

EDUCATION

Article 990309

Podcasting Lectures: the next silver bullet?

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Abstract

This paper will be the first in a series outlining the contemporary use of educational technology in paramedic higher education.

Objectives

This paper describes a pilot study, which examines the student use of podcasting service within a Bachelor of Emergency Health (BEH) degree. The aim of this study is to report student usage patterns of the podcasting service as well as any perceived advantages or disadvantages to podcasting.

Methods

Second and third year undergraduate paramedic students (n=67) were surveyed with respect to their use of the podcasting service in 2006. An annual audit of students' learning needs was taken from 2006-2008 with respect to relevant general student profile information.

Results

Almost two-thirds n=42 (62.7%) of the students did not download the Podcast lecture material. Of those that did, twenty students (29.9%) used Podcasts for reviewing lecture content; only two (3%) as a substitute to attending the lecture. Students described positive benefits as well as difficulties with the technology; seventeen (25.4%) reported revising concepts which they had not understood. The audit demonstrated that in Semester 1, 2008, 83% of students owned iPods or equivalent.

Conclusion

While only a minority of BEH students listened to the podcast lectures, those that did reported use for revision of theoretical concepts and revision for examinations. Podcasting appears to have significant potential for mobile learning (m-learning) allowing some students the capacity to utilise their study time more effectively. Podcasting may well prove useful for particular students, and should be given some qualified support.

Keywords

e-learning; educational technology; paramedic education; m-learning; podcasts; podcasting.

Introduction

The term 'podcasting' was first used in 2004¹ and in 2005 was awarded the 'word of the year' by the New Oxford American Dictionary.^{2,3} Podcasting has derived from Apple's iPod mobile music device to describe the process of listening to audio files on a mobile or portable media device, although the technology itself has been available since 2001.^{1,4-6} A 'podcast' is a file, most commonly audio but increasingly video (or 'vodcast') format, which can be recorded and delivered via the Internet to listeners. The podcast can be listened to in real-time ('streamed' directly from the computer) or stored for later listening (asynchronous or delayed delivery). Listeners subscribe to digital shows that are automatically downloaded to their personal computer by podcatching software (eg juice, jpodder or gpodder) and can be listened any convenient time for the listener.^{2,7} Evans⁹ notes that an additional advantage of podcasting is the notion of 'push' rather than 'pull' technology whereby information is provided directly from the source rather than the learner having to search and find a particular file.

Podcasting is now considered a technological (and pedagogical) phenomenon,^{1,2,8} particularly in secondary schooling, and has up until recently been sparingly used in the Higher Education sector in Australia.^{3,9} Its integration and acceptance by other Higher Education institutions has been well documented in the literature: particularly in the USA^{2,10,11} and the United Kingdom.^{1,2} The reach of this technology is demonstrated by Duke University purchasing and distributing over 1500 Apple iPods for its incoming undergraduate cohort in 2004, providing students with preloaded lecture and other orientation material.¹⁰ A number of commentators have noted that students may access the Podcasts in a variety of settings, and can be replayed to suit the pace of each student learner; a truly on-demand control.^{2,4,9} Podcasting provides the students with the ability to listen to audio material on the train, tram, in the library or at home as many times as they like, further supporting the notion of mobile-learning (m-learning).^{1,9} In recent times, given the changes in global economies and rising fuel costs, some authors and institutions are speculating that distance education is likely to see dramatic increases in enrolments,¹² which in turn may lead to greater need for technology-enabled learning flexibility.

While podcasting is an accepted technology, according to Lazzari,¹³ reported benefits in the higher education sector are mixed. Lazzari noted three studies which indicated that such technologies can be a resounding success. The most pertinent of these studies concerned a survey of Business and Management higher education students. Results indicated that students felt podcasts were a more effective revision tool than textbooks and that students were more receptive to learning materials delivered as podcasts than either lectures or textbooks.⁹ Lazzari also noted studies which indicated that podcasting has some benefits for some students but not more so than current technologies; and other studies again which indicated that podcasting is not popular or does not provide any real benefit beyond the traditional mode of educational delivery. One explanation of this type of variation is that the context and design of the overall educational program may be playing a greater role than the technology itself. Courses which rely on large amounts of information transmission may be better suited to podcasting; or a particular lecturer may successfully integrate podcasting into the delivery of a specific course. No peer-reviewed literature was found on podcasting and paramedic education.

