ICSSPE Bulletin No. 65, October 2013

ICT and Physical Literacy: The Use of Podcasts as an Educational Tool to Promote Motivation and Raise Attainment in Developing Knowledge and Understanding in Physical Education

Elizabeth Myers

Abstract

The issue of ensuring that learners attain and retain motivation in respect of classroom-based work in Physical Education (PE) has seldom been a focus of investigation. This study looks specifically at the use of ICT to promote motivation and learning in A Level PE.

The research investigation explored whether the use of podcasts as an A Level Physical Education (PE) revision tool could improve motivation and examination performance. The pupils within an A Level PE class took a pre-test mock examination paper, after which the pupils were separated into either the control or intervention group. Over a six-week period the control group used traditional methods of revision along with revision lessons. The intervention group used traditional methods along with the additional use of podcasts to aid their revision.

The podcasts covered revision material that was combined with popular songs and animations. After the six-week revision period pupils took another mock examination paper. The results found that whilst most pupils improved in their examination performance, the intervention group had greater gains in examination performance overall. The results concluded that the use of podcasts could improve examination performance over and above using traditional revision methods alone. This investigation supports the notion that the use of podcasts within education can improve student attainment when used in conjunction with traditional revision methods.

Introduction

Information Communication Technology (ICT) rapidly and incrementally changes over time. The use of ICT In the modern world has evolved to become an integral part of everyday life, whether communicating at work via email, using Intranet/Internet sites to access information, downloading web content, using mobile technology or subscribing to podcasts and RSS feeds. It is important that education responds, not only to the shifts in society, ensuring that what is being taught and learnt in schools across the country remains relevant

and suitable using ICT to enhance learning opportunities, but also has a secondary focus on developing ICT literate individuals who are competent and confident in using a wide array of digital media, computer systems and ICT.

In 2002, the use of ICT was added to the Secondary National Strategy (DfES, 2002) as its contribution to supporting high quality teaching and learning was recognised. In 2007, the use of ICT within education was further recognized by its statutory inclusion within the National Curriculum for England and Wales (DCSF/QCA, 2007). The National Curriculum (DCSF/QCA, 2007) for Key Stage three and four stipulates that all schools need to provide opportunities for sufficient and regular time for the teaching of ICT skills, knowledge and understanding, and for access by pupils to appropriate tools. There should be planned opportunities for pupils to use and apply their ICT capability as part of their learning in other subjects of the curriculum, and ICT may be used to provide additional support for pupils who have made slow progress, are less able or are falling behind, to get them back on track. This focus on integrating ICT skills within other subjects to enhance learning, and learning ICT skills in isolation, are by no means the only ways in which we should be preparing young people for an increasingly digital world. This is something that needs constant review to ensure that education teaches young people to be responsible, knowledgeable, effective and safe ICT users.

One of the many ICT tools that can be used to fulfil the National Curriculum aims and outcomes (DCSF/QCA, 2007) is the use of podcasting as an educational tool. Podcasting is a relatively new technology that has yet to be fully utilised widely within educational settings.

A podcast is a type of digital media that may consist of a series of episodes of audio files subscribed to, and downloaded, through web syndication or streamed online to a computer or mobile device. Currently, podcasting is being debated as a promising e-learning tool that will possibly influence teaching and learning in the classroom and transform the concept of mobile learning beyond the classroom (Cebeci and Tekdal, 2006).

Meng (2005) defines the term podcasting as the process of capturing an audio event, song, speech, or mix of sounds and then posting that digital sound object to a website or blog in a data structure called an RSS 2.0 envelope or otherwise known as a feed. Podcast content can include audio, video, and image materials, but currently audio podcasts, commonly known as audiocasts or audioblogging, are the most common content used in educational contexts (Rossell-Aguilar 2007). Podcast content and frequency can be diverse, in terms of material covered, and length, ranging from hourly three-minute newscasts, through to daily twenty-minute news summaries or commentaries, to weekly one-hour in-depth discussions (Bell, Cockburn, Wingkvist and Green, 2007). The length of the podcast may depend on what material is to be covered, the nature of the audience (children or adults) and the structure of the podcast itself (educational content vs. recreational content). Psychological factors such as how to maintain an audiences' attention should be considered with any podcast, but this is especially the case with longer podcasts or podcasts that cover highly complex or specialist material.

Podcasts are normally subscribed to, or streamed to, mobile devices or computers via a website, application or blog. This is made possible through web syndication. Web

syndication is a way of publishing informational feeds about the new and updated content of a website to other websites or people who have subscribed to these feeds. A feed or a channel is a type of XML file that contains information about new or updated content of a website or a blog (Cebeci and Tekdal, 2006).

RSS feeds are created by content publishers or developers and then delivered to their subscribers by a feed reader or feed aggregator, although it is possible to develop your own RSS feed with limited knowledge through the use of free or commercial plugins as part of a Content Management System (CMS) such as WordPress or Joomla. Feed readers are programs that regularly or periodically check for new information on subscribed feeds. If new information is detected on a website, application or blog then the feed reader will automatically download the referenced content files to a user's device; either mobile (PDA, smart phone or MP3 player) or fixed (computer) (Cebeci and Tekdal, 2006). This is made possible through the sophisticated nature of wireless and Internet technology, allowing content uploaded to a website in the UK to be made available almost instantaneously on a mobile device on the other side of the world. The power of this technology, especially with the popularity of social networking sites such as Facebook and Twitter, means that RSS technology is incredibly effective in distributing information or content quickly, and on mass, with relative ease. Web syndication, as a technology for use within education, can facilitate the communication between pupils, parents, teachers, and school communities instantaneously.

Clark and Walsh (2004) produced one of the earliest reports describing the potential of podcasting in education. They highlighted that listening is instinctual, and that linguistic psychologists have found that unlike reading and writing, children do not learn how to understand the spoken word, but are instead hard-wired with the skill (Hew, 2009). This potentially means that pupils will be more engaged with listening to information rather than reading or writing the same information, due to our innate nature to attend to, or tune in to, the spoken word. Durbridge (1984) supports this notion and stresses the advantages of audio for learning, stating that the spoken word can influence a learner's cognition, adding clarity or meaning and improve motivation by conveying directly a sense of the person who is speaking. This has a clear impact for podcast creation, as the pitch, tone and language used within the podcast should aim to create an affinity with the listener, thus allowing for a positive sense of the person who is speaking to be created.

In a modern world, with many distractions such as television, the media, the Internet, friends and family, it is sometimes difficult to find the time or be in the right place to undertake learning tasks in a conducive environment. RSS, web syndication and podcast technology is revolutionary in its ability to facilitate 'mobile learning' opportunities, allowing learning to take place unrestricted by location or activity. For example, an educational activity can take place whilst traveling to school or work by listening to a podcast whilst traveling, or listening to a podcast whilst at the gym. Downes (2004) highlights the potential for this emerging educational trend of 'mobile learning'. He foresees that the delivery of learning content through mobile devices such as smart phones, PDAs, MP3 players and similar mobile devices or tools is something that can be realised imminently within education. He also emphasizes that with this technology learning is no longer confined to a particular fixed location but instead, as a result of wireless technology, accessing

educational content will be available at any time and anywhere in the world. As XML encoded content and syndicated delivery systems become more sophisticated, the location or manner in which learning or educational content may be available is limitless.

In summary, podcasting can serve as an anytime and anywhere mobile learning solution. After podcasts are downloaded into a mobile device, they can be listened to at one's own convenience. The flexibility of merely listening is a technological advantage of podcasting that may make mobile learning applicable, cheaper, and popular when it is compared to its counterparts such as WAP-based or web-based mobile learning (Cebeci and Tekdal, 2006). Podcasting can make learning content attractive to students, improve concentration and motivation and facilitate active learning and engagement experiences (DfES, 2004; Piaget, 1972; Rogers, 1975). Podcasts could also be used to support learners when revising, revisiting information or completing homework. It can be used as a form of supported mobile learning recapping points made within the lesson, as a revision tool, learning new information or extending knowledge (Cebeci and Tekdal, 2006).

Research Question

Can A Level PE examination performance be improved through the use of podcasts as a revision tool? Does the use of podcasts in addition to traditional revision methods produce gains in examination performance that exceed traditional revision methods alone? Does the use of podcasts improve educational attainment?

Design

The pupils within an A Level PE class took a pre-test, mock examination paper, after which the pupils were separated into two groups; a control group and an intervention group, of roughly the same mean grade performance.

