

# Virtual lecturing: Delivering lectures using screencasting and podcasting technology

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## Abstract

Delivery of lectures using web technology is now an accessible and relatively straightforward option for University of Stirling (University) teaching staff. In this study, conducted with a 2<sup>nd</sup> year Environmental Science module, a series of 8 lectures were delivered via screencasts and podcasts. Feedback from the students via a questionnaire was extremely positive, with flexibility and the ability to repeat lectures cited as the main advantages. However, caution must be exercised in that this is not a mechanism for replacing face-to-face teaching, but is used to provide additional material or to free-up time for more discussion sessions or practical-based teaching.

## Introduction

The recent increase in the accessibility of personal broadcast technology has opened a wealth of new opportunities for learning and teaching, which can enable us to meet the emerging needs of our students and address issues resulting from the changing dynamic of the student population. These issues include the requirement for more flexible learning, as students need to work increasingly long hours in paid employment to meet the cost of their education. The number of students who are making their own recordings of lectures either as a result of dyslexia or other learning difficulties, is also on the increase.

## What is screencasting and podcasting?

Screencasts are, effectively, a digital recording of your computer screen, and can include an audio commentary. Screencasting is being increasingly used to record Powerpoint presentations using software such as MicroSoft Producer for Powerpoint or Camtasia Studio, which act as plug-ins to Powerpoint allowing users to run and control the software from within the Powerpoint environment. These programs also have the ability to record a WebCam image to accompany the slide and audio recordings. Screencasting has significant advantages over audio recordings in that the presentations can include diagrams, photographs and videos. This is an important consideration for visually rich subject areas such as the Earth and Environmental Sciences, where visual aids are often highly important for the understanding of much of the subject material.

A podcast, in its truest sense, is a digital media file (audio or video) which is distributed and shared over the web, so that users can *subscribe* to digital content such as a lecture series, for example. This is then automatically delivered or downloaded to a personal computer. Files can either be played back on a computer, or transferred to a personal media player. The term 'podcast' can refer to either the media file itself, or the way in which it is delivered.

## Where is it being used in higher education?

Screencasting and podcasting are increasingly being used within a Higher Education setting to deliver a range of educational material. In the US, many Universities, including Yale and Princetown, are podcasting their public lecture series, while institutions such as Stanford and UC Berkeley are podcasting lectures from a range of modules. Indeed, Berkeley has taken the step of making all of its recorded lectures series freely available to the public (<http://webcast.berkeley.edu/>). In the UK, the University of Wales, Aberystwyth, was the first University in the UK to create podcasts of its lectures (Thomas, 2006). Formal studies on the effectiveness of screencasting and podcasting in HE are few and far between, but a number of studies are now beginning to emerge (e.g. Chan and Lee, 2005) while ongoing research through the IMPALA project aims to explore the beneficial effects of podcasting and to deliver pedagogical models of podcasting for student learning in Higher Education ([www.impala.ac.uk](http://www.impala.ac.uk)).

## Production and delivery of the online lecture series

In this study, part of the lecture series for a second year Environmental Science module in Earth and Landscape Evolution was delivered via screencasts and podcasts. The rationale behind the study was to explore the student experience of using and learning via this type of technology, and to determine the most appropriate and popular delivery formats for online lectures.

Traditionally, the module consists of 20 lectures, five practical sessions, and four help sessions, which are designed to support the students in completing the assessments and for discussion of the course content. The module is supported by a WebCT based VLE. There were 105 students enrolled in the class. A mid-semester online test was used to examine the students on the content of the electronic lectures.

The first eight of the 20 lectures were delivered electronically. The lectures were recorded prior to the start of the course using Camtasia Studio, desktop microphone, and WebCam. A short introduction to the course and the electronic lecture series was also recorded.

Using Camtasia Studio, the lectures were produced as high and low resolution screencasts. The audio file was exported to GarageBand (a Mac based software bundled with iLife for creating podcasts) to create high and low resolution MP3 audio files and enhanced podcasts (as mpeg4 files) which include chapters and images. The rationale behind producing such a wide range of formats was to make the material as accessible as possible, and also to determine which format the students preferred.

The introductory lecture was placed on the entry page of the WebCT site for the module. The page contained full instructions for viewing and downloading the introductory e-lecture, with instructions about what to do if they had problems accessing the screencasts or podcasts. As teaching commenced, two lectures

were placed online each week and an e-mail was sent to inform students they were available. The lectures were released in all the formats produced, along with a downloadable ZIP file of the high resolution screencast. Pdf files of the Powerpoint slides used in the presentations were also provided. Students were seen face-to-face in the first week during a practical session where informal feedback was solicited. No students reported any access problems and initial feedback was positive.

The first lecture in this series can be viewed or downloaded from: [http://www.sbes.stir.ac.uk/env3e3/e-lectures/lecture\\_1/](http://www.sbes.stir.ac.uk/env3e3/e-lectures/lecture_1/)



## Student feedback and response

At the end of this part of the course, an anonymous questionnaire was put on to the WebCT site and students were encouraged to fill this in by way of a prize draw for respondents, with the chance to win an MP3 player or a £20 iTunes voucher. In total, 94 students completed the questionnaire.

In terms of the format, 86% of the students watched the high resolution screencast and 20% downloaded and listened to the audio files (note that some students accessed the lecture material in more than one format). Of those that watched the high resolution screencasts, 58% watched them in the computer labs on campus and 40% watched them off-campus using a broadband connection. Of those that downloaded the audio files, 90% accessed the high resolution MP3 file or mpeg4 files.

