

Educational podcasts: Some early evidence and thoughts

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Abstract

The aim of this project was to investigate, using a non-specialist accounting module, when and where students use podcasts, analyse student views on their educational value and explore some of the potential barriers to their introduction. The paper uses a student questionnaire and usage statistics collected from the Blackboard online tracking facility, and draws on secondary research from a number of studies from the UK and USA to compare evidence from early adopters. We found that students believe their learning experience is improved by podcasts and there is convincing evidence of their use as an additional learning tool, particularly for revision. As with other studies, there is little evidence of mobile learning or for a desire among students to abandon traditional teaching practices. We conclude that educators should consider using podcasts as an additional method to engage with students but that this resource should be primarily used during the revision period. Education policy makers should note that staff may be reluctant to introduce another method of communicating with students.

Keywords: podcasts; student perceptions; revision; e-learning; m-learning

Introduction

This study reflects on an early investigation into the use of podcasts for an accounting module (Managing Finance) for undergraduate business students at the University of the West of England (UWE). UWE is a former polytechnic with a well established business school, Bristol Business School (BBS). It has a large campus with substantial numbers of undergraduate students and, like most higher education institutions, has experimented with the use of computer technology over a number of years (Collett *et al.*, 1999; Love & Fry, 2006).

The development of e-learning practices at UWE is strikingly similar to the experience at other institutions (see, for example, Blin & Munro, 2008) and there certainly appears to be a mimicking of professional routines and “homogeneity of organisational forms and practices” (DiMaggio & Powell, 1983, p.148). Within the Managing Finance module, the authors felt that the use of e-learning technology was limited to an online storage facility, which had minimal “impact on teaching practices” (Conole, 2004, as cited in Blin & Munro, 2008, p. 476). In addition, a previous study of virtual learning environments (VLEs) within BBS identified some adverse and unintended consequences from their existing use, and concluded that the “online provision of teaching material does not motivate students to either attend taught sessions or to engage in an independent and deep approach to learning” (Love & Fry, 2006, p. 161). It was in the spirit of improving this existing provision that we began examining the possibility of using audio podcasts.

Our research was influenced by previous work (Chan & Lee, 2005; Lane 2006; Copley, 2007; Edirisingha & Salmon, 2007; Lee & Chan, 2007; Evans, 2008) and, like Copley’s experiment (2007), used a student questionnaire and usage statistics collected from the Blackboard online tracking facility. The experiences of the authors as direct participants, students’ previous familiarity with podcasting, and their perceptions of the usefulness of this technology are explored. We were also interested in student usage during a revision period. The paper firstly outlines some of the existing literature and debates on using educational podcasts, and then provides a summary of how the podcasts were developed for the Managing Finance module. This is followed by a data collection and findings section, with analysis of a student questionnaire and access statistics gleaned from an examination revision period. We then discuss and compare the data with other relevant literature, and the paper ends with our conclusions and suggestions for further research.

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Previous evidence on educational podcasts

Brown and Green (2007) defined podcasting as “the technology of distributing sound or video files to users” (p. 3). The technology for producing podcasts is widely available, inexpensive, relatively simple to use, and is likely to become more popular as the number of digital players expands (Ellis, 2006, cited in Brown & Green, 2007, p.3). While, a number of authors note that podcasting, or using some form of audio recording, to aid teaching and learning is not a new concept, the improvement in playback and production technologies has allowed the podcast to achieve enormous growth over the last 5 years (Bongey *et al.*, 2006; Atkinson *et al.*, 2007; Brown & Green, 2007). There is also increasing evidence of greater familiarity with and use of podcasts within the general population. Edison Media (2007b) noted that, in the USA, “the awareness of the term ‘podcast’ has grown considerably” (p. 1) between 2006 and 2007, from 22 % to 37 % of the population. While in the UK “22.5 % of adults in the 15-24 age group own a digital media player” (Intel-BMRB Survey, 2005, cited in Edirisingha and Salmon, 2007, p. 1). Within this societal and technological context education, practitioners have begun to show increasing interest in podcasting for teaching and learning (Nie, 2006). Certainly early reports from the USA suggest that a number of universities are embracing them as another method for engaging with students (Lane, 2006; Brown & Green, 2007). In the UK, the Informal Mobile Podcasting And Learning Adaptation (IMPALA) Project (Rüdel, 2006) identified a wide range of possible educational podcast usage. This included the provision of news items, additional lecture material, course notices, guidelines on tutorials, updates on current issues, and student generated material (Edirisingha & Salmon, 2007). Also, Rüdel’s (2006) literature survey of podcasting identified a similar use of the technology.

