ARTICLE

THE USE OF PODCASTS AS A TEACHING TOOL IN EDUCATION: APPROACHES IN NATIONAL JOURNALS BETWEEN 2009 AND 2020.

ANDRÉ LUIZ DE SOUZA CELARINO[1]

ORCID: https://orcid.org/0000-0002-1663-2323

<andre.celarino@ifpr.edu.br>

MIGUEL ANGELO LARSSEN STOHR[1]

ORCID: https://orcid.org/0000-0003-1446-7050

<miguelarssen@gmail.com>

KÁSSIA DANIELI BRESCIANI[1]

ORCID: https://orcid.org/0000-0002-4247-5931

<kassia.ifpr.bresciani@gmail.com>

GUILHERME ANTONIO CADORIN[1]

ORCID: https://orcid.org/0000-0003-3632-6179<guilhermeacadorin@gmail.com>

JOÃO PAULO GANHOR[1]

ORCID: https://orcid.org/0000-0001-6558-9387

<joao.ganhor@ifpr.edu.br>

[1] Instituto Federal do Paraná (IFPR). Quedas do Iguaçu, Paraná (PR), Brazil.

ABSTRACT: The current stage of technology development achieved by society allows us to state that we have been living in a fourth or even fifth industrial revolution. In that context, it is necessary to consider how education, and mostly school, as one of the places of teaching and learning, has been adapted to that new ecosystem. One of the tools that emerges from this context is the podcast, a tool

that allows sharing audio in applications and hosting sites. In that way, the purpose of this work was to evaluate how podcasts have emerged and expanded in educational environments in Brazil, mapping the national production of articles through the Capes (Centro de Aperfeiçoamento de Pessoal de Nível Superior) journals portal. At last, eighteen articles published between 2009 and 2020 were selected in order to form the corpus of analysis, then the institution of affiliation of the authors, their graduation areas, type of publication, most cited journals, and the chronological distribution of these citations were verified. Such data allowed us to establish that the attempts to use podcasts in educational environments have been increasing significantly between 2013 and 2020. Regarding the educational institutions, public ones stood out to the detriment of the private ones, it is also important to emphasize that 40,4% of the citations made by the authors of the corpus are books, while 28.9% are journals, indicating that this is still an area with a lot of space for research, since most books citations refer to single authors.

Keywords: Podcasts, Education, Educational tools.

O USO DE PODCASTS COMO INSTRUMENTO DIDÁTICO NA EDUCAÇÃO: ABORDAGENS NOS PERIÓDICOS NACIONAIS ENTRE 2009 E 2020[1]

RESUMO: O atual patamar de desenvolvimento tecnológico atingido pela sociedade nos permite inferir que vivemos em uma quarta ou até mesmo quinta revolução industrial. Neste contexto, é praticamente uma exigência que se reflita como a educação e essencialmente a escola, como um dos *locus* de ensino e aprendizagem, têm se adaptado a este novo ecossistema. Uma das ferramentas que surge deste contexto é o podcast, ferramenta que permite compartilhamento de arquivos de áudio vinculados a aplicativos e sites de hospedagem. Nesse sentido, o objetivo deste trabalho foi investigar como se deu o surgimento e a expansão dos podcasts em ambientes educacionais no Brasil, mapeando a produção nos periódicos nacionais através do portal de periódicos da Capes (Centro de Aperfeiçoamento de Pessoal de Nível Superior). Ao todo, foram selecionados 18 trabalhos publicados desde 2009 a 2020 para fazer parte do *corpus* de análise, em seguida verificou-se a instituição de vínculo dos autores, as áreas de formação, tipo de publicação, revistas mais citadas e a distribuição cronológica destas citações. Tais dados nos permitiram concluir que as tentativas de utilização dos podcasts em ambientes educacionais têm aumentado significativamente, sobretudo no período entre 2013 e 2020. Já com relação às instituições, se destacaram as públicas em detrimentos das particulares, importante ressaltar também que 40,4% das citações realizadas pelos autores do *corpus* são livros, enquanto 28,9% são periódicos, indicando que esta ainda é uma área com muito espaço para pesquisa, uma vez que a maioria das citações de livros se referem a autores únicos.

Palavras-chave: Podcasts, Educação, Ferramentas educacionais.

EL USO DE PODCASTS COMO HERRAMIENTA DIDÁCTICA EN EDUCACION: APROXIMACIONES EN REVISTAS NACIONALES ENTRE 2009 Y 2020.

RESUMEN: El actual nivel de desarrollo tecnológico alcanzado por la sociedad permiten inferir que vivimos en una cuarta o incluso quinta revolución industrial. En este contexto, es prácticamente una exigencia reflexionar sobre cómo la educación y esencialmente la escuela, como uno de los loci de enseñanza y aprendizaje, se han adaptado a este nuevo ecosistema. Una de las herramientas que surge de este contexto es el podcast. En ese sentido, el objetivo de este trabajo fue investigar cómo se produjo el surgimiento y la expansión de los podcasts en los ambientes educativos de Brasil, mapeando la producción en revistas nacionales a través del portal de revistas Capes (Centro de Aperfeiçoamento de Pessoal de Nível Superior). En total se seleccionaron 18 trabajos publicados entre 2009 y 2020 para formar parte del corpus de análisis, luego se detallaron la institución de filiación de los autores, las áreas de formación, el tipo de publicación, las revistas más citadas y la distribución cronológica de estas citas. Dichos datos permitieron concluir que los intentos de utilizar podcasts en entornos educativos han aumentado significativamente, especialmente en el período comprendido entre 2013 y 2020. En cuanto a las instituciones, se destacaron las públicas en detrimento de las privadas, también es importante señalar que el 40,4% de las citas realizadas por los autores del corpus son libros, mientras que el 28,9% son revistas, indicando que todavía es un área con mucho espacio para la investigación, ya que la mayoría de las citas de libros se refieren a autores únicos.

Palabras clave: Podcasts, Educación, Herramientas Educativas.

INTRODUCTION

Many authors have already pointed to a fourth or even fifth industrial revolution due to the current technological level reached by society through cyber-physical systems, nanotechnology, 3D printers, an increase in the number of internet connections, and many other innovations (DEMIR; DOVEN; SEZEN, 2019).