Over a six-week period the control group used traditional revision methods along with revision lessons. The other group (intervention group) used traditional revision methods along with the additional use of podcasts to aid their revision. The podcasts covered a range of course material combined with popular songs and animations.

After the six-week revision period pupils took another post-test, mock examination paper. The results of this examination paper were compared to their original examination performance prior to the six weeks revision. The differences in examination performance were then calculated, illustrating any improvements in examination performance between the pre and post mock examination tests. The differences in improvements between the control and the intervention group were analysed to determine the impact of podcast use.

Data Collection

The grade scores for both examinations were given a mark out of 100 and what that corresponded to in terms of grade equivalent. A revision log was also given to the students so that they could track how many hours revision they completed, and how many times they listened to a podcast. This information provided an understanding of the gains in

examination performance in relation to the number of hours revised and the type of revision activity completed.

Results

The results of the pre-test mock examination were as follows:

Table 1: Pre-test mock examination results.

Picture did not copy correctly onto original

The control group consisted of five pupils with mock examnation grades of A, B, B, C, and C. The intervention group (podcast users) consisted of pupils with mock examination grades of A, B, B, C, D. The number of revision hours recorded by participants during the six-week revision cycle is outlined in the revision log results table below:

Table 2: Revision log results.

Picture did not copy correctly onto original

Table 3: Total number of hours revised.

Picture did not copy correctly onto original

The group who had the largest total number of hours revised was the intervention group with a total of 59 hours. Of these hours, 24 of them were completed using a podcast. Without this extra podcast revision time both groups had a similar amount of total revision time, with 33 hours undertaken for the control group and 35 undertaken for the intervention group. The results of the post-test mock examination were as follows:

Table 4: post-test mock examination results.

Picture did not copy correctly onto original

The results in the table above show that all participants were able to improve their examination performance. 6 out of the 10 participants were also able to improve their result by a whole grade boundary.

Table 5: Overall examination improvement.

Picture did not copy correctly onto original

The overall examination improvement as illustrated in Table 5 highlights that the intervention group saw the largest gains in examination performance, improving their results by 27 numerical points as opposed to the control group who only improved by 8 numerical points.

Discussion

The results found that whilst most pupils improved in their examination performance, the intervention group saw greater gains in examination performance. This could be as a result of the intervention group having a greater total number of hours revised over the six-week period. During discussions with the intervention group post study, they stated that they preferred revising using the podcasts, as they were able to listen to them whilst going about everyday activity. They also said that due to the learning material being broken up with songs they were able to revise for longer and with greater concentration. Some of the intervention pupils went as far as saying that they repeated the podcasts because they enjoyed listening to them, and it didn't 'feel' like they were revising. This is a clear example of how podcasts can facilitate active engagement (DfES 2004) whereby students are engaged in learning tasks and enjoy learning. Another intervention participant said that they were able to concentrate more easily, taking in, and understanding, the information contained in the podcast much more easily in comparison to when writing or reading to revise. This supports the notion that the use of podcasts can tailor learning and revising tasks to support auditory learners.

The increased gains in examination performance may relate to the extra hours revised, but when the participants asked whether you would have done any extra revision if you didn't have the podcasts, the majority said they felt they would not have committed extra hours to revising traditionally, but instead revised due to the flexibility and ease of listening to the podcasts whilst they were going about everyday life. It was surprising when interpreting the results to find that the intervention group had almost double the total amount of revision hours in comparison to the control group, as a direct result of twenty-four more hours revised through using the podcasts. The intervention participants stated that podcasts were an attractive revision tool as they didn't require any additional resources such as a pen or paper, desk or quiet space; just an MP3 player, and that it could be used whilst multi-tasking. This could be important feedback in structuring future revision methods; organising tasks as convenient snippets of information rather than structured or formal tasks.

The podcast creation was time consuming and required a certain level of ICT proficiency in order to create content that was engaging and professionally produced. Researching the topics and the additional media material such as music breaks also required careful consideration ensuring the right media was chosen and the topic was fully covered in accordance with the course materials. This process at present is something that would not

be accessible for all teachers in terms of the level of ICT proficiency required and the time allocation required to create materials.