Early feedback from other podcast studies claimed positive results (Lane, 2006; Copley, 2007; Crawford, 2007; Edirisingha & Salmon, 2007; Evans, 2008). Indeed, a UK national pilot study by Edirisingha and Salmon’s (2007) concluded that:

Podcasts supported organisational aspects of learning, brought an informality and fun to formal learning, developed students e-learning and independent study skills, enabled a deep engagement with learning material, and helped them to learn while being mobile. (p. 5)

A number of studies also suggested that they may be a valuable revision tool (Copley, 2007; Evans, 2008; Waraich, 2008), with Evans (2008) finding that students regarded podcasts as “more effective than revising from textbooks” (p. 495) and “a quicker way to revise than using their own notes” (p. 496). Chan and Lee (2005) also suggested that podcasts can be used to reduce student worries and angst before entering the classroom. For example, they found that audio is “an ideal medium for producing material to address students’ preconceptions about a subject and its content, and to alleviate the anxiety that students bring to a classroom” (Chan & Lee, 2005, p. 68).

Some research (Edirisingha & Salmon, 2007; Lee & Chan, 2007) found that podcasts provide ideal opportunities for m-learning (mobile learning) and “offer a higher degree of lifestyle integration” (Lee & Chan, 2007, p. 201) with “the acquisition of any knowledge and skill... anywhere, anytime” (p. 203). However, this was contradicted by other studies which suggested that podcasts are not used predominantly as a mobile technology (Lane, 2006; Copley, 2007; RAJAR, 2008), rather students, and indeed the wider public, tend to use a home computer rather than mobile devices with the “freedom to listen when they want is perceived as the main benefit” (RAJAR, 2008, p. 17).

The literature also identified some potential drawbacks to their use. There is some, largely anecdotal, evidence that podcasts may have an adverse affect on student attendance. Lane’s (2006) evaluation of podcasting in the USA suggested that:

Several instructors reported observing a drop in attendance in courses with podcasting... seven instructors indicated that the presence of podcasts made students less likely to attend class, four indicated that it had no effect...and no instructors claimed that podcasting made students more likely to attend class. (p. 7)

While French (2006) suggested that just listening to a podcast is not the most effective educational strategy and that “studies on the effectiveness of multimedia software (e.g., Mayer & Moreno, 2003) indicate that information received via one sensory channel is not processed and stored as well as information received from two” (p. 58).

Also, as Abt and Barry (2007) questioned, do podcasts provide improved learning compared to the provision of any other additional material? They compared podcasts with other written material and concluded that “the use of podcasts... may not result in a worthwhile improvement in student achievement over-and-above the use of written material” (p. 6).

Our study: Podcasts for the Managing Finance module

There were a number of specific stimuli for our experiment with podcasts: students with special needs; the perceived prevalence of pod technology among students and within the wider community; the promotion of the technology within the university; as a way to revamp our Blackboard site; and, as a means to keep in contact with or “reach out” to partner institutions. The perceived ease of use, as far as producing the podcasts, was another important factor, particularly as this was a self-supported project.

The Managing Finance module is a second year module, primarily aimed at business studies students. Module content is relatively broad as it provides an introduction to both management accounting and finance, and follows the standard delivery pattern of all modules in our undergraduate programme of one lecture and one workshop each week. The lecture provides an introduction to a topic, followed the next week with a more interactive workshop, where students are normally given questions or tasks to complete. In 2007/8 the module had 340 students in total, divided between two lectures and fourteen workshops of around 24 students. The module is also delivered at two partner institutions, one in the UK and one overseas. Module leadership was shared between two lecturers and there were four additional teaching staff undertaking workshops and teaching at partnership institutions.

The intention was to start using the technology in the first term of the course but there was a debate within the team that prevented this from happening and, indeed, dampened initial enthusiasm. In retrospect, a number of reservations or indeed fears were identified, which may have wider connotations for future adopters. The time needed to produce the first podcast was around 3 hours. This was surprisingly long for a 15 minute podcast and, although a learning curve effect was recognised, spending such a period of time on each podcast was de-motivating.

There were also less obvious and less tangible barriers. The quality of the recording seemed a little amateurish, particularly as the podcasts lacked other audio effects such as music, sound effects or voice variety. There was also a serious debate within the team about the possible misuse of the recordings by students. This included cutting and pasting parts of the recording to humiliate the lecturer, in a type of YouTube posting, and possible inaccurate or misleading information being broadcast, with students’ using this as part of any appeal process.

