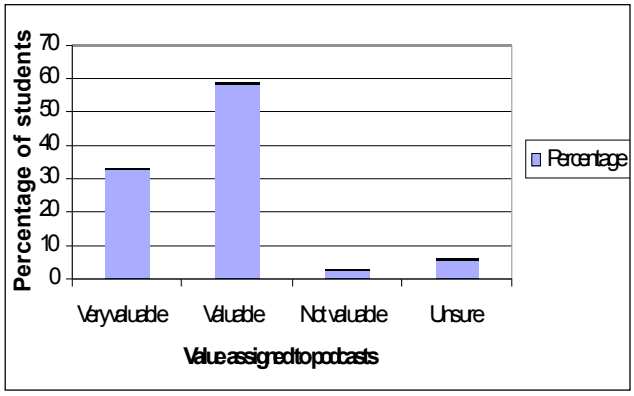



Figure 3: Perceived Value of Podcasts for Learning (Unit-Specific)

When asked if they would recommend listening to podcasts to other students, 16% of the participants said "Definitely" and 42% of participants said "Possibly". A further 11% said that they would not recommend podcasts to other students and 31% of participants indicated that they were unsure. The first year students appeared to be more likely to want to recommend podcasts to other learners.

As well as the questionnaire items that were reported above, the students' responses to the open-ended questions on the questionnaire also offered interesting data about how they perceived the use and value of podcasts. There were four major themes that emerged from the comments offered by the study's participants about the use of podcasts for learning: (1) the possible use of podcasts; (2) value of podcasts for reflection and revision; (3) the flexibility associated with using podcasts; and (4) comments about podcasts in relation to attendance at lectures. For example, although there were some students who did not know what podcasts were, or who had never listened to a podcast, even these students could see the value of them, as indicated by the following comments:

*Although I have circled that I didn't use any podcasts provided for this unit, I can see that they could be useful.*

*I would of [sic] used them if I knew about them.*

*Have not had a chance to explore them yet, but am keen to.*

*If I understood podcasts I would use them and recommend them to peers.*

*Although I didn't listen to any podcasts this semester, I certainly will be next semester.*

*I'm going to listen to them next semester.*

*From what I hear, it sounds like a useful technology.*

*I don't use them, mostly because I forgot they were there and I'm not sure how to use them. I would like to though.*

*Even though I don't listen to them, I think they can be beneficial.*

*I have not listened to them yet! I think it's a very good idea 'cos I learn better through sound.*

Without doubt, one of the most significant benefits that students noted about using podcasts was the ability to revise unit material in their own time at their own pace.

However, although the researchers' intentions in this study were to enable students to have opportunities for reflection, the students largely viewed podcasts as being useful for revision rather than reflection. The following comments reflect the students' perceptions of the value of podcasts:

*Podcasts are good to recap.*

*I only used the podcast once, but having them available meant I was able to get clarification on any issues that were arising throughout the assignment*

*I think the lecture podcasts are quite helpful as even if you go to the lecture then you can go back over and listen to anything you missed or write any extra notes.*

*I think it's a great idea you had podcasts of previous students for the assignment.*

*Podcasts are useful tools for refreshing what you have learnt to consolidate your learning.*

*Good to be able to relisten to lectures.*

*Great for revising.*

*I find it valuable to listen to podcasts of lectures as it is difficult to absorb all that is said in a lecture.*

*I use podcasts for exam revision – it's always helpful.*

As well as recognising the benefits of podcasts for reflection and revision, the students also noted flexibility as an advantage of using podcasts for teaching and learning purposes

*With hideous time issues, I can download the podcast and listen to it in my car on the way to work, or when I was off uni with the flu, I listened to lectures and podcasts in bed.*

*I think it's great for those who have children as it's hard for them to attend all lectures. However, at times, it is frustrating when people are lazy and do not come to lectures because they can listen to them online.*

*Being a full time student and mum of three, podcasts have been extremely beneficial for times I have been unable to attend lectures due to priorities of children.*