In this context, it is necessary to reflect on how education, and essentially how the school, as one of the *locus* of teaching and learning, will adapt in the face of an increasingly connected world where students often obtain information instantly.

Although there is much talk and discussion about pedagogical alternatives and their applications in addition to more formal practices in the teaching-learning process, some social and structural contexts limit many of these innovation attempts by researchers in the field of education, especially in a country like Brazil is facing serious social problems, inequality, and indifference by the political class towards these issues.

Despite the relative expansion of access to digital technologies witnessed in our country in recent years, socioeconomic, regional, and geographic inequalities still condition the full development of this context. Data from the Brazilian Internet Steering Committee (CGI- *Comitê Gestor da Internet no Brasil*) reinforce the reality of such expansion, also influenced by the effects of the Covid-19 pandemic period, the consequent need for social distancing and the increase in the rate of activities carried out online. According to this body:

> [...] In 2021, there were around 59 million homes with Internet in the country, which is equivalent to 82% of Brazilian homes [...] The proportion is stable when compared to 2020, but 11 percentage points higher than in 2019. There was a significant increase among all social classes, with a gradual reduction in the difference between class A and classes C and D/E (CGI, 2021, p. 25).

Contradictorily, despite this expansion in internet access, it still materializes in an extremely uneven way. This can be seen by the number of computers in Brazilian homes, which, according to the same survey, was practically 100% in class A and only 10% in class D/E (idem, p. 60). In homes with more than one type of computer (desktop, notebook, etc.), class A has a rate of 89%, while D/E has a rate of 7% (idem, p. 61). This affects the quality and intensity of use and enjoyment of the benefits of internet access.

It is interesting to highlight, for the section proposed here, the significant increase in demand for podcasts. According to CGI, "listening to podcasts was the cultural activity investigated that grew the most during the pandemic, reaching 28% of users in 2021, an increase of 15 percentage points compared to 2019. This is equivalent to an estimate of 23 million more individuals than in 2019" (CGI, 2021, p. 26).

On the one hand, this scenario points to the difficulties and limitations that still exist in achieving full access to digital technologies but it also highlights the potential inherent in countless attempts at innovation based on the diffusion of the internet and the development of new technologies, through computers and cell phone applications, which can contribute to promoting a significant expansion of formal and informal education.

Based on the idea of Bauman (2001), modern societies have clear knowledge due to the ease of obtaining information; however, the need for the role of the teacher to guide the process of teaching and

learning is also increasingly evident. We can list several examples such as the use of cinema in education (DUARTE, 2002; TEIXEIRA; LOPES, 2003; CHRISTOFOLETTI, 2009; FISHER, 2007), games (MARCATTO, 1996; RIYIS, 2004; DE PAULA, 2011; FERREIRA-COSTA et al, 2007; VASQUES, 2008; AMARAL, 2008; AMARAL and BASTOS, 2011) and, more recently, the use of podcasts, which represents the union of the terms Ipod with broadcast (BOTTON; PERIPOLLI; ARAÚJO SANTOS; 2017) that is, the first term refers to an Apple device and the second to transmission.

For Barros and Menta (2007), its main characteristic is the fact that the audio files are linked to feeds, a tool that can update content for its followers without the user having to carry out an internet search. Therefore, it brings a proximity character that distinguishes it from other media.

When used in an educational context, the podcast has the potential to provide complete teaching materials such as classes, documentaries, and information in an audio format that can be heard by students at any time of the day and in any geographic space (CASTRO; CONDE; PAIXÃO, 2014). In this sense, the idea of Castells (1999) in the book "The Rise of the Network Society" provides the production of content in a network and a collaborative manner, overcoming the initial stages of the internet where access took place in a much more unidirectional way, where the user searched the web but had little interaction with it.

For Castro, Conde, and Paixão (2014), the use of podcasts in educational environments has been increasingly frequent due to the ease of production and editing of the audio file, in addition to the vast distribution network over the internet through aggregators and Virtual Environments of Learning, like Moodle.

Jham et al. (2007) point to a revolution in Podcasts and gives an example of the use of this tool in the context of dentistry at the University of Maryland/Baltimore (United States), as a means of distributing lectures and clinical procedures by professors through audio files or video podcast.

Kang and Gretzel (2012) presented the usefulness of podcasts as expanding the ability of tourists to concentrate and immerse in national parks and the social and geographic context of tourism in general, especially when compared to the traditional method of conducting them through just the narration of a tourist guide. For the authors, the tool can keep the tourist more attentive to the details of the visit to the national park because the human voice, when heard separately from the noise of everyday life, can keep the listener more attentive, providing a more complete experience in the visit.

Hew (2008) investigated podcast use in children under 12 and higher education. In a review article, he concluded that the most common use of this tool is by teachers to distribute recordings of lectures or supplementary materials for students to review at their time and place.

In this sense, this review article's main objective is to systematically verify how scientific works have approached the podcasting tool as a pedagogical instrument in the educational environment, as well as mapping production in national periodicals through the Capes portal (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*) and identify possible research centers most identified with the theme.

METHODOLOGICAL OPTIONS

According to Snyder (2019), a systematic literature review is concerned with the approach to a given research topic carried out by various groups of researchers. Given this definition, it would be very costly to verify how a certain topic is covered in each published article. In this sense, different methodologies are used to investigate how a certain research object is explored on a temporal scale.

Despite having been originally used by the social sciences (GLASS, 1976), this type of analysis can combine statistical elements that can explain trends within a variety of selected studies (DAVIS et al., 2014). In this way, this article works with elements of basic descriptive statistics, to evaluate changes and approaches to published work on podcasts in recent history in different areas of study, from an interdisciplinary perspective.

To operationalize this systematic review with meta-analysis, the CAPES Periodicals Portal was used to search and select the articles that made up the corpus with the following keywords: 1) Podcast+Education; 2) Podcast+Teaching; and 3) Podcast+Extension *(1) Podcast+Educação; 2) Podcast+Ensino; e 3) Podcast+Extensão)*.

After the search, within each keyword, we verified all works retrieved by the platform at the time of the research. Among all of them, eighteen works were selected based on the criteria and in fact, were the scope of the work. Then, data from the journals where the articles were published, the year of publication, and information about the authors obtained through the *Lattes* curriculum system were analyzed. We also analyzed the publication sources of these works through the analysis of bibliographic references in the corpus, using as criteria the type of publication (article, book, publication in conference proceedings, etc.), year of publication, and whether there would be a predominance from institutions or authors with the highest number of citations.

