iPod! uLearn?

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Podcasting is the pre-selection of on-demand audio broadcasts; the user will subscribe to a series of shows, and then choose when and where they will listen to them. While Podcasting offers a more sophisticated delivery mechanism, it may also have the potential to offer a unique perspective on the production and communication of educational material. Educational podcasting could provide additional, on-demand, personalised content that is directly linked to lecture/seminar activities, thereby encouraging and supporting independent learning. However, in order to exploit the potential of Podcasting, we as educators need to understand how the process of developing educational podcasting material will be influenced by the nature and usage of a podcast. In this paper the authors will present an international perspective on educational Podcasting - focusing on their experiences of a practice-driven approach to Podcasting, describing how Podcasting has been used in the School of Computing, Engineering & Information Sciences, Northumbria University, UK, and School of Medical Sciences, RMIT University, Australia. The rationale for educational Podcasting from these two differing national higher education institutions are compared; looking at the learning and teaching philosophy of the programmes, and discussing the pedagogical rationale for the use of educational Podcasting. The paper will report on student feedback to Podcasting, and present an evaluation of the effectiveness of educational Podcasting, and its potential to improve the students' learning experience is discussed.

Keywords Educational Podcasting; Pedagogical Rationale; Developing Educational Material; Supporting Independent Learning

1. Introduction – Podcasting; What That?

Podcasting may be viewed as personalised on-demand multi-media content – the content is distributed to a subscriber's computer via the Real Simple Syndication (RRS) protocol, while podcatching is the use of 'freeware' applications such as Juice <http://www.juice.sourceforge.org>, Doppler <http://www.dopplerradio.net>, or commercial applications such as iTunes <http://www.apple.com> to 'catch' that content [1]. Podcasting makes use of the RSS protocol to 'push' multi-media content to subscribing computers – the user subscribes to a show, and the podcatching application catches or downloads the show onto the user's machine. To listen to a podcast on a computer will require some form of media player – Windows Media Player, Real Player, etc. However, an important aspect of podcasting is portability, and the majority of podcasts are enjoyed via an MP3 player – the user simply 'drags and drops' the audio file from their computer to their MP3 audio player.

A fundamental principle of podcasting is that listeners can ignore conventional broadcasting schedules; they can use a podcatching application to subscribe to a particular show, schedule the application to download the next available episode, and then listen to the show on their MP3 player when they want to – in the metro, in the car, in the bus, in the gym, etc. Another fundamental principle of podcasting is that podcasting uses the Internet and RSS protocols to distribute the audio content, consequently the production and distribution of this audio material isn't governed by access to conventional broadcasting transmitters. This means that any computer with a sound card, a microphone, recording software and Internet access are all that are needed to produce and publish a podcast [2]. All that is required is some form of audio recording and editing software – Audacity <http://audacity.sourceforge.net> is a prime example of a freeware recording and sound editing suite.

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The advantages of podcasting, ease of production and its portability are all geared to providing a simple way of 'connecting' with today's students [3] – the majority of students are already very familiar with the technology required to download and listen to audio files, and podcasting is just an extension of this technology.

However, there are some issues that potential educational podcasters need to be aware of. Firstly, your podcast will need a hosting site – somewhere on the Internet that can hold and distribute your podcast audio files. In developing your podcasting strategy, you will need to consider the number of podcasts you intend to produce, the number of listeners you are hoping to attract, and how these will be influenced by the amount of bandwidth provided by the hosting site. Bandwidth refers to the space needed to handle the amount and size of audio files that are distributed to your listeners. Large audio files will require more bandwidth than smaller audio files, while a large number of file requests will also require more bandwidth than a smaller number of file requests – podcasts that become very popular will require increasing bandwidth resources [1]. The author's experiences support this; the number of file request dramatically increased during the exam period, leading to all the bandwidth being consumed, and some file requests being rejected by the hosting site.

Secondly, audio podcasts will discriminate against those who are deaf or have impaired hearing. No matter how creative your educational podcast, those who are unable to hear it, will not be able to engage with the material provided. In addition podcasting is still a passive approach to learning and teaching; I speak, you listen. Consequently, when initially developing your material, you will need to consider issues such as (i) what educational goal you are trying to meet, (ii) how will your podcasting enhance the student's learning experience? [4] – note this will be discussed in more detail below. The message can sometimes outweigh the substance – educational podcasting is growing and evolving at a rapid rate, with categorising, navigation and indexing features seen as adding to the educational podcasting potential [3]. Unfortunately the rush to add complexity to the podcasting experience may limit the one aspect of podcasting that has ensured its success – its simplicity.

