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The podcast as an educational tool: faculty perceptions and challenges in two universities

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ABSTRACT

This article explores the historical background of podcasts, their evolution as a communication medium, and their integration into educational contexts. Their flexibility, accessibility, and ability to foster self-directed learning make podcasts a valuable tool in contemporary educational settings. Using an ad hoc questionnaire, this study examines how 224 university lecturers from two institutions -one in Mexico and one in Spain- perceive and incorporate podcasts into their teaching practice. The data analysis reveals that while the overall use of podcasts remains limited -mean usage score: 2.2 on a 6 point scale-, lecturers highly value their learning potential, especially as supplementary tools outside the classroom -mean rating. 82% of participants agreed that podcasts enhance students learning experience, and 79% considered them useful for promoting autonomous learning. Gender-based differences were found, with male professors consistently rating podcast use and value higher than their female counterparts. These findings underscore the perceived relevance of podcasts in fostering innovation in university teaching, while also highlighting key barriers including time constraints and limited institutional support. The study recommends targeted training and institutional strategies to promote the adoption of podcasts as part of broader digital learning initiatives.

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1. Introduction

The podcast has emerged as a prominent digital medium in contemporary era, driven by an overwhelming influx of information and an increasing demand for accessible and flexible content. (Fernández et al., 2020). Combining elements of traditional radio with the technological benefits of online distribution, this format enables users to listen to audio episodes on demand from mobile devices or computers. As a result, podcasts have revolutionised how people consume information and entertainment, offering unparalleled adaptability while also catering to a wide range of needs, from leisure to education. (Hew, 2009).

In the field of communication, podcasts represent a democratisation in the creation and dissemination of content, eliminating the need for costly infrastructure or intermediaries to reach global audiences. With their technical accessibility and informal, conversational style, podcasts have enabled independent creators and organisations, including educational institutions, to use this medium as a powerful tool to encourage reflection, transmit ideas and narratives with specific audiences. At present, podcasts serve as a strategic resource not only for commercial and cultural purposes but also for fostering new learning dynamics in both formal and informal settings.

In education, podcasts have emerged as an innovative resource to enhance teaching, learning, and assessment. Their ability to deliver audio content tailored to the needs of students combined with their portability and potential for self-directed learning, have positioned podcasts as powerful tool in

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contemporary education. (Berry, 2016). Furthermore, their asynchronous and personalised nature makes them especially valuable for hybrid and online learning models, allowing students to access educational material at their own pace, without the constraints of rigid schedules. (McHugh, 2024).

While podcasts have been increasingly integrated into educational contexts, most existing studies have focused primarily on student engagement or technical production (Kay et al., 2019), with limited attention to how faculty members perceive and adopt podcasts as pedagogical tools (Arias, 2024). Moreover, few investigations have employed comparative approaches that consider cross-cultural, institutional, and gender-related dimensions, which are essential for understanding how educational technologies are contextualized in higher education (Villafán & Ramírez, 2025).

This study addresses these gaps by analysing the perspectives of university lecturers from two distinct national and institutional settings Mexico and Spain, focusing on how they perceive and integrate podcasts as tools for pedagogical transformation. The novelty of this research lies in its interdisciplinary and cross-country approach, which links podcast use to contemporary theories of multimedia learning (Andrade, 2012), adult education (Hase & Kenyon, 2000; Knowles, 1978), and media engagement (Berry, 2016; McNamara & Min, 2024). In doing so, it contributes original insights into the role of podcasts in fostering active, flexible, and autonomous learning (Arias, 2024; Fernández et al., 2020), and into their potential as drivers of educational innovation in university teaching.

2. Literature review, state of the art, and theoretical framework

This section will explore the background and potential applications of podcasts in education, followed by a review of the current state of their use in the field and a theorical framework.

2.1. Literature review

2.1.1. Origins

Podcasting has its roots in the evolution of audio transmission and digitisation of content. Its development is intrinsically linked to the advance of communication technologies, particularly the Internet, which revolutionised media production and distribution. The transition from traditional radio to digital formats in the 1990s laid the foundations for the creation of media that is asynchronous, accessible on demand, and tailored to specific audiences (Berry, 2006). This technological breakthrough allowed audio files to be distributed through global networks, eliminating the constraints of both space and time.

The emergence of the podcast format is closely tied to the advent of portable devices, for instance, Apple's iPod, which was released in 2001, popularised the idea of carrying music and other digital content, thus generatin a growing market for audio consumption beyond traditional radio. The expansion of MP3 players, along with advances in digital platforms that allow for online data storage and streaming, enabled the creation of specialised content accessible anytime (McHugh, 2024).

In addition, signalling technologies, such as RSS -Really Simple Syndication-, played a crucial role in the development of podcasts. Introduced in 1999, RSS enabled users to subscribe to online content and receive automatic updates, making it easier to distribute audio files widely and consume them on portable devices (Hammersley, 2004). This technical innovation was crucial in consolidating the podcast as a dynamic and accessible medium.

The term podcast was coined in 2004 by journalist Ben Hammersley in an article in The Guardian, where he explored the potential of this new digital audio streaming technology. The word is a blend of iPod, Apple's portable music player, and broadcast (Berry, 2016). While the concept of digital audio distribution existed before, introducing a specific term helped establish the podcast as an independent medium and marked the beginning of its global expansion.

During these early years, pioneers of the format, such as Adam Curry and Dave Winer, developed tools that streamlined podcast production and distribution. Curry created software that automated episode downloads using RSS, while Winer perfected the code needed to integrate audio files into broadcasts (Markman, 2012). These innovations not only consolidated the technology but also made it accessible to individuals and organisations, enabling content creation without significant financial investment.

The term podcast was quickly embraced by the tech industry and media. Its popularity became widespread thanks to platforms such us iTunes, which integrated podcasts into its catalogue in 2005, providing them with unprecedented visibility. This moment marked a turning point in the popularisation of the format, consolidating it as an essential tool in digital communication and content consumption.

The origins of the podcast are deeply rooted in technological advancements and cultural transformations that redefined how digital audio is produced, distributed, and consumed. From the coining of the term to the expansion of platforms that facilitate its access, the podcast has evolved into a powerful and versatile medium, making a significant impact in multiple areas.

2.1.2. Development of the format

Podcasts have evolved significantly since their inception, transforming from a niche technical tool to become a mainstream and versatile medium that spans education, entertainment, and corporate communication. This growth is driven by several factors, including the expansion of digital platforms, widespread access to mobile devices, the democratisation of media, the diversification of content, and the rising popularity of podcasts among digital natives.

Markman (2012) explains that podcasts initially emerged as an alternative format, offering content creators an independent platform for producing and distributing information. Unlike traditional media such as radio, podcasts required neither extensive infrastructure nor approval from intermediaries, making it easier for diverse and non-institutional voices to enter the media ecosystem, thus giving marginalised communities and niche interest groups access to a global platform.

Piñeiro and Pedrero (2022) highlight the remarkable evolution of podcasts since their emergence in the early 2000s. They explain that this phenomenon began when David Winer and Adam Curry introduced the ability to download audio content via syndicated files, creating a new form of audio communication. The first Spanish-language podcast, *Comunicando*, by José Antonio Gelado, marked the beginning of the Spanish-speaking podcasting. The authors emphasise that the arrival of mobile devices and the expansion of wireless networks in the 2010s further transformed podcast consumption, giving listeners the freedom to access content anytime, anywhere.