This paper describes a pilot study, which examines the student use of podcasting service within a Bachelor of Emergency Health (BEH) degree. The BEH is a three-year pre-employment degree offered to students on a full-time basis at the Peninsula Campus, Melbourne, Australia. We evaluated the integration of podcasting lecture material into the

BEH via the Monash University Online Lecture (MULO) library service. This service creates digital audio recordings of selected lectures, which are available on the internet (Figure 1). These audio recordings can be converted and delivered as podcasts to students (Figure 2).

The aim of this study is to report student usage patterns and any perceived advantages or disadvantages to podcasting; and to use this evidence to make judgements as to whether podcasting of lecture material is a pedagogical tool worthy of ongoing support. This is the first study of this type from an Australian perspective involving paramedic undergraduate students. It should be noted that Ambulance Service New South Wales have recently trialled podcasting for their employed clinical staff; however, this has yet to be formally evaluated or published in the peer-reviewed literature.¹⁴ We describe a contemporary learning opportunity and a pragmatic analysis of the feasibility of podcasting lecture material to students studying in the BEH degree that may be useful to other paramedic programs as well as Australian higher education sector in general.

Figure 1: Example of Monash University Lectures Online Website

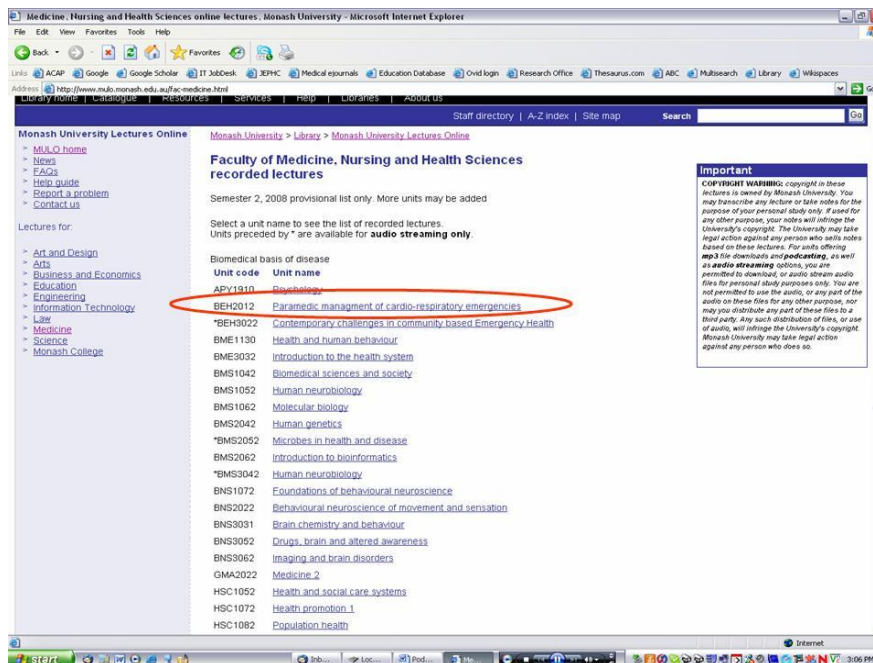
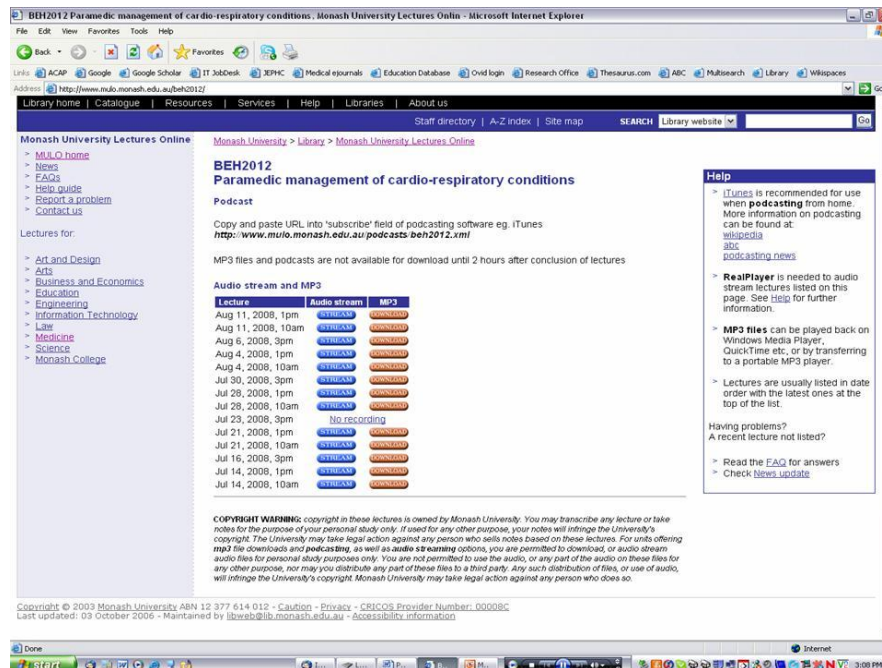