In addition, some staff expressed concern about the possible knock-on effects of this technology on lecture and workshop attendance. A previous study within the Business School suggested that posting lecture and workshop materials on Blackboard might have had “a negative impact on attendance” (Love & Fry, 2006, p. 158). Love and Fry’s (2006) research used student focus groups and there were some memorable student quotes, including: “I know there have been some people that haven’t been to one lecture at all for certain modules this year, because they know it is all on Blackboard” (p. 157). This evidence appeared to contribute to a view among a number of staff that additional online provision, in the form of podcasts, could sway students towards not making the effort to attend traditional teaching sessions. The implication was that this could have a detrimental effect on their subsequent performance.

Although there is evidence suggesting “a clear positive relationship between attendance at classes and subsequent academic performance” (Paisey & Paisey, 2004, p. 39), this does not mean that the transfer of student time to online learning will have a negative impact on student performance. As far as our study was concerned, it was largely as a result of these reservations that the use of podcasts on Managing Finance was delayed until the second term when eight podcasts were produced, one each week, each of about 10 minutes in duration and linked to workshop activities.

The podcasts were produced using the voice recording tool within the Blackboard virtual learning package, one of a number of additional software tools supplied by Horizon Wimba. The mechanics of production were quite simple. There is a drop-down menu within Blackboard called voice recorder and when this is accessed a toolbar appears with a small number of standard “screen buttons”, such as, record, play, and stop. The lecturer plugs a microphone into the computer and clicks the record button. You can stop the recording to think about your next point, but we could not find how to edit the recording if we made a mistake. The audio file is saved and made available on Blackboard in the same way as any other digital data. Students can listen to the audio file on their computer via their Blackboard site or download it to a personal audio player.

Each podcast gave a brief summary of the weekly workshop topic, information on where to find additional learning material and the main stages of completing the workshop question. Early in each podcast students were informed that they needed to have the question in front of them to understand parts of the podcast. Sometimes more detailed guidance was given and parts of the answer were revealed so students could ascertain whether their answer was correct. The podcast was unscripted but the lecturer normally had a list of headings. On average, the recording time for the early podcasts was between 1 and 2 hours. This relatively long production time was caused by our unfamiliarity with the technology and also perhaps slight embarrassment when listening to our own voices, and the subsequent urge to review and re-record what we

had said. This self consciousness reduced as the process became more routine, although committing what is essentially a conversation to permanent future scrutiny still felt somewhat disconcerting. The recording time was reduced to around 30 minutes for some of the podcasts, but the total preparation time - familiarising oneself with the question, deciding on the key points to be covered and reviewing the podcast on completion - still resulted in at least an hour of time being devoted to the production of each one.

Many accounting modules, including ours, use workshop questions that require the manipulation or computation of data drawn from simplified business scenarios. Previous teaching experience suggested that students often have initial difficulty in interpreting the information provided in these questions and often vocalise this as “I didn’t know how to start”. Our podcasts were seen as an opportunity to talk through the workshop questions before a session and thereby increase student confidence and help them in overcoming this hurdle. Therefore, they were not developed as a stand alone replacement for lectures and workshops, but rather as an additional resource for students as a way to “maximise interest and appeal to students [rather than as a] primary method of instruction [and not to] replace face to face lectures and tutorials” (Chan & Lee, 2005, p. 67). It was also felt that this approach would limit any possible adverse effects on attendance that may have occurred from providing podcasts of lectures.

Data collection and findings

Like Copley’s investigation in 2007, we used the Blackboard VLE platform and evaluated the experiment using a questionnaire and tracking data, but our focus was workshop related audio podcasts, whereas Copley (2007) used both audio and video podcasts of lectures. We sought to corroborate evidence from previous studies (Chan & Lee, 2005; Lane 2006; Copley, 2007; Edirisingha & Salmon, 2007; Lee & Chan, 2007; Evans, 2008) and, in particular, student usage and familiarity with podcast technologies, their views on their perceived educational benefits, and where and when they used the podcasts.

A questionnaire was distributed to students at the end of the second teaching term, prior to the start of the self-directed revision period. There were 116 responses: 35% of the 333 students subsequently sitting the examination, with the responses divided equally between male and female students. The questionnaire was divided into two sections. The first, completed by all 116 students, was on general awareness and the use of podcasts. The second section was specifically related to student perception of the Managing Finance podcasts and was only completed by the 33 students who had accessed them. All the questionnaire data were processed and analysed using SSPS version 15. Where appropriate, students were asked to give their response on a Likert scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*).

