

## **Podcasting the sciences – a practical overview**

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### **Abstract**

University science education has been undergoing great amount of change since the commercialization of Internet a decade ago. Mobile technologies in science education can encompass more than the proximal teaching and learning environment. Podcasting, for example, allows audio content from user-selected feeds to be automatically downloaded to one's computer as it becomes available online, and then later transferred to a portable player for user's consumption at a convenient time and place. Enjoying a phenomenal growth in mainstream society, podcasting are asynchronous and could be provided at a distance from a classroom. This paper reports a case study from the University of British Columbia that implemented podcasting for physics content. It presents the rationale for, technical details and step-by-step guide to creating podcasts in the sciences.

### **Background and introduction to podcasting**

In January and February 2005, the Pew Internet and American Life Project conducted a survey of iPod/MP3-player users and found that one in five "age 18 and older" own an iPod or MP3 player (Pew Internet, 2006).

More recently, eMarketer estimated the total US podcast audience reached 18.5 million in 2007. That audience will increase by 251 percent to 65 million by 2012. Of those listeners, 25 million will be "active" users who tune in to podcasts at least once a week (eMarketer, 2008).

A recent Australian academic study that measured undergraduate use and ownership of emerging technologies found that in 2007 more than 70 percent of undergraduates owned iPod or MP3 players, up from 40 percent in 2005 (Oliver & Goerke, 2007).

A podcast - defined in the New Oxford American Dictionary as "a digital recording of a radio broadcast or similar program - is typically made available on the web for downloading to a personal audio player". Podcasting was the 2005 Word of the Year, according to the dictionary editors. (McKean, 2005)

Podcasts are digital files that can be downloaded and listened to whenever and wherever one wants (Barsky, 2006). Originally, podcasting referred to an audio file that was automatically delivered directly to the listener's device using the XML-based format RSS (Really Simple Syndication) and a feed reader. Rather than the listener having to remember to check for new audio files or tune in to a broadcast on schedule, the feed reader software would automatically check and download any new audio to the listener's device. Recently, podcasting has become synonymous with any audio or video file that listeners download and play on a digital player (Worcester & Barker, 2006).

### **Podcasts in university education**

The portable audio device is no longer simply a medium for music or video entertainment; it is now conveys a lot of educational material. Podcasting usage in education is increasing. With the potential to change the teaching and learning experience significantly, it can facilitate organization and delivery of information tailored to users' individual preferences and learning styles (H. Harris & Park, 2008).

Podcasts are asynchronous and allow for infinite review and reinforcement of skills presented. Long files can be broken into smaller, more digestible chunks than typical instructional sessions in academia. (Griffey, 2007) The flexibility and affordability of podcasting cater to diverse student needs by enabling repeated learning and offering an opportunity for the effective use of time.

Podcasting is also a communication enabler, reaching out to a wider community. For instance, podcasting usage provides lifelong education opportunities for alumni and creates a culture of knowledge-sharing and interdisciplinary collaboration (H. Harris & Park, 2008).

Podcasting allows existing educational audio content to be made more widely available to various communities, as well as allowing educators to develop custom audio content. It provides educational benefits to students who have a preference for auditory learning, for those with sight and/or auditory impairment who rely on audio technology, and may greatly assist non-native tongue speakers (Palmer & Hall, 2008).

In recent years, podcasting has become more popular in academia. In a well-publicized move, Duke University gave iPods to its entire 2004 freshman class as part of a university initiative to encourage creative uses of technology. Students used iPods to listen to podcasts of class lectures and music, to store and transfer files, to record interviews and create their own podcasts (Worcester & Barker, 2006). The Vanderbilt Center for Science Outreach created Snacks 4 the Brain, a podcasting feed, which connects working scientists with students and teachers in K-12 classrooms worldwide. Moreover, Stanford University, MIT and other prominent institutions, via the Apple iTunes U. online music store website, offer lectures and other content available free of charge to the public (Lee, McLoughlin, & Chan, 2008).