Figure 2: MULO lecture files (MP3 or Streaming option)



Methods

Educational context

The lecture material was recorded (lapel or lectern microphone) and converted to MP3 files or streaming¹ by Monash Library facilities. Podcasts were scheduled online during the academic teaching period. They were offered as a reinforcing learning tool for students, not as an alternative or substitute for attending lectures. It should be noted that within the BEH program attendance is not compulsory, nor are attendance logs kept on students' presence.

Design

A paper-based questionnaire was developed¹⁵ for use containing Likert-based and open-ended questions that related to podcasting and their educational use by the students. In addition relevant questions from the annual BEH educational needs analysis, 2006 to 2008, were audited. This provided information regarding student profile with respect to: computer access at home; bandwidth; and attitude towards educational technology.

Ethics approval for the study was granted by the Monash University Standing Committee on Ethics in Research Involving Humans. Each participant also had additional data collected such as the year of study being undertaken. Students were invited to take part in the project by one of the investigators at the conclusion of a lecture. The purpose of the study was explained to students and that their participation in the project was voluntary.

Participants

Participants in the study were students enrolled in 2nd and 3rd year of the BEH studying units BEH2012 Paramedic Management of Cardio-Respiratory Conditions and BEH3022 Contemporary Challenges in Community Based Emergency Health. Inclusion criteria for the

¹ Streaming is transmission of digital audio or video files onto a personal computer (requiring internet access)

students were providing consent to take part in the study and being enrolled in the BEH at Monash University on a full time basis.

Data analysis

For the questionnaire data, statistical analysis was undertaken using the Statistical Package for the Social Sciences (Version 15.0, SPSS Inc.).

Results

Audit educational needs analysis - participation

Since 2006 an audit of educational needs has been undertaken at the commencement of each academic semester one, this has included: how students commute to campus and the time taken to campus, whether they have access to a home computer with what type of Internet bandwidth, and whether they own an iPod or similar media device. The total numbers sampled in each year include – 2006 (N=52), 2007 (N=73) and 2008 (N=62). The results of these educational needs can be seen in Figures 3-5.