As podcasts became more widespread, the format evolved from an amateur medium into a professionalised industry. Major media companies like the BBC and NPR began producing high-quality content, while platforms such as Spotify and Audible invested in original productions. These developments raised production standards and attracted new audiences, consolidating the podcast as a competitive medium in both quality and reach. The broadening of podcast genres also played a crucial role in their growth. From the beginning, podcasts were characterised for their ability to cover topics often overlooked by traditional media. Today, they span a vast range of subjects, from narrative fiction and political analysis to science communication and personal development. This diversity has enabled podcasts to engage broader and more varied audiences, significantly amplifying their social and cultural impact (Sánchez-Crespo, 2021).

2.1.3. Podcasts in the field of education

Podcasts have also transformed educational processes, offering a flexible and accessible tool that adapts to various teaching methods and learning models. Whether used as a classroom supplement or a resource for self-directed learning, their versatility has made them an invaluable educational asset.

The introduction of podcasts into digital educational environments has presented new opportunities for interaction and access to knowledge for both teachers and students. In formal settings, podcasts have been used to supplement in-person classes with recorded lessons, expert interviews, and explanations of key concepts. This approach not only broadens learning possibilities but also enhances information retention and conceptual understanding. Fernández et al. (2020) emphasise that students who consume educational podcasts report greater levels of engagement, and a deeper understanding of the material compared to traditional teaching methods.

Another important benefit is the encouragement for self-directed learning. Podcasts give students the freedom to choose content based on their interests and needs, fostering greater autonomy in their learning process. A study by Kay et al. (2019) highlights that this feature is especially valuable in higher education, where students need to develop skills in self-learning and time management.

Podcasts can also be tailored to address different learning styles. Auditory learners, in particular, find this format to be an effective way to acquire and retain information. Furthermore, podcasts featuring engaging narratives and enhanced sound elements can capture students' attention and enhance their learning experience (Hew, 2009).

2.1.4. Barriers in the use of podcasts in education

Despite its many advantages, integrating podcasts into education comes with challenges. One of the most significant barriers is the persistent digital divide in many parts of the world. According to UNESCO. (2025, p. 1), '50% of students lack a computer at home, and 43% do not have Internet access'.

Another challenge is ensuring content quality. While the accessibility of podcasting has allowed more people to create educational content, not all of it is rigorous or pedagogically effective. This raises the need to establish quality standards and teacher training in developing audio resources that meet learning objectives (Fernández et al., 2020).

Furthermore, some students may find it difficult to focus on audio content alone, especially if they are used to more visual or interactive learning methods. This challenge can be mitigated by combining podcasts with other educational resources, such as visual presentations, interactive quizzes, or online discussions.

2.1.5. Future perspectives of podcasts in education

Podcasts have the potential to be a powerful tool for inclusive education. Their audio format makes educational content more accessible for students with visual impairments or reading difficulties. Additionally, offering podcasts in multiple languages can contribute to the elimination of language barriers in global learning. When combined with other formats, such as educational videos and virtual reality, podcasts can enhance learning environments, creating richer and more immersive experiences (McHugh, 2016).

The integration of podcasts into education marks a significant shift in how learning resources are created and shared. However, to fully harness their potential, challenges such as the digital divide, content quality, and integration with other educational tools must be addressed. As technology evolves, podcasts will remain a key player in transforming education, helping to create more inclusive and personalised learning environments (Artiles-Rodríguez et al., 2024).

2.2. State of the art

2.2.1. Audience profile of educational podcasts in Mexico and Spain

The rapid growth of educational podcasts has redefined how we consume educational and informational content. In particular, Mexico and Spain exhibit similar consumption patterns among educational podcast audiences, with distinct cultural nuances. This trend not only reflects an increasing demand for self-directed learning but also shows how new technologies are transforming traditional methods of education, learning, and access to information.

In Mexico, interest in podcasts has increased significantly, becoming a prominent educational resource. A report by PwC México (2022) projects that the number of podcast consumers will increase from 32 million in 2022 to 47 million in the next five years. This growth is driven by the popularity of platforms like Spotify and YouTube, which are favoured by users to access educational content. According to the Reuters Institute, University of Oxford (2024) from the University of Oxford, the typical podcast listener in Mexico is a young adult, aged 18 to 34, predominantly male, and with higher education, suggesting a preference for content that complements their academic pursuits. Most listeners in Mexico hold university degrees, reflecting a global trend where educational podcasts tend to attract individuals with higher levels of education (Edison Research, 2024). Furthermore, this audience generally comes from higher socioeconomic backgrounds, which facilitates access to the necessary technology for consuming these podcasts.

In Spain, the podcast landscape has also experienced significant growth. According to Estatista (2024), more than three million people listen to podcasts weekly, spending about ten hours a week on this medium. The dominant demographic includes young people under 24, but there is also growing

interest among those aged 34 to 44 and 45 to 54, many of whom hold multiple subscriptions to podcast platforms. The educational level of Spanish listeners is also high, with over 33% having a university degree, as reported by the Observatorio iVoox (2023). This reflects a preference for content that offers educational and informative value. Additionally, many listeners work in sectors such as education, healthcare, and public administration, showing a clear interest in content that supports their professional development and personal growth.

Both audiences show a strong interest in content that helps them acquire new knowledge or skills. The flexibility of podcasts, making it possible to learn while engaging in other daily activities, plays a crucial role in their popularity and adaptability to various lifestyles. Educational podcast audiences in Mexico and Spain share similar demographic traits: they are mostly young, educated, and from middle to upper socioeconomic backgrounds. This profile is not only appealing to content creators and advertisers but also reflects a cultural shift toward more autonomous and accessible learning. As the podcast industry continues to expand, interest in educational content is likely to continue to grow.

2.2.2. Educational use of podcasts in the third decade of the 21st century

In their article about podcast production, Alonso and López (2024) explore the use of podcasts in higher education. They note a growing interest in production of educational resources to enhance student engagement with learning materials and streamline production processes. According to the authors, podcasts promote active listening and cater to individual student needs, which is essential in educational environments that increasingly value personalised learning. Meden et al. (2024) conducted a study on how podcasts are transforming informal learning among university students. Their research focuses on how these digital media enable students to access knowledge in a flexible, adaptive, and self-directed way, making podcasts powerful tools outside the formal education system, and positioning them as an appealing informal study strategy based on listening habits. The findings reveal that a significant majority of students engage in self-directed learning, while one-third participate in incidental learning. This pattern suggests that podcasts serve as catalysts for both intentional and unintentional knowledge acquisition. The study also shows that listeners with higher education levels tend to trust podcast content more. However, it emphasises the critical need to improve digital literacy to strengthen listeners' ability to critically evaluate content. These insights provide valuable understanding of how podcast-driven learning is cognitively processed and offer actionable strategies for educators and content creators to enhance the educational impact of podcasts.

While podcasts are widely recognised for their value in learning and professional development, the research by Meden et al. (2024) highlights the need to promote greater digital literacy. This approach will not only strengthen listeners' critical thinking skills but also enhance the educational effectiveness of podcasts, enabling these digital tools to effectively complement traditional teaching methods.

Arias (2024) examines the integration of podcasts into higher education, emphasising their potential to enhance autonomous learning and promote scientific dissemination. The research highlights how these digital resources enable the re-contextualisation of knowledge, making academic content more accessible and engaging for both students and academics. The study investigates the use of podcasts in university education through a research methodology applied to a diverse group, including young students aged 18 to 25, lecturers, and graduate students aged 25 to 50. This approach allows for an assessment of how podcasts are perceived and used across the university community, considering potential differences in age, gender, and academic specialisation.

