Podcasting, which originated as a technology to create and distribute personal radio shows on the Internet, is now becoming a technology to support learning in many educational contexts.

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In this article, we introduce podcasting as a learning technology, and discuss four approaches to using podcasting to support formal higher education, a key stage of an individual's lifelong learning process. These podcasting approaches have been developed to support: transition from school to university; acquiring good learning and study skills; online and independent learning; and; learning at a distance. Following a brief overview of the definitions of podcasting as they apply in educational contexts, and a review of the current use of podcasting for learning, this article outlines the methodology for developing podcasting approaches. It then briefly describes the four approaches to support student learning. Each approach has been developed to address a specific teaching and learning challenge. We invite practitioners to adopt these approaches and develop their own podcasts to address similar or different teaching and learning challenges.

**INTRODUCTION AND DEFINITIONS**

Increasing numbers of research papers published on podcasting and formation of practitioner groups to explore the potential of podcasting for learning indicate the increased interest from teachers and technologists on the potential of podcasting for learning. The Podcasting for Pedagogical Purposes group (podcastingforpp.pbwiki.com), IMPALA (www.impala.ac.uk), and the Podagogy Research Group (wlw.ac.uk) are examples of UK-based communities of researchers and practitioners interested in the pedagogical applications of podcasting. In the UK, the Higher Education Academy (HEA) and the Joint Information Systems Committee (JISC) have funded a number of research and development projects to examine podcasting for learning.

Salmon et al (2008) regard podcasts and podcasting as new practices that are still evolving. According to their definition, a podcast:
- is a digital media file that plays sound, and sound and vision
- is made available from a website
- can be opened and/or downloaded and played on a computer, and/or
- is downloaded from a website to be played on a portable digital player (such as a mobile phone or a dedicated player such as an iPod or mp3 player).

Those who prefer a more technical approach to podcasting would disagree with the above definitions. It is true that technically speaking what distinguishes podcasts from other forms of digital media is that the technology that underpins podcasts enables digital media files to be delivered on the Internet using syndication feeds; podcasts, then, can be downloaded automatically through a subscription service to playback on a suitable digital media player, such as a dedicated MP3 or MP4 player or a computer. This process enables the content to be “automatically delivered to [a user’s] computer as soon as ‘new content’ is posted on the web” (BBC, 2005). Subscription-based access makes podcasts a ‘pull’ technology rather than a ‘push’ technology – the user does not have to seek and download new content manually (Campbell, 2005).

The American Oxford Dictionary defines podcasts as ‘a digital recording of a radio broadcast or similar program, made available on the Internet for downloading to a personal audio player’. This also hints at the possibility of a non-subscription vision of podcasts, offering the teachers and students the option of choosing the delivery and access technology. Many academic podcaster offer their podcasts as downloadable files from a website or an institutional Virtual Learning Environment (VLE) (Lee, Miller & Newham, 2008). Empowered by the ‘low threshold technology’ involved in producing podcasts (Ramsden, 2007) and benefiting form the institutionally available VLEs, many teachers at universities, colleges and schools now deliver podcasts through their VLEs for students as downloadable files. This approach is close to the approaches that we have recently documented (see Salmon & Edirisingha, 2008). VLE-based podcasting is a popular option in academic contexts, given that both students and staff are familiar and regular users of institutional VLEs (Edirisingha, Salmon & Nie, 2008).

**PODCASTING IN HIGHER EDUCATION**

A number of social and technological trends work in favour of the increasing uptake of podcasting in formal learning contexts. Software for creating and distributing podcasts, and technical instructions on the use of software and tools are freely available on the Internet, making podcasting a ‘low threshold technology’ (Ramsden, 2007). Significant numbers of students taking HE courses own one or more devices: iPods and other brands; portable computers with MP3 playback software; and mobile phones (Melville et al., 2009; Trinder et al., 2008). All of these can be used to playback podcasts. Advice on exemplar approaches to using podcasting to improve student learning, and pedagogical models grounded in research (e.g., Salmon & Edirisingha, 2008) also contribute to the uptake of podcasting for learning.