RESULTS

Description of selected works

Following the criteria established in the methodology, eighteen articles were found in different scientific journals and identified with their respective ID (Identification), journal title, volume, number, year, and search terms (Chart 1).

Chart 1: Articles selected for the analysis corpus.

ID	Authors	Title	Journal	Vol	Num	Year	Search terms
1	Ronaldo Figueiró, Solange Aparecida de Paula	The use of podcast media as an innovative practice in higher education	Research Society And Development	9	12	2020	Education
2	Juliana da Silva Fernandes, Maraísa Damiana Soares Alves	How Podcasts can Help Listening Competence in Teaching - Learning Spanish as a Second Language	Holos	3	1	2009	Education
3	Rayane Isadora Lenharo, Vera López Cristovão	Podcast, Social Participation and Development	Educação Em Revista	32	1	2016	Education
4	Eugênio Pacelli Aguiar Freire	Podcast: new voices in educational dialogue	Revista Interações	9	23	2013	Education
5	Eugênio Pacelli Aguiar Freire	Cooperative potentials of the school podcast from a Freinetian perspective	Revista Brasileira de Educação	20	63	2015	Education
6	Guilherme Matheus Langa, Alexando Ferreira Guimarães, Héllen Teixeira	Digital Educational Resources in Human Anatomy and Physiology in times of pandemic	Revista Docência do Ensino Superior	10	1	2020	Education

7	Kelly Maria Ayala de Carvalho, Gustavo Silva Saldanha	Sound that the document has: The podcast and the monographic principle	Brazilian Journal of Information Science	12	1	2018	Education
8	Fernanda Beatriz da Costa Miranda de Carvalho, Cristhiane Pereira De Lima, Alessandra Dutra, Vanderley Flor da Rosa, Jair de Oliveira	Use of podcasts and webquest to study the topic of assessment in early childhood education	Texto Livre: Linguagem e Tecnologia	11	2	2018	Education
9	João Manuel Casquinha Malaia Santos	Narratives of the Past and the power of communication	Revista de Educação Popular	18	3	2020	Teaching
10	Márcia Jussara Hepp Rehfeldt, Maurício Severo da Silva	Podcast as a Learning Resource: A link between digital media, meaningful learning and educating through research	Ensino em re-vista	16	Especial	2019	Teaching
11	Adriana Moreira Dias, Fabio Oliveira Costa, Daiane Maciel Bezerra de Castro, Beatriz Cliene Mafra Neves, Hanari Santos de Almeida Tavares	Using a podcast to disseminate information about MP/936/2020: An Experience report	Revista ELO - Diálogos em Extensão	9	1	2020	Outreach
12	Valéria Hernandorena Monteagudo de Campos, Fernanda Guinoza Matuda	Using podcasts to enhance the development of oral genres in Portuguese language classes in high school	EaD & TDE	7	9	2019	Education
13	Luãn José Vaz Chagas, Luana Viana	Roquette-Pinto's legacy and the production of podcasts with an educational bias	Revista Extraprensa	13	1	2019	Education
14	Vera Lúcia Lopes Cristovão, Vinicius Neves Cabral	Podcasts: characteristics in the productions of teachers in continuing education	Revista de Estudos da Linguagem	21	1	2013	Education
15	Jean Roque Santos Lezme, Isabela Quaglia	Technological Concepts Aimed at Education: new ways of learning and teaching	Revista EaD & tecnologias digitais na educação	2	3	2014	Education
16	Christof Schreiber	Mathematics audio-podcasts: communication and representation with ICT	Saber & Educar	-	28	2020	Education
17	Cristiane Matte, Régis R. Hözer	Podcasts on Biochemistry and Molecular Biology	Revista de Ensino de Bioquímica	15	-	2017	Teaching
18	Raphael De França e Silva, Thelma Panerai Alves	Audio soap operas between fiction and reality: podcast narratives in the History discipline	Em Teia Revista de Educação Matemática e Tecnológica Iberoamericana	10	1	2019	Teaching

Source: Created by the authors.

There is a great diversification of journals where the topic "podcast" is mentioned, and there is no more than one article published in the same journal. It is also highlighted that the search terms with the most results are those related to education, followed by teaching, and finally outreach.

The ID 1 article addresses how new 21st-century technologies can help teach students who have access to a large volume of information from an early age and are surrounded by uncertainty about the future. In this sense, through a questionnaire, it concluded that the use of podcasts can enhance the dissemination of knowledge, stimulating the autonomy and protagonism of students at different levels of education. The authors also propose an analysis of the use of podcasts during the COVID-19 pandemic, to verify whether there was an increase in the use of the tool.

In article ID 2, the authors tried to demonstrate how podcast technology can help with listening comprehension in the teaching of foreign languages, with an emphasis on Spanish. Although it is just a tool, according to the authors, the technology can develop auditory competence and make the other five language skills also evolve.

ID 3 article evaluated a group of basic education teachers from the public education network through filming, from which the authors analyzed the IRA sequence (Start, Response, and Assessment), the types of action, and the interaction between the agents of the search. The article concludes that there were conflicts in the use of technology and the difficulty was limiting the development of activities. Thus, although it is not possible even among teachers who demonstrated ease with technology to predict how it will be used, the experience allowed them to reflect on the use and redefinition of the potential of DICT (Digital Information and Communication Technologies).

The discussion brought about by the article in ID 4 presented the importance of using podcasts for teaching, bringing more options of choices and opinions from different topics since the podcast, in the author's view, distances from the commercial logic of the mainstream media and its structure of production and facilitated dissemination encourages plurality.

The ID 5 article analyzed the Brazilian podosphere from a cooperative perspective by Freinet (1998), with the main hypothesis of the idea that a joint production of content can be used in formal education. The author concludes by stating that a cooperative podcast, where students can contribute to the areas in which they have the most affinity, can generate a minimization of conflicts whose result would not be the content but the process through which the students had to work.

The article by ID 6 demonstrated the use of podcasts in practice for teaching during the Covid-19 pandemic. This tool showed a way to integrate and help in the development of students, in addition to enabling greater accessibility and flexibility in the areas of Anatomy and Physiology.