The results indicate that podcasts significantly improve understanding of the topics covered and encourage more active participation in the educational process. A large majority of respondents recognise the value of podcasts in fostering autonomous and meaningful learning. Additionally, podcasts provide a flexible and personalised way to access educational content, which is especially beneficial in an educational environment that values student autonomy. In its conclusions, the study emphasises that, despite some technical and adaptation challenges, podcasts are seen as an effective educational tool that increases student motivation and engagement. They also promote interaction and collaboration among students, aiding not just in the acquisition of knowledge but in applying it across various contexts.

This article clearly highlights the value of podcasts as a complementary tool in higher education, showcasing their effectiveness in improving student motivation and engagement. By promoting both learning autonomy and social interaction, podcasts act as catalysts for intellectual and personal growth, facilitating the acquisition and application of knowledge in academic and professional contexts. The findings suggest that podcasts can bridge the gap between academic theory and real-world practice, allowing students to engage with content in ways that align with their personal interests and aspirations. This enhances the relevance and applicability of learning, while also strengthening students' critical and creative thinking skills. By incorporating podcasts into the university curriculum, institutions can offer a more dynamic and multimedia learning experience that better meets the demands of the 21st century.

2.2.3. Models for innovation and transformation

Higher education faces ongoing challenges in adopting methodologies that foster meaningful and active learning. Viscarra-Muñoz et al. (2025) explore the flexibility and accessibility of podcasts integrated into pedagogical strategies like gamification and collaborative learning. When combined with the audio format, these methodologies enhance student interaction and engagement, adapting to various learning styles and creating a more dynamic and participatory educational environment. This approach not only strengthens auditory skills and concepts but also increases student motivation and autonomy, empowering them to assume responsibility of their own learning. Podcasts complement these methodologies by introducing complex concepts in an accessible way and offering additional explanations for difficult content.

It can be concluded, regarding the article by Viscarra-Muñoz et al. (2025) that the use of educational podcasts emerges as an innovative and effective strategy that enriches the teaching-learning process in higher education. The implementation of podcasts, combined with methodologies such as gamification and collaborative learning, enhances interactivity in the classroom and diversifies teaching methods. However, it is crucial to ensure teacher training and equitable access to technology to maximise their effectiveness and guarantee inclusive and personalised education.

Villafán and Ramírez (2025) highlight best practices and the impact of using podcasts in the educational process for master's students. The research found that students who used podcasts as an evaluative tool showed a notable improvement in their academic performance. Student satisfaction with this methodology was high, with an average score of 4.00 on a scale of 1 to 5. This approach not only encouraged students to engage more deeply with the study material but also helped them develop essential 21st-century skills, such as critical thinking and learning autonomy.

2.3. Theoretical framework

2.3.1. Theoretical concept and podcast genres

The concept of the educational podcast can be understood as a digital tool that, in addition to facilitating the transmission of academic content, functions as a cognitive instrument that complements and enriches students' learning processes, according to Drew (2017). He further argues that educational podcasts not only energize e-learning environments but also have the capacity to support learners' cognition by promoting deep and meaningful learning. This dual function positions them as resources that on one hand, facilitate access to content in diverse contexts, and on the other hand, foster reflection, analysis, and the internalization of knowledge. The podcast's nature as a digital medium that combines audio and, in some cases, narrative elements allows students to interact with content in an active and personalized manner, enhancing both engagement and motivation.

In his article, Drew (2017) defines the podcast as a medium for information distribution and as a pedagogical element which, through its features and conventions, can enhance comprehension and critical thinking, thereby contributing to more autonomous and in-depth learning. He identifies three podcast types: Quick Burst, Narrative, and Chat Show.

2.3.1.1. Quick burst. This genre is characterized by its brevity and focus on the rapid delivery of a single key piece of information, usually in under five minutes. Its communicative purpose is to offer tips, ideas

or specific data in a concise and effective manner, targeting audiences with limited time availability, such as busy individuals. This format relies on techniques such as intentional time limitation, an energetic and direct tone, and the use of sound effects like a ticking timer to quickly capture attention and reinforce the sense of brevity. While it can help reignite interest and support the review of previously learned content, its ability to foster deep and reflective learning is limited due to its fast-paced and surface-level nature. In summary, it functions as a pedagogical tool aimed at memorization and quick information retrieval, making it suitable for review or introductory contexts but not for the development of higher-order cognitive skills.

2.3.1.2. Narrative. This genre is defined by a sustained storytelling approach, where the narrator delivers a story directly to the listener with minimal interruptions for open discussion. It employs storytelling techniques such as vocal modulation, strategic pauses, and sound effects to enhance the emotional and pedagogical impact of the story, thereby promoting learning through the affective power of sound. The narrative format aims not only to inform or entertain but also to shape knowledge and values through story construction that fosters reflection and internalization, especially within historical or cultural contexts. Moreover, this genre blends elements of radio and audiobooks, developing a distinctive style that supports prolonged attention and deep comprehension of the narrated content.

2.3.1.3. Chat show. This genre is characterized by institutionalized conversations between two or more participants, with the purpose of exploring specific ideas and concepts. It draws inspiration from radio interview programs, where each participant assumes a defined role—such as host or guest—and the interaction revolves around structured dialogues and debates. Additionally, it combines elements of entertainment and humor, aiming to capture the listener's attention through wit, anecdotes, and a light tone, without neglecting the cognitive dimension of the content. The use of humor and narrative in these podcasts not only entertains but also humanizes the material, making complex concepts more accessible and easier to internalize. In educational settings, this genre supports active learning and fosters emotional engagement, making the content more memorable and appealing for listeners.

Drew (2017) concludes that these three types or genres of educational podcasts demonstrate the versatility of podcasting in supporting and enhancing learning within e-learning environments. Each genre has developed specific patterns and design strategies to meet the needs of its audience, facilitating content access while promoting reflection, analysis, and knowledge internalization. Furthermore, he emphasizes that analyzing these genres allows educators and students to modify, utilize, and even subvert established conventions to create innovative and effective educational texts. However, he also notes that these genres have limitations regarding their capacity to promote deep and meaningful learning. Ultimately, the study suggests that genre and its structural analysis are valuable tools for designing effective pedagogical resources tailored to diverse learning objectives.

2.3.2. Cognitive and adult learning theories

McNamara and Drew (2019) propose a conceptual review of the theoretical frameworks that have supported empirical studies on the educational impact of podcasts. Their analysis reveals not only the versatility of the podcast as a didactic resource but also the pressing need to incorporate cognitive theories that inform its design and implementation across diverse educational contexts. This need arises in response to a methodological gap that, according to the authors, still persisted up to that point. Among the theoretical models examined, particular emphasis is placed on the Cognitive Theory of Multimedia Learning, CTML, and Cognitive Load Theory, CLT, alongside frameworks related to adult learning, such as Andragogy and Heutagogy. Given that the podcast operates primarily through the auditory channel, it becomes essential to design content that minimizes cognitive overload and promotes meaningful knowledge integration.

McNamara and Drew (2019) argue that studying the theoretical foundations of these approaches enriches the understanding of the podcast as a pedagogical tool and guides more effective practices for its use. Rather than being viewed merely as a technological artifact, the podcast should be conceived as a pedagogical strategy grounded in robust theoretical principles. Its rigorous design not only lends validity to the research that employs it but also enhances the quality of learning it facilitates. Consequently,

its pedagogical versatility demands a methodological commitment that ensures its relevance and sustainability in educational environments that are increasingly diverse and in constant evolution.