Questionnaire Section 1: Previous student podcast usage

The questionnaire showed that only 44% of students had previously downloaded a podcast of any kind, including the Managing Finance podcasts (Table 1). Even though fewer than half the students had ever used podcasts, and only 28% of students had actually downloaded a Managing Finance podcast, there was general support for their usage, with 87.5% agreeing (or strongly agreeing) that they were a good additional resource (Table 2). However, there appeared to be no general desire for podcasts to replace traditional teaching formats, with 76% of students preferring face-to-face contact.

Questions	Yes (%)	No (%)
Have you ever listened to an audio or video podcast?	44	56
Have you ever listened to the Managing Finance podcasts?	28	72
Have you ever listened to a podcast for another module?	4	96

Table 1: Use of podcasts (n = 116)

Statements	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Podcasts are a good idea but I prefer face-to-face contact	19.8	56.6	18.9	4.7	0.0
Podcasts to help learning are just another hassle	1.0	3.8	15.2	59.0	21.0
I have far too little time to mess about listening to podcasts	1.0	3.8	29.5	48.6	17.1
I would prefer smaller student numbers in workshops than more podcasts	7.8	34.0	39.8	18.4	0.0
Module podcasts are a good additional resource	34.6	52.9	10.6	1.9	0.0
Module podcasts could be good for revision	40.6	50.9	7.6	0.9	0.0

Table 2: Views on podcasts (n = 116)

We examined the student responses to the statements shown in Table 2 using the Pearson Chi-squared test to see whether there were any significant differences in respect of gender, age, language and previous podcast use. The results are presented in Tables 3 to 6. When calculating the Pearson Chi-squared statistics, it was sometimes necessary to combine adjacent categories to ensure that the expected frequencies were greater than 5.

Statements	Mean		Pearson chi-squared		
	M	F	Value	df	P-value
Podcasts are a good idea but I prefer face-to-face contact	2.02	2.16	1.88	2	.39
Podcasts to help learning are just another hassle	4.02	3.88	0.24	1	.63
I have far too little time to mess about listening to podcasts	3.75	3.80	0.22	1	.64
I would prefer smaller student numbers in workshops than more podcasts	2.68	2.70	1.02	2	.60
Module podcasts are a good additional resource	1.80	1.80	0.09	2	.96
Module podcasts could be good for revision	1.73	1.65	0.87	2	.65

Table 3: Views on podcasts by gender

Statements	Mean		Pearson chi-squared		
	21 and under	22 and over	Value	df	P-value
Podcasts are a good idea but I prefer face-to-face contact	2.14	1.92	1.41	2	.50
Podcasts to help learning are just another hassle	3.95	3.96	0.00	1	1.00
I have far too little time to mess about listening to podcasts	3.76	3.80	0.08	1	.78
I would prefer smaller student numbers in workshops than more podcasts	2.73	2.54	2.27	2	.32
Module podcasts are a good additional resource	1.83	1.71	0.74	2	.69
Module podcasts could be good for revision	1.69	1.68	5.53	2	.06

Table 4: Views on podcasts by age

Statements	Mean		Pearson chi-squared		
	Y	N	Value	df	Asymp sig (2-sided)
Podcasts are a good idea but I prefer face-to-face contact	2.16	1.75	7.53	2	.02
Podcasts to help learning are just another hassle	4.03	3.50	6.51	1	.01
I have far too little time to mess about listening to podcasts	3.85	3.38	4.32	1	.04
I would prefer smaller student numbers in workshops than more podcasts	2.70	2.67	1.54	2	.46
Module podcasts are a good additional resource	1.75	2.07	6.83	2	.03
Module podcasts could be good for revision	1.64	2.00	6.52	2	.04

Table 5: Views on podcasts by first language (Y = English, N = Other)

There was no significant difference in student views by gender or age (Tables 3 and 4), although there was significance when comparing students with English as their first language with foreign language students (Table 5). When we examined student responses in more detail, it was found that 85% of students whose first language is English disagreed or strongly disagreed that “Podcasts to help learning are just another hassle”, compared to only 43% of foreign language students. Similarly, 85% of students whose first language is English disagreed or strongly disagreed with the statement that “I have far too little time to mess about listening to Podcasts” whereas only 57% of foreign language students disagreed or strongly disagreed. These results need to be interpreted with caution as the number of foreign language students was small (12 out of 116). Also, in retrospect, the wording of these questions may have been difficult to interpret for foreign language students.

