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How can podcasts support engaging students in learning activities?

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Abstract

This study builds upon previous research on podcasts as an educational tool, by providing a background in teaching, learning and cognitive theories. Laurillard's Conversational framework is one of the most acknowledged tools for examining teaching/learning situations for their effectiveness and the evaluation of the appropriateness of media for any given teaching/learning activity. In the light of current literature and practice, this study explores podcasts through the Conversational framework, and provides with examples where podcast has the potential to extend it. As a result, a table is designed in structuring teaching and learning validity of podcast as educational technology.
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1. Introduction

With its appearance, podcasting technology stimulated expectations of great success in educational settings. In 2005, Gardner Campbell wrote an inspiring paper on the potential of podcasts to support students in their learning. He imagined lecturers' and students'- generated podcasts to become an almost natural source of information, motivation and inspiration for students and peers. He emphasised on the connection of radio and podcasts in terms of the importance of the human voice in bringing a more personal, and informal touch to what is being said. Podcasts are rooted not only in radio tradition, but also in the tradition of using audio for teaching and learning. Previous research have demonstrated that audio has educational ability to influence cognition through clarity of instructions, and to influence emotional aspects of learning by conveying immediacy and a connection with the teacher (Durbridge, 1984). There is a growing body of research literature on the educational applications of the podcasting technology. But research linking podcasts to learning outcomes is still scarce. A recent review of research literature (K. F. Hew, 2009) points out that although there are many examples of podcasts' uses in universities and schools, research is often bound to students' reports through questionnaires and interviews, and less often through proper experiments. The review also underlines that the majority of the available studies stress more on features of the podcasts and the uses listeners make of them, than on a theoretical rationale and justification for using this particular technology (idem. p. 343). Analysing media through the sole perspective of its technical

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affordances appears to be misleading in some cases. For instance, literature shows that students tend to listen to podcasts on their computers, rather than to use the downloading function and listen on their mp3 players (Copley, 2007; Lane, 2006), and under-use the subscription to a feed option. Limiting the potential of podcasts to its technical features does not provide with explanation of these types of students' practices. Instead, researchers should be aware that the uses of a technology are lead not by its features, but rather by the purposes of the users, the context in which they use them and the pedagogical drive behind it. Hew (2009) suggests that we can expect students to learn equally well regardless of using podcasts or not. We do agree that the media is not the message, but we suggest that because podcasts are a relatively simple technology to use, they do not limit teachers and learners creativeness and do not bound it to their affordances. A right place should be given to podcasts in support of good teaching and effective learning.

2. Purpose of the study

We stand on the idea that design of the content of podcasts and of the learning activities in which students are involved, as well as the feedback students get on their activities, are key factors for successful learning. To provide with a theoretically ground framework for analysing the educational potential of this new technology, we refer to Laurillard's Conversational framework. Laurillard (2002) suggests this framework as a base of reference for identifying the type of media necessary or suitable to achieve one or each of the interactions occurring between teacher, learner, and actions within a learning environment. Other reseaches (Plaisted and Irvine, 2007) have used this framework to analyse the design and application of Web 2.0 generation tools, which are specific with that that they afford more student-centered learning. Additionally, our analysis shows that there are applications of podcasts, which evidence entirely student-centered and student- created learning activities. We designed a table which emphasises both on applications of podcast conforming with different aspect of the Conversational framework, and other applications which potentially expand the framework, by putting more power in the hands of the learners themselves.