The ID 7 article shows the origins, concepts, and transformations that are occurring with the podcast tool during library-informational thinking, its advantages about the concept of Webradio, and recognizing it as the unfolding of web 2.0, but with elements of Paul Otlet's historical epistemology.

ID 8 article uses research to analyze the possible benefits of using podcasts and WebQuests in early childhood education in a teacher training course. The results were positive, and the authors noted a development in self-taught knowledge, demonstrating that the technique of using podcasts and WebQuests brings real advantages for learning, although there is always an initial difficulty when dealing with the tool.

The ID 9 article reports the experience of producing podcasts by a teacher and students on a history degree course. The objective was to bring old narratives and what is currently happening into

podcast form, to create a record, and to provide a modern way of learning. The results highlighted by the author were an increase in the involvement of students in study group activities, an increase in the number of participants, and the challenge of using the tool within the classroom, appropriating a form and a discourse little rooted in scientific dissemination.

The ID 10 article shows the creation of podcast episodes and their relationship with the concept of educating through research, proposed by Demo (2011), within the discipline of Special Topics in Computing. The authors highlighted the main results of the approach as a more reflective and autonomous pedagogical practice by the students, including the research methodology for producing the episodes.

Through the ID 11 article, we found a report on the experience of using podcasts by educators and students during the pandemic period, in addition to providing important information about COVID-19. The authors gave an experience report on the creation of an outreach project within the scope of MP/936, which discussed measures of the Emergency Employment and Income Maintenance Program. The main results of this outreach project were greater access to the information conveyed in MP/936 by the internal community and the involvement of the academic community in the activities.

The ID 12 article aims to demonstrate how the use of podcasts for teaching can enhance the development of oral genres in Portuguese language classes. In this sense, the authors highlight the importance of a democratized internet that gave a voice to many people, on the other hand, they also notice the increase in unfounded debate. The work understands that the use of podcasts at school is an enriching possibility that places the student not only as the protagonist of their learning process but can go beyond the limits of traditional institutions.

The article by ID 13 reflects on the possibility of podcasts becoming media with greater reach than radio and addresses the possibility of innovation in the production of podcasts used especially for education. The authors provide a historical overview of the use of radio as an educational tool within public educational institutions, and they classify the types of podcasts in the "educational" category through cartography carried out on the Chinese platform Castbox, one of the largest aggregators of current content. As a result, the authors defined that the podcasts about language teaching and preparation (Enem, entrance exams, competitions, and others) accounted for more than 50% of all categories analyzed. In this sense, the podcast even offers the possibility of bringing guests to the debate that they are often left out of major scientific events, and that most educational productions have the State as a major supporter.

The ID 14 article brought analyses of the use of podcasts for the continuing education of English language teachers using Sociodiscursive Interactionism (SDI). As the main result, the authors also pointed out the need for the advancement of teachers in their oral production skills as well as overcoming some barriers that still prevent the use of technologies in education.

With article ID 15, it is possible to note a bibliographical review about Web Radio, Podcast, e-learning, MOOC (Massive Open Online Courses), m-learning (Mobile Learning), and educational applications. The authors conclude that in no way should the inclusion of technologies be considered an innovative practice but rather a necessary adjustment to a new lifestyle.

The ID 16 article aims to promote the use of podcasts in teaching mathematics for both teachers and students in primary grades, as well as reporting the process of creating two podcasts, one related to teaching in the early years of elementary school, and the other linked to teacher training.

The ID 17 article presents the importance of using podcasts in Biochemistry and Molecular Biology, highlighting the importance of this tool in the production of inclusive content to help students with visual impairments.

Finally, the article by ID 18 analyzed the results of research on the production of digital narratives in podcast format, in audio soap opera format. From the authors' perspective, the possibility is very promising in the sense that it manages to break traditional teaching and learning dynamics, highlighting the fundamental role of research and the dialogue between digital technologies and the discipline of History.

After completing the general description of the articles that make up the selected corpus, aspects such as temporal evolution, institutions, and areas of knowledge of the authors, types of publications, types of most cited publications are highlighted below and, finally, an analysis of the bibliographic references cited for the eighteen selected works.

Bibliographic data - Temporal evolution, institutions, and areas of knowledge of the authors

Among the works selected in the corpus of this work, Figure 1 shows the evolution of publications in chronological order.

Figure 1: Distribution of articles selected in the corpus of this work
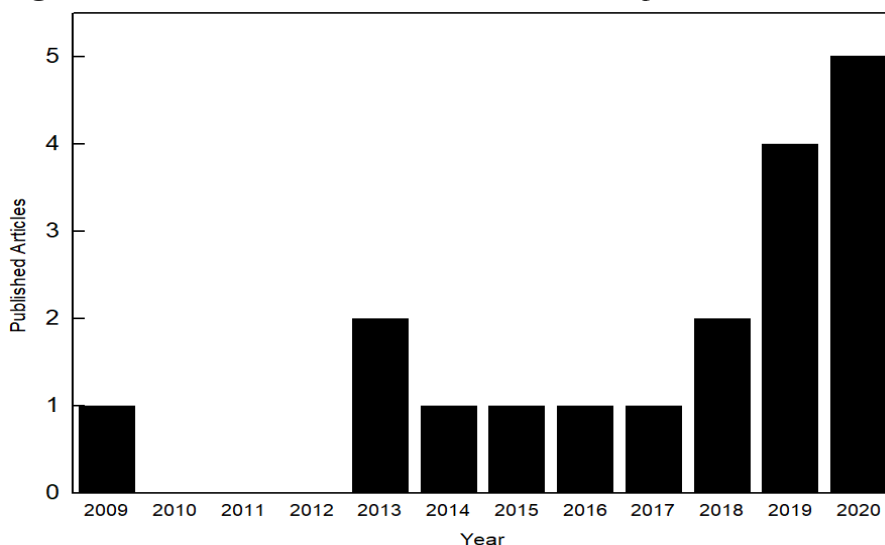
Source: created by the authors.

From the data in Figure 1, there is a growing production within the study area, especially between 2018 and 2020. The first article dates from 2009, approximately nine years after the emergence of the word podcast and its more widespread use. In other words, there is a long gap between the first attempts and the realization that this could be a tool addressed within education.

Among the articles analyzed, 39 authors were found, including Vera Lúcia Lopes Cristovão and Eugênio Pacelli Aguiar Freire appearing in two different works, the latter being the only author. Deepening the authors' analysis, the professional links between them and the teaching and research institutions were investigated, as well as the area of knowledge in which the researchers were inserted (Table 1) using the data provided by the Lattes platform[2].

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[2] Available at: https://lattes.cnpq.br/. Access on 9/20/2021.

Table 1: Information about the institutions linked to the authors.

Institutions	Professional link	Undergraduate	Master's degree	Ph.D.	Qnt	Percent (%)
UFRGS	2	5	4	4	15	12.1%
UEL	2	4	3	1	10	8.1%
USP	-	2	3	3	8	6.5%
UFCSPA	3	3	-	-	6	4.8%
UFRN	1	1	2	2	6	4.8%
UFRJ	-	1	2	2	5	4.0%
UNITINS	3	2	-	-	5	4.0%
UTFPR	3	-	2	-	5	4.0%
CESUMAR	1	2	1	-	4	3.2%
UFPE	1	1	1	1	4	3.2%
UNIVATES	2	1	1	-	4	3.2%
UFOP	1	1	1	-	3	2.4%
UNIFOA	1	1	1	-	3	2.4%
FAFICOP	-	2	-	-	2	1.6%
IFRN	1	1	-	-	2	1.6%
PUC/SP	-	-	1	1	2	1.6%
Rede municipal de Ensino (PR)	2	-	-	-	2	1.6%
UENP	-	2	-	-	2	1.6%
UFMG	-	1	1	-	2	1.6%
UFPR	-	-	1	1	2	1.6%
UNESP	-	-	-	2	2	1.6%
Universidad de Deusto	-	-	1	1	2	1.6%
UNOPAR	-	2	-	-	2	1.6%
CEULP	-	1	-	-	1	0.8%
FABIC	-	1	-	-	1	0.8%
FGV	1	-	-	-	1	0.8%
SENAC-SP	1	-	-	-	1	0.8%
SESI-SP	1	-	-	-	1	0.8%
UCG	-	1	-	-	1	0.8%
UDF	-	-	1	-	1	0.8%
UEG	-	1	-	-	1	0.8%
UEPG	-	-	1	-	1	0.8%
UERJ	-	-	-	1	1	0.8%
UEZO	1	-	-	-	1	0.8%
UFJF	-	-	-	1	1	0.8%
UFMT	1	-	-	-	1	0.8%
UFPA	-	-	1	-	1	0.8%
UFSM	1	-	-	-	1	0.8%
UNASP	-	1	-	-	1	0.8%

UNESPAR	1	-	-	-	1	0.8%
UNICENTRO	-	1	-	-	1	0.8%
UNIFAMMA	1	-	-	-	1	0.8%
UNIFRA	-	1	-	-	1	0.8%
UNIRIO	-	1	-	-	1	0.8%
UNISANTOS	-	1	-	-	1	0.8%
UNITAU	-	-	1	-	1	0.8%
Universität Gießen Institut für Didaktik der Mathematik, Germany	1	-	-	-	1	0.8%
UNP	-	1	-	-	1	0.8%
UPE	1	-	-	-	1	0.8%
TOTAL	**33**	**42**	**29**	**20**	**124**	**100%**

Source: created by the authors.

It is possible to observe 49 linked institutions (including two foreign ones), of which 19 are private and 30 are public, with 23 of them having more than one link. Therefore, the importance of public institutions for research in Brazil is highlighted. UFRGS (Universidade Federal do Rio Grande do Sul) is the one with the most bonds, with 15 in total, and some of the authors who have postgraduate degrees at this institution have professional bonds at the Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA).

In general, there is a relevance of work concentrated in the southern region due to the relevance of UEL (Universidade Estadual de Londrina) in the state of Paraná. The three institutions together account for more than 25% of the bonds. It is also important to highlight the institutions in which the authors have professional bonds, in this case, UFCSPA (Universidade Federal de Ciências da Saúde de Porto Alegre) (3), UTFPR (Universidade Tecnológica Federal do Paraná) (2), UNIVATES (Universidade do Vale do Taquari) (2) and UNITINS (Universidade Estadual do Tocantins) (2) deserve to be highlighted.

Finally, we also highlight the participation of the institutions USP (Universidade de São Paulo) and UFRN (Universidade Federal do Rio Grande do Norte), which together account for 11.3% of all the authors' bonds.

Among the institutions surveyed in the corpus, we did not identify research groups specialized in podcasts. Many of the works presented here result from initiatives that originate in disciplines, theoretical-methodological approaches within the area of education and communication, or in reports of experiences related to the most varied areas of knowledge, as shown in Table 2 due to the wide dispersion of fields of knowledge that addressed the topic in publications.

Table 2: Areas of training of the authors of the corpus.

Areas	Undergraduate	Master's degree	Ph.D.	Qnt.	Percent. (%)
Education	-	5	7	12	13%
Arts	6	2	1	9	10%
Biological Sciences	2	2	2	6	6%
Language Studies	-	3	3	6	6%

Law	4	1	-	5	5%
Pedagogy	5	-	-	5	5%
Administration	2	2	-	4	4%
Journalism	3	1	-	4	4%
Information Sciences	-	2	1	3	3%
Communication	-	1	2	3	3%
Teaching	-	3	-	3	3%
Pharmacy	3	-	-	3	3%
History	2	-	1	3	3%
Mathematics	2	-	1	3	3%
Library Science	2	-	-	2	2%
Biochemistry	-	1	1	2	2%
Health and Environmental Sciences	-	2	-	2	2%
Ecology	-	1	1	2	2%
Environmental Sciences	-	1	-	1	1%
Accounting Sciences	1	-	-	1	1%
Computer Science	-	1	-	1	1%
Physical education	1	-	-	1	1%
Nursing	1	-	-	1	1%
Production engineering	-	-	-	1	1%
Physics	1	-	-	1	1%
Medical Physics	1	-	-	1	1%
Regional Management and Development	-	1	-	1	1%
Degree in Spanish	1	-	-	1	1%
Medicine	1	-	-	1	1%
Social service	1	-	-	1	1%
Information systems	1	-	-	1	1%
Technology in Agriculture	1	-	-	1	1%
Data processing technology	1	-	-	1	1%
Theology	1	-	-	1	1%
TOTAL	**43**	**29**	**20**	**93**	**100%**

Source: Created by the authors.