When we attempted to evaluate student support for podcasts, comparing the views of students who had previously used podcasts with those who had not, there were some significant differences between the two groups. For example, only 6% of those students who had previously used a podcast regarded podcasts as “just another hassle”, versus 32% of students who had not used them before. However, there was no significant difference between these two groups when exploring their views on traditional teaching methods, with both groups preferring face to face contact and smaller workshop groups (Table 6).

Statements	Mean		Pearson chi-squared		
	Y	N	Value	df	P-value
Podcasts are a good idea but I prefer face-to-face contact	2.04	2.12	0.37	2	.83
Podcasts to help learning are just another hassle	4.15	3.79	10.45	1	.00
I have far too little time to mess about listening to podcasts	4.06	3.53	15.23	1	.00
I would prefer smaller student numbers in workshops than more podcasts	2.89	2.52	5.18	2	.08
Module podcasts are a good additional resource	1.52	2.04	14.25	2	.00
Module podcasts could be good for revision	1.46	1.88	11.90	2	.00

Table 6: Views on podcasts by previous podcast use (Y = yes, N = no)

Questionnaire Section 2: Students using the Managing Finance podcasts

The questionnaire data suggested that there was a strong correlation between those students who had used the technology before and those who subsequently used the Managing Finance podcasts. 61% of students who had previously listened to a podcast also listened to a Managing Finance podcast, whereas only 3% of students who had not previously listened to a podcast listened to a Managing Finance podcast. We further tested the relationship between these two variables using the Pearson product-moment correlation and a coefficient of 0.64 was obtained which shows significance at the 0.01 level (2-tailed) (Table 7).

		Used any podcast previously	Use MF podcast
Used any podcast previously	Pearson Correlation	1	0.64
	Sig. (2-tailed)		0.00
Use MF podcast	Pearson Correlation	0.64	1
	Sig. (2-tailed)	0.00	

Table 7: Pearson Correlation: Previous podcast use and Managing Finance podcast use (n = 116)

More specific questions were asked of those students who had listened to the Managing Finance podcasts (Table 8): 33 students or 28% of our sample.

Statements	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Provided a good introduction to workshop question	31.1	46.9	18.9	3.1	0.0
Helped me understand topic material	28.1	56.3	15.6	0.0	0.0
Helped when I missed a workshop	25.8	41.9	32.3	0.0	0.0
I will use podcasts for revision	40.6	53.1	6.3	0.0	0.0
Podcasts were of limited value	3.1	6.2	21.9	50.0	18.8

Table 8: Views on Managing Finance podcasts (n = 33)

The majority of these students were generally supportive of the podcasts' value and appeared to use them as an introduction to, or to catch up with, workshop activities. Students also indicated that the podcasts helped with understanding of workshop content and could potentially be useful as a revision tool. Less than 10 % of these podcast users found them of limited value. The questionnaire results also showed that 58% of users felt an ideal length for a podcast was between 5 and 10 minutes (Table 9).

Minutes	Less than 5	5 to 10	10 to 20	20 to 30	Over 30
Percentage	0	61	26	13	0

Table 9: Ideal length of a podcast (n = 33)

There was little evidence of m-learning with only 12% indicating they had listened on an MP3 player, whereas 97% had used a computer.

Data from Blackboard tracking statistics

We also used Blackboard to track the number of computer "hits" and to ascertain the extent of usage outside traditional teaching hours and podcast usage in the revision period.

Figures 1 and 2 suggest there peak use in the early part of the week with 69% of students accessing the

podcasts Monday to Wednesday and a smaller, but not insignificant number of 13%, over the weekend. Similarly, the time of day that students access the podcasts shows a peak with 59% of between the hours of 9am to 5pm, but there were a substantial number of hits outside these hours, with more than 11% of students accessing the podcasts during the unsociable hours of 10pm to 3am.

