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Paul A. Kirschner, Anguelina Popova

► **To cite this version:**

Paul A. Kirschner, Anguelina Popova. Innovative pedagogical and psychological perspectives of podcasts. Towards a Philosophy of Telecommunications Convergence Sept. 27–29, 2007, 2007, Budapest, Hungary. pp.5. hal-00197201

**HAL Id: hal-00197201**

**<https://telearn.archives-ouvertes.fr/hal-00197201>**

Submitted on 14 Dec 2007

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## **Innovative pedagogical and psychological perspectives of podcasts**

Anguelina Popova, Prof. dr. Paul A. Kirschner  
Utrecht University, Faculty of Social and Behavioural Sciences,  
Research Centre Learning in Interaction  
PO Box 80140  
3508 TC Utrecht, The Netherlands  
Emails: {A.Popova, p.a.kirschner}@uu.nl

*Abstract:* Podcasting, being a new form of audio distribution offering the possibility to be loaded on personal mobile devices from teachers', student', university's websites and blogs, is discussed as an activity with potential in learning and teaching. The existing and potential varieties of podcasts represent sources for learning, converging, socializing. In this paper, podcasting is supported as an innovative approach to stimulate university students' reflection, specifically on epistemic questions and concepts. Both theoretical and practical background information is provided to clarify the rationale of using this method in higher education.

### 1. Podcasts and Podcasting: An introduction

A podcast is defined as a digital media file or series of such files that is distributed over the Internet using syndication feeds for playback on portable media players and personal computers (Wikipedia, 2007). Exemplary for podcast is its form of distribution, its ease of use and creation and the wide-scale, ubiquitous access to it. Podcasts allow asynchronous transfer of information, meaning the audience has remote access to them.

Podcasts are an alternative way to deliver information and for entertaining<sup>1</sup>. Podcasts and podcasting are favoured by the increasing number of Mp3 players<sup>2</sup> and the available free software and Internet tools for podcasting. Educators are facing the massive invasion of these digital devices in the classroom and are searching for meaningful ways to use them to enrich learning, rather than just reproduce old methodologies with a new generation of technology (Coghlan, 2007).

### 2. Pedagogical and psychological perspectives of the educational use of podcasts

#### *2.1 Audio in education*

Audio has been used in education for many years and its benefits for distance and face-to-face learning are well studied. A range of studies conclude that audiotapes, used for feed-back, bring a more positive experience to learners, than written feed-back (Carson & McTansey, 1978; Kirschner, van den Brink & Meester, 1991; Logan, Logan Fuller & Deneby, 1976). Tutor-initiated audio embedded into email messages yielded increased student participation in group activities, and added a sense of online community and satisfaction with the overall learning experience (Woods & Keeler, 2001).

Similarities exist between audio cassettes and podcasts (aside the distribution form), such as the freedom they give to the listener (i.e., the learner) to listen and execute activities in parallel to other learning activities, to listen anytime s/he wants and to have control over the record/playback hardware. Both are easy to produce and distribute, advantages are even more prominent for the podcasts. All of the pedagogical and control advantages, identified in the studies on audio cassettes, are applicable for podcasts.

The question is, what are the real effect of podcasts on learning, above the primarily enthusiasm?

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<sup>1</sup> CNN Podcast directory: <http://www.podcastnews.com/forum/links.php?id=508> ; BBC Podcast : <http://bbc.podcast.com/>

<sup>2</sup> In 2006, a marketing research in the USA shows that one of five Americans aged over 12 owns an Mp3 player. The British Market Research Bureau revealed that 32 per cent of UK adults owned an Mp3 player; where 69 per cent - amongst the 16 – 24 age group. Nineteen per cent of the UK internet users (i.e., 73% of the adult population) downloaded a podcast during Sept 2006 – Feb 2007. About 4 million UK adults in 2007 use their phones as Mp3 players (cited in Edirisingha and al., 2007).

## 2.2. Current and potential uses of podcasts in education

In the context of higher education there are two categories of podcasters<sup>3</sup> - the instructors and the students. Predominantly, podcasts are created by instructors (Deal, 2007). Here we propose a summary of current and potential uses of podcasts.

1. Lecture delivery- lectures and guest lectures.
2. Feedback- as a form of evaluation/assessment of students' work.
3. Additional materials- either supplementary (purely additional) or complementary (making up for something that is missing) to the basic learning materials such as interviews, speeches, preparatory materials, music or other audio recordings to augment written text, class discussions and conversations, instructions, courses summaries, reminders.
4. Specific learning practice and needs- as necessary learning materials that cannot be presented in another way as in heart sounds in medicine (Barrett et al., 2004) or phonetics assistance for auditory learners.
5. Assignments- created by the students as a response to a given task.
6. Creative activities- would be all activities with a learning objective, in which students are creating content on their own, e.g. pieces of theater or music.

Podcasts can have a variety of uses, but all of them should serve a pedagogical objective or require a dedicated pedagogy. Yet the effectiveness of all these approaches is not studied. At this moment, the most popular use of podcasts in higher education - the lecture recording - has the support of students who believe listening to recorded lectures has a positive effect on examination grades (Brittain et al., 2006), although there is not much evidence showing actual effects on learning outcomes. An English language podcasts experiment gathered valuable results on the effect of the latter on the transfer of tacit knowledge and experience through peer's discussions (Edirisingha et al., 2007).