Figure 3: Mode of transport used to travel to university

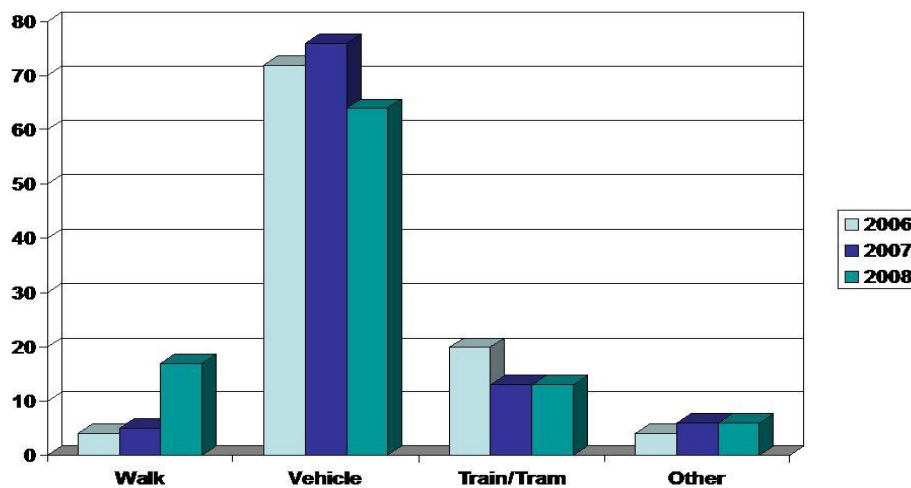


Figure 4: Time taken to travel to university

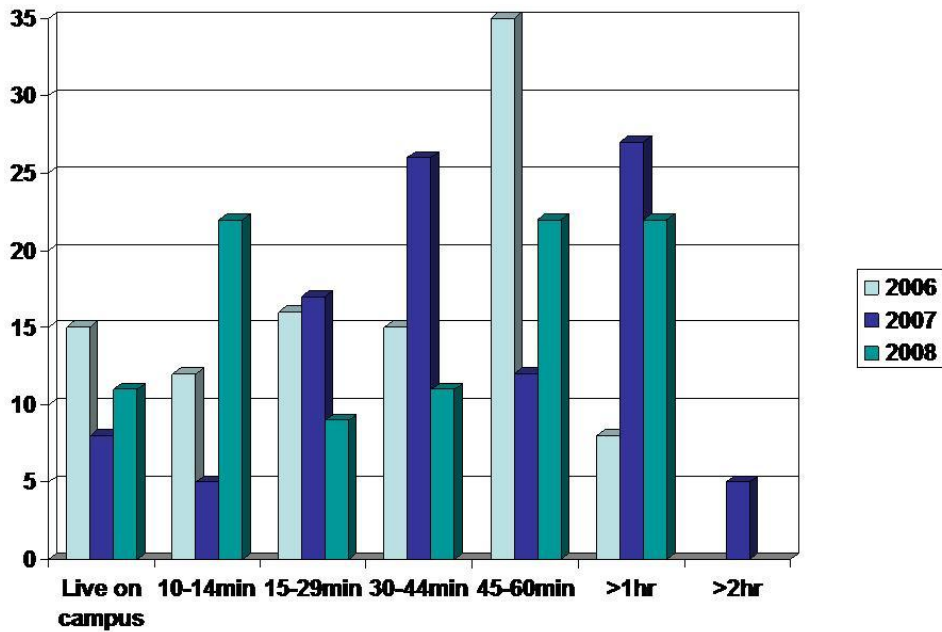
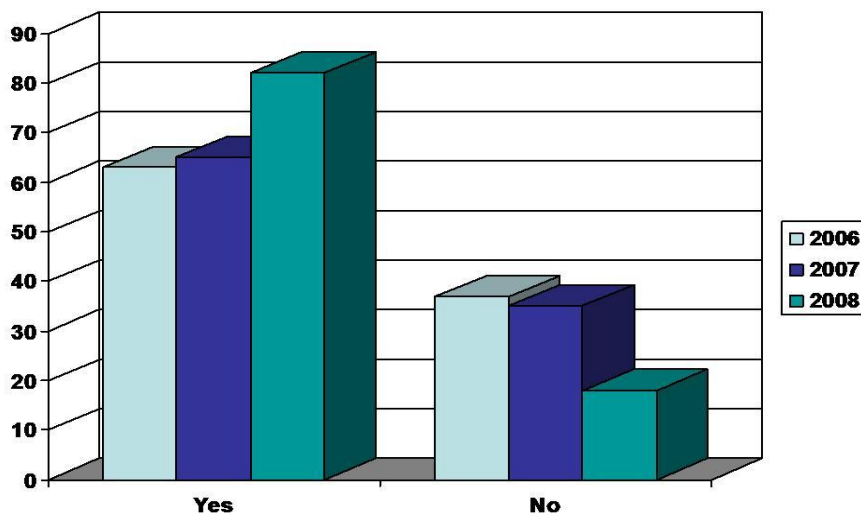


Figure 5: Student ownership of an iPod (or similar) device?



