Pedagogical Potentialities of Podcasts in Learning: reactions from K-12 to university students in Portugal

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Abstract

This paper stresses the use of podcasts in learning. It describes different types of podcasts in varied learning situations, namely content, instructions, and feedback for students' assignments. Four studies are described involving students from the 9th grade, the 11th grade, at the undergraduate and graduate level. Each study deals with a different type of podcast and for each, we have analysed learners' acceptance or rejection. The students recognized the pedagogical value of podcasts in learning. The 9th grade students enjoyed the activity of creating their own podcasts and recognized its impact in their learning. The 11th grade students preferred to listen to podcasts as opposed to reading a book. Most of the undergraduate students liked to listen to the instructions, but a few preferred to receive them as written text, as they are used to reading. The graduate students enjoyed listening to feedback on their assignments, mentioning that it was unusual, but it kept their interest and attention, and it gave a sensation of proximity to the teacher.

Keywords
Podcast, learning, students' reactions

INTRODUCTION

A podcast is audio content available on the Internet that can be automatically delivered to a personal computer, a MP3 player or a cell phone. The concept was created by Adam Curry (MTV DJ) and Dave Winer (Programmer). Since 2004, the term podcasting (combination of ipod and broadcasting) has become commonplace:

. "Podcasting is not simply a new way to distribute audio recordings, it´s a form of expression, of interaction and of community building" (Geoghegan & Klass, 2005: 5).

The authors also stressed that podcasting "puts the power to communicate into the hands of _individuals_" (idem, 2005: 2).

A number of social and technological trends work in favour of the popularity of podcasts, and their potential for learning. As Salmon, Nie & Edirishingha (2007) pointed out: the growing use of podcasts is a supplementary or alternative means of delivering content by media, entertainment and journalism industries. Kaplan-Leiserson (2005) remarks that "listening to digital audio content won't replace reading, listening to live presentations, or the multitude of other ways learners take in information, but it can augment those methods". The author suggests using

podcasts to assist auditory learners, to provide another channel for material review, to assist non-native speakers, to provide feedback to learners, to enable instructors to review training or lectures, to replace full classroom or online sessions when content simply requires delivery, to provide supplementary content or be part of a blended solution. Podcasting is capturing the attention of teachers from K-12 to academics but research is in its early steps (Abt & Barry, 2007; Jowitt, 2007; Savel, Goldstein, Perencevich& Angood, 2007; Chris, 2007; Edirisingha, Salmon & Fothergill, 2007).

We conducted four studies, one with 9th grade students, another one with secondary education (11th grade), and two at the university level at the undergraduate and masters level, to study the impact of podcasting.

RESEARCH
Podcasts are a quite new way of communicating, which enable one to take advantage of such facilities of Web 2.0 as the Podomatic tool. Since students are familiar with the use of MP3 players, it would be useful to see if they would use them to listen to learning content.

A research study has been conducted in different levels of the Portuguese educational systems, having in mind the following questions:
   a) How will students react to podcasts in learning? Would they accept it?
   b) Would they prefer to get the same information in the form of a written text?

The Portuguese educational system includes three compulsory cycles, followed by an extra 3 years of study (secondary level). This is followed by university level studies (table 1).

Four studies were carried out in different grades and academic levels, namely 9th grade, 11th grade, undergraduate and masters levels.

Educational Cycles	Grades/age
Pre-primary school	5 years old
1st Cycle - Primary school	$1^{st} – 4^{th}$ grades
2nd Cycle	$5^{th}-6^{th}$ grades
3rd Cycle	$7^{th}-9^{th}$ grades
Secondary	$10^{th}-12^{th}$ grades
University	undergraduates
	Master students
	PhD students

Table 1: Portuguese Educational System

All groups had to fill in an ICT literacy questionnaire to describe their studies. The length, purpose and number of podcasts vary in different studies. The four studies will be described in the following sections.

From consumers to producers online in the History Class
Podcasts were used in a 9th grade history class with two main purposes:
   (i) to present students with information and a problem solving activity
   (ii) to have students create their own podcasts about World War I.

The sample consisted of 27 students, 16 males and 11 females ranging from 14 to 16 years old. This study was designed to integrate two steps.

In step one, students had to listen to a podcast about the "Hegemony and decline of the European influence in the beginning of the 20th century", and then they had to identify the words used in an inappropriate way ("intruder words"). They then had to rewrite the text correctly and post their written comments in the podcast. This first activity was intended to allow students to explore the ease of operation of the Podomatic web tool. In that vein, 59% of students found it easy to learn to use the podcast, while 40.% thought that the tool was accessible and no one reported it to be difficult or very difficult to use (table 2).

Learning to use podcasts	f	%
Easy	16	59,2
Accessible	11	40,7
Difficult	0	0,0
Very difficult	0	0,0

Table 2: Learning to use podcasts (n=27)

In step two, the content focused on the First World War. Students were invited to create, in pairs, their own podcasts, about: *1.* Europe before the War; *2.* First World War. The armament in War; *3.* World Wide Spread; *4.* The participation of Portugal in the conflict; *5.* The Victory; *6.* The Peace, and *7.* Consequences of the First World War. They had to search for information on the Web and to analyse different written sources. Each pair of students had to create one episode per lesson. Each episode would be recorded by both students. Students were encouraged to write up the text prior to recording. Along with the narration, students could post pictures related to the theme of their episode (see figure 1).

Figure 1: Podcast created by one group about the World War I

As far as the publication of episodes as podcasts is concerened, 96,2% of the students considered it easy. However, one student expressed that he didn't know what to do (table 3).

Publishing a podcast	F	%
It's easy	26	96,2
I didn't know what to do	1	3,7

Table 3: Publishing a podcast (n=27)

The majority of students (88,8%) considered the podcast to be a challenging way to work with history. Only 11,2% disagreed and none of the students considered it boring (table 4).

Podcast to introduce the History activity	F	%
A challenging idea	24	88,8
Not a very challenging idea	3	11,2
Boring	0	0,0
Very boring	0	0,0

Table 4: Podcast to introduce the History activity (n=27)

Most of the students considered that podcasts were a useful tool for students with difficulties in learning (88,8%), while only 11,2% indicated that podcasting is a tool for motivated students only.

Students were asked about the implications of creating their own episodes (table 5). Most of the students mentioned that they agreed that publishing their episodes helped them to carefully analyze different documents (77,7%), to learn to select the more relevant information (74,0%), to synthesize the main ideas (77,7%), to organize ideas logically (77,7%) and to produce texts.

Publishing my podcasts helped me:	Agree		Partially agree		Disagree	
	f	%	f	%	f	%
To analyze carefully different documents	21	77,7	6	22,2	0	0,0
To learn to select relevant information	20	74,0	7	25,9	0	0,0
To synthesize the main ideas	21	77,7	6	22,2	0	0,0
To organize ideas logically	21	77,7	6	22,2	0	0,0
To produce texts	23	85,1	4	14,8	0	0,0

Table 5: Implications of podcasting in learning (n=27)

When asked about their preferences regarding listening to podcasts or reading a book, most of them (77,7%) mentioned to prefer to listen to podcasts. Different justifications were used: I learn better, it is not so tiring or monotonous, it is a more original way, it creates interest, the content is more explicit and finally, reading is boring (table 6).

I prefer listening to podcasts rather than reading a book because…	f
It is not so tiring/monotonous	5
It is a more original way	5
Content is more explicit	1
I learn better	9
It creates interest	4
Reading is boring	1

Table 6: Justifications of students' preferences for listening to podcasts (n=21)

The six students that preferred to read the content rather than listening to podcasts justified their preference as follows: "my vision is more accurate than my hearing" (022), "because I am more attentive when I read" (008) and "when I read, I memorize more easily" (016).

The majority of the students (66,6%) listened to the episodes of their colleagues because it helped them to understand the content and it motivated them to learn.

According to these students it was easy to download a podcast, to write comments and to post an episode. They found it challenging to use a podcast to present an activity in the History class. In order to accomplish this, they had to read, select information, organize ideas and to produce a text to create their own podcast. The Podcast is a tool that encourages students to utilize several learning skills and competencies relevant for the 21st century.

We would like to finish this study with this question: if podcasts help and motivate students to learn why don't other teachers use them in their classes?

Learning Portuguese Literature

This second study focuses on the use of podcasts in Portuguese Literature in a secondary school (11th grade). The focus of this research is on the pedagogical implications of this technology.

The Podomatic was used to post the podcasts (fig. 2) – "Em Discurso Directo". These podcasts were about novels and poems, authors' biography and literature analysis. Their length varied from 1,54 minutes to 14,50 minutes.

Figure 2: Podcasts about Portuguese Literature

Two groups of students participated in this study. One consisted of adults (n= 16), who had difficulty on attending classes because they were working. The other group consisted of 16 students, who were not motivated to learn.

Using podcasts with the first group gave the adults the opportunity to acquire the content of the classes when they could not attend. Moreover, it helped them to prepare for tests and exams, because it was easier to review the content by listening to it than by reading it. For the other group with the unmotivated students, it was an opportunity to learn by listening instead of reading, and it allowed them to use technology that is attractive to most

A questionnaire was developed to analyze students' reactions to these podcasts, in terms of their pedagogical value and student attitudes. A Likert scale with three points was used to indicate agreement, undecided or disagreement.

The majority of the students (77%) considered that podcasts content was well organized (table 7) and it helped students to learn (68%). Almost all of the students (94%) disagreed that the podcasts replaced the teacher. Some teachers are

concerned with their potential replacement by the technology. These students liked podcasts but they also liked their teacher, revealing that the teacher is irreplaceable.

In terms of user mobility, 68% agreed that they liked to listen to podcasts when or where they want. Those that disagreed or were undecided, were those that didn't have a MP3 player or a laptop to listen to the podcasts.

Pedagogical value of podcasts	Disagree		Undecided		Agree	
	f	%	f	%	f	%
The content of the podcasts is well organized	0	0	8	23	27	77
Podcasts help me to learn	2	6	7	20	26	74
The podcasts replace the teacher	33	94	2	6	0	0
I like to listen to the podcasts when and where I want	1	3	10	29	24	68

Table 7: Pedagogical value of the podcasts "Em Discurso Directo" (n=35)

Related to students' attitude towards podcasts, (table 8), we discovered that only one student strongly disliked podcasts, all others (94%) disagreed. Only 14% preferred to read the content instead of listening to the podcasts, 46% were undecided and 40% preferred to listen rather than to read the content.

Students' attitudes towards podcasts	Disagree		Undecided		Agree	
	f	%	f	%	f	%
I hate podcasts	33	94	1	3	1	3
I prefer to read the content rather than listen to it in the podcast	14	40	16	46	5	14
Podcasts are appropriate for motivated students only	22	60	7	23	6	17
Podcasts are of more help to students with learning difficulties	5	14	13	37	17	49

Table 8: Students' attitude towards podcasts (n=35)

In terms of podcasts relevance being limited to motivated students only, 60% of the students disagreed, 23% were undecided and 17% agreed (table 8). Almost half of the students (49%) agreed that podcasts were of more use to students with learning difficulties, 37% are undecided and 15% disagreed.

According to this study, the students recognised the pedagogical value of podcasts in learning and the important role of the teacher in the classes. Their attitudes' towards podcasts was positive as only one student hated podcasts. Most of the students preferred to listen to podcasts than rather reading the content from a book.

Undergraduate students' reactions to podcasts
In the third study the podcast was used to give instructions to students about how to use tools, like the forum in an e-learning platform (Blackboard).

These undergraduate students were 14 girls, 19 years old, enrolled in a program of Education Sciences at University of Minho. These students were attending lectures on the use of Multimedia Educational Materials but they were very negative towards the use of technology.

According to their answers to the ICT literacy questionnaire, almost all of them (93%) didn't know what a podcast was. Only 7% mentioned that they listened to

podcasts for entertainment. None of them had participated in a forum and only 36% had participated in a chat.

At the end of the semester students filled in the questionnaire about podcasts. All students mentioned that they listened to the podcast and most of them (79%) considered that the instructions were useful (table 9). However for 21% of the students the instructions were irrelevant as they already knew how to use the tools, and for one student they were not clear.

Utility of the instruction in the podcast	f	%
Yes, it was useful	11	79
No	3	21
Because I knew how to use the tool	2	
Because the instructions were not clear	1	

Table 9: Utility of the instructions in the podcas (n=14)

More than half of the students (58%) listened to the podcasts twice to clarify details, 14% three times and 14% only once (two subjects didn't answer). Most of them listened to it on *campus* (58%) and 28% at home.

They were asked if they would prefer the instructions in a written text or in podcast. Half of the students preferred to listen to the instruction and 36% said they would prefer to have the written information, because they liked to read and to underline the important parts, as they are used to do (table 10).

Learning preferences	f	%
Listening to podcasts	7	50
Reading the information	5	36
No reply	2	14

Table 10: Preferences for listening to podcasts or for reading a text (n=14)

Finally they were inquired about what kind of podcasts they would like to have in their courses, presenting 6 options as be can seen in table 11.

Types of podcast	f	%
Class content summary	6	42
Instructions for assignments	8	58
Study guidelines	5	36
Comments to their assignments	4	28
Instructions for tools usage	2	14
Feedback	8	58
Others	0	0
No reply	1	7

Table 11: Preferences of types of podcasts in their courses (n=14)

Students would like to have podcasts focusing on feedback (58%), and instructions for assignments (58%), followed by class content summary (42%), study guidelines (36%), comments to their assignments (28%), and Instructions for tools usage (14%).
This group was not very attracted by technology. However they were receptive to having other kind of podcasts in their courses.

Master students' reactions to podcasts

The fourth study carried out involved master students (n=25) of Educational Technology. The podcasts were used to give feedback about their assignments or to provide guidance about assigned tasks. Theses podcasts were 3 to 5 minutes long.

The sample consisted of 16 females and nine males. The majority of the students already knew podcasts (60%), but none of them had produced their own podcast.

During the semester five podcasts were presented. At the end of the semester the questionnaire about podcasts was made available in an e-learning platform (Blackboard) for the students to fill in. According to their answers, 92% listened to the podcasts, while 2 students didn't (table 12).

Of those that listen to the podcasts, 13 did it in the Blackboard platform while 12 downloaded to their PC. None used the MP3 player.

Listening to the podcasts	F	%
Yes	23	92
Blackboard	13	
Download to the PC	12	
Download to the MP3	0	
No	2	8

Table 12: Listening to the podcasts (n=25)

Students were asked if they saved the podcasts after listening to them, 48% did and 48% didn´t and one student didn't reply (table 13). All the students that didn´t keep the podcasts mentioned that the podcasts are always available. Two students also indicated that it wasn't necessary to listen again and it overloaded the equipment's memory. This opinion also appears in Edirisingha, Salmon & Fothergill's (2007) study.

Save the downloaded podcasts	f	%
Yes	12	48
No	12	48
Always available	12	
It wasn´t necessary to listen several times	2	
Due to memory overload	2	
No reply	1	4

Table 13: Save the downloaded podcasts (n=25)

The majority of the students (80%) listened to the podcasts more than once to review (60%), to get details (60%), to get a better understanding (28%) or to clarify content (8%).

They were also asked about if they were doing something else when listening to podcasts. The majority of the students (80%) listened exclusively to the podcasts, while 12% preferred to write down everything, and 8% liked to take notes (table 14).

When listening to podcasts	F	%
Listening only	20	80
Write down everything	3	12
Other (take some notes)	2	8

Table 14: When listening to podcasts (n=25)

One student wrote: "*at first it was strange to listen to the teacher, and more unusual to listen to comments about the assignments. But I would like to say that the attention of the student is kept in a more intense way than with a written text. The suspense effect keeps our attention and interest in listening to the whole podcast*" (Mac2).

All students expressed the opinion that they would like to have podcasts in other courses. One student said "*I liked it very much. The podcast gives a sensation of proximity to the teacher. It is a very useful tool in a learning context*"(Mac10), another one recognized that "*it is a powerful tool that should be used in distance learning*".

The teacher wrote: "*it was a challenging experience. When recording the podcast I imagined the students in front of me. Consequently, I appreciated their comment about the feeling of proximity that they experienced*". This idea needs further research particularly in distance education.

CONCLUSION

Podcasting is a very useful tool that can be used in all levels of learning. Podcasts are easy to listen to and to create. Their use is limited only by the teacher's imagination and the context of learning.

In the four studies described, the majority of the students liked to listen to podcasts. However, a few students would rather have had access to a written text instead of a podcast (e.g., students of 9th and 11th grades and undergraduate students). Further research is needed in this matter. Did students prefer to read a text because they are more familiar with this medium? Or is it because they cannot focus on the content when they are listening to a podcast?

Only one group used their MP3 to listen to podcasts. The length of the podcast and its content may be important. This is another aspect that needs further study.

The idea of proximity identified by the Masters students and also in the Edirisingha, Salmon & Fothergill (2007) study raises some questions. Do podcasts help to diminish the transactional distance (Moore, 1997)? These are some of the aspects that we intend to address in our project about "Pedagogical implications of podcasts in blended learning" which is currently being conducted.

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Biographies

Ana A. Carvalho is a lecturer in the department of Educational Technology and a researcher at University of Minho, in Portugal. She developed a model to structure learning objects based on Cognitive Flexibility Theory. Her last project is about the implications of podcasts in blended-learning. She is an IFIP 3.6 member.

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