In this section a brief overview of podcasting has been presented. In the remainder of the paper an international perspective on the pedagogical rationale for educational podcasting will be outlined – describing how podcasting has been used in the School of Medical Sciences, RMIT University, Australia, and the School of Computing, Engineering, & Information Sciences, Northumbria University, UK.

2. RMIT University, Australia

At RMIT it was decided to use the technology to capture standard face-to-face lectures for students to use on later occasions, rather than creating new content. The limitations of the format for capturing, reproducing and presenting all the features of a live interactive event was recognised, but the ability to capture lectures in this way was felt worthy of exploration. Each lecture was recorded using a portable MP3 player attached to the lecturer's lapel. The course includes 2 formal lectures per week in addition to practicals and tutorials. The audio files were then trimmed, compressed and uploaded to the distributed learning system for student download.

The pedagogical rationale behind the methodology outlined above recognised that students may be unable to attend every lecture, but attempts to minimise the impact of this on their learning. Furthermore, listening and re-listening to material is a useful revision tool and may enhance understanding, particularly where English may be a second rather than a first language for the student.

Student feedback was surprisingly positive. Despite the limitations of the format and the modest ambitions of the project it was very successful. Students indicated that they used the material in different ways – some used it to catch up missed lectures, others to gain understanding of difficult material, whilst many used the lectures as a revision aid in preparing for exams. A number of requests for missing files to be uploaded was received, indicating that the comprehensive coverage of the course was appreciated. The project has now been extended to include a large number of the staff in the School of Medical Sciences from a variety of courses.

3. Northumbria University, UK

A podcasting trial was undertaken on a computing module in the School of Computing, Engineering & Information Sciences (CEIS). Initially the podcasts focused on providing additional material; however feedback indicated that students wanted a more 'connected' approach, in which podcasts were directly linked to the lecture and seminar activities. 'Embedding' the podcasts within the traditional lecture proved very popular, with the majority of the module cohort acknowledging that they listened on a regular basis.

The pedagogical rationale behind this trial was to identify if the podcasting of small 'chunks' of additional content directly linked to (and then embedded within) lecture and seminar activities, would encourage and support independent learning. The trial attempted to 'tap-into' the student experiences of computer based multi-media systems, and the 'portability' of such systems – allowing students to listen and re-listen to a podcast when travelling to and from university; preparing for a lecture or seminar – reinforcing the concepts or issues that were raised during that lecture or seminar. Overall student feedback has been very positive, with some students commenting that they found the podcasts to be an important part of the learning and teaching environment. The constructive feedback can be spilt into two sections.

Firstly, student feedback indicated that the initial intention of providing additional material did little to enhance their learning and understanding of the module, they suggested that a better approach would be to 'embed' the podcast into the module material. Students pointed out that 'embedding' the podcast would allow for the migration of learning – moving from lecture (introduction/explanation) to podcast (preparation/reflection). It appeared that the students wanted the podcast to be a required component within their learning and teaching environment, and not something that was optional.

Secondly, student feedback indicated that they appreciated the relaxed and enthusiastic approach to the production of the podcast content. They also appreciated the fact that the podcast wasn't a lecture, or that the presenter was not reading from a script, the occasional 'uhms', and 'errs 'did not in their opinion detract from the overall impression of somebody being themselves and expressing their understanding of the subject material in a personal and informal, but informative manner.

These findings support the work done at the University of Wisconsin [4] on the pedagogical aspects of podcasting. A discussion of their work is presented below; however readers should be aware that cultural and educational differences may need to be considered. As mentioned above, feedback indicated that students found the podcasts to be an important part of the learning and teaching environment – from that it could be surmised that the podcasts enhanced the student experience, but did they truly aid the students understanding of the module, or indeed assist in their module performance and progression? This is debatable. However, it was pointed out by the students (and noted by an increase in download activity) that the podcasts were extensively used as part of the student's revision strategy.

4. Discussion

The University of Wisconsin [4] has produced a guide outlining some learning and teaching issues that may warrant consideration when designing educational podcasts. Before discussing these guidelines, readers should note that the guidelines are from an American perspective on higher education – cultural and educational differences may exist, and these differences may render much of the guidelines inappropriate.

The learning and teaching issues as suggested by the University of Wisconsin [4] are:

3.1 Selecting appropriate content

Be aware of the environment in which the learner may be listening to your podcast – in the gym, on the metro, walking the dog; it may be inadvisable to introduce difficult and complex issues. Perhaps such issues should be introduced in a lecture, and the podcast should instead concentrate on those concepts that students are having problems with – focus on the essentials; this is termed narrowcasting.