Questionnaire - participation

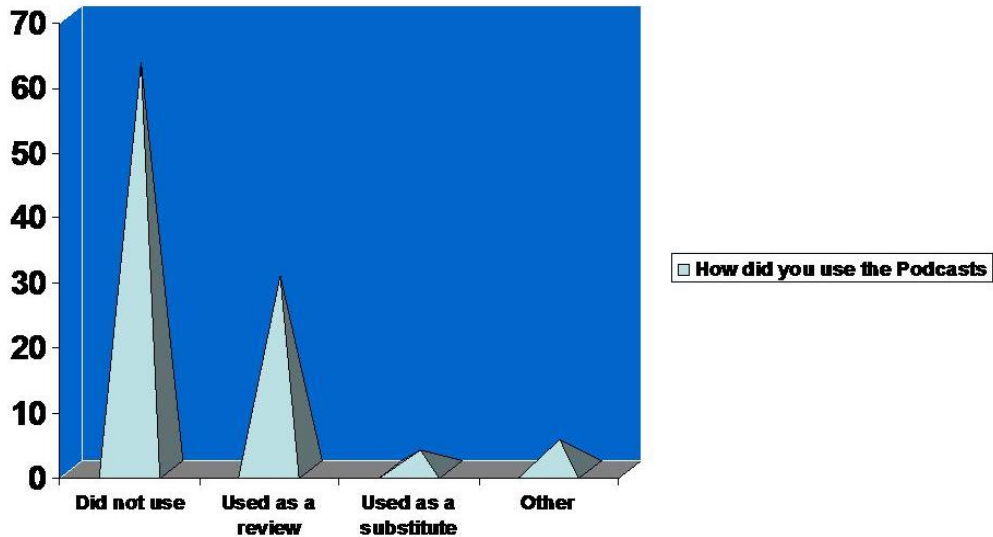
The questionnaire was completed by 67 out of 87 students, producing a return rate of 77%. Thirty seven respondents were second year undergraduates and the remaining (n=30) were third year undergraduate students.

Questionnaire results

The majority of students n=42 (62.7%) did not use the podcast lecture media. Those students that used the podcasts, n=20 (29.9%) used them as a review of the lecture, with only n=2

(3%) stating that they used the podcasting lectures as a substitute to attending lectures. A total of 4.5% stated other. These results are seen in Figure 6.

Figure 6: How students used Podcasts



The majority of students listened to the podcasting lecture at home n=19 (28.4%) with n=6 (9%) reviewing the podcast on-campus. The remaining students n=42 did not answer this question. Almost a quarter of students n=16 (24%) downloaded the media infrequently or at irregular intervals, with n=7 (10.4%) downloading the material within a few days of it being available.

A total of 17 (25.4%) of students stated they went over concepts that they did not grasp during the lecture. Eleven respondents (16.4%) used the podcasts specifically for revision of final examinations. Only n=2 3% stated they used the podcast lecture because they did not attend the lecture. Other reasons giving for downloading the podcasts included:

“A few lectures were reviewed to ensure the messages were taken in, especially for exam purposes”