According to the data in the table, we observe that the areas of Education, Arts, and Language Studies dominate the areas of the corpus of the authors, together accounting for 29% of all registered fields of knowledge. As previously stated, these areas use the podcast tool to innovate theoretical and methodological practices, in the case of Education (ID 1, 4, 5, 6, 8, 10, 13, 14, and 15), in the area of Arts and Language Studies (ID 2, 7, 9, 12), experience reports stand out, ranging from assistance in learning Spanish as a second language, podcast as a monographic principle, as an enhancer of oral genres in Portuguese and the production of narratives of the past through communication.

However, the participation of other areas of knowledge such as Biology, Law, Pedagogy, Journalism, Pharmacy, History, and Mathematics, among others are also important, which only proves how podcasts have been used in a wide range of fields and how much this contributes to interdisciplinary use of the tool, which certainly brings the possibility of different interpretations of the same object.

Analysis of corpus references

A total of 325 references were found, and 74 were published in a foreign language, whether in English, Spanish, French, or German. In this sense, despite the significant participation of international works, the dialogue, within this object of study, takes place most common among national authors and institutions.

Regarding the types of publications, which are sources for the authors of the corpus, the following distribution is observed according to Table 3.

Table 3: Distribution of publication types of bibliography cited by the corpus.

Type of publication	Qnt	(%)
Books	130	40.4
Journals	93	28.9
Works presented at scientific events	53	16.5
Official Documents (Laws, publications from government agencies, etc.)	14	4.3
Dissertations	13	4.0
Others (interviews, oral communications)	11	3.4
Theses	7	2.2
Final papers	1	0.3
TOTAL	**322**	**100**

Source: Created by the authors

We should highlight the predominance of works in book format (130), surpassing those publications originating in scientific journals (93). Therefore, there is a tendency towards wide dissemination in collections of articles published in books, even so, both types of publication together account for 69.3% of all works cited.

In a previous work, Bottentuit Junior, Lisbôa and Coutinho (2009) concluded that, in that given context, most of the publications related to the use of podcasts analyzed came from conference publications (68%). Therefore, in more than 10 years of research, there has been a maturation of the lines of research and methodologies used, resulting in a greater volume of publications as articles and books, surpassing those presented at scientific events, although this fact has not generated, as previously identified, research groups in the area.

Regarding the most cited journals in the corpus, the following distribution can be observed in Table 4.

Table 4: Journals most cited by the corpus of selected works.

| Journals	Citations	Percentage of journals cited
Revista Brasileira de Linguística Aplicada	4	4.3
Educação Em Revista	3	3.2
Prisma	3	3.2

Educação, Formação & Tecnologias.	2	2.2
Interdisciplinary Journal of Knowledge and Learning Objects	2	2.2
International Journal of Applied Linguistics	2	2.2
Language Learning & Technology	2	2.2
Revista Brasileira de História	2	2.2
Revista de Economía Política de las Tecnologías de la Información y Comunicación	2	2.2
Revista Educação Especial	2	2.2
Tesol Quarterly	2	2.2
Trabalhos em linguística aplicada	2	2.2
Periódicos com apenas 1 citação	65	69.9
Total	93	100.0

Source: Created by the authors

The relevance of the journals *Revista Brasileira de Linguística Aplicada* (four citations), *Educação em Revista,* and *Prisma* (with 3 citations each) stands out. While the first focuses on work in the area of linguistic phenomena, the use of different language teaching strategies and contexts, the journal *Educação em Revista* has the dissemination of contributions in the field of education from different theoretical and methodological perspectives as its scope, while *Prisma* focuses on supporting the dissemination of research by professors and postgraduate students in the health areas, human, social and technological sciences.

Figure 2 shows the distribution, by year of publication, of citations made by the authors of the corpus of this work.

Figure 2: Distribution by year of publication of citations of articles in the corpus of this work.
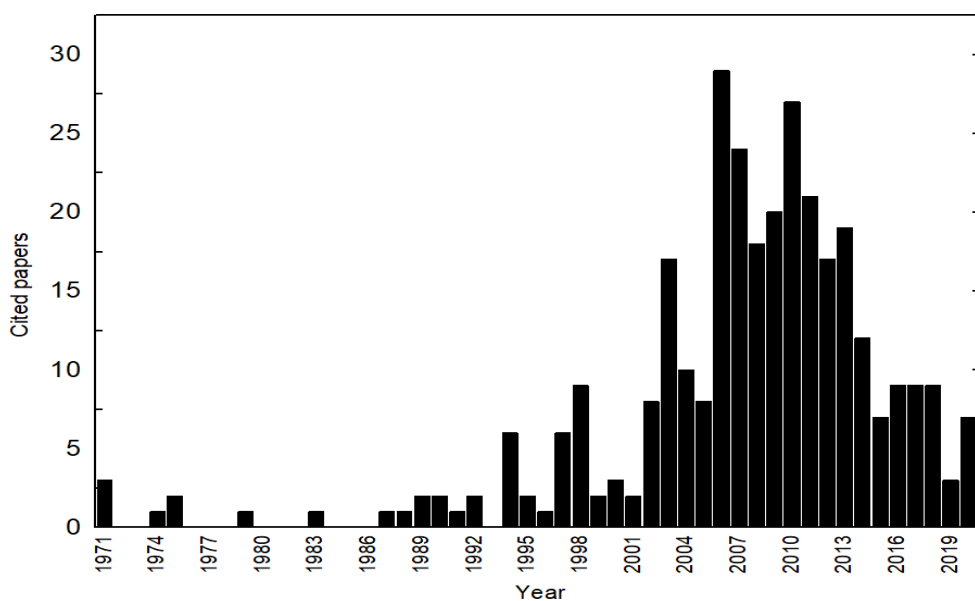
Source: Created by the authors.

It is important to highlight that this data considers all citations in the corpus and not just articles, since, as seen previously, books and works published in event annals are quite relevant in the context of work involving podcasts.

In this sense, there is a greater concentration of papers between 2003 and 2014, in which 2006 is the year with the highest number of records in the analyzed database. While the works in the corpus are concentrated between 2018 and 2020, the bibliographic references for these authors are located within a range of 10 years of publications, demonstrating that much of the theoretical foundation used in the most recent works was produced from the 2000s onwards.