3.2 Determining educational goal

What do you want the podcast to achieve – preparation prior to a lecture or seminar, reflection on activities undertaken during a seminar, elaboration of concept or issue introduced during a lecture, explanation of what is required from an assignment. The educational goal of the podcast will influence the design of the content.

3.3 Designing the content

How will you communicate the message – monologues, interviews, dialogues, or group discussions, etc? Consider the podcast's educational goals; can the podcast use a scenario to introduce a problem or challenge; can the podcast use a personal experience; is it possible to use a group discussion with opposing views? Again, be aware of the learner's podcasting listening environment; can you use that environment to identify the optimum length for your podcast – how long do they spend in the gym, how long do they spend on the metro, how long do they spend walking the dog, etc.

3.4 Producing the podcast

Try not to read from a script – be informal, be personal, be yourself, use your passion for the subject to enthuse and motivate your audience.

3.5 Incorporating the podcast into course

Don't make it an option – integrate the podcast into the learning and teaching environment. Try to ensure that there is a connection between the lectures, seminars, tutorials, and podcasts.

Feedback from students at both Northumbria and RMIT appears to support the need to consider all those steps when producing an educational podcast. More importantly (confirmed by specific student comments, and highlighted in the University of Wisconsin [4] podcasting guidelines), the identification of the podcast's education goal, and the integration of the podcast into the module content must be the overriding consideration when using podcasts in a learning and teaching environment. For example, if the educational goal is the elaboration of a particular concept, then the design should consider how different approaches could aid in the communication of that goal – should the content be built around a problem based scenario; using the solution of the problem to discuss the concept being introduced [3]. The use of this strategy will impact on the selection of the podcast content – should the problem based scenario consist of complex data, should the podcast be tightly focused concentrating on the concept being addressed [4]. How will the listener's environment impact on their ability to assimilate the podcast content; will they use the podcast for preparation, revision, reflection or reinforcement? Is the podcast too long, or too short? Should you vary the length to suit the podcast content? Unfortunately, there are no simple answers; using the Wisconsin guide will be help, but don't be afraid to experiment, and don't forget your audience.

A note of caution – the Wisconsin guide suggests that the podcast should avoid material that consists of complex inter-relationships [4]. This suggestion is borne out by findings from Northumbria Univer-

sity's podcasting trial – students prefer the podcast to have a limited scope; focusing on one or two issues that have been raised in the lecture or seminar, but discussed in a light and informal, but informative manner. However, what the guide does not mention, is that the podcasting of a discussion on issues that have been raised in class may well discriminate against those individuals who are deaf or have impaired hearing. The production and distribution of additional material that can not be accessed by the whole cohort will severely disadvantage those students who are unable to engage with that material.

In a recent development Apple has introduced iTunes U, [5] a free service that enables participating universities to post educational material via the iTunes music portal. Students can access this material via iTunes U; they can download the educational material in the same way as they would download music from the commercial iTunes site. Once a university has enrolled onto the iTunes U service, students, alumni and members of the public can access and download educational materials via the university's iTunes U site. This is a contentious development – it may offer an integrated approach to learning and teaching that matches the student expectations, but it also encourages more students to access the iTunes music site.

Educational podcasting should not be viewed as a replacement for other learning and teaching activities, rather it should be used to enhance the student experience of the learning and teaching environment. Podcasting provides an alternative means for students to review subject material – at their leisure and in an environment that students may find more relaxing; while the very nature of the delivery mechanism can alert students, informing them that new material is available [6]. However, in order to exploit the potential of podcasting, we as educators need to understand how the process of producing material for educational podcasts will be influenced by the very nature of podcasting itself and by the way in which the student cohort interacts and engages with that material. We should take advantage of the familiarity students have with the underlying technology to enhance the methods by which we produce and distribute educational material and to do so in way that the students find approachable and for them non-threatening [3].

5. Conclusions

In this paper the authors have presented an international perspective on educational podcasting. The authors looked at the learning and teaching philosophy of the programmes, and discussed the pedagogical rationale for the use of educational podcasting. The authors also discussed the pedagogical considerations when using podcasts for teaching, and the implications for learning. It was noted that while podcasting may offer a more sophisticated delivery mechanism, podcasting might also offer a unique perspective on the production and communication of educational material. However, in order to exploit the potential of podcasting, we as educators need to understand how the process of developing educational podcasting material will be influenced by the nature and usage of a podcast.

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