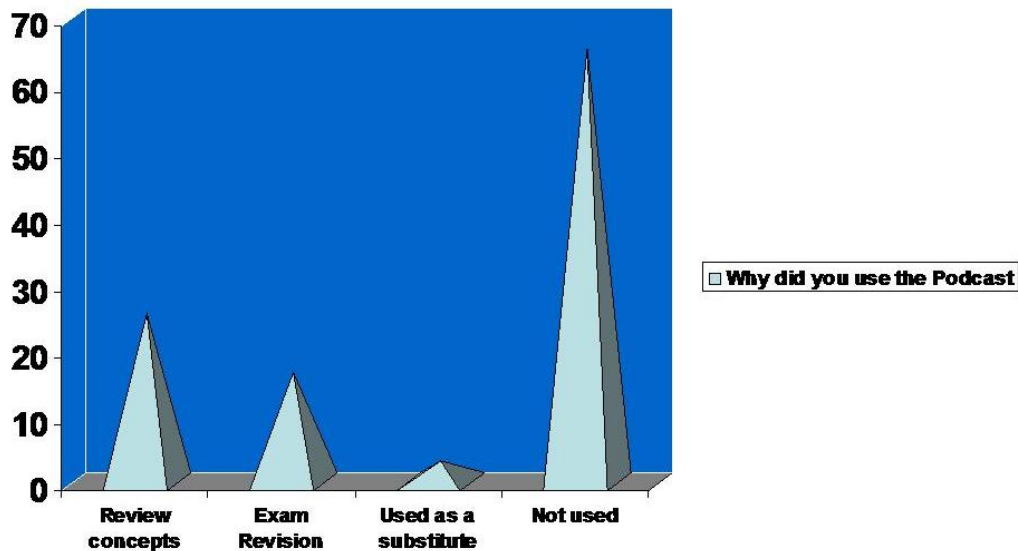
“Used to refresh my memory and review concepts”

“To just have a quick listen to determine the outcome of a case or rhythm [ECG] in the notes”

“Went over generally in order to assist in remembering and refreshing my memory for exams”

These results are seen in Figure 7.

Figure 7: Why Podcasts were used



A total (n=28) 41.8% of students stated that they did NOT find the podcast lecture material easy to use with (n=25) 37.3% students responded in the affirmative. Twenty percent (n=14) of students did not provide an answer.

Student comments on downloading issues, included:

“I tried to download lectures to my iPod but it didn't seem to work. I needed to get assistance on how to get access to the Podcasts, but didn't get around to seeking IT help”

“Very difficult to download... I don't think I had the right program so I could only download one”

“It was good but I only used it once or twice”

“I believe that the Podcasts were easy to use however, I think that they could have been easier to use. For example locating the right one was sometimes difficult due to how they were all named as files”

Almost 20% (n=13) of respondents stated they preferred MP3, followed by 14.9% (n=10) preferring streaming. Thirteen students (19.4%) stated they did not have a preference with 46.3% (n=31) not answering this question.

When asked regarding audiovisual preferences, comments included:

“I find audio or visual learning always more interesting and easier to learn. The information learnt in the lectures can be reinforced again with Podcast”

“Would be good to download and burn to CD so they can be played in car etc.”

Discussion

This small scale evaluation study of a pilot program to deliver lectures via podcast produced equivocal results. The audit identified a sizeable (and increasing) majority of students who owned iPods or equivalent, however 63% of all students did not use the podcasting facilities. It is clear that many of these must have possessed the relevant technology. Many had trouble downloading the podcasts; others had no difficulties at all. Some reported benefits in using the podcasts to better understand and/or review lecture concepts. Interestingly, no students described listening to the podcast on public transport such as train or tram despite one in five students using this type of transport to university. In many ways this study contains in a small scale, the mixed responses to podcasting reported across the literature.

The results do not clearly indicate why many students in this study did not use the Podcasts; indeed, one of the limitations of this study is that it did not capture this data. There could be a number of factors. One is technical limitations, whereby the audience discussion is not captured. Another is the lack of audiovisual input, with the supposition that a 'vodcast' might be better received. Another factor may be educational; the passive nature in which audio podcasts are delivered and received by the learner.² Finally, it may simply be that podcasts suit some and not others. However we believe that in order to explore this further, the experience of the technology must be improved. The lectures as recorded omitted the students' questions from the podcast, as the student's voices were not close enough to the microphone. The capture of question and answer sessions, either through allowing students to talk into a microphone or the provision of vertical drop-down microphones from the ceiling, will improve the podcasts. Clearly there were difficulties for some students with downloading the podcasts; there may be simple usability issues at play. However unless these technological barriers are overcome, it is difficult to establish the true educational impact of podcasting.