2.3.3. Cognitive theory of multimedia learning, CTML

Mayer (2009) developed the Cognitive Theory of Multimedia Learning, CTML, in response to the proliferation of digital learning environments. One of its most significant challenges lies in ensuring that the presentation of content fosters deep comprehension without overwhelming the learner's cognitive processing capacity. CTML stands as a foundational theoretical framework for guiding the design of digital educational materials, and the podcast, as an educational resource, is particularly well-suited for the application of its principles in both content design and production. According to Mayer, CTML is grounded in a dual-channel model of the human cognitive system, which processes information through two primary channels: the visual-pictorial and the auditory-verbal. Both channels have limited attentional and working memory resources, implying that disorganized or excessively dense content presentation may result in cognitive overload, thereby hindering meaningful learning.

The theory distinguishes among three types of cognitive load: intrinsic, related to the inherent complexity of the material; extraneous, determined by how the information is presented; and germane, associated with the mental effort invested in constructing and automating mental schemas. Effective instructional design aims to reduce extraneous load, manage intrinsic load, and foster germane load. In the context of educational podcasting, which operates exclusively through the auditory channel, CTML provides a framework to avoid the common misconception that digital tools are pedagogically effective merely because they are accessible or novel. On the contrary, this theory emphasizes that the educational value of a podcast resides in the strategic organization and verbal delivery of its content. Principles such as the use of pauses, narrative emphasis, thematic segmentation, selective redundancy, and auditory signaling can be applied to optimize auditory information processing and facilitate its integration into long-term memory. (Andrade, 2012).

2.3.4. Cognitive load theory, CLT

From another theoretical perspective on cognition, Sweller's (2011) Cognitive Load Theory, CLT, contributes significantly to the understanding of podcasts as digital learning resources. According to Brunken et al. (2003), CLT has gained increasing relevance in the field of instructional design and evaluation, both in traditional learning settings and in technology-mediated environments. This theory focuses on the mental effort required by learners to actively process information within working memory, which is inherently limited in capacity. When instructional materials are not properly structured, they may induce cognitive overload, which impairs the meaningful construction of knowledge and, consequently, hinders learning processes.

Despite its strong theoretical foundation and wide acceptance in the domain of cognitive sciences applied to education, the measurement of cognitive load induced by digital learning materials has largely relied on indirect and subjective methods—such as self-assessment, perception questionnaires, or academic performance analysis. In light of this limitation, Brunken et al. (2003) emphasize the need to advance toward more direct and objective measurement strategies that can more accurately capture the actual cognitive load experienced by learners.

2.3.5. Andragogy and heutagogy

The relevance of these two cognitive theories is enhanced when integrated with other theoretical perspectives such as Andragogy (Knowles, 1978) and Heutagogy (Hase & Kenyon, 2000), which emphasize self-direction, prior learner experience, and personalized learning as key pillars in contemporary education. The complementarity between these two approaches enables the design of educational podcasts that not only align with learners' cognitive architecture but also respond to their motivations, needs, and personal contexts.

Knowles (1978) developed andragogical theory to explain the specificities of adult learning, recognizing that it differs from child learning due to factors such as accumulated experience, autonomy, and a strong orientation toward practical application. One of its core principles is that adults possess a self-concept of independence, leading them to prefer educational processes where they can assume

responsibility for their own learning. Moreover, adults' prior experience becomes a critical asset that enriches the collaborative construction of knowledge. Adults also demonstrate a heightened readiness to learn when content is clearly linked to their real-life roles and professional or personal contexts. Consequently, instruction should be problem-centered and aimed at immediate application. Finally, adult learners are typically motivated by intrinsic factors such as personal growth or quality of life improvement. This view has transformed educational models in higher education, encouraging the adoption of active, flexible, and learner-centered methodologies.

Heutagogy, introduced by Hase and Kenyon (2000), represents a conceptual evolution beyond Pedagogy and Andragogy by focusing on self-determined learning, wherein the learner assumes full control over the learning process. This theory proposes an educational model in which individuals not only define their learning objectives, select resources, and evaluate their progress, but also engage in nonlinear learning through both formal and informal experiences promoting genuine autonomy. Unlike andragogy, which frames the adult learner as self-directed within a structured context, Heutagogy posits an environment in which the educator acts solely as a contextual facilitator. In this paradigm, learning is understood as a profoundly reflective and adaptive process aimed at developing individuals capable of transferring their knowledge to new, uncertain, and complex situations. It also emphasizes values such as creativity, flexibility, and collaboration—skills essential to meeting the challenges of the twenty-first century.

2.3.6. Uses and gratifications theory, UGT

The Uses and Gratifications Theory, UGT, rooted in empirical studies of mass communication since the 1960s, provides a framework for understanding how individuals select and engage with media based on their specific needs and motivations. Within this framework, McNamara and Min (2024) examine the rise of the educational podcast as an emerging resource that reflects the digital transformation of content consumption in learning contexts. The authors identify five key motivations driving podcast use among educators: information seeking, flexibility, social interaction, entertainment, and professional stimulation. This multifactorial perspective reveals that podcasts serve not only an instrumental function in ongoing professional development but also emotional and relational roles.

Flexibility emerges as a defining characteristic of the format, allowing it to be seamlessly integrated into demanding professional routines. Likewise, social interaction and entertainment, traditionally associated with recreational media, gain pedagogical relevance by fostering peer connections and professional inspiration. The study demonstrates that these motivations are positively correlated with both the intention to listen and digital word-of-mouth recommendation, reinforcing the podcast's role as a viral and collaborative tool within teacher learning communities.

As a result, designing and implementing educational podcasts through the lens of UGT enables educators and instructional designers to enhance their impact on continuing education. This approach addresses not only cognitive needs but also the affective and social dimensions of learning, making podcasts a multifaceted strategy for fostering engagement, motivation, and knowledge exchange in contemporary educational environments.

2.3.7. Synthesis of theories applied to podcast design and implementation

The educational podcast has established itself as a digital tool that not only facilitates the transmission of academic content but also functions as a cognitive instrument that enhances learning. McNamara and Drew (2019) emphasize the need to understand podcasting through a rigorous theoretical lens, warning that its educational impact depends on its cognitive, pedagogical, and technological design. In their review of relevant frameworks, these authors highlight the importance of integrating models such as the Cognitive Theory of Multimedia Learning, CTML, and Cognitive Load Theory, CLT, as a theoretical corpus offering guidelines for structuring podcasts in a way that avoids overloading working memory, facilitates meaningful content integration, and promotes learner autonomy.

In parallel, Knowles' Andragogy and Hase and Kenyon's Heutagogy reinforce the didactic dimension of podcasts by positioning them as ideal resources for self-directed, reflective, and adaptive learning, particularly in higher education settings. Additionally, the UGT provides insight into the motivations that lead educators and students to engage with podcasts for educational purposes.

Together, these perspectives consolidate the podcast as a comprehensive and versatile pedagogical strategy whose educational value lies in its ability to articulate robust theoretical principles with relevant instructional practices. Its effective implementation demands a methodological commitment that ensures quality, sustainability, and innovation across diverse and ever-evolving learning environments.

3. Materials and methods

This section outlines the materials and methods used in the research, ensuring the study's replicability and the validity of the results. It details the methodological strategies, research design, selected population and sample, as well as the instruments and procedures used for data collection and analysis.

3.1. Objectives, research questions and hypotheses

The principal research objectives of the study are:

a. To examine how university faculty incorporate podcasts into their teaching.
b. To assess their perception of podcasts as a tool for teaching and learning.