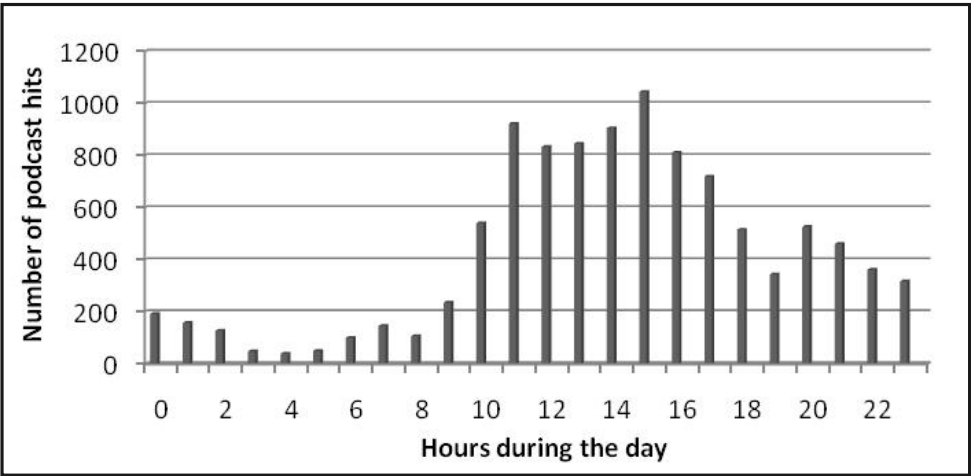


Figure 1: Time of day

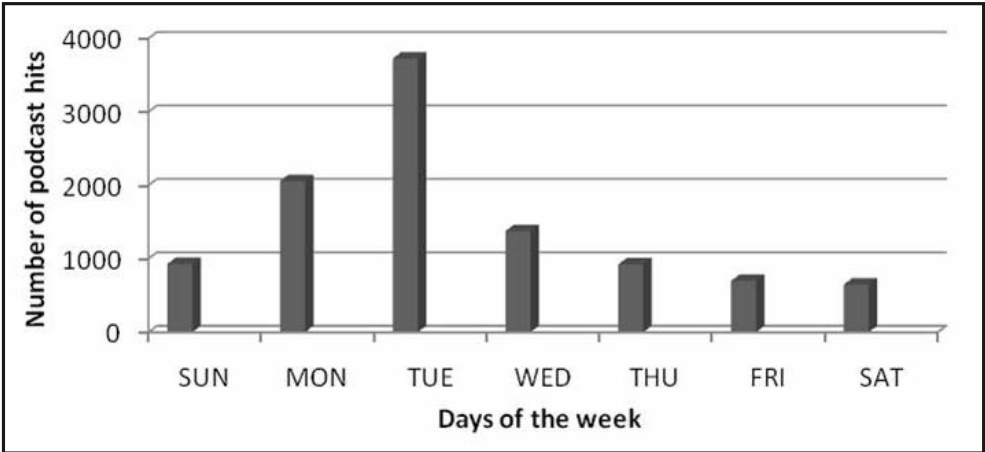


Figure 2: Day of the week

Use for revision

The revision tracking covered a 27 day period prior to the day of the examination. The statistics show that 94% of students who subsequently sat the examination accessed at least one of the podcasts, while the total number of “hits” was 10,293, which averaged 32.1 hits per student. The examination consisted of eight questions and students were required to answer any four. The tracking data shows that more than two-thirds of students accessed 4 or more podcasts (Figure 3) in the four weeks prior to the examination.

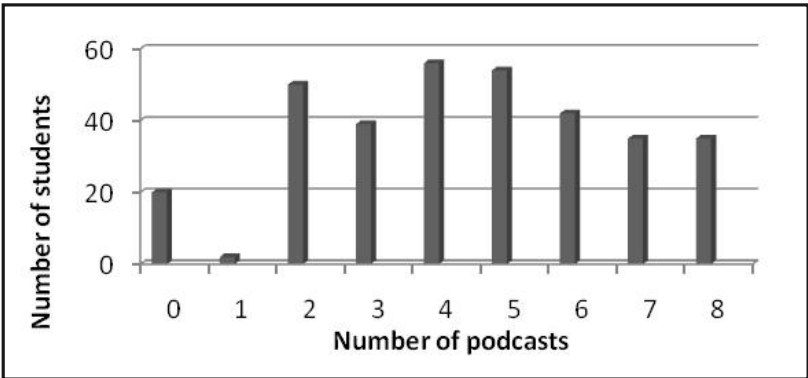


Figure 3: Number of podcasts accessed

As one might expect, usage became more intense as the examination loomed. Examining usage week by week, 87% of students accessed a podcast in the week before the exam, with 47% two weeks and 42% three

weeks before. The usage peak immediately before examination was even more pronounced (Figure 4).