Although it was not a major theme to emerge from the students' comments about podcasts, some students' comments linked podcasts to attendance issues. Although the podcasts accessed, created and/or broadcast during the study did not only include lecture material, the students' comments which related to attendance tended to mention attendance. These comments included references to how podcasts could be used by students who could not attend lectures regularly. However, many of these comments were coloured by either a mixed or a disapproving attitude to this use of podcasts which may indicate that lecture podcasts were not necessarily seen as a valid learning alternative by these students:

*I think podcasts are great for those who have children or if you have accidentally slept in. However, it can make it too easy for those who are lazy.*

*Good as a backup to the lecture but not good as a replacement for actually attending and participating.*

When asked about how podcasts could be used in the future in the course, students offered a range of suggestions. As well as including the types of podcasts they had recently accessed specifically for their units of study, they also included other suggestions for how podcasts could be integrated into future units. Their ideas about how podcasts could be used in the future include the following suggestions:

> Lectures; assignment advice; interviews with students; FAQs; instructions on how to make websites; tips and hints for completing the unit; ideas from previous students; articles and readings; speeches; instructions for software use; important tutes; linked ideas for further reading; guest lectures; demonstrations; explanations of difficult maths problems; everything!

So, in relation to the actual research questions which drove the design and implementation of this study, the results of this study provided an indication of the students' understanding and use of podcasts based on a limited sample. Further, the research provided us with some insights about the students' understanding of the value-adding nature of podcasts in relation to learning. Most of the students in both the first and second year of the course did understand the nature of podcasts and were interested in them. In fact, even the students who had not yet accessed or listened to podcasts were interesting in using them in the future. Although the flexibility of podcasting was attractive to students, their positive attitude to the value of podcasts was viewed as being largely related to their use in terms of revision rather than reflection. In general, the students in our sample primarily accessed and listened to podcasts on their computers with some also using mobile players. There appeared to be little difference between the different year levels except for the fact that the first year students taking part in the research were, at the time of data collection, enrolled in an ICT-related unit during the period of this study which may have influenced the ease with which they adapted to podcasting technology. Overall, the participants in the study (both teachers and students) perceived podcasts as being useful for learning.

## *Implications*

An analysis of the data gathered from this study so far indicates that podcasts are seen as being useful technological tools to enhance students' learning at the higher education level in the three cases focused upon in this paper. Both the lecturers and the students involved in each case perceived podcasts to be useful in general. However, the students in each case demonstrated a heightened impression of the effectiveness of podcasts if they were designed to specifically suit their unit of study. For example, although students found podcasts about mathematics education topics useful to listen to for their own development as pre-service teachers, they found podcasts which were created specifically for their current unit of study to be even more relevant and valuable. Additionally, many of the students in the study perceived podcasts as being more valuable for revision purposes than their lecturers, who mainly focused more on the use of podcasts for reflection purposes.

This tendency may be indicative of diverging beliefs about teaching and learning, where some students, especially in the early phases of university education, may hold a view of teaching and learning processes that are based on a transmission model of education, rather than a constructivist model that would require deep reflection on the

part of students. Maybe students in the latter years of the course may begin to appreciate the use of podcasts for reflection as their educational beliefs become more complex. Nevertheless, a substantial number of students indicated great interest in the idea of using podcasts and communicated their intentions to do so when enrolled in future units of study

In terms of patterns of podcast use, the findings from this study correlate with those of other early studies in the field which have investigated the methods used to access podcasts. This study suggests that, despite the availability of various types of mobile playing devices (such as MP3 players and iPods), most students listen to podcasts using a desktop or laptop computer. Therefore, students who do not own one of these mobile players are not disadvantaged when it comes to listening to podcasts.

Although the issue of how the use of podcasts could impact on student attendance at lectures and tutorials was not a goal of this study, many of the students who participated in the study indicated that having podcast material available would provide them with the motivation to revise the material in audio format if they missed a lecture. However, there was not a strong indication from an analysis of the data gathered during this study that having online access to podcasts would necessarily impact negatively on student attendance at on-campus classes and lectures. Maag's results in this area are similar: "And, much to a critic's chagrin, the majority of the students reported the availability of the podcasts had no significant effect on class attendance" (2006, p. 490).