With these initial objectives, the key research questions are:

- Do university faculty members use podcasts as a teaching resource?
- How do they perceive their educational potential?

The study proposed the following research hypotheses:

H1. University faculty are expected to incorporate podcasts into their teaching, even if they do not create them.

H2. University faculty are expected to recognise the educational value of podcasts.

H3. Differences in podcast usage and perception are expected among university faculty based on age, gender, and institutional affiliation.

3.2. Instruments for data collection and analysis

To collect the necessary data for achieving the study's objectives, an *ad hoc* questionnaire was designed, with most items asking participants to rate questions on a six-point Likert-type scale.

The final version of the questionnaire consisted of 17 items, grouped into three main dimensions:

- Demographic context, items 1–4: sex, age, university and current employment relationship with the university.
- Use and characteristics of podcasts within the university setting, items 5–11: Likert-type questions on a 1–6 scale where 1 indicates the lowest degree and 6 the highest, with the exception of one question regarding the ideal duration of podcasts,10, and another concerning the main challenges in podcast production, which required respondents to rank the difficulties in order of importance, 11.
- Assessment of the educational impact of podcasts in university teaching, items 12–17: Likert-type questions on a 1–6 scale where 1 indicates the lowest degree and 6 the highest. The questionnaire was then validated by a group of experts, $N = 12$, in educational technology, particularly in podcast production and use, and/or educational research. They evaluated each item across three dimensions: relevance, clarity, and appropriateness, to ensure that the questions were well-aligned with the study's objectives and the characteristics of the respondents, while also confirming that there was no ambiguity or potential for misinterpretation.

The analysis of the experts' responses revealed high ratings for all the proposed items, confirming the appropriateness of the questionnaire for the research objectives, according to the evaluators. Only the wording of a few items was refined for clarity, and an additional item was added to address the type of contractual relationship between the teacher and the university, full-time or part-time.

Regarding privacy and data management, the questionnaire clearly states that the data will be used solely to gather information for the research project on the impact of podcasts in university teaching. It also clarifies that the respondent's consent is granted through their anonymous response to the online questionnaire, and that the data will not be shared with third parties. The data will be retained only as long as necessary for the research purposes of the project.

Lastly, it is important to note that the Jamovi program, version 2.6, was used to analyse the data presented in the results section.

3.3. Population and sample

The population targeted by the study consists of teaching and research staff at universities. The researchers intentionally selected the universities where they are based: Universidad Anáhuac de Puebla in Mexico and Universidad Francisco de Vitoria in Madrid, Spain. Both private universities are part of the International Network of Universities of Regnum Christi. In the 2024/25 academic year, Universidad Anáhuac de Puebla, UAP, has 642 professors, 54 of whom are full-time, while Universidad Francisco de Vitoria, UFV has 1,313 professors, 853 of whom are full-time.

After editing the online questionnaire with input from the experts, a snowball sampling method was used. Through contacts and referrals, the final sample of professors who responded to the questionnaire consisted of 224. Regarding the results, a descriptive analysis of the sample is presented. Their distribution by gender, age, and university is detailed below. This is followed by the main analyses addressing the study's objectives. Firstly, we provide the values of basic descriptive statistics for the questionnaire items on a scale of 1 to 6. Some of the results of the descriptive analyses need to be complemented with analyses aimed at assessing the significance of differences between groups.

4. Results

The questionnaire results were analysed for reliability to assess the internal consistency of the responses. The Cronbach's alpha coefficient indicates a high correlation between the responses, suggesting strong reliability in measuring the intended construct (Table 1).

As mentioned above, the questionnaire was completed by 224 lecturers from the two participating universities. The distribution by university, employment status (full-time or part-time), and gender is well-balanced, as shown in the following tables (Figures 1–4).

Having considered these socio-demographic variables, the fundamental analyses with respect to the objectives of the study are presented below. Firstly, the values of the basic descriptive statistics of the questionnaire are shown in relation to the items for which responses were provided on a scale of 1 to 6. The items with the lowest averages relate to the current use of podcasts in university teaching created by students −1.48- or by the lecturers themselves −1.49-. On the other hand, the items with the highest average scores concern the relevance of using podcasts as a resource outside of class −4.22- and the positive view of podcasts as a tool to enhance the learning experience of university students −4.20-. The standard deviation of the responses indicates a high level of agreement among participants, though some nuances should be taken into account (Table 2).

Thus, significant differences -$p \leq 0.05$- were found in the responses between men and women for all items except those related to the current and future use of podcasts produced by the students

Table 1. Scale reliability statistics.

S	Cronbach's alpha
Scale	0.946

Source: Jamovi (version 2.6).

Table 2. Mean scores and standard deviation.

	Mean	SD
Frequency of podcast listening in everyday life:	3.07	1.59
Degree of podcast usage in your current university teaching: Already created and produced by third parties	2.20	1.49
Degree of podcast usage in your current university teaching: Produced by the professor	1.49	1.14
Degree of podcast usage in your current university teaching: Proposed by the professor and produced by students	1.48	1.05
Degree of anticipated podcast usage in the future in your university teaching: Already created and produced by third parties	3.08	1.53
Degree of anticipated podcast usage in the future in your university teaching: Produced by the professor	2.39	1.49
Degree of anticipated podcast usage in the future in your university teaching: Proposed by the professor and produced by students	2.76	1.59
To what extent do you rate the value of podcasts at different stages of the teaching process? As an introductory or motivational element at the beginning of a topic	3.74	1.43
To what extent do you rate the value of podcasts at different stages of the teaching process? As a resource to illustrate or exemplify during the teaching-learning process	3.64	1.38
To what extent do you rate the value of podcasts at different stages of the teaching process? As a strategy to consolidate or reinforce what has been covered in class	3.94	1.50
To what extent do you rate the value of podcasts at different stages of the teaching process? As a source for expanding knowledge at the end of the session	4.13	1.56
How relevant do you find the use of podcasts inside (during classes) or outside the classroom (e.g. flipped learning)? Inside the classroom	2.67	1.45
How relevant do you find the use of podcasts inside (during classes) or outside the classroom (e.g. flipped learning)? Outside the classroom	4.22	1.56
To what extent do you value the potential of podcasts as an educational resource?	4.15	1.35
How useful do you think podcasts are in addressing students' diverse learning needs?	3.84	1.36
To what extent do you believe incorporating podcasts enhances university students' learning experience?	4.20	1.40
How effective do you think podcasts are in facilitating autonomous learning for university students?	3.99	1.44
To what extent do you believe podcasts promote interaction between students and professors?	3.50	1.45
In your opinion, how do podcasts influence the development of critical thinking skills in university students?	4.04	1.41

Source: Jamovi (version 2.6).

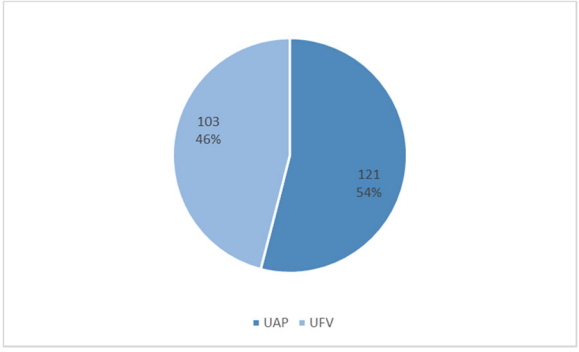

Figure 1. Distribution of participants by university.
Source: Own elaboration based on the results of the questionnaire.