A growing body of literature shows how podcasts can support student learning. Chan and Lee (2005) identified that informal short podcasts help to address students’ anxieties and concerns about the course content and to increase the sense of belonging to a learner community for distance learners. Lee, McLoughlin and Chan (2008) showed that learners’ involvement in podcast creation promoted collaborative knowledge building. Chinnery
(2006) demonstrated the use of podcasts to bring authentic cultural experience to students learning foreign languages. Copley (2007) showed the effectiveness of video podcasts to deliver supplementary lecture materials within an undergraduate marine science course, increasing students’ enthusiasm for studies and support in revision and preparation for assessments. Cebeci and Tekdal (2006) demonstrated that podcasting is an effective technology to make learning material more accessible to a wider diversity of learners. Baird and Fischer (2006) and Ng’ambi (2008) found that podcasts can be effective in enhancing student engagement in course-related activities and reflection. These studies and others reported in the literature on podcasting in higher education show positive benefits for learning. Students both surveyed and interviewed have reported that they valued the flexibility offered by podcasts for accessing and using learning material as well as the cognitive and motivational benefits obtained from listening.

The above results may not be too surprising; long before podcast technology was invented and became popular, the benefits of audio for learning had been identified through its predecessors: radio, audio cassettes, and audio-vision. The content medium of podcasting is recorded audio, which is not a new medium in education. Durbridge’s research (1984) at the UK’s Open University has shown that audio can influence cognition through clarity of instruction, and emotional aspects of learning; audio is effective in conveying immediacy and connection with the teachers. Woods and Keeler (2001) reported that short audio recordings by tutors embedded into emails have helped increase student participation in group activities, and added a sense of online community and satisfaction with the overall learning experience.

### IMPALA Podcasting Approaches

In this article, we discuss four approaches to using podcasting to support formal higher education to: support transition from school to university; help students acquire good learning and study skills; help students’ online and independent learning; and support learning at a distance. The approaches reported in this paper were generated through the IMPALA research project (and its friends) which examined the way podcasts can bring the advantages of digital audio (both tutor and student generated) to facilitate learning in higher education (HE). The research was carried out in five UK universities (Leicester, Nottingham, Kingston, Gloucestershire and the Royal Veterinary College) across a range disciplines: chemistry, engineering, English language, human geography, physical geography, genetics, media and communication, physics, sociology and veterinary sciences. IMPALA’s friends are in Scotland (The University of Edinburgh), South Africa (The University of Capetown); Australia (Charles Sturt University and University of New England), and Portugal (The University of Minho).

The IMPALA podcast development and research was initiated with a pilot study at the University of Leicester leading to the development of a set of guidelines and a framework for pedagogical design and development of podcast applications to address teaching and learning challenges. IMPALA partners from the above subject areas developed podcasts and trialed their use with students in undergraduate courses. We studied the impact of podcasting on student learning through qualitative and quantitative data collection and analysis (see Salmon and Edirisingha (2008) for more on IMPALA and the research findings). In this article we outline four approaches relevant to learning in HE: on-campus, online and at a distance (see Table 1).

**Podcasting for transition to university**

This is the most recent podcasting approach being developed within the IMPALA project. The aim of this podcasting approach is to support new undergraduates’ transition from school or college to university (www.impala.ac.uk/impala4t/index.html). The project is entitled IMPALA For Transition (IMPALA4T).

For many students, poor transition into university life, and difficulties with its academic and social demands, are key contributors to underachievement and possibly dropping out. An Ulster study found that up to 20 per cent of new students encountered difficulties in adjusting, managing their workload and

### Table 1. Four approaches to using podcasts to address specific teaching and learning objectives

<table>
<thead>
<tr>
<th>Purpose or teaching and learning issue to be addressed</th>
<th>Specific example of an approach to using podcasts</th>
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<tbody>
<tr>
<td>Supporting the transition from school or college to university</td>
<td>Student-created podcasts to share experience and provide advice on university studies and life</td>
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<tr>
<td>Supporting online and independent learning</td>
<td>Advice on time management, proposed study schedules and feedback on e-tivities</td>
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<tr>
<td>Supporting learning at a distance</td>
<td>Podcasts to address anxieties and other emotional issues of distance learners</td>
</tr>
<tr>
<td>Supporting the development of learning and study skills</td>
<td>Podcasts with advice on student presentations and assessments</td>
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becoming independent learners, leading to one in six withdrawing (Lowe & Cook, 2003). Students’ preparedness for and awareness of HE are critical factors contributing to their successful transition into HE (NAO, 2002; Boyle, Carter & Clark, 2002). HE students’ age, ethnicity, socio-economic background and family HE history (Taylor, Barr & Steele, 2002) all impact on their preparedness for HE. New entrants may hold misconceptions and many are inadequately prepared for the university’s assessment procedures, the relatively limited amount of face-to-face contact, the requirements of independent study, the large size of lecture groups, and the choices to be made among modular options (Byrne & Flood, 2005; Robothom & Julian, 2006).

