



Redesigning the curriculum

University of Hertfordshire

What is an electronic voting system (EVS)?

Electronic voting systems provide opportunities for interactivity and immediate feedback in large-group teaching contexts. Computer software collects and records the responses made by learners using handsets to questions posed during a class, lecture or presentation. Percentage responses to options are usually displayed, but data can be collected from individual handsets.

What is a podcast?

A podcast is a recording, for example, of the content of a lecture, made available for download from a website or VLE by syndication – a process of making content available to other sites by means of RSS feeds. A vodcast refers to the use of video files for the same purpose.

Background

The School of Health and Emergency Professions at the University of Hertfordshire offers courses in dietetics, paramedic science, physiotherapy, diagnostic radiography, and radiotherapy. Students in these disciplines have benefited from newly developed technology-enhanced learning environments which simulate the real-life demands made on tutors in healthcare and emergency medical professions. In addition, students have 24/7 access to resources on the university's Managed Learning Environment, StudyNet, which offers a personalised portal to module and course information, online discussion and group work facilities, communication channels with tutors, blogs, online journals and databases, and an e-portfolio tool.

The Blended Learning Unit (BLU) at Hertfordshire has been instrumental in embedding the use of StudyNet but also advises on how to enhance learning and teaching with a range of technologies. The Unit – a HEFCE-funded centre for excellence in teaching and learning (or CETL) – specialises in blending effective uses of technology with traditional pedagogic approaches. Tutors who are enthusiasts can be seconded to help colleagues integrate technologies such as virtual classrooms, electronic voting systems, mobile devices and podcasts into day-to-day practice.

Challenge

The increase in student numbers in recent years on the BSc (Hons) course in diagnostic radiography and imaging in the School of Health and Emergency Professions has made it increasingly difficult for tutors to assess the quality of students' learning. Approximately 120 students, for example, are likely to take the compulsory Level 2 module on anatomy, physiology and pathology for imaging. This large intake means greater diversity in the age groups of students and consequently in the level of experience they bring with them into their studies. Yet lectures delivered to large groups give little opportunity for tutors to identify and support those needing assistance: *'It is hard to know what, and how well, students in large groups are learning.'* Alan Hilliard, University Teaching Fellow, Blended Learning Unit, University of Hertfordshire

Transforming practice

Until 2006, the anatomy, physiology and pathology for imaging module was delivered in two two-hour lectures in large lecture theatres which provided the only face-to-face contact that this large cohort of students had with their tutors. That was until module tutor Jenny Lorimer seized the opportunity to radically change the way the module was taught: *'I felt I could do more to improve the quality of the students' experience – I just wanted to find a better way of teaching.'* Jenny Lorimer, senior lecturer, School of Health and Emergency Professions, University of Hertfordshire

By using a digital voice recorder, and with guidance from the BLU, the content of the first two-hour lecture has now been split into shorter sections and recorded as MP3 files to accompany the PowerPoint® presentation normally given in the lecture. When recording the podcast, consideration is given to students' need to assimilate unfamiliar terms. On an initial slide in each presentation is a list of terms and concepts that may be new to the student. The next slide gives an overview of the topic, introducing relevant concepts. At this stage, the recording pauses and students are advised to take the opportunity to familiarise themselves with the new terms and concepts. The presentation is similarly divided into sections of around 20–30 minutes to enable students to assimilate what they have learnt and to take a break before continuing.

The presentations and podcasts are uploaded to StudyNet a week in advance of the second two-hour session – now redesigned as a face-to-face session made up of small-group activities. During the second session, students rotate in groups to undertake three or four different activities, testing their recall of the newly acquired anatomical and pathological terms by using multiple choice quizzes and EVS handsets, discussion activities or peer marking of essays in outline format. Since Jenny prepared the content for the podcasts and the group activities, other members of the teaching team have time available to facilitate group activities.

e-Learning advantage

Podcasting is a simple and cost-effective use of technology which enables course content to be accessed free of constraints of time, pace and place. RSS feeds alert students at Hertfordshire to the availability of new podcasts and students either use computers in the university learning resource centres or their own personal technologies to play or download the podcasts. Evidence suggests that students respond well to podcasts recorded by their lecturers – explanations given by a familiar voice are more likely to help with the emotional aspects of learning by providing a personal and more immediate quality (Fothergill, 2008).