Lastly, like other studies that have begun preliminary investigations into student perceptions of the value of podcasts, the findings from this study correlate with those of other recent similar studies. For example, Maag (2006, p. 487) reports that 32.4% of students in her study selected the "very valuable" option when asked "How valuable did you find the podcast lectures posted on the instructor's website?", 14.7% replied "somewhat valuable," while 52.9% responded "not accessing" the podcast lectures. Similarly, like the results of this study, Maag's (2006, p. 487) results encouraged the lecturers with continuing to use podcasts in their teaching: "Overall, student satisfaction was very favourable and qualitative comments at the end of the course encouraged the instructor to use podcast technology during the subsequent semesters." To compare with the students' perceptions about the value of podcasts, our small study also indicates that the lecturers involved in this study held similarly positive impressions about the use of podcasts in association with student learning. It appears that students really are tuning in to podcasts to assist their university studies, as are their lecturers.

## *Conclusion*

Specifically, this research has attempted to use podcasts in a higher education context beyond the "talking head". The purpose of the study was not just to provide audio recordings of on-campus lecture presentations. Instead, the researchers involved in the project attempted to explore ways in which university students and teachers could work together to create audio resources that would enhance student learning and encourage student reflection about their learning.

In more general terms, this study aimed to contribute to the new branch of research which focuses on the use of podcasting technologies in education. Although some studies about podcasting are beginning to emerge (Cebeci & Tekdal, 2006; Chan et al., 2006; Leaver, 2006; Weiss, 2007), more are required to evaluate the overall value of using podcasts to enhance students' learning in university contexts.

In conclusion, our preliminary research into the perceived value of podcasts for university learning and teaching has left us with just as many questions as it has offered answers:

- How can podcasts be effectively integrated into university courses of study to enhance student learning?
- What are the qualities of a "good" podcast?
- How can university educators design innovative ways in which to incorporate the use, access and creation of podcasts into student assessment tasks?
- Can university students be expected to be involved in creating, using or accessing podcasts if the task is not allocated assessment marks?
- How can university educators and university students extend the traditional use of audio files (i.e., listening to recordings of lectures) into their everyday teaching and learning processes?

These and other questions that we haven't yet considered will surely be answered by future podcast researchers.

Stay tuned.

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**Linda Marshall** began her career as a primary teacher. She has had wide experience as a demonstration teacher, a mathematics consultant in WA District Education Offices, and in the WA Education Department Central Office, where she was one of the writers of the 1989 WA Primary Mathematics Syllabus, and later a

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**Eva Dobozy** is a lecturer in the School of Education at Edith Cowan University, where she lectures in education studies and values education curriculum to undergraduate students. Prior to her appointment at Edith Cowan University, Eva was a visiting scholar at the Paedagogische Hochschule in Solothurn, Switzerland. Eva is an experienced early childhood/primary teacher and teacher educator. She has been involved in education for over twenty years. Her passion for innovative teaching practices is well documented. She acted as a consultant to the Swiss National Early Childhood Education Association (Verband Kindergartnerinnen Schweiz KgCH) and last year received the prestigious Early Career Award from the Western Australian Institute for Educational Research.

**Paul Swan** is a senior lecturer in Mathematics Education at Edith Cowan University where he teaches in the Bachelor of Education and Graduate Diploma in Education programs, which cover K – 7 teachers and teachers of the middle years. He is an experienced primary and secondary teacher who has always tried to make mathematics accessible to all students. He is the author of numerous books and articles and his work is published in several countries. He has lectured internationally to provide professional development for teachers. He was the co-editor of the Australian Primary Mathematics Classroom journal, and is a past president of the Mathematical Association of Western Australia.

**Paula Mildenhall** is an experienced primary school teacher, teacher educator and researcher and has worked in Australia and internationally in Saudi Arabia and the United Kingdom. She has been involved in education for nearly twenty years. At present she is working in the School of Education at Edith Cowan University in Perth. She tutors in the primary mathematics education programme, working with undergraduate students, and is employed as a research officer.