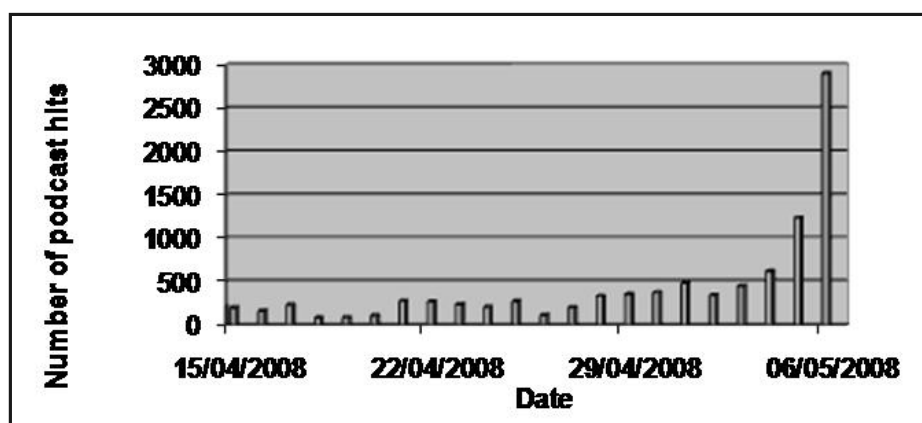


Figure 4: Number of podcast hits

While the usage numbers confirm that the students were using the podcasts, certainly in the revision period, the question arises as to what impact their use may have had on performance. The module has two assessments and the first is a controlled conditions test in January where students are given some case data prior to the test and are asked examination style questions largely based on this data. The second assessment is a traditional examination in May. The podcasts were only provided in the second term after the January test. Therefore this gives us, fortuitously, comparative performance data of assessment results before and after the production of the podcasts (see Table 10).

Mean score	January test (%)	May exam (%)	Increase (%)
Overall	51.7	54.3	5.0
4 podcasts or more	51.0	55.1	7.9
Fewer than 4 podcastes	48.2	50.1	4.0

Table 10: Podcasts and examination performance

One needs to be careful with this raw data as the “4 podcasts or more” group may have been, or are more likely to have been, the group who would be more engaged or committed, even without the podcasts, but it certainly seems to suggest that using the podcasts did not adversely affect performance.

Discussion of findings

We expected the use of podcasts to be more prevalent within the so called “iPod generation”. However, our findings replicate those of Lane’s 2006 study which found that “the majority of student respondents had little previous exposure to podcasting” (p. 3). Even by June 2008, Radio Joint Audience Research (RAJAR, 2008) found that only 12% of UK adults (aged 15 plus) “have ever downloaded Podcasts” (p. 9). While this study provides no age breakdown, USA research suggests (Edison Media Research, 2007a) that usage among the 18 to 24 age group is less than any other group apart from the over 55s. We found that only 44% of students had previously downloaded a podcast, including the managing finance podcasts. Therefore, our preconceived ideas on the prevalence of this technology were incorrect and this was reinforced by the fact that there was little evidence of podcast use within UWE, with only 4% of students indicating that they had listened to podcasts for any other module on their course.

There was no evidence, from our study, to suggest that students saw podcasts as a replacement for existing face-to-face activities. Rather, it would seem, students were keen on lecturers producing any additional resource which may be useful or have some potential benefit before the examination. Indeed, the 33 students who had listened to the Managing Finance podcasts all indicated a desire to see their use expanded to lectures and/or revision material, and a high proportion of students indicated that they could be a good resource for revision. Both of these findings are supported by Copley (2007) who found 86% of students are keen for the podcast material to be extended beyond the lecture material he produced and that one of the most commonly indicated uses of educational podcasts was for “short revision summaries and briefings for assignments” (p. 393).

Student views of podcasts were not significantly influenced by gender and age, although foreign language students appeared to be less enthusiastic regarding their use for educational purposes. However, the results for foreign language students are based on low numbers and more research is required before reaching any firm conclusions. There was also a high positive correlation between previous usage of podcasts and the

likelihood of using Managing Finance podcasts. Previous usage appears to be an important indicator of whether the students will access podcasts but this barrier may be less significant in the future if general usage increases (Edison, 2007b; RAJAR, 2008).

There is little doubt that students welcome additional web resources prepared for them and that their "perception of its usefulness" (Sabry & Baldwin, 2003, p. 452) is generally positive. Indeed this study, together with a number of others (Copley, 2007; Edirisingha & Salmon, 2007; Newnham & Miller, 2007; Evans, 2008), all provide evidence that students believe podcasts improve their learning experience (Shim *et al.*, 2007). High proportions (see Table 8) of our students strongly agreed or agreed that the Managing Finance podcasts were a good introduction to the workshop question, helped understanding and were useful for students who missed a workshop session. Less than 10% regarded them as having limited value.