3. Theoretical evidences for teaching and learning, as suggested by the Conversational Framework

In her book, Diana Laurillard states that teachers task is to make academic learning possible for learners, i.e. to make it possible for them to understand and manipulate with the descriptions of the world. For achieving this goal, it is necessary to consider students' characteristics and specificities, and to involve them into meaning-generating activities, or mathemagenic activities, as Rothkopf coins them. Laurillard elaborates on five mathemagenic activities - apprehending the structure of the academic discourse; interpreting forms of representation; acting on descriptions of the world; using feedback; reflecting on the goal-action-feedback cycle. The choice for these specific mathemagenic activities reposes on the following: the teacher is a holder of the academic knowledge, s/he is familiar with the conceptual representations of the world, whereas the student comes with a general, "everyday" knowledge, epistemological beliefs and pre-conceptions. These two types of knowledge meet in a learning environment around a learning content and task, and in order for the teacher to bring students pre-conceptions to the level of academic knowledge, s/he should engage him/her in a processes of iterative negociation of meaning (actions 1 to 4 in the Conversational Framework), i.e. the teacher helping the student to construct a correct understanding of the concepts, of the structure of the academic content, and what is expected to be done/learned from this content (the goal of the learning activity). Ideally, this process would run in parallel with an experience- a situation in which the teacher can provide feedback on student's conceptions and /or actions. While carrying out a task the student has the opportunity to improve his/ her understanding of the academic representation, which improves his/her task performance (actions 6 to 9). In addition, the teacher is able to modify the task goal and academic descriptions based on the student's task performance (action 5). As a result both teacher and student reflect on their representations and actions (action 11 and 12)- the teacher by re-defining concepts and goals in the light of student's understandings and actions; the student- by re-defining his/her understanding and re-adjusting his/her action in light of teacher's feedback and task performance (action 10). The Table 1 bellow represents our analysis of how podcasts comply and extend (in colour) the Conversational framework. For reasons of space, not all applications of podcasts are presented and/or analysed.

Table 1. Podcasts and the Conversational framework

Type of podcast	Content	Support for learning (examples)	Example from literature and practice	Conversational Framework Actions
Lecture	Traditional, invited lecture, online lecture	Repetition, revision, enhancement of internal dialogue, motivation	Re-listening to lecture allow students to go through concrete moments, take more extensive notes and this supports exam performance (McKinney, Dyck & Luber, 2009)	Teacher conveys theory, ideas (1) Student: actions 1 to 12 for internal dialogue (see Laurillard 2002, p.88)
Feedback Assignments	Instructor's formative feedback on activity and/or conceptions, suggestions on activity Guidelines on assignments or assessment	Self-reflection critical thinking Clarity of instruction through the medium of the voice	Feedback on assignments in a geography module (France & Ribchester, 2008) increases detail, accessibility, is more personalised, understandable and encourages deeper engagement with the feedback information Duckling project (BDRA)- while looking at typed comments (using track changes or other Comments functions in Word).	Teacher provides with a feedback on concepts understanding (3) and actions (8), or reorganise his teaching in light of students' action on which feedback was provided (12) Student reflect on concept in light of experience through the feedback (11)
Additional learning materials	Interviews (with students or experts) Discussion groups	Sharing of experience, learning new concepts, accessing peer's knowledge, confronting points of view stimulating reflection	Conversations and discussions on assessment tasks between peers and mentors clarifies mentor's expectations (Rothwell, 2008)	Negociation of meaning (actions 1-4) and clarification of task goals (action 6 to, potentially 9) occur with or without the presence of teacher, under the influence of hearing peer discussion.
	Practical or field works Summaries Guidelines	Linking or integrating concepts and practice, information between learning spaces	iWalk- podcast information available for concrete locations in a field trip, with interview-based narration and relevant background sounds to convey sense of engagement and place (Downward, Livingstone, Lynch & Mount, 2008)	Teacher conveys theory (1) and sets goals (6) Student: internally can reflect on descriptions based on interview (2) and on actions (7) Student can reflect in light of experience (11)
	Speeches Music or other audio recordings music or other audio recordings	Motivating, providing third perspective (other than teacher's and student's) Inspiring Professional performances	Duke university's iTunes U http://itunes.duke.edu/	Third person (expert) perspective can influence student's conceptions (2 or 4, depending on when the speech would be listened to, with regard to the main learning activity) and actions (7 or 9) and adaptation (10)
Preparatory materials	Additional materials used before a main learning activity	Addressing misconceptions	Conversational podcast with examples of standard misconceptions in undergraduate physics students (Aliotta, Bates, Brunton & Stevens, 2008)	0- teacher makes available information to students before their main learning activity, thus stimulates students to prepare their concept understanding (2), or a possible action (7) and adapts their action in light of theory (11)
	Primer podcast with epistemic questions	Priming stimulating epistemic thinking Organising concepts Structuring content	Prior lecture students receive a summary of main concepts to be addressed in lecture, and are asked an epistemic question to reflect on during lecture (Popova, Kirschner, Joiner, 2008)	0- teacher pre-builds concepts, structure of content, thus stimulates students to form their conceptions (2), their eventual actions (7), their adaptation of action in light of theory (10) and if no immediate feedback provided, they reflect on their experience (11)
	Fieldwork	Providing context, theoretical, logistical or site-specific preparation, others' experience	Hearing and watching previous students' activities and reflections on fieldwork in GEES (Downward, Livingstone, Lynch & Mount, 2008)	Students are observers of other students actions 2, 4, 7 and 9, their own corresponding action will expectedly be influenced
Specific materials	Specific sounds (medicine	Supports students identifying phonemes	Medical students recognition of basic cardiac murmurs significantly improves	Learning technical skills through monitoring (actions 1 to 4) and