Ana Amélia Amorim Carvalho (13), Eugenio Pacelar Freire (12), and Vera Lúcia Lopes Cristovão (8) are among the most cited authors, as can be seen in Table 5, which presents the list of authors cited at least three times in the corpus.

Table 5: Authors with more than two citations in references.

Author	Quantity of citations
Carvalho, A.A.A	13
Freire, E. P.A	12
Cristovão V.L.L	8
Moura, A.M	7
Bottentuit Junior	6
Bronckart, J.P	6
Coutinho, C.P	5
Medeiros, M.S	5
Freinet, C.	4
Moran, J.M	4
Aguiar, C	3
Anjos-Santos	3
Assis, P	3
Bakhtin, M	3
Barros, G.C	3
Cruz, S.C	3
Dolz, J	3
Finn, Gabrielle	3
Freire, P	3
Maciel, R	3
Menta, E.	3

Schneuwly, B	3
Jenkins, J	3
Bruner, J	3
Demo, P.	3
Total	115

Source: Created by the authors.

Only Freire (2013, 2015), Lenharo and Cristovão (2016), and Cristovão and Cabral (2013) are part of the works selected in the corpus of this work. In a complementary way, there was no significance in the citation network analysis carried out between the authors once they were rarely cited, as demonstrated in the temporal distribution of Figure 2.

FINALS CONSIDERATIONS

In general, work and attempts to use podcasts in educational environments have increased significantly, especially in the period from 2013 to 2020. The network of works investigated in the corpus did not present a dominant area of knowledge but rather contributions from different scientific fields, although there is a predominance of education in the authors' area of training.

Although a dominant area trend was not identified, it was possible to identify that such research, which is concerned with the podcast theme in education, teaching, and extension, is largely dominated by public educational institutions, notably by UFRGS, UEL, and USP, when considering the institutions to which the authors are linked. Another important result of the research points to the predominance of works cited by the corpus in the form of books 40.4%, against 28.9% of citations originating from periodicals. In general, publications in book format are made by one author, and, in this sense, this type of communication predominates indicating an area that is still little explored in collaboration, which is observed that there are still few groups research with systematic and periodic publications on the subject.

Also, there was no relevance in the analysis of the citation network either between the articles in the corpus or between the authors, observing that only two authors are cited among the 39 selected, without excluding self-citations. Thus, there is fragmentation in the area and little dialogue between publications.

The bibliographic sources for the authors of the works selected in the corpus are concentrated between 2003 and 2014, in which 2006 was the most relevant from the point of view of the number of publications registered in the database. Thus, a large part of the theoretical foundation used in the more recent work focuses on the 2000s.

However, in a non-systematized way, we observed a significant increase in the number of podcasts not only in Brazil but worldwide, especially when we consider the post-COVID-19 pandemic period (AMORIM; ARAÚJO, 2021). In a way, there is a use of content produced in other media and formats for podcasts, whether in television programs, live channels on YouTube, or in storytelling productions, in this way, the possibilities that open for free content and via support financial issues point to a different path to that outlined in this article, which observed the use of the podcast more as an educational tool.

Therefore, we may be facing a change of focus in work related to podcasts, where their use and potential from an educational point of view will no longer be explored by the academic community, but rather their ability to tell stories, and narratives and generate monetization, closely following the evolution of digital information and communication technologies.

REFERENCES

AMARAL, R. *Uso do RPG pedagógico para o ensino de Física*. Dissertação (Mestrado em Ensino das Ciências). Universidade Federal Rural de Pernambuco. Recife: UFRPE, 2008. Disponível em: https://www.rpgnaescola.com.br/gallery/9e1a919d9c9aba0f384670d22ab1256d_ico-para-o-ensino-de-Fisica.pdf. Acesso em: 16/8/2022.

AMARAL, R.R., BASTOS, H.F. O Roleplaying Game na sala de aula: uma maneira de desenvolver atividades diferentes simultaneamente. *Revista Brasileira de Pesquisa em Educação em Ciências*, v.11, n o 1, p.103 122, 2011. Disponível em: https://periodicos.ufmg.br/index.php/rbpec/article/view/4126. Acesso em: 16/8/2022.

AMORIM, Andrea de Lima; ARAÚJO, Maria. Como o isolamento social causado pela pandemia de Covid-19 impactou o consumo de podcasts no Brasil: uma análise de matérias jornalísticas nacionais / How the social isolation caused by the Covid-19 pandemic impacted podcast consumption in Brazil: an analysis of national news reports. *Brazilian Journal of Development*, v. 7, n. 3, p. 25802–25815, 2021. <https://doi.org/10.34117/bjdv7n3-335>.

BARROS, G. C., MENTA, E.. Podcast: Produções de áudio para educação de forma crítica, criativa e cidadã. *Revista de Economía Política de las Tecnologías de la Información y Comunicación*, IX, n.1, 2007. Disponível em: https://seer.ufs.br/index.php/eptic/article/view/217/186. Acesso em: 16/8/2022.
BAUMAN, Z. *Modernidade líquida*. Rio de Janeiro: Jorge Zahar, 2001.

BOTTENTUIT JUNIOR, João Batista.; LISBÔA, Eliana Santana.; COUTINHO, Clara Pereira. Podcast: Uma revisão dos estudos realizados no Brasil e em Portugal. In: CARVALHO, Ana Amélia A. (org). Actas do Encontro sobre Podcasts, 2009. Anais. Braga - Portugal: CIEd, 2009. Disponível em: http://repositorium.sdum.uminho.pt/bitstream/1822/9421/1/S07.pdf. Acesso em: 16/8/2022.

BOTTON, L., PERIPOLLI, P.Z., SANTOS, L.M.A. Podcast - Uma ferramenta sob a ótica dos recursos educacionais abertos: apoio ao conhecimento. *Revista Educacional Interdisciplinar (Redin)*, v.6, n. 1, p. 1-11, 2017. Disponível em: https://seer.faccat.br/index.php/redin/article/view/613. Acesso em: 16/8/2022.

CASTELLS, Manuel. *A Era da Informação: Economia, Sociedade e Cultura. A Sociedade em Rede*. Vol. 1. 5ª. ed. São Paulo: Paz e Terra, 1999.