Preparation for HE should include understanding HE and its ‘institutional habitus’, meaning the values and practices of cultural or social groups that are embedded in and mediated through the culture of an institution (Reay, David & Ball, 2001). A student who is unprepared can feel like a ‘fish out of water’ (Thomas, 2002, p. 431). Support for transition may bridge the gap between ‘institutional habitus’ and a person’s habitus, but HE institutions typically respond by providing formal courses in study skills (Hultberg et al., 2004; Knox, 2005).

The knowledge and experience of students who have already made the transition have rarely been exploited. Such knowledge is considered ‘hot knowledge’ (Ball & Vincent, 1998) that identifies ‘the socially embedded’ knowledge prevailing in networks of friends, family, relatives and neighbours, the people who are generally considered as ‘people like me’ (Hutching, 2003, p. 110). Studies on HE preparation report that potential applicants consider ‘hot knowledge’ to be more trustworthy than communication through ‘official’ sources (Hutchings, 2003).

Podcasting can capture this ‘hot knowledge’ and make it available to HE entrants and those studying at Level 1. The IMPALA4T approach uses podcasting as an innovative way to reach and address students on transition issues. IMPALA taps the knowledge and experience of students who recently made their own transition. IMPALA4T develops podcasts of two types: Type A for the benefit of learners about to start their first undergraduate studies, and Type B for those well into their first year (Level 1). Second- and third-year students in the Department of Biological Sciences at the University of Leicester develop these podcasts with a lecturer’s guidance.

Early results from interviews with students suggest that they see the student-created podcasts as helpful in three areas of transition: social, academic and institutional. For each area of transition they identified specific information needs that must be considered by academic institutions in supporting new entrants. These include information and knowledge about services available within the institution, such as the library facilities, the VLE platform and support services; information about tutorials, assignment submission procedures and communication with tutors; and developing relationships with peers and specific interest groups.

Supporting online and independent learning

Students enrolled in campus-based HE institutions generally carry out the majority of their studies through face-to-face methods such as lectures and seminars. However, the availability of VLE provides opportunities for lecturers and tutors to offer some or most of the teaching and learning activities online. Professor John Fothergill at the University of Leicester took this opportunity, and using the intuitional VLE Blackboard, he has been teaching his undergraduate engineering module mostly online since the early 2000.

While online learning offered the students many advantages, for example, the flexibility of learning at a pace, time and at locations suitable to their circumstances, it had its drawbacks. Professor Fothergill felt that, although the content of the course did not change during the few years of running the course, the repeated presentations of recorded ‘e-lectures’ meant that over time the course started ‘to lose life and lack lustre’ (Fothergill, 2008). He felt that even a well-designed course can look static and lack the liveliness of a course delivered using face-to-face methods such as lectures and seminars. He also felt that students needed support and guidance to structure their online learning activities.

Fothergill was looking for a technology that could help him support students’ online learning and to ‘enliven’ the course, and he found the answer in podcasting. He considered that podcasts would enable him to ‘talk to the students’ regularly, to provide feedback on their course work and performance in group work, and comment on results from assignments. For the majority of students, learning and studying entirely online was a new experience, therefore, the professor wanted to use podcasts to provide advice and guidance to students on approaches to studying the module.

Fothergill developed podcasts on a weekly basis and made them available on the module site of the VLE. His model of podcasts contained an initial item related to something that was reported in the popular press related to the subject, a middle and a substantial section (about 6–7 minutes) dealing with elements described above and a final section with humour. More details on the podcasts can be found in Fothergill (2008, pp. 80–91).
Student evaluations during four academic years have shown that the podcasts were popular amongst students; podcasts have helped students carry out their learning and studying online. Students valued the guidance received from podcasts to structure their weekly learning activities; being first-time e-learners, they needed such guidance.