	phonetics)	specific sounds (construct concepts, schemes)	after listening repetitively to cardiac murmurs (Barrett, Lacey, Sekara, Linden, & Gracely 2004)	repetition
Creative activities	Student-generated content Podcasts as assessment	Motivation, self-reflection, collaboration, learning in and from action creative activities	Collaborative development of podcasts enables student' conceptualisations of disciplinary content to be shared with peer, stimulating both individual and collective learning, supports social processes of perspective-taking and negotiation of meaning that underpin knowledge creation (Lee, McLoughlin & Chan, 2008) Cognitive benefits of student-created podcasts- enhancing understanding of topic, taking a critical stance on topic, connect new to previous knowledge, reflect on implications, independent and active learning is promoted (Nie, Cashmore, Cane, 2008)	In creative activities teacher can have a rather supportive function. While student-generated podcast where students follow a task given by the teacher, part of their activities could comply with the CF, the potential of this type of podcast lies in providing a space and a tool for learners to generate meaning and to express it in a way of their choice.

4. Conclusions

The present paper provides with theoretical and practical illustrations that podcasts are a flexible technology, which can support teaching and learning in a variety of contexts and for a variety of purposes. Laurillard states, technologies might need to be used in combination. As the podcasts examples show, this particular technology can address some of the teaching and learning actions, but not all of them at once. Besides, other technologies might be more appropriate to address the same issues. It is to note that the literature and practical references provided in Table 1 account only for positive podcasts experiences. Nevertheless, the power of human voice and the effect of listening to peer's discussions on student's learning are under-studied, and we believe their educational potential is to be explored seriously. The expansion we provide to the Conversational framwork comes first with the example of podcasts distributed in advance of a main learning activity. The way content is organised in them is supportive for both negociation of meaning (actions 1- 4) and of tasks/goals (action 6- 9). These types of podcasts thus augment the outcome of the teaching/learning activity. Second, the table shows that podcast technology affords student-generated content, which is a core activity in achieving higher-level and creative learning. The Conversational framework confines learning to formal academic learning. It does not capture creativity, neither informal learning. With the advent of the Web 2.0 technologies student-centered learning, creativity and informal learning take a new, more powerful dimension. We belive creativity is a crucial factor for success and its place in academic settings needs to be revised. Third, student-generated podcasts for assessment can take part of the creativeness logic, as it assesses not just what students know, and what they can do, but how creative they can be. Last but not least, it should be aknowledged that with student-generated podcasts both the content and the design are subject to student's decision, and it also responsibilises the student, as podcasts are usually made public- to peers, teachers, the larger community. This table should serve educators and researchers as an open reference-such that can be expanded.

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