CASTRO, L.; CONDE, I.; PAIXÃO, G.C. Podcasts exploratórios e colaborativos: oralizando conhecimentos em um curso de graduação à distância. *Revista Tecnologias na Educação*, n.11, 2014. Disponível em: http://tecnologiasnaeducacao.pro.br/. Acesso em 16/8/2022.

CGI - COMITÊ GESTOR DA INTERNET. Pesquisa sobre o uso das tecnologias de informação e comunicação nos domicílios brasileiros. São Paulo: CGI, 2021. Disponível em: https://www.cgi.br/media/docs/publicacoes/2/20221121125504/tic_domicilios_2021_livro_eletronico.pdf. Acesso em 03/05/2023.

CHRISTOFOLETTI, R. Filmes na sala de aula: recurso didático, abordagem pedagógica ou recreação? *Revista Educação*, v.34, n.3, p.603-616, 2009. Disponível em: https://periodicos.ufsm.br/reveducacao/article/view/871/605. Acesso em: 16/8/2022.

CRISTOVÃO, Vera Lúcia.; CABRAL, Vinicius Neves de. *Podcasts*: características nas produções de professores em formação continuada. *Rev. Est. Ling.*, v.21, n.1, p. 189-222, 2013. Disponível em: http://www.periodicos.letras.ufmg.br/index.php/relin/article/view/5097/9068. Acesso em: 16/8/2022.

DAVIS, Jacqueline; MENGERSEN, Kerrie; BENNETT, Sarah; et al. Viewing systematic reviews and meta-analysis in social research through different lenses. *SpringerPlus*, v. 3, n. 1, p. 511, 2014. <https://doi.org/10.1186/2193-1801-3-511>.

DE PAULA, G. *A prática de jogar videogame como um novo letramento*. Dissertação de Mestrado (Linguagem e Sociologia). Universidade Estadual de Campinas – UNICAMP, 2011. <https://doi.org/10.47749/T/UNICAMP.2011.812859>.

DEMIR, KA; DÖVEN, G; SEZEN, B. Industry 5.0 and Human-Robot Co-working. *Procedia Computer Science* 158, p. 688–695, 2019. <https://doi.org/10.1016/j.procs.2019.09.104>

DEMO, Pedro. *Educar pela pesquisa*. 9.ed. Campinas: Autores Associados, 2011.

DUARTE, R. *Cinema & Educação*. Belo Horizonte; Autêntica, 2002.

FERREIRA COSTA, R., LIMA, A., RODRIGUES, F., GALHARDO, E. *O role playing game (RPG) como ferramenta de aprendizagem no ensino fundamental e médio*. Livro eletrônico dos núcleos de Ensino da Unesp. São Paulo: Cultura acadêmica Editora, 2007. Disponível em: https://www.unesp.br/prograd/PDFNE2006/artigos/capitulo1/oroleplayingame.pdf. Acesso em: 16/8/2022.

FISCHER, R.M. Mídia, máquinas de imagens e práticas pedagógicas. *Revista Brasileira de Educação*, v.12, n.35, p. 290-299, 2007. <https://doi.org/10.1590/S1413-24782007000200009>.
FREINET, Celestin. *A educação do trabalho*. São Paulo: Martins Fontes, 1998.

FREIRE, Eugênio Paccelli Aguiar. Podcast: novas vozes no diálogo educativo. *Interacções*, v. 9, n.23, p. 102-127, 2013. <https://doi.org/10.25755/int.2822>.

FREIRE, Eugênio Paccelli Aguiar. Potenciais cooperativos do podcast escolar por uma perspectiva freinetiana. *Revista Brasileira de Educação*, v. 20, n. 63, p. 1033–1056, 2015. <https://doi.org/10.1590/S1413-24782015206312>.

GLASS, G. V. Primary, Secondary, and Meta-Analysis of Research. *Educational Researcher*, v. 5, n. 10, p. 3–8, nov. 1976. <https://doi.org/10.3102%2F0013189X005010003>.

HEW, K. Use of audio podcast in K-12 and higher education: a review of research topics and methodologies. *Education Tech Research Dev.* v.57, p.333-357, 2009. <https://doi.org/10.1007/s11423-008-9108-3>.

JHAM, B. et al. Joining the Podcast Revolution. *Journal of Dental Education,* v. 72, n.3, p.278-281, 2008. <https://doi.org/10.1002/j.0022-0337.2008.72.3.tb04493.x>.

KANG, M.; GRETZEL, U. Effects of podcast tours on tourist experiences in a national park. *Tourism Management*, v.33, p.440-455, 2012. <https://doi.org/10.1016/j.tourman.2011.05.005>.

LENHARO, Rayane Isadora e CRISTOVÃO, Vera Lúcia Lopes. PODCAST, PARTICIPAÇÃO SOCIAL E DESENVOLVIMENTO. *Educação em Revista* [online], v. 32, n. 1, 2016. <https://doi.org/10.1590/0102-4698136859>.

MARCATTO, A. *Saindo do quadro: uma metodologia lúdica e participativa baseada no role playing games*. 2. ed. São Paulo: A. Marcatto, 1996.

RIYIS, M. *Simples: sistema inicial para mestres professores lecionarem através de uma estratégia motivadora*. São Paulo: Ed. do Autor, 2004.

SNYDER, Hannah. Literature Review as a Research Methodology: An Overview and Guidelines. *Journal of Business Research*, vol. 104, p. 333–339, 2019.< https://doi.org/10.1016/j.jbusres.2019.07.039>.

TEIXEIRA, I., LOPES, J. *A escola vai ao cinema*. Belo Horizonte: Autêntica, 2003.

VASQUES, R.C. *As potencialidades do RPG (Role Playing Game) na Educação Escolar*. Dissertação de Mestrado. UNESP Araraquara, 2008. Disponível em: https://repositorio.unesp.br/bitstream/handle/11449/90316/vasques_rc_me_arafcl.pdf?sequence=1 &isAllowed=y. Acesso em: 16/8/2022.

AUTHOR'S CONTRIBUTIONS

Author 1 – Project coordinator, active participation in data collection, analysis, interpretation, construction of graphs, discussion of results, and text writing.
Author 2 – Data collection and text writing.
Author 3 - Data collection and text writing.
Author 4 - Data collection and text writing.
Author 5 - Deputy coordinator of the project, participation in the preparation of the article and final review.

DECLARATION OF CONFLICT OF INTEREST

The authors declare that there is no conflict of interest with this article.