Conclusion

Podcasting can be associated with a number of benefits and limitations. Similar to wikis and blogs, podcasts are not always accurate, and as a result the quality and accuracy of podcasts can be compromised. The free form nature of podcasting has a double implication; it allows you to download and upload audio and video files in a quick and easy way, but in an open and collaborative web anyone can easily duplicate copyrighted material without the permission of the copyright holder(s) and also add misleading or unsuitable content. Another limitation is in the set up of the RSS feed. Once the web syndication system is set up and customized, the distribution and subscription to feeds is relatively simple and easy to use. The difficulty lies in the programming and implementation of the actual RSS feed, although there are numerous open source tools available to automate the creation of RSS feeds (Cebeci and Tekdal, 2006).

Feedback from the intervention group suggested that the nature of podcasts being asynchronous in consumption allowed for convenient access and multi-tasking (riding the bus, walking, or working out whilst listening to a podcast), which was highly valued as a characteristic. Podcasts can also provide flexible curriculum pathways to encourage student motivation and participation, engagement and help to facilitate educational success (Cebeci and Tekdal, 2006). It is important to stress that the use of ICT, and in particular podcasts, should be used in conjunction with traditional teaching methods in order to create holistic individuals who are both literate in ICT and traditional teaching and learning tasks.

Education as a profession continually seeks to improve the quality of teaching and learning, and in doing so, explores a multitude of teaching and learning strategies. Podcasts could be used as a teaching and learning strategy, or tool, to facilitate the personalization of learning, fostering active engagement and providing positive and conducive learning environments, whereby all pupils can succeed (Cebeci and Tekdal, 2006). Podcasts can be used as a learning tool to enrich the learning experience within education and improve educational attainment. More research is required to establish the full learning potential podcasting may hold as a tool for use within education and to overcome the technological and time-consuming barriers in their creation and distribution. However it would appear from this small study that forms of ICT can be beneficial in respect of fostering the motivation and learning that are elements of physical literacy.

References

1. Bell, T. Cockburn, A. Wingkvist, A. & Green, R. (2007). *Podcasts as a supplement in tertiary education: An experiment with two computer science courses.* Paper Presented at the Mobile Learning Technologies and Applications Conference. Auckland: New Zealand.

2. Cebeci, Z. & Tekdal, M. (2006). Using Podcasts as Audio Learning Objects. *Interdisciplinary Journal of Knowledge and Learning Objects.* Turkey: University of Adana. Vol 2, pp.47-57.
3. Clark, D. & Walsh, S. (2004). *iPod-learning*. White paper. Brighton, UK: Epic Group.
4. DCSF/QCA. (2007). *The National Curriculum – Statutory Requirements for Key Stages 3 and 4.* London: HMSO.
5. DfES/QCA. (2002). *Key Stage 3 National Strategy: Training Materials for the Foundation Subjects*. London: DfES.
6. DfES/QCA. (2004) *Key Stage 3 National Strategy*: *Pedagogy and Practice - Teaching and Learning in Secondary Schools - Unit 11: Active Engagement Techniques.* London: DfES.
7. Downes, S. (2004). RDF site summary 1.0 modules: Learning object metadata. Available from: http://www.downes.ca/xml/rss_lom.htm [accessed 12th August 2012].
8. Durbridge, N. (1984). Media in course design, No. 9, audio cassettes. *The role of technology in distance education.* Kent, UK: Croom Helm.
9. Hew, K. (2009). Use of audio podcast in K-12 and higher education: a review of research topics and methodologies. Educational Technology Research & Development. Vol 57(3), pp.333-357.
10. Meng, P. (2005). *Podcasting & vodcasting: Definitions, discussions & implications*. A White paper by IAT Services at University of Missouri. Available from:
11. http://edmarketing.apple.com/adcinstitute/wp-content/Missouri_Podcasting_White_Paper.pdf [accessed 26th July 2012].
12. Piaget, J. (1972) *Psychology and Epistemology*. Harmondsworth: Penguin Books.
13. Rogers, C. (1975) *Freedom to learn*. In Entwistle, N. and Hounsell, D. (eds) *How Students Learn.* Lancaster: University of Lancaster.
14. Rossell-Aguilar, F. (2007). Top of the pods–in search of a podcasting 'pedagogy' for language learning. *Computer Assisted Language Learning*. Vol 20(5), pp.471–492.

Contact

Elizabeth Myers
23 Bowmans Court, Melksham, Wiltshire, SN12 7FE
http://www.icsspe.org