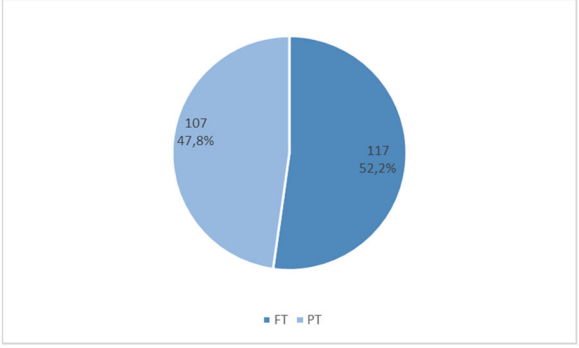

Figure 2. Distribution of participants by employment status (full-time or part-time).
Source: Own elaboration based on the results of the questionnaire.

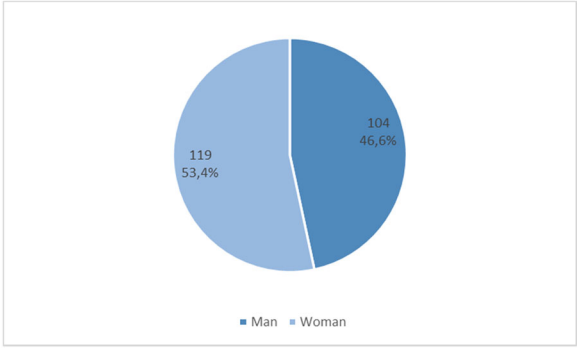

Figure 3. Distribution of participants by gender.
Note: One person did not answer this question, which was not compulsory, so the sample is reduced to 223 persons in this table.
Source: Own elaboration based on the results of the questionnaire.
Regarding the age distribution of the faculty in the sample, 63% are between 35 and 54 years of age.

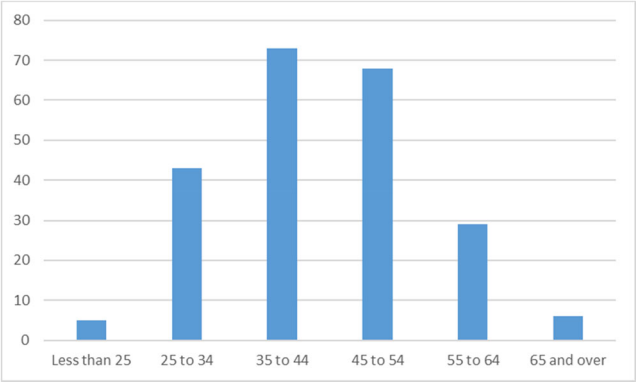

Figure 4. Distribution of participants by age.
Source: Own elaboration based on the results of the questionnaire.

themselves. Below, the mean responses by gender are presented, showing that men's scores were higher than those of their female counterparts, both in terms of usage and evaluation of podcasts (Table 3).

In general, the ratings of the teaching staff at UAP are higher, except in the item related to the relevance of using podcasts in the classroom. The most notable differences between the two universities are in the use of podcasts produced by third parties and by the students themselves (Table 4).

However, after conducting the same Student's *t*-test, no significant differences were found between lecturers working full-time or part-time at each university. In terms of age, the most noticeable differences are in the current use of podcasts created by students: teachers aged 25 to 34 have an average of 1.69, while those over 55 years old have an average of 1.26. Additionally, teachers aged 35 to 44 are more prone to consider the use of podcasts outside the classroom relevant compared to those over 55, with averages of 4.22 and 3.14, respectively (Table 5).

Finally, it is worth noting that there is a positive and significant correlation between being a regular podcast listener and rating podcasts highly as a teaching resource, as shown in Table 6.

The survey also included questions about the ideal duration of a podcast as a teaching tool. Over 90% of teachers believe it should be shorter than 20 minutes, with the most popular choice being 5 to 10 minutes -selected by 66 teachers-. With regard to the challenges of producing their own podcasts, teachers primarily cited the time required for preparation. In fact, 101 teachers ranked time as the biggest hurdle, ahead of other factors such as creativity, digital skills, necessary infrastructure, personal communication shyness, or lack of institutional support (Figures 5 and 6).

5. Discussion

The findings of this research provide a critical and comparative analysis of the role of podcasts in higher education, based on the theoretical framework presented. The data confirm that while podcasts are

Table 3. Mean scores by gender.

	Gender:	Mean
Frequency of podcast listening in everyday life:	**Man**	3.43
	Woman	2.74
Degree of podcast usage in your current university teaching: Already created and produced by third parties	**Man**	2.54
	Woman	1.90
Degree of podcast usage in your current university teaching: Produced by the professor	**Man**	1.70
	Woman	1.29
Degree of podcast usage in your current university teaching: Proposed by the professor and produced by students	**Man**	1.58
	Woman	1.39
Degree of anticipated podcast usage in the future in your university teaching: Already created and produced by third parties	**Man**	3.41
	Woman	2.79
Degree of anticipated podcast usage in the future in your university teaching: Produced by the professor	**Man**	2.68
	Woman	2.13
Degree of anticipated podcast usage in the future in your university teaching: Proposed by the professor and produced by students	**Man**	2.81
	Woman	2.70
To what extent do you rate the value of podcasts at different stages of the teaching process? As an introductory or motivational element at the beginning of a topic	**Man**	4.05
	Woman	3.46
To what extent do you rate the value of podcasts at different stages of the teaching process? As a resource to illustrate or exemplify during the teaching-learning process	**Man**	3.84
	Woman	3.47
To what extent do you rate the value of podcasts at different stages of the teaching process? As a strategy to consolidate or reinforce what has been covered in class	**Man**	4.18
	Woman	3.75
To what extent do you rate the value of podcasts at different stages of the teaching process? As a source for expanding knowledge at the end of the session	**Man**	4.43
	Woman	3.88
How relevant do you find the use of podcasts inside (during classes) or outside the classroom (e.g. flipped learning)? Inside the classroom	**Man**	2.82
	Woman	2.55
How relevant do you find the use of podcasts inside (during classes) or outside the classroom (e.g. flipped learning)? Outside the classroom	**Man**	4.55
	Woman	3.96
To what extent do you value the potential of podcasts as an educational resource?	**Man**	4.46
	Woman	3.88
How useful do you think podcasts are in addressing students' diverse learning needs?	**Man**	4.09
	Woman	3.65
To what extent do you believe incorporating podcasts enhances university students' learning experience?	**Man**	4.51
	Woman	3.95
How effective do you think podcasts are in facilitating autonomous learning for university students?	**Man**	4.25
	Woman	3.77
To what extent do you believe podcasts promote interaction between students and professors?	**Man**	3.85
	Woman	3.21
In your opinion, how do podcasts influence the development of critical thinking skills in university students?	**Man**	4.28
	Woman	3.84

Source: Jamovi (version 2.6).

widely recognised as valuable pedagogical tools, their systematic adoption and use by academic staff at universities remain limited. This aligns with previous studies (Fernández et al., 2020), which highlight a gap between the acknowledged potential of podcasts and their effective integration into formal learning environments (Hew, 2009).

5.1. Perception of the podcast in higher education: between acceptance and pedagogical inertia

One of the study's most notable findings is the infrequent use of podcasts as a teaching tool, despite their high appreciation among academic staff. This highlights an epistemological disconnect between pedagogical theory and classroom practice, echoing the observations of McHugh (2024) and Berry (2016) on academics resistance to adopting new technologies when there is no institutional support or adequate training to facilitate their integration.