The students were reminded that the questionnaire was anonymous, and were asked when they had accessed the lectures during the course. 45% accessed all or most of the lectures within a week of release. 34% started to access them regularly, but then fell behind, and 21% only accessed the material during the week before the exam.

Finally, the students were asked if they liked having lectures delivered in this way. 85% of the students responded positively, while 8% were ambivalent, and 7% responded negatively. When asked if they would like more lectures to be delivered in this way, 76% responded that they would, 17% were not sure and 7% responded negatively.

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The students were also asked open questions and were given a text box in which to record their answers. In terms of what they liked about having the lectures delivered in this way, the key responses were flexibility, and the ability to pause and rewind—either to catch up in their note taking or to repeat sections they didn't fully understand. Students also thought it was a useful revision tool. Some key comments included:

*“The flexibility was great as my little boy finishes nursery at 6 so I didn't have to attend the 5 – 6 lecture”*

*“I even managed to do one of them during my lunch break at work one weekend when I was really busy and hadn't had time during the week.”*

*“I liked being able to pause and rewind bits so I could write down notes. I really struggle writing notes in lectures”*

*“You could take your time, go back over things as many times as you liked and you could use the Internet as you worked for research on topics.”*

*“I liked the idea of having it online so you could watch it when you wanted. Sometimes because of 9 o'clock starts you feel tired and don't take in as much.”*

*“...no one coughing/talking/distracting you from a lecture.”*

*“It is certainly the best revision aid you can get ... your whole lecture all over again.”*

In terms of what the students didn't like about the lectures, the key complaints were that it was easy to fall behind with them. Unless students were very motivated, they often put off watching them until another day. Students also noted that it took them much longer to access the lectures in this way as they were pausing and rewinding the recordings which meant that it often took them twice as long to go over the material than it would have taken them to just attend the lecture. Some students complained that they felt isolated from the lecturer and from their fellow students and that they missed being able to ask questions. Some key comments included:

*“It was easy to put off doing a lecture, as you knew you could do it later and this could lead to leaving it to the last minute and cramming.”*

*“I fell very behind with the lectures and it also took about double the time of the lecture to actually watch it as I became obsessed with catching virtually every word.”*

*“I found I was writing every detail down which took forever, whereas in the real lecture you write key points you need to know.”*

*“I didn’t like the fact that you couldn’t ask questions during the lecture. I also didn’t like the lack of bonding between the lecturer and student.”*

*“Not being able to ask what something meant. Not being able to ask fellow students if they understood a lecture i.e. in the same boat as each other therefore reducing your confidence. Not being able to mix with other students and get to know how everyone is doing with regards to assignments etc.”*

In terms of technical problems, some of the students complained that the files were often slow to download, and that they had problems accessing a free machine in the computing labs during busier times. A couple of people said that they couldn’t get the MP3 files to work on their own MP3 players, although nothing was said at the time.

Finally, we asked the students what they thought we could do to improve the e-lectures. The main answer was that they would have liked more face-to-face contact, possibly through a weekly discussion/question and answer session, or by having more practical sessions. Students also requested the lectures on a DVD, if possible, and the inclusion of a trouble-shooting page.

## Discussion and conclusions

In general, the feedback from the students was overwhelmingly positive, with only 7% of students not in favour of this form of delivery. Flexibility was one of the key criteria for the students, as they could then view the lectures at the time of day most suited to their learning style, rather than be constrained by lecture times. Students also reported learning more, being able to take better notes, and gaining a better understanding of the lecture material. However, the mid-semester test that examined the content of these lectures had not previously been run in a similar format, so it is not possible to judge whether this anecdotal evidence is matched by the students’ exam performance in previous years. Further work is needed to assess the validity of this finding.

While the feedback from the students was very positive, there are issues that need to be addressed if we are to continue and extend lecture delivery in this format. Students miss the interaction not only with the lecturers, but also with the other students. Clearly, this method of teaching is not to be used to replace face-to-face teaching time, but it could be used to provide much of the theoretical material for a course. This could free up staff time to introduce more small-group teaching, discussion sessions, and practical-based teaching into course modules. This may also address the issues of motivation, if weekly follow up sessions are provided. Students will also need coaching in how to take lecture notes from this form of delivery. It is not appropriate or effective for them to be writing down every word the lecturer says, but this is clearly a temptation when the lectures can be re-wound and replayed.

In terms of the preferred viewing and download formats, the majority of the students were accessing the high resolution screencasts, podcasts and MP3 files. While some commented that download times were slow, clearly the quality of the audio and video recordings was paramount. Despite the fact that the students were strongly encouraged to report technical difficulties if they encountered them, none did at the time. This conflicts

with the evidence that a few students did experience technical problems, which they reported in the questionnaires, and indicates some reluctance to admit to or seek help for difficulties when they arise—perhaps a more detailed troubleshooting guide is required.

## References

- Chan, A. and Lee, M.J.W. (2005) An MP3 a day keeps the worries away: Exploring the use of podcasting to address preconceptions and alleviate pre-class anxiety amongst undergraduate information technology students. In D.H. Spennemann and L. Burr (eds.) *Good Practice in Practice: Proceedings of the Student Experience Conference* (pp. 58-70). Wagga, NSW, September 5-7.
- Thomas, K. (2006) The power of the podcast. *Viewpoint*, January 2006. [www.futurelab.org.uk/viewpoint/art70.htm](http://www.futurelab.org.uk/viewpoint/art70.htm)



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