### **Science podcasts at the University of British Columbia**

The University of British Columbia is one of the largest research universities in Canada and is a home to a strong Faculty of Science. The departments our library serves present hundreds of talks during an academic year for the students, faculty and the broader community. As librarians, we feel that most of this information is lost quickly after a talk is completed. It could be greatly beneficial if we could capture those lectures in a digital format and share them with the world.

As a result, the librarians offered to help the Department of Physics with creating, hosting and maintaining podcasts. Our offer was enthusiastically supported by faculty and students and we have recorded a number of physics lectures directed at students, faculty members and the general public. We were successful enough to record two Nobel laureate's lectures as podcasts. We host our podcasts on cIRcle (<https://circle.ubc.ca>) – UBC's Institutional Repository – and provide links from the UBC library website. This initiative was very well received by our community and podcasts were downloaded thousands of times

in the first few months. Below, we share our experiences and insights into creating podcasts for the sciences.

### **Podcasting 101: a step-by-step guide for the sciences**

1. First, find appropriate content. Content is crucial – substance trumps style. Quality will keep people coming back for more. We usually work with our departments to select workshops and lectures for recordings. Copyright is a major issue. We have a simple copyright waiver form for presenters so we can deposit our podcasts online and make them available publicly.
2. Gather required hardware and software. Podcasting is very simple and cheap. We use free open source software called Audacity to record our podcasts (<http://audacity.sourceforge.net>) and convert files into MP3s. We use a USB microphone plugged to a laptop to capture sound. Those microphones are reasonably priced and can be found in any music store for less than \$75. We use cIRcle (<https://circle.ubc.ca>) – the University of British Columbia’s Institutional Repository – to store, archive and maintain our digital podcasts. Many universities in the developed world have institutional repositories in place to capture and archive university-generated knowledge. Alternatively, your department website can be utilized or the podcasts could be stored freely on the web with sites such as [www.podbean.com](http://www.podbean.com).
3. After converting the final audio file to MP3 format and uploading it online, the audio file needs to be streamed using an RSS feed. This is what makes an audio file a podcast –when the listener’s feed reader software (such as Bloglines at [www.bloglines.com](http://www.bloglines.com) or Google Reader at [www.google.com/reader](http://www.google.com/reader)) automatically check and download any new audio to the listener’s computer/device. One simple way is to create a blog (which has an embedded RSS feed and point to a podcast as a blog entry. Then, listeners subscribe to the appropriate blog’s RSS feed and the podcasts are downloaded to their audio devices or computers. Of course, audio files can simply be linked from a website for manual download, which in many cases today is also referred to as a podcast.
4. Promote the podcasts. We advertise within our university community and encourage faculty, students and staff to subscribe. Students can be the best word-of-mouth promoters, but the quality and timeliness of the podcasts will be what keeps subscribers coming back for more.
5. Lastly, evaluate and learn from mistakes. We believe that this is one of the most important steps in the whole process.

### **Conclusion:**

Podcasting is another method that academics can use to reach young user groups and maintain relevance in their university learning experiences. The versatility of this technology may increase student satisfaction and instructional flexibility. Most importantly, the use of iPods or other portable media devices has the potential to integrate formal education with other aspects of the student’s life such as communication, entertainment and work.

It is difficult to predict the outcome of integration but then this has never before been possible on such a large scale. It is likely that podcasting will bring unexpected and even disruptive aspects to transforming traditional pedagogy and educational processes (D. A. Harris & Krousgrill, 2008; Ralph & Olsen, 2007). We have certainly found our podcasting experiences to be mutually beneficial for the library and our academic community. They have fostered relationships between students and their respective faculties.

Even though podcasting is at an early stage, we expect it to continue to grow in popularity as it receives more mainstream press and as new tools arise (both in content creation and delivery to the end user). In addition, increased awareness of what iPods or other MP3 players can hold – not just MP3 files but other types of content, such as pictures, video and text – should enhance their profile. The podcasting phenomena will grow in ways that we haven't even envisioned yet.

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