These and other studies lead to few conclusions:

1. Podcasts are more often listened to by students on their laptops than on their iPods or Mp3 players (Edirisingha P., Rizzi C., et al., 2007, Deal A., 2007). Thus, students listen to recorded lectures rather in a traditional way to prepare their classes.
2. Podcasts are a new technology for the majority of instructors and students. The enthusiasm for their use competes with the insufficient technical skills and it is a challenge to effectively get started with podcasting for educational purposes.
3. The design of the podcast (duration, amount of information, presentation) has a great impact on the learning. Shorter but focused podcasts are more appreciated by students (Edirisingha, Salmon & Fothergill, 2006) than long ones.
4. Podcasts can motivate for learning, help organize time and activities, support independent and online learning, cause a deeper engagement and understanding of the material to learn (Edirisingha, Salmon & Fothergill, 2006). To reach these results, the podcast should be integrated into concrete learning activities and serve to fulfill a concrete learning objective.
5. Podcasts should not be singular events, but should be reiterative, such as episodes, in order to engage students into the learning and the information conveyed.
6. The pedagogical approaches should place the learner in the center of the learning activity. Research shows that students have a positive experience in an informal learning setting, such as while listening to peer discussions (Edirisingha, Rizzi et al, 2007).

In the perspective of the above conclusions, our research will attempt to test a pedagogically innovative way of using podcasts to enhance learning and reflection.

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<sup>3</sup> Podcaster identifies both the creator and the listener of podcasts. Here we use this term to identify the podcasts' creator.

### 2.3. *Priming students' metacognition*

Stimulating students to reflect on what they are studying and what they learn, in other words- involving them in metacognitive activities, is a factor that can help make them successful learners (Borkowski, Carr, & Pressley, 1987). From a psychological perspective, metacognition refers to higher order thinking which involves active control over the cognitive processes engaged in learning and reasoning. According to Winn and Snyder (1998), metacognition consists of two basic processes occurring simultaneously: monitoring progress while learning and making changes and adapting strategies if the progress is not seen as sufficient. From a pedagogical perspective, these cognitive processes can be stimulated through meaningful activities, such, for instance, questioning or discussions.

Flavell (1979) conceptualized metacognition as “knowledge and cognition about cognitive phenomena”. To understand the cognitive phenomena, Piaget (1985) suggests that new information is shaped to fit with the learner's existing knowledge (i.e., assimilation), and existing knowledge is itself modified to accommodate the new information (i.e., accommodation). Assimilation assumes that people tend to apply any mental structure that is available to assimilate a new event, and they will actively seek to use a newly acquired structure. Accommodation occurs when existing schemas or operations must be modified to account for a new experience. These concepts are best defined as assimilation being schema usage and accommodation as schema change (Anderson, 1977).

Our hypothesis is that supporting learning activities with *primer podcasts posing epistemic questions* (i.e., tasks or questions that give rise to epistemic activities (Ohlsson, 1996) would affect at their schema change level and would thus bring them to deeper understanding and reflection on what they learn. These tasks help the learner to achieve “the ability to identify and use different ways of knowing, to understand their different forms of expression and evaluation, and to take the perspective of others who are operating within a different epistemic framework” (Morrison & Collins, 1996, p.109). These types of tasks (task classes) are archetypical for what Honebein (1996) calls “pedagogical goals” of constructivist learning environments, namely knowledge construction, appreciation of multiple perspectives, relevant contexts, ownership of the learning process, social experience, use of multiple representations, and self-consciousness / reflection.

The presumption of primer podcast' effect is based on the impact of adjunct questions on learning and retention. Researches on adjunct prequestions (i.e., questions posed prior to reading a piece of text) and postquestions (i.e., questions posed after reading a piece of text) show positive effect on directing the attention of students while reading a text and on stimulating certain types of learning (Bull, 1973). It was found that test-like questions presented before or after a material to be learned, indeed lead to learning (mathemagenic, Rothkopf, 1970). Although the scope of most of the research carried out was geared towards retention and short-term performance (Faw & Waller, 1976; Rothkopf & Billington, 1974), and not on reflection (which should lead to deeper learning and metacognition), and did not concentrate on learning from audio, there are meaningful conclusions which could serve the present research purpose. As summarized by Faw and Waller (1976), reliable results say that while adding prequestions and postquestions to textual materials both facilitate intentional learning (i.e., learning of content directly related to the question posed), only the use of postquestions facilitates incidental learning (i.e., learning of content not directly related to the question posed). Some authors state that different types of adjunct questions would influence the level of encoding presented materials (Anderson, 1972), or that under appropriate conditions, types of question would influence the nature of the memory representation formed in semantic memory (Andre, 1979). An experiment of Cunningham (1982) shows that in concrete and abstract prose learning verbal adjunct aids work better than visual aids, which, instead, could be somewhat disruptive.

### 3. Conclusion and future work

Basing on the conclusions from the above sections, we assume that effective usages of podcasts should have an appropriate design and take into account cognitive psychological approaches, as well as students' learning profiles. Our intention is to investigate how primer podcasts can affect metacognitive processes, by elaborating and testing a design of podcast with epistemic questions. The empirical research will use a

time-series method (as a particular design of a quasi experimental research), involving four groups of students. These would be the experimental group, provided with a primer podcasts, control groups 1 and 2, which would receive redundant information (in oral and written form), and a control group 3, not provided with extra information on the course. The experiment would have three phases, validating the design and pedagogical scenario and gathering answers to the research questions.

Given the state-of-the art of actual research on podcasting in education, research-based pedagogical models are needed in supporting and enhancing students' motivation and learning through podcasting. In this perspective, it is necessary to pursue psychologically and pedagogically innovative and valuable podcasts experiences.

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