Supporting learning at a distance

Pre-conceptions and anxieties that students bring to learning are barriers to effective learning (Chan & Lee, 2005). A small-scale trial of using podcasts with a cohort of undergraduate on-campus students at Charles Sturt University (CSU) in Australia proved that short podcasts (about 5 minutes long) were useful in helping students alleviate their anxieties and to help them address their misconceptions about the subject matter (Chan & Lee, 2005). Building on the success of the pilot study, Chan, Lee and their colleagues used podcasts with a range of undergraduate and postgraduate students, studying on-campus as well as off-campus at locations around Australia and overseas.

The podcasts at CSU were about 5 minutes long. Groups of volunteer students who had either completed the course or who were not presently enrolled were involved in creating these podcasts. They managed the complete production process, from generating ideas to making the final product available for students to listen to. Lee and Tynan (2008, pp. 92–102) describe the production process in detail. Podcasts were produced by students in groups with the minimal intervention by the teaching staff. The student podcast producers were able to exercise a high degree of autonomy and creativity. The format of the podcast was similar to a talk-back radio programme where student presenters hold discussions on subject-related issues in a relaxed and informal style. Occasionally, lecturers and subject experts featured in these podcasts offering insights into the more difficult or complex issues and topics. The material covered in these podcasts was supplementary to formal content, and involved no assessments.

Research carried out to identify how podcasts helped student learning unearthed a number of beneficial effects. The distance learners rated podcasts highly: listening to podcasts has been an effective use of their time. Students improved their time-management skills, thereby preventing them from falling behind. Those who listened to podcasts reported that they helped with their motivation and engagement with their studies, leading to enhanced learning outcomes. Podcasts have contributed to fostering a sense of community amongst the distance learners who do not generally get to meet their peers.

Supporting the development of learning and study skills

Rothwell (2008) illustrates an approach to using podcasts to develop the learning and study skills of first-year undergraduate students. Rothwell teaches a core module taken by students who were from different fields of study: all combining English language with other subjects from humanities, arts and social sciences. Students on Rothwell’s module were assessed on a portfolio that they had developed individually during the semester, and their group presentations. Students had little contact with each other outside the module, limiting the opportunities to develop a cohort identity and for peer support to develop study skills for assessed work.

Rothwell used podcasts to help students develop the range of study skills required for learning the module, including the core skills needed to develop portfolios and presentations. The podcasts that she developed were about 10 minutes long, and were made available fortnightly. They were designed to enhance students’ understanding of the core concepts and issues, build a sense of cohort identity, encourage peer support for learning, and develop writing, speaking and presentation skills. Each aspect was covered by sound clips of 2–3 minutes explaining key concepts covered in lectures and seminars, discussions between students and staff on assessment tasks, and senior students providing study tips. To develop student collaboration, content for podcasts was generated from interviews with current and previous students, and student mentors (senior students) who help with level-one students at the faculty Academic Skills Development Centre (a drop-in advice centre).

Rothwell reports a number of positive outcomes of her podcast approach. Podcasts became a complementary resource for students to learn more about, and clarify issues related to, how they go about developing portfolios and preparing for presentations. The views of, and advice from, senior students on learning and studying have been a valuable source of learning. Podcasts offered them choices in terms of time, location and sequencing of their learning.

REMARKS AND RECOMMENDATIONS

This article presented four approaches to using podcasts to support formal learning at the undergraduate level. Starting with a clear pedagogical rationale is critical for the success of a podcasting approach. All the four podcasting approaches presented in this paper share a common feature; they all have been developed to address a particular teaching and learning challenge. Researching the impact of these approaches has shown positive benefits to student learning.

As the approaches described in this article demonstrated, you can involve not only teachers and subject experts, but also students and other stakeholders in the podcast development process. These approaches showed that content generated from and by students have
helped students to learn generic learning and study skills, to alleviate study-related anxieties, and to develop reflective skills. Consider getting your students’ active participation in developing podcasts.

The VLE is the main delivery platform for all the podcasts described in this article, and research carried out on student use of podcasts showed that students were able to access and use them without technical issues. Therefore, we can confidently say that VLE based podcast delivery works well for academic podcasts. If you use a subscription-based approach to deliver your podcasts, it is important to help students understand how they can subscribe to your podcasts in order to access them.

Podcasting can support face-to-face learning, online and on location, and it can help to learn both conceptual topics and practical subject matters. As this article outlined, many social and technical trends are working in favour of using podcasts for teaching and learning. So, please explore, experiment and report back your stories of podcasting for learning. You can find us on www.impala.ac.uk.

References


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