There is a general impression that podcasting may deter individuals from attending lectures. It is worth noting that the podcasting lectures did not have any noticeable effect on attendance levels in either unit. These results are also supported in a recent pilot study (using Lectopia, a commercial lecture capture and delivery system) by the Faculty of Pharmacy at Monash University where systemic falls in attendance were not found.¹⁶ It is worth noting the limitations of this study in that attendance was not measured, and there was no investigation of the relative benefits of podcasting versus other modalities, including the face-to-face lecture itself.

So what is the future for podcasting? We note that a large proportion of students are travelling greater than 45 minutes to university and up to one-third come to campus by a mode that might be considered highly 'compatible' with listening to podcasts, although most of the students in the study reported listening at home. It may be that teaching staff need to actively promote the concept of *m-learning* beyond traditional spaces such as lecture hall or library. Again, the benefits may be confined to a particular group, as not all students will be willing to learn in such spaces. However, we suggest that for those students who have other large commitments, such as family responsibilities, professional careers or working hours, this modality may prove very important. Under any circumstance, it is important to bear in mind that podcasts of lectures are only ever going to be replicas of the lectures themselves. They are limited by the value of the lecture; and also by how well it translates to podcasting. Perhaps as experience with other audio media has proved, such as learning cardiac auscultation from CD, where the learning is *auditory*, podcasting may be invaluable. Highly visual learners may only benefit from vodcasting; those dependent on interaction and activity may find no advantage to either.

Despite the growing enthusiasm, use and integration of technology such as iPods, wikis and blogs into education, empirical evidence on the educational benefits is presently very limited.¹⁰ Maag argues that contemporary educational technologies such as podcasting support experiential learning and provide greater student ownership, which is crucial given the emergence of student-centred learning, particularly given the attention to the 'Net Generation'.¹⁷ Although these alternatives are showing signs of promise finding the balance across educational design, entertainment and catering to the needs of a diverse body of learners continue to be the fundamental challenge.¹⁸

Conclusions

Podcasting of lectures is easily achievable with central University support, however, only one third of BEH students used lecture podcasts; minor technical issues have an unknown influence on these results. There was some student support use for revision of theoretical concepts and revision for examinations. Podcasting would appear to have significant potential for mobile learning (m-learning) allowing some students the capacity to utilise their study time more effectively. Podcasting is not the educational silver bullet but this study has shown that it may well prove useful for particular students, and should be given some qualified support.

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This Article was peer reviewed for the Journal of Emergency Primary Health Care Vol.6, Issue 3, 2008

Appendix A : Questionnaire (Adopted from Brittain et al., 2006)

Did you use the Podcast lectures as a review of lectures you already attended, or as a substitute to attending class?

- Review of lectures I already attended
- As a substitute to attending lectures
- I did not use the Podcasting lecture media (specify why not)

Other (specify)

Where did you primarily use the Podcasting media? Choose one answer only.

- At home
- On campus
- On my commute (driving, train, etc)

Other (specify)

Which statement best describes when you acquired the Podcasting lecture material?(time from posting to download). Choose one answer only.

- I downloaded the lecture material as soon as it was available
- I downloaded the lecture material within a few days of it being available
- I downloaded the media infrequently / at irregular intervals
- I downloaded the media all at once close to the exam period /assignment due date

Which statement best describes why you used the Podcasting lecture material? Choose one answer only.

- I went over concepts that I didn't grasp during the lecture
- I didn't attend the lecture, so played the Podcast media instead.

Other (specify)

Which statement best describes the way you used the Podcasting lecture material? Choose one answer only.

- I replayed the whole lecture to help me consolidate the material covered
- I replayed parts of the lecture and skipped over other parts
- I used the lecture material to help my revision before the exam period/assignment due date

Did you find the system for accessing the Podcast lecture material easy to use?

- Yes
- No

Did you like using the Podcast lecture material?

Yes (specify)

No (specify)

Do you think Podcasting lecture material should be made available in future BEH units?

Yes (reason)

No (reason)

I had trouble with downloading the Podcasting material

Yes (specify)

No

I prefer to use the Podcasting material in the following format:

- MP3
- Streaming (playing the file on my PC e.g. QuickTime, Realplayer)
- No preference

What other form of audio-visual material (if any) would you like to see used to deliver lectures in future (e.g. Video files, better capture of student/audience questions, etc)

Specify:
