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PODCAST LEARNING EFFECTIVENESS IN HIGHER EDUCATION IN EUROPE: A SYSTEMATIC REVIEW

Patrícia Araújo (a)*, Filipe Rodrigues (b)

*Corresponding author

(a) IPAM/Universidade Europeia-Laureate International Universities, Porto, Portugal.

E-mail: pattaraujo@gmail.com

(b) Universidade Lusófona do Porto, Portugal. E-mail: sampaio.rodrigues@gmail.com

Abstract

Problem Statement: Although Podcast-Learning (PL) represents opportunities to innovative learning, evidence of its effectiveness is still scarce. **Research Questions:** (1) Which Podcast Practices in Higher Education (HE) foster its effectiveness and (2) How do HE students react to Podcast Learning. **Purpose of the Study:** A podcast is a media file which can be downloaded and studies found that HE students think Podcasting is more effective than traditional methods. This paper aims to do a systematic literature review of Podcast Learning effectiveness in European HE. **Research Methods:** The first search was conducted using Ebsco, Redalyc, Scielo, Latindex and B-On databases, which resulted in the identification of 2 publications. Secondly, search was extended to Google Scholar which retrieved 18 publications. Peer-reviewed articles and book sections (all years/countries) with data on effectiveness of Podcast Learning in HE-Europe were included and, Thesis, Books and extra-European research were excluded. **Findings:** Twenty publications were retrieved and, after applying inclusion and exclusion criteria, three were included in the review. Findings suggest that there is a high level of satisfaction with podcasts. Students find podcasts useful and motivating, specially to received feedback and assignments instructions, and data indicates that podcast learning improves student performance in evaluations. **Conclusions:** Overall, research on PL Effectiveness in HE in Europe is rare. Limitation of this study includes languages and databases used. Nevertheless, this review points to positive results of the use of podcasts in HE which represents an opportunity to adopt this new technique in order to further advance HE.

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Keywords: Podcast Learning, Higher Education, Effectiveness, Europe.



1. Introduction

In 2004, the Guardian' journalist Ben Hammersley stated the emergence of a revolution on how radio was being listened and suggested three different names for it: audioblogging, guerrilamedia or podcasting (Martinho, 2018). Podcasting (the merge of the words 'ipod'+ 'broadcasting') was first introduced in 2003 and by 2005 there were more than 10,000 different podcasts available on a several themes, with the use of podcast-Learning for educational purposes in higher education on constant rise (Campbell, 2005).

As technology develops and enters the educational settings, new challenges and opportunities emerge. The use of technologies such as podcast and audio files in education has increased in higher education (Campbell, 2005; Bongey, Cizadlo, & Kalnbach, 2006; Lakhali, Khechine, & Pascot, 2007) with future educational settings becoming more student-centered (Nix, 2005). Although mobile devices were first introduced into students' life primarily for entertainment they are undoubtedly becoming part the educational process (Kukulska-Hulme, 2005), and it has been gaining relevance as learning tool. With the emergence of the internet and personal digital devices the possibility to learn at distance emerged.

In the particular the context of Higher Education (HE) has been developing new insights on what andragogical development could become in the future, with mobile learning (m-learning/ML) and Podcast-Learning (PL) becoming fascinating opportunities and, simultaneously, with academic research focused on transforming it into a new emerging discipline (Brown & Mbatia, 2015).

Pedagogical affordances of Mobile-Learning in general are diverse, with personal publishing and sharing and self time-management at the centre, but also the possibility to personalize learning environments, personal control and learning ownership and support and motivational messages (Araújo, In Press).

Podcasting "involves downloading a series of audio or video broad-casts (files) onto a digital media player, via a computer, over a period of weeks. These can then be watched or listened to when, where and as often as students choose" (Evans, 2008, p. 491).

Higher education teachers, educators and supervisors all over the world are rediscovering the power of the spoken word by utilising these technologies to reach students outside the traditional classroom, allowing even the narrative to change, with teacher posting 'new episodes' of class subjects.

Furthermore, in 2011 at the Stanford University, the MOOCs are born, 'Massive Online Open Courses' and rising tremendously, nevertheless, "a single MOOC corresponds to a course at a university. Currently, in Europe, there is no program or degree offered that is based on MOOCs" (Lemarquand, 2018, p.3).

Although research on PL use worldwide is rising, indexed studies focusing on Europe seem to be scarce and one of the reasons that might be is that, there is a central difference between HE in Europe and other countries which is the Bologna process.

The Bologna declaration (Joint Declaration of the European Ministers of Education convened in Bologna on 19 June 1999) is the main guiding document of the Bologna process and it was adopted by ministers of education of 29 European countries (European Union, 1999).

Briefly, its main objectives are: (i) Adoption of a system of easily readable and comparable degrees (implementation of the Diploma Supplement, in order to promote European citizens employability and the

international competitiveness of the European HE); (ii) Adoption of a system essentially based on two main cycles, undergraduate and graduate; (iii) Establishment of a system of credits – the ECTS –European Credit Transfer System – where Credits could also be acquired in non-higher education contexts, including lifelong learning, provided they are recognised by receiving Universities concerned, and (iv) Promotion of mobility (European Union, 1999).

Nowadays, either the 3-cycle Bachelor-Master-Doctorate and the ECTS is regarded as one of the most successful practices in Europe and beyond (Lemarquand, 2018).

Today, the European Higher Education Area (EHEA) involves 48 states. In May 2018, the Education Ministers met in Paris and adopted a 'Communiqué' on their priorities for a more ambitious EHEA beyond 2020, calling for: “(i) an inclusive and innovative approach to learning and teaching; (ii) integrated transnational cooperation in higher education, research and innovation; and (iii) securing a sustainable future for our planet through higher education” (Lemarquand, 2018, p. 1).

Besides the obvious contributions of Podcast-Learning (and technology in general) to the first goal, the third goal may as well be served by the elimination of excessive paper in HE and, therefore, the inclusion of ML or PL in HE teaching. Regarding the second goal, either E-learning in general and ML and PL, in particular, can facilitate communication for cooperation, research and innovation between countries, universities and people (and even resolve language barriers).

Even with some European particularities, with Hay's (2008) contributions and other observations from our experience, we list some reasons why European HE institutions should integrate podcasting into curricula or as a means for effective campus communication: (a) for distance learning; (b) to facilitate self-paced learning; (c) to value different learning styles (visual, audio, kinesthetic); (d) to allow faculty to offer highly motivated learners extra content; (e) to reach students with several types of disabilities; (e) for multi-lingual education (in the case of Europe, the Erasmus and other mobility programs are growing and bringing new challenges to teachers); (f) to promote lectures from guest speakers from remote locations; (g) to “allow educators to escape the tedium of lecturing” (Hay, 2008, p.986) and save time; (h) to offer a richer learning environment; (i) to strength the relation between teachers and students, and, for examples, between thesis supervisors and masters and PhD Students; (j), and last, but not least, (k) for improvement of universities financial management.

At last, regarding Podcast-learning effectiveness, Vajoczki, Watt, Marquis and Holshausen (2010) present four main indicators to assess the effectiveness of podcasts: (a) student satisfaction, (b) educational outcomes, (c) instructor satisfaction and (d) financial feasibility. Authors point out that the student satisfaction has been the most used measure for PL effectiveness and has been explored by asking students about ease of use, usefulness and benefits to learning of podcasts.

Hence, the aim of this study is to deepen the knowledge on how podcast-learning is being used in HE, how students are reacting to it, and to find out which scientific studies approaches its effectiveness in Higher Education in Europe.

2. Problem Statement

Throughout the relevant literature there are authors who defend that the use of podcasts promotes the increase in learning satisfaction (Lakhal et al., 2007) and lower feeling of isolation in students on

distance courses (Lee & Chan, 2007). Fillion (2005) argued that the use of other information technologies enhances students' performance, and that the combination of audio technologies with traditional methods of lecturing may provide a clue for a future teaching strategy. However, other authors (Bongey et al., 2006; Fichter, 2006) argue that podcasting (and other audio technologies in higher education) may be contraproductive, claiming that: (i) it may lead to absenteeism; (ii) it promotes unidirectional communication; (iii) it requires additional technological infrastructure; and (iv) it may not be worth the effort given the students' low subscription rates.

Therefore, although Podcast-Learning represents opportunities to innovative learning and teaching in HE in Europe, there is still scarce evidence on PL effectiveness. So, the problem we wish to address relates to European Higher Education institutions and how are they using podcast-learning in effective ways.

3. Research Questions

In this study, our two main research questions were: (1) What Podcast Practices in HE, in Europe present effectiveness and (2) How do HE students react to Podcast Learning, in Europe.

4. Purpose of the Study

Some studies, for example, in United States of America (USA), found that that HE students thought Podcasting was more effective than traditional methods (Evans, 2008). In Hong Kong, a study by On Tam (2012) with 128 students revealed high satisfaction and effectiveness of educational podcasts for teaching music and visual arts in higher education.

However, maybe due to Bologna process, research in Europe has other challenges, and PL effectiveness studies are still scarce, so this paper aims to execute a type of systematic review called a 'state-of-the-art systematic review' (Grant & Booth, 2009) of Podcast Learning effectiveness, in HE, in Europe.

5. Research Methods

From Grant and Booth (2009) detailed work emerged 14 types of systematic reviews. Given the newness of the subject of Podcast-learning effectiveness we choose to approach this investigation using a "State-of-the-Art systematic Review" which authors define as:

A typology of review that addresses (...) more current matters in contrast to other combined retrospective and current approaches. May offer new perspectives on issue or point out area for further research (...) Aims for comprehensive searching of current literature and aims to present current state of knowledge and priorities for future investigation and research (p.45).

Key-words used for the search were: 'podcast learning'+ 'higher education'+ 'effectiveness'+ 'europe' (in Portuguese and English) and search was conducted on 15th April 2019, using Ebsco (1 article) and Scielo (1 article) databasis.

Given that, after this first phase only 2 publications appeared, a second phase has conducted on Redalyc, Latindex and B-On databases. This time, zero publications emerged.

The third phase was implemented on Google Scholar (in English and Portuguese), on the same day and 18 more publications emerged, totalizing 20 publications.

5.1. Inclusion and Exclusion Criteria

Peer-reviewed articles and book sections (from all years and countries) with data on effectiveness of Podcast Learning in HE in Europe were included.

Paid articles and paid databases, Thesis, Books and out-of-Europe research was excluded.

6. Findings

Although five different databases were used in three different phases of this study, from the 20 publications retrieved, 17 were excluded: 5 because it was out-of- Europe research; 6 because they were books, 1 Master thesis, 4 publications which did not report Podcasts effectiveness and 1 out-of Europe conference paper.

After applying inclusion and exclusion criteria, three publications were included in this state-of-the-art systematic review (see Table 1).

Table 01. Podcast Learning in HE in Europe: Publications Included in this systematic Review

| N.º | Authors | Title | Country and Source | Methodology | Sample/Participants | Podcast Effectiveness |
|---------|-------------------------------------|--|--------------------------|------------------------------------|--|---|
| Study 1 | (Alonso-Arbiol, 2009) | Use of Audio Files Improves Students' Performance in Higher Education | Spain / Google Scholar | Quantitative (Testing Hypothesis) | <ul style="list-style-type: none"> • 103 Undergraduate, Psychology students | <ul style="list-style-type: none"> • Podcast use improves students' grades (in certain types of students) • Students with better grades are more prone to use podcasts; |
| Study 2 | (Alarcón, Blanca, & Bendayan, 2017) | The Student Satisfaction with Educational Podcasts Questionnaire-SSEPQ) | Spain /Scielo | Quantitative (Validation of SSEPQ) | <ul style="list-style-type: none"> • 376 Undergraduates, first year Psychology students | <ul style="list-style-type: none"> • Podcasts provide rigorous and clear information • Easy to access and Useful • Motivating to learn • Students were satisfied with 3-5-minute podcasts to complement traditional Resources |
| Study 3 | (Carvalho, Moura, & Cruz, 2008) | Pedagogical potentialities of podcasts in learning: reactions from K-12 to university students in Portugal | Portugal /Google Scholar | Quantitative and Qualitative | <ul style="list-style-type: none"> • 14 undergraduate Education Sciences • 25 Educational Technology Master students • Teachers | <ul style="list-style-type: none"> • Students feel sense of proximity to teacher • Podcasts are useful • Students feel podcast stimulates more attention and interest • Podcasting is most useful on feedback and instructions for assignments. • Teacher/Podcaster satisfaction • Students listen more than once • Students preferred podcast to written instructions |

We will present next, a brief summary of each publication included:

Study 1: Alonso-Arbiol (2009), from the University of the Basque Country, developed an empirical study to assess the effectiveness of podcasts in improving the students grades. The sample included 103 students who took a written exam from the second time, out of an universe of 140 students enrolled in the course of “Psychological Assessment”. Researchers made available to all students one single audio file (6.52 minutes long) which provided contents of one lesson related to one question on the exam (‘Phases of the psychological interview’). Students were allowed to leave the question blank. The question had 4 possible answers and only one was correct.

The hypothesis was: students who downloaded the audio file would answer better to the question related to its content, and therefore have better grade. Either accounting for blank answers or not, hypothesis was confirmed. Procedure included obtaining statistical data from the platform (Moodle), so researchers went further and hypothesised about differences between the two groups of students (the ones who used the podcast and the ones who didn’t).

Students performance improvement from exam 1 to exam 2 could be attributed to other reasons than the podcast, for example, better cognitive skills (Students with better cognitive skills might be more motivated to use several types of study material than the other group). So, researchers eliminated the question that had the podcast file and analyses confirmed a large effect size (Cohen’s $d=.79$), that showed that the group of students who downloaded the audio file would have obtained better grades than the group who showed no interest in the podcast.

Study 2: In this research, Alarcón, Blanca and Bendayan (2017), from University of Málaga, Spain, created and validated, using statistical measures, the ‘Student Satisfaction with Educational Podcasts Questionnaire’ (SSEPQ), using a sample of 376 first year Psychology students, attending the last day of ‘Research Methods’ curricular unit.

Average age of participants was 19.88 (SD=3.81), 292 were women and 84 were men and they all used podcasts at least once a year. SSEPQ consists of a 10 likert type items (Strongly agree, disagree, agree and strongly agree), with Cronbach’s Alpha of .88 and one factor structure, which supports the use of the total score as a global index of student’s satisfaction with podcasts.

Results revealed that all mean values were higher than 3 except for item 10 (2.85), which was: ‘the design of the podcasts makes them appealing’. The total mean score for the sample used was 31.93 (out of a possible maximum of 40) which show “that students were satisfied with the use of podcasts as educational tools” Alarcón, Blanca and Bendayan, 2017, p.130).

Study 3: Carvalho, Moura and Cruz (2008) collected data, in Portugal, on several learning stages (including 9 grade and 12 grade). Here, we will only discuss results regarding Higher Education students. The study approached 14 Education Sciences undergraduates and 25 Educational Technology Master students. Regarding Educational Sciences Undergraduates, the podcast focused on instructions on how to use the forum, the platform (BlackBoard) and not curricular content, and at the beginning, 97% didn’t know what a podcast was. At the end of the semester 79% considered the podcast useful, 50% preferred podcast to written instructions (but 36% would prefer written material). Finally, when asked about podcast use and

content, the majority of the sample (58%) feel that podcasting is most useful on feedback and instructions for assignments.

In the masters students study, podcasting were used to give feedback and guidance on assignments and they were 3 to 5 minutes long. Main results are: (i) 48% of students listened to the podcast more than once; (b) when asked if they were doing something else while listening, 80% said no; (iii) in qualitative part of the study, students manifested satisfaction and verbalized they “wish they have podcasts in other courses” (...), because it gives proximity to the teacher,(...) it’s very useful (...)the suspense keeps our attention and interest” (Carvalho, Moura, & Cruz, 2008, p.31). The paper has limitations regarding methodological standards, and no information is given on how many teachers participated or even the data collection on teachers. Nevertheless, since in this review, there is no other paper which approached teachers/podcasters, we feel it’s important to say that a teacher in this study, and his/hers comment was “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.” (Carvalho, Moura, & Cruz, 2008, p.31).

6.1. Reframing Podcast Learning effectiveness and practices in HE in Europe

The state-of-the-art review is a review that offers new perspectives on an issue or highlights areas in need of further research (Grant & Booth, 2009). In this study, overall, Podcast-learning in general, in HE in Europe is scarce (at least scientifically published), so, it is clear that further research on use of PL in general and its effectiveness in particular, is needed.

To answer Research question 1. (RQ1) What Podcast Practices in HE, in Europe present effectiveness? and Research question 2 (RQ2) How do HE students react to Podcast Learning, in Europe?, we chose to reframe the collected data using Podcast Effectiveness four main indicators by Vajoczki, Watt, Marquis, and Holshausen (2010): (a) student satisfaction, (b) educational outcomes, (c) instructor satisfaction and (d) financial feasibility.

This reframing will help this state-of-the-art review to further focus the way to new research.

Table 02. Reframing of collected data on Podcast-learning effectiveness (in HE in Europe) using Vajoczki et al. (2010) taxonomy

| | RQ.1 Podcast Practices effectiveness (in HE, in Europe) | RQ. 2 Students reaction to Podcast Learning (in HE, in Europe) |
|--|--|---|
| Factor I: Student Satisfaction | <ul style="list-style-type: none"> ▪ Satisfaction with 3-5m podcasts (Alarcón et al, 2017) ▪ Easy to access, motivating to learn (Alarcón et al, 2017) ▪ Podcasts are useful (Carvalho et al, 2008; Alarcon et al, 2017) ▪ Students feel sense of proximity to teacher (Carvalho et al, 2008) ▪ Students feel podcast stimulates more attention and interest (Carvalho et al, 2008) ▪ Podcasting is most useful on feedback and instructions for assignments (Carvalho et al, 2008) ▪ Students listen more than once (Carvalho et al, 2008) ▪ Students preferred podcast to written instructions (Carvalho et al, 2008) ▪ Students with better grades are more prone to use podcasts (Alonso-Arbiol, 2009) ▪ Podcasts provide rigorous and clear information (Alarcón et al, 2017) | |
| Factor II. Educational Outcomes | <ul style="list-style-type: none"> ▪ Podcast use improves students grades (in certain types of students) (Alonso-Arbiol, 2009) | ----- |

| | | |
|--|---|-------|
| Factor III. Instructor Satisfaction | ▪ Teacher/Podcaster satisfaction (Carvalho et al, 2008) | ----- |
| Factor IV. Financial Feasibility | ----- | ----- |

Overall, from Table 2., it's possible to conclude:

- (i) Student satisfaction is the most used indicator of podcast effectiveness [as previous research pointed (Vajoczki et al., 2010)];
- (ii) Financial issues in general and instructor/Teachers contributions – satisfaction or other indicators- are the least or almost inexistent studied indicators of PL effectiveness;
- (iii) Regarding our RQ1, podcast-learning practices related to instructions and feedback on assignments are found more effective by students and in general;
- (iv) **Regarding RQ2, students in HE in Europe, included in this review, find PL useful, motivational and attention-stimulated, more interesting than written or traditional resources and, in some cases, performance improvements in students grades were found.**

Regarding particular findings from Alonso-Arbiol (2009) that students who used the Podcast, achieve better grades in the second exam, the author herself reflects that:

“the effect may not imply direct cause, because those who made use of this aid were the students who would regardless, achieve better grades. Can we therefore conclude that there is a previous level of motivation that makes some students more prone to use whatever tool that would help them succeed? (Alonso-Arbiol, p.453).

Still, we find this study an important contribute to this reflection and to start the overall discussion and clues to future research and practice.

Grant and Booth (2009) state that “If an expert in a given field has written a state-of-the-art review, it is likely to provide a fairly accurate representation of current knowledge and future priorities for research. Depending on the extent of communication within the chosen field, it may also capture an informal consensus among fellow experts” (p.105).

Although, we do not consider ourselves experts in PL in Higher Education, we started using podcasting in a Portuguese college with considerable success amongst master's students. Initially, as a way to give feedback for assignments and even for the evolution of Master thesis development, and later on to address issues of Thesis Storytelling and writing techniques, scientific writing and methodological mini-lectures focusing on each students' research, ethical concerns, preparation for public arguing, etc.

Students manifest deeply satisfaction about these practices and, informally, confide with us feedback from other students that do not receive Podcast-Feedback, and it seems to be overall less positive (comparing groups or even using control-group techniques could be a future path for research).

Indirectly, this state-of-the-art review had another aim: to confirm if other HE teacher were experiencing the same results we were feeling (informally), and had publish them. But we still feel there is no clear answer to this question (yet), although as teachers and thesis supervisors, we agree with the participants from Carvalho, Moura, and Cruz (2008) study, when they say that podcast-learning is

extremely useful in feedback and instructions for assignments and that PL gives a sense of proximity teacher-student, and we also agree with the (one) teacher from the study reporting challenging and satisfaction.

Maybe teachers lack training, or are afraid of misuse of podcasts by students, for example, launching them publicly on the internet or even afraid of misinterpretations by scientific community of the recorded material. Research is almost inexistent from the teachers perspective (time, technology knowledge, engagement of students in theirs courses, etc.) or even from teachers performance reviews, for example, we rise another future research question: do teachers who engage students using technology like podcasts, have better performance reviews by their employer/Institutions?

Campbell (2005) reflected upon this new challenge to HE teacher more than a decade ago, saying:

Am I suggesting that those of us in higher education, we who have spent our lives perfecting our writing and speaking must now learn to be audio and video engineers too? Can't we leave the multimedia authoring to the audio/video gurus at our institutions? The short answer is, "yes." Perhaps few of us will have the time, energy, or motivation to add an entirely new skill set to our working lives (p. 45).

Another interesting issue which seem to not be very explored by research in PL is the type of Podcast. For example, On Tam (2012) in a study in Hong Kong about teaching music skills thought PL, indicated that demonstration of procedures or skills was the most effective type of podcast. The author further developed a taxonomy where he identified three types of podcast and results (On Tam, 2012); (i) demonstration and activity or assignment-related podcasts are more effective than informational; (ii) Podcasts that demonstrate the application of skills and content that requires audio and visual explanation are well received; (iii) Simply converting lecture PowerPoints or handouts into podcast files does not work well.

Thus, future studies should also experiment on the content or typology of podcast-learning and explore its efficacy in each typology, as well as other variables, for example student educational levels, gender, socioeconomic level, student digital competency, etc. For example, Kennedy, Hirsch, Dillon, Rabideaux, Alves and Driver (2016) found podcasts used in students who will become future teachers was a success and using an experimental design, future teachers who used content podcast had better grades in an exame than those going to a traditional lecture.

Podcast-Learning *per se* is not the only matter. How to produced it, the design, the content but also, which content will be more successful and effective for those particular students, are all details to prepare.

On the other hand, the author also lifts the veil to a more paradigm-approach necessity: "there is still little description of how to combine podcasting successfully with existing pedagogies and there is no evidence-based model to follow, in either strategy or practice" (On Tam, 2012, p.11).

So, either in pure or applied research, either in pragmatic orientations, more steps have to be made. Bottentuit, Junior, and Coutinho (2008) explore, on a practical and detailed level, recommendations for production of podcasts and advantages in the use in virtual learning environments, pursuing and deepening these orientations. This practical sense is also crucial at this stage of podcast research and implementation in HE, since we believe podcast learning holds promise in an innovative and challenging higher education in Europe.)

7. Conclusion

Published studies about PL in Higher education in Europe are scarce and further research is needed. However, findings point to positive impacts of Podcast-learning, suggesting that there is a high level of satisfaction with podcasts in HE Students: they find podcasts useful and motivating, especially to received feedback and instruction on assignments, and data indicates that podcast learning might improved student performance in evaluations.

Studies focusing on financial issues and teachers' perspective and **participation are** almost inexistent. Type of contents and overall design and conception of podcasts for learning are still areas in need of more studies and podcast design must be more attractive to students (Alarcón et al., 2017)

Limitation of this study includes the databases used (mainly because paid databases were not used).

Nevertheless, the main conclusion of this state-of-the-art review points to positive results of the use of podcasts in HE in Europe, which represents an opportunity to adopt this new learning/teaching technique in order to further advance HE.

Furthermore, Mobile-Learning and Podcast-learning might conjugate in innovative and successful new pedagogical affordances with PBL – Project-Based Learning, micro-learning and gamification of learning (Game-base Learning).

In other countries, not only the use of podcast in general is rising, but its use in HE is also gaining ground, as is research on its effectiveness. For example, in the USA, in 2018, 48 million Americans stated that they listened to one podcast a week, a 10% rise from the numbers in 2013 (Martinho, 2018).

If Podcasting is changing the way we absorb information, if it brings a sense of proximity between podcaster and listener, if we can take it anywhere, and, moreover, if it enhances listening skills (in opposition to a visual-oriented society we've become)... we believe it's time for European Higher Education to 'jump' on this train quickly in order to engage the new generation of students, because, as Campbell (2005) says "Done well, podcasting can reveal to students, faculty, staff, communities even the world, the essential humanity at the heart of higher education" (p. 47).

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