In the School of Health and Emergency Professions, it is common practice to combine podcasts with slides – information displayed diagrammatically on a slide can be supported by an explanation recorded as digital audio files, a format which is especially valuable in the context of anatomy and physiology.

The podcasts and slides are released before rather than after the timetabled session, which gives students more time to engage with the content – for example, by repeating the podcast or researching recommended links. Evaluations show that the average time students spent working with a podcast was around 3½ hours; in comparison, the lecture the podcast replaced was two hours long. Making podcasts available in advance of a session also complements patterns of study adopted by students; most students (97%) participating in the evaluation stated that they found it easier to learn at the weekend or during the evening, and therefore appreciated the chance to prepare for the face-to-face session by listening to the podcast over the weekend or the night before.

The face-to-face session then provides opportunities to follow up on questions that students' deeper engagement with the theoretical content has generated – podcasts often conclude with tasks and prompts for further research. Unlike students in large lecture theatres who rarely question their

lecturers, those working in small groups are more likely to ask for additional explanations, especially if their answers to multiple choice quizzes using the voting system have shown that they have not yet mastered the core concepts. The EVS at Hertfordshire – TurningPoint® – not only provides simple opportunities for students to self-assess their understanding of the podcasts, but also enlivens the face-to-face sessions. Majority verdicts from multiple choice questions embedded in a presentation, for example, can open up exploration of the consequences of the decision in subsequent slides. Learning from erroneous approaches then occurs without exposure or censure – the group, not the individual, has made the faulty decision. Students can become deeply engaged in the debates that ensue.

Graphs of the results of weekly EVS tests are published on StudyNet; this information pushes the boundaries still further by enabling students to assess their performance against that of their peers. (Data is given by handset number rather than name to maintain anonymity.) Tutors can then compare formative and summative data to research more closely how well students are learning.

The two technologies used in tandem – the podcast prior to the face-to-face session and the voting system during the session – have transformed the experience of learning challenging, factually-based content. Students can access the podcast at times and in places convenient to them and return to it as many times as they wish. The level of interaction between students and tutors has increased significantly and students' recall of information has improved.

It is not surprising that students have almost unanimously praised the redesign: 80% of the student group expressed satisfaction with the blended delivery. 97% of direct-entry students and 100% of mature students found the EVS system easy to operate. 97% of all students found it easy to download podcasts from StudyNet.

From the tutors' perspective, teaching has become more productive. Tutors have more opportunity to know students as individuals, despite the size of the cohort. Students experiencing difficulties are more likely to self-refer and look for support from both tutors and peers, and it is evident from the module discussion site on StudyNet how active students have become in supporting one another.

Both tutors and students enjoy the face-to-face sessions – now freed from the chores of delivering and receiving knowledge, both are able to interact more freely and put learning and teaching more closely to the test. Tutors are, as a result, finding out more quickly (rather than too late) what needs attention, and their teaching becomes correspondingly contingent:

'Once I thought I had covered something fully. However, I discovered through the EVS tests in the small-group session that across the board students were getting questions on the topic wrong. The voting system helps me realise what students find difficult and where to focus my efforts.' Jenny Lorimer, senior lecturer, School of Health and Emergency Professions, University of Hertfordshire

From the point of view of assessment, the redesigned curriculum has integrated well into the assessment framework for the module. The podcasts provide flexible opportunities for students to revise key terms and concepts, while on-the-spot quizzes using the EVS help to prepare students for the multiple choice questions they eventually face in summative assessments. (See also Draper & Brown, 2004.)

Lessons learnt

- Care should be taken to select digital voice recorders (DVRs) that support the production of MP3 files. DVRs usually offer two quality settings. The higher setting creates larger files which use up more space on the devices that students use to play back the podcasts. Depending on the length of recordings and requirement for multimedia, it may be worth testing the lower setting first to keep file sizes smaller.