The limited use of podcasts by academics or students, 1.49 and 1.48 respectively, contrasts with their strong potential to foster self-directed learning, an aspect extensively documented in heutagogy and digital education research (Alonso & López, 2024; Kay et al., 2019). Heutagogy, as proposed by Hase and Kenyon (2000), emphasises the importance of adult learners taking an active role in constructing knowledge. Podcasts support this process by offering asynchronous access, flexibility, and the ability to incorporate pedagogical narratives that enhance ubiquitous learning (Fernández et al., 2020).

Despite the apparent disconnect between evaluation and use, the data reveal that podcasts are more widely accepted when incorporated into supportive teaching strategies outside the classroom −4.22-, highlighting their potential in methodologies such as flipped learning (Sánchez-Crespo, 2021). This

Table 4. Independent samples t-test (university).

		Statistic	gl	P
Frequency of podcast listening in everyday life:	**Student's t-test**	0.5806	222	0.562
Degree of podcast usage in your current university teaching: Already created and produced by third parties	**Student's t-test**	4.1098[a]	222	<.001
	Welch's t-test	4.1597	222	<.001
Degree of podcast usage in your current university teaching: Produced by the professor	**Student's t-test**	2.2608[a]	222	0.025
	Welch's t-test	2.3025	221	0.022
Degree of podcast usage in your current university teaching: Proposed by the professor and produced by students	**Student's t-test**	4.9984[a]	222	<.001
	Welch's t-test	5.3343	150	<.001
Degree of anticipated podcast usage in the future in your university teaching: Already created and produced by third parties	**Student's t-test**	2.0031	222	0.046
Degree of anticipated podcast usage in the future in your university teaching: Produced by the professor	**Student's t-test**	1.5313[a]	222	0.127
	Welch's t-test	1.5521	222	0.122
Degree of anticipated podcast usage in the future in your university teaching: Proposed by the professor and produced by students	**Student's t-test**	0.4339	222	0.665
To what extent do you rate the value of podcasts at different stages of the teaching process? As an introductory or motivational element at the beginning of a topic	**Student's t-test**	0.6423	222	0.521
To what extent do you rate the value of podcasts at different stages of the teaching process? As a resource to illustrate or exemplify during the teaching-learning process	**Student's t-test**	1.4807	222	0.140
To what extent do you rate the value of podcasts at different stages of the teaching process? As a strategy to consolidate or reinforce what has been covered in class	**Student's t-test**	0.7650	222	0.445
To what extent do you rate the value of podcasts at different stages of the teaching process? As a source for expanding knowledge at the end of the session	**Student's t-test**	0.5824	222	0.561
How relevant do you find the use of podcasts inside (during classes) or outside the classroom (e.g. flipped learning)? Inside the classroom	**Student's t-test**	−0.0945	222	0.925
How relevant do you find the use of podcasts inside (during classes) or outside the classroom (e.g. flipped learning)? Outside the classroom	**Student's t-test**	0.2560[a]	222	0.798
	Welch's t-test	0.2594	222	0.796
How relevant do you find the use of podcasts inside (during classes) or outside the classroom (e.g. flipped learning)? Outside the classroom (2)	**Student's t-test**	0.2560[a]	222	0.798
	Welch's t-test	0.2594	222	0.796
To what extent do you value the potential of podcasts as an educational resource?	**Student's t-test**	1.9563	222	0.052
How useful do you think podcasts are in addressing students' diverse learning needs?	**Student's t-test**	0.9775	222	0.329
To what extent do you believe incorporating podcasts enhances university students' learning experience?	**Student's t-test**	2.5858	222	0.010
How effective do you think podcasts are in facilitating autonomous learning for university students?	**Student's t-test**	1.1727	222	0.242
To what extent do you believe podcasts promote interaction between students and professors?	**Student's t-test**	1.8568	222	0.065
In your opinion, how do podcasts influence the development of critical thinking skills in university students	**Student's t-test**	2.2713	222	0.024

Note.: $H_a \mu_{UAP} \neq \mu_{UFV}$.
[a] The Levene's Test ($p < 0.05$) suggests that the variances are not equal.
Source: Jamovi (version 2.6).

Table 5. One-way ANOVA (age).

	F	gl1	gl2	p
Degree of podcast usage in your current university teaching: Proposed by the professor and produced by students	4.023	3	101	0.009
Degree of anticipated podcast usage in the future in your university teaching: Proposed by the professor and produced by students	2.965	3	103	0.036
How relevant do you find the use of podcasts inside (during classes) or outside the classroom (e.g. flipped learning)? Outside the classroom	2.799	3	105	0.044
How effective do you think podcasts are in facilitating autonomous learning for university students?	3.953	3	103	0.010

Note: Given the small number of professors under 25 or over 65, the ANOVA test was conducted with the following age groups: under 25 to 34 years, 35 to 44 years, 45 to 54 years, and over 55 years.
Source: Jamovi (version 2.6).

finding aligns with the idea that media are most effective not only when integrated into the educational environment, but also when they transform it (Markman, 2012).

5.2. Gaps in the adoption of podcasts: socio-demographic variables and institutional bias

A notable outcome of this study is the persistent gap in podcast use and perception along gender and institutional lines among university academics. Male lecturers reported higher usage and more positive views of podcasts than their female colleagues. While this might suggest a simple difference in digital

Table 6. Correlation matrix.

		Frequency of podcast listening in everyday life:	To what extent do you value the potential of podcasts as an educational resource?
Frequency of podcast listening in everyday life:	**Pearson R**	—	
	gl	—	
	***p* value**	—	
To what extent do you value the potential of podcasts as an educational resource?	**Pearson R**	0.489	—
	gl	222	—
	***p* value**	<0.001	—

Source: Jamovi (version 2.6).

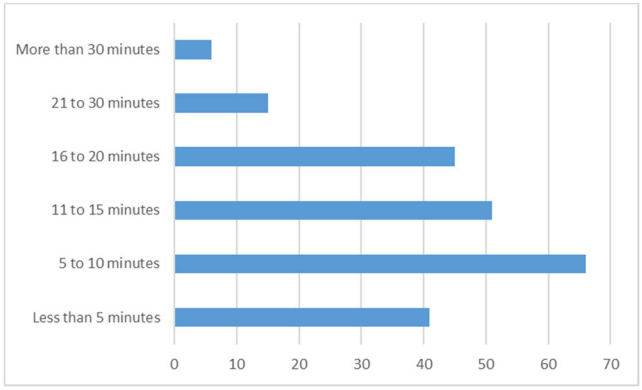

Figure 5. Ideal duration of the podcast as a teaching tool.
Source: Own elaboration based on the results of the questionnaire.

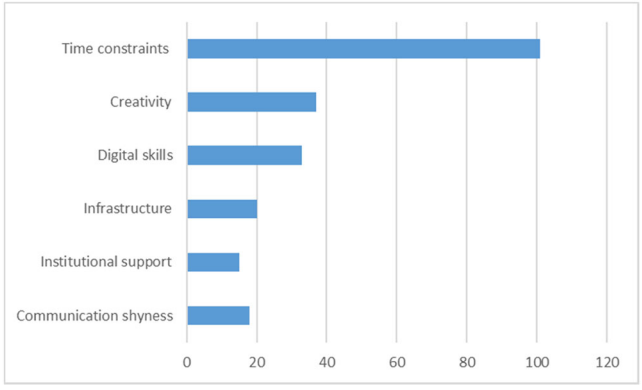

Figure 6. Principal difficulty in creating an educational podcast for teachers.
Source: Own elaboration based on the results of the questionnaire.

affinity, deeper analysis highlights broader cultural and structural factors shaping technology adoption in higher education. The gender gap reflects research on digital divides, showing that disparities are rooted in socialization, access to professional development, and confidence with digital media. Differences in institutional support, professional opportunities, and persistent stereotypes can limit the engagement of women with new technologies. This mirrors wider trends in podcast audiences, where male listeners predominate, and possibly influencing the comfort of academic staff with podcasting as a teaching tool.