M-learning was not prevalent among our students, with only 12% listening on an MP3 player compared with 97% using a computer. This evidence is supported by Lane's (2006) evaluation and Copley's later survey which found that "94% of students... played the podcasts using a PC, only 13 % listened while doing other things" (2007, p. 391). Similarly Abt and Barry (2007) found most students were "using personal computers to listen to educational podcasts indicating that mobility is not the prime drive for using this media format" (p.6). Even though M-learning was limited, there was evidence to suggest "out of hours" learning. Over 40% of students accessed the podcasts outside the 9am to 5pm window and 13% used them over the weekend, which suggests that there are a substantial group of students who may benefit from being able to access them when they want. This pattern of usage mirrors Copley's results.

Another finding that closely follows other studies (Copley, 2007; Evans, 2008) is the use of podcasts for revision. While only one-third of students used the podcasts during the teaching term, 94% subsequently accessed them in the revision period. Interestingly the questionnaire evidence suggests the students had noted this potential use prior to the revision period, and indeed this may prove to be their main purpose. The usage statistics during revision appear to be significant: the number of hits per student was 32, with 65% of students accessing more than four podcasts and 87% of students using a podcast in the week prior to the examination. In retrospect, perhaps their use for revision purposes should have been expected. Students tend to work long hours before their examinations and at these times there is little opportunity to converse with teaching staff. Therefore there is a likelihood that students will check what staff had to say on a particular topic. The extent to which podcasts helped improve student performance is difficult to establish but the data from those students downloading more than four podcasts indicates their examination marks increased more than those downloading less than four.

Conclusions

Institutions looking to adopt podcast technology for educational use need to be aware that staff may be reluctant to engage with this e-learning tool. There were a number of factors fostering staff unease: limited time, unfamiliarity with the technology, worries regarding possible misuse and the possible adverse effect on attendance. There appear to be few studies that address these concerns, although a number do suggest that other e-learning technologies have had "little impact on teaching practices" (Conole, 2004, as cited in Blin & Munro, 2008, p. 476), so this aversion to this e-learning technology may be more widespread. While there is little hard evidence on podcasts and attendance, it appears from our study that staff fears on this issue may slow or prevent more widespread adoption. Future studies exploring in more depth why staff are reluctant to embrace podcasting should be undertaken, as this appears to be neglected within the existing literature.

Perhaps one solution is to get students directly involved in the production of the podcasts (Lee *et al.*, 2008). It may also be possible to use actors rather than staff to record podcasts, as Calk *et al.* (2007) found "no significant differences in student performance" (p. 88) between actors and staff used to present video lectures, and this could help counteract staff concerns regarding student misuse.

Another issue podcast adopters will need to consider is how podcasts should be integrated with other learning activities. The authors were not drawn to their use essentially as a replication device for recording lectures, although other studies suggest there are benefits in doing this (Copley, 2007). The podcasts were conceived as an aid to help students overcome initial reluctance to engage with workshop activities, to limit initial stress when faced with a new task and to build confidence (Chan & Lee, 2005).

As in other studies (Lane, 2006; Copley, 2007), there was also little evidence of mobile learning, with only 12% of students using an MP3 player as their listening media. This study also highlighted that previous usage of podcasts is a good indicator of students using educational podcasts. We found no significant differences in student perception of podcasts, by gender or age. However, based on our very small sample, foreign language students were less positive about their potential benefits, and therefore more research on foreign language students and audio podcasts is required. Again, future researchers may consider interviewing these foreign language students, as this may provide more insight than the questionnaire data used in this study.

One surprising outcome from this study was the extent of podcast usage during the revision period. Although a number of studies confirm their use and/or perceived benefit for revision (Copley, 2007; Evans, 2008), our usage statistics suggest that educators need to be aware that a podcast primarily designed for one purpose, namely as an introduction to workshop activities, may be seen and indeed used differently by students. There was some evidence to suggest that the intense podcast usage in the revision period did no harm to subsequent student examination performance, although further research is required in this area.

Students also appear, based on informal feedback to staff, to appreciate the efforts of lecturers to produce podcasts. Perhaps this positive response from students is enough, in itself, for staff to examine the possibility of integrating podcasting with their other learning materials. If not, early evidence about reducing student anxiety (Chan & Lee, 2005), making lecture material easier to understand (Newnham & Miller, 2007) and, at the very least, providing some sort of surrogate lecturer in revision periods, could be sufficient for those staff considering the use of podcasts.

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