- Clear use of titles and subheadings helps students understand the structure in a suite of podcasts.
- Publishing graphs of results from weekly EVS quizzes helps students monitor their own performance and promotes more consistent learning: *'The EVS let me know my weaknesses and helped me to learn what I needed to look up.'* Student

Key points for effective practice

- Podcasts in themselves may not make a significant difference to the quality of the learning experience. More important is the coherence of the blend between technology and traditional aspects of learning and teaching.
- Shorter podcasts are easier to record and play back, so it is preferable to split larger topics into sections, signposting for students in each script where other related information is located.

Learners' perspectives

'I have found this subject very hard, but the way Jenny and her team taught it made the module absolutely fantastic. I have found myself looking forward to her lecture.' Dan, radiography student, University of Hertfordshire

'I have loved every minute of the module and feel I have benefitted more from building a good relationship with the teaching staff; the little group sessions enabled this.' Nadia, radiography student, University of Hertfordshire

Future developments

The TurningPoint EVS system can also support strategies for problem-based learning if students are given control over the order of slides and use their judgement to decide on the right order before viewing the decision of the majority. This additional use of EVS will be put into practice and evaluated during 2009.

Further reading

Draper, S.W. & Brown, M.I. (2004) 'Increasing interactivity in lectures using an electronic voting system', *Journal of Computer Assisted Learning*, 20, pp. 81–94

Fothergill, J. (2008) 'Podcasts and online learning' in Salmon, G. & Edirisingha, P. (Eds), *Podcasting for Learning in Universities*, Chapter 15, pp. 153–168, Open University Press

Lorimer, J. & Hilliard, A. (2007) Using Podcasts/Audio Downloads and an Electronic Voting System to Transform a Traditionally Delivered Module into a Blended Learning Module –

<http://hdl.handle.net/2299/2624>

Key words

Blended learning, electronic voting system, EVS, podcast, managed learning environment, undergraduate, radiography, healthcare, Jenny Lorimer, Alan Hilliard

References

University of Hertfordshire Blended Learning Unit –
www.herts.ac.uk/about-us/learning-and-teaching/blended-learning-institute/home.cfm
TurningPoint® – www.turningtechnologies.co.uk

Effective Practice in a Digital Age: Getting prepared for change

Learning and teaching in a digital age are being profoundly altered in a wide variety of contexts by the additional potential offered by technology.

*Effective Practice in a Digital Age: A guide to technology-enhanced learning and teaching – an updated version of the well-received 2004 JISC guide to the pedagogy of e-learning *Effective Practice with e-Learning* – was launched in June at the 2009 Higher Education Academy Annual conference.*

The publication aims to illustrate for those new to teaching or who have not yet adopted technology in their practice, how technology can be harnessed to meet everyday teaching and learning challenges. Combining theory with practice, the guide also aims to pinpoint some of the key steps that will help further and higher education practitioners to take the next steps towards using technology appropriately and effectively in their own practice.

Effective Practice in a Digital Age marks an important watershed in JISC's programmes of research into pedagogy and technology. Drawing on the outcomes of a range of JISC programmes of research and development in the field of technology enhancement, the guide looks forward to an age of digitally empowered learning and teaching.

Accompanying the publication is a suite of online resources in the Effective Practice Resource Exchange. The Effective Practice Resource Exchange includes video case studies depicting themes related to technology-enhanced practice; a selection of practitioners' voices caught on camera; extended versions of the publication's case studies for use in staff development and other institutional contexts, and podcasts expanding on key messages from the publication.

The publication can be ordered in hard copy or downloaded in PDF and accessible text-only formats. All resources associated with the publication can be downloaded for use in educational contexts.

To download the publication in a range of formats: www.jisc.ac.uk/practice

To download or view the supplementary online resources: www.jisc.ac.uk/resourceexchange

For further information, contact Sarah Knight [s.knight@jisc.ac.uk]

Effective Practice in a Digital Age: Links

1. Effective Practice in a Digital Age publication: download or order from

www.jisc.ac.uk/practice

2. Effective Practice in a Digital Age online resources: Redesigning the curriculum, University of Hertfordshire available from

www.jisc.ac.uk/resourceexchange

3. Responding to learners pack:

www.jisc.ac.uk/publications/programmerelated/2009/respondingtolearners

4. JISC Transforming Curriculum Delivery through Technology programme:

www.jisc.ac.uk/curriculumdelivery