Institutional context also plays a role. Academics at Universidad Anáhuac Puebla generally rated podcasts more positively than those at Universidad Francisco de Vitoria, which may relate to institutional policies, leadership support, and access to resources. According to diffusion of innovation theory, organizational culture and strategies are pivotal for technology adoption. Where digital innovation is promoted, academic staff are more likely to value and integrate podcasts; without such support, adoption may delay.

In sum, closing podcast adoption gaps requires more than individual motivation—it needs intentional strategies at institutional and systemic levels. Promoting gender equity in digital skills, ensuring professional development, and fostering innovative cultures are essential for universities to realize the potential of educational podcasts. (Viscarra-Muñoz et al., 2025).

5.3. The podcast and its impact on autonomous learning and critical thinking

One of the most significant findings of the study is the widespread belief that podcasts are an effective tool for autonomous learning −3.99-. This supports existing literature (Meden et al., 2024), which suggests that podcasts foster knowledge construction in a flexible and self-directed way.

However, the study also uncovers a paradox in educational interaction: while podcasts are highly valued as a resource for expanding content −4.13-, their ability to promote interaction between students and teachers receives a moderate rating of 3.50. This highlights the idea that while podcasts are effective for fostering autonomous learning, they need to be paired with interactive pedagogical strategies that encourage the collective construction of knowledge (Arias, 2024).

Furthermore, the data suggest that teachers believe podcasts have a positive impact on the development of critical thinking −4.04-, which aligns with recent research on the relationship between audio formats and metacognition (Berry, 2016). This finding indicates that podcasts can play a crucial role in models of critical and reflective education, where students not only consume information but also analyse, compare, and reinterpret it within different epistemological contexts.

5.4. Barriers to the production and consumption of podcasts in higher education

Despite the well-documented benefits of podcasts in university teaching, the results of the study reveal significant barriers to their production and adoption. The main challenge identified by teachers is the lack of time to create their own content, followed by a lack of technical skills and the absence of institutional support.

This finding aligns with the theory of cognitive load in teaching (Sweller 2011), which suggests that integrating new technologies into education requires a process of cognitive adjustment. Without proper training and resources, this process naturally leads to resistance to change (Berry, 2006).

Additionally, the perception of the ideal podcast duration for teaching (less than 20 minutes, with a preference for episodes between 5 and 10 minutes) indicates that teachers value brief and well-structured content. This aligns with the principles of microlearning in digital education (Alonso & López, 2024).

6. Conclusions

To begin this section, it is important to first examine the contrast of the research hypotheses posed. The first hypothesis -It is expected that university professors will use podcasts in their teaching, even if they do not produce them- is rejected, as the results suggest that the use of podcasts by university professors is limited. On a scale of 1 to 6, the average score for using pre-existing podcasts was 2.2, which aligns with the relatively low frequency at which podcasts are listened to in daily life −3.07-. The current use of podcasts produced by the professors themselves −1.49- or their students −1.48- is minimal, although there is an interest in increasing their production in the future, 2.39 and 2.76, respectively.

The second hypothesis -It is expected that university professors will recognise the educational potential of podcasts- is accepted, as professors largely agree that incorporating podcasts enriches the learning experience for university students −4.2-, especially as a resource for use outside of class −4.22-. However, one of the less valued aspects is the potential for promoting interaction between students and professors through podcasts −3.5-. Once again, there is a significant and positive correlation between being a regular podcast listener and rating podcasts as a valuable teaching tool.

The third hypothesis focused on differences in the use and evaluation of podcasts based on various variables: -It is expected that there will be significant differences in the use and evaluation of podcasts by university professors based on age, gender, and the university where they work. - This hypothesis is

partially accepted, as the most significant differences were found based on gender. Men reported higher average scores than women in both the use and evaluation of podcasts. Significant differences were observed between male and female respondents on all items, except for the current and future use of podcasts produced by students. Regarding the university where the professors work, those from the Universidad Anáhuac Puebla generally gave higher ratings, though statistically, these differences were not highly significant. Differences based on age were smaller than expected, with significant age-based differences found only in the use and future use of student-produced podcasts, the relevance of using podcasts outside of class, and their effectiveness in promoting autonomous learning.

Overall, we believe that the study's objectives have been met: identifying the use of podcasts by university professors and comparing their perception of podcasts as a potential teaching tool. However, it is essential to acknowledge several limitations that may have impacted the research and its results. One primary limitation is related to the sample, which was restricted to two private universities, one in Mexico and one in Spain. While the sample includes a good representation of faculty members and offers an international perspective, it is not fully representative of the entire university teaching community. Additionally, because the study used a non-probabilistic sample, the results cannot be generalised to the broader population of university professors. However, this was not the goal of the study, which aimed to provide an overview of a practice that, as demonstrated, is still not widespread, the use of podcasts in university teaching, despite its recognised potential, as evidenced by this research and related studies.

This study has allowed us to identify and analyse the use and perception of podcasts as a teaching tool in higher education, revealing both their pedagogical potential and the limitations that hinder their full integration into teaching and learning. The findings confirm that, although podcasts are positively regarded by university professors, their effective use in teaching remains limited, indicating a significant gap between the theoretical appreciation of the resource and its practical application.

One of the main findings is the low frequency with which professors integrate podcasts into their educational practice, particularly in terms of producing their own podcasts or encouraging students to create them. This suggests a need to strengthen faculty training and support for adopting new educational technologies, ensuring that their use is not limited to simply reproducing content, but instead encourages active, collaborative, and autonomous learning.

The recognition of podcasts as a valuable tool for supporting learning outside the classroom stands out in the research. Professors acknowledge their usefulness in complementing face-to-face sessions, enriching the learning process, and offering flexible access to academic content. In this sense, the application of podcasts in methodologies like flipped learning or Project-Based Learning, PBL, is particularly relevant, as it allows students to prepare ahead of time for synchronous activities that enhance interaction and knowledge application.

However, the data also reveals a paradox in the perception of podcasts' impact on higher education. While they are seen as highly beneficial for fostering autonomous learning and critical thinking, the relationship between podcast use and promoting interaction between students and professors is moderate. This presents a central challenge: the need to design strategies that incorporate podcasts not just as a tool for individual consumption, but as a catalyst for academic discussion, collective reflection, and co-creation of knowledge.

Given these findings, we offer several recommendations for future research and improvements in the implementation of podcasts in higher education. First, faculty training strategies should be developed to promote both pedagogical and technological mastery of podcasts, moving beyond content reproduction to activities that foster the active construction of knowledge. Second, institutional support for podcast production should be enhanced, providing resources, infrastructure, and academic recognition for initiatives integrating this format into teaching practices. Finally, further research is needed to explore the implications of podcasts in university teaching, considering factors such as academic discipline, student profiles, and convergence with emerging technologies. In conclusion, podcasts represent a tool with tremendous potential to transform higher education by providing access to quality content, promoting learning autonomy, and diversifying teaching strategies. However, their effective implementation requires a comprehensive commitment from educational institutions, which must foster a culture of

pedagogical innovation where podcasts are not isolated tools, but integral components of more flexible, inclusive, and personalised learning environments.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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