Journal of Management and Business Education

JMBE

www.journaljmbe.com ISSN: 2605-1044 Published by Academia Europea de Dirección y Economía de la Empresa.

Podcasts as a mediating element in improving entrepreneurial skills among vocational training students

El podcast como elemento mediador en la mejora de las habilidades emprendedoras de los estudiantes de formación profesional

Antonio Manuel Montaño-Sobrino
https://orcid.org/0009-0003-8202-8831
Universidad de Sevilla (Spain)

Ángela Martín-Gutiérrez*
https://orcid.org/0000-0001-9847-245X
Universidad de Sevilla (Spain)

Jesús Conde-Jiménez
https://orcid.org/0000-0002-4471-5089
Universidad de Sevilla (Spain)

Montaño-Sobrino, A. M. et al. (2026) Podcasts as a mediating element in improving entrepreneurial skills among vocational training students. *Journal of Management and Business Education*, 9(1), 179-194. https://doi.org/10.35564/jmbe.2026.0010
*Corresponding author: amartin9@us.es
Language: English
Received: 21 Oct 2025 / Accepted: 8 Feb 2026

Funding. This contribution forms part of the doctoral thesis entitled 'Technology as a mediating factor in entrepreneurship training in vocational education,' which is part of the doctoral programme in Education at the University of Seville. It is also linked to the project entitled 'Good practices in entrepreneurship classrooms: a study to address the entrepreneurial skills of vocational training students' (PIV-081/24) by the Regional Ministry of Educational Development and Vocational Training of Andalusia (Spain).

Ethics Statement. The authors confirm that data collection for the research was conducted anonymously, and there was no possibility of identifying the participants.

Declaration of conflicting interests. The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CRediT author statement. Antonio Manuel Montaño-Sobrino: Conceptualization, Software, Formal analysis, Data curation, Writing – original draft, Writing – review & editing, Supervision, Investigation. Ángela Martín-Gutiérrez: Conceptualization, Validation, Formal analysis, Writing – original draft, Writing – review & editing, Visualization, Supervision, Resources, Project administration. Jesús Conde-Jiménez: Conceptualization, Validation, Formal analysis, Writing – original draft, Supervision, Project administration. All authors have read and accepted the published version of the manuscript.

AI Statement. The authors declares that no generative artificial intelligence technologies or AI-assisted tools were used in the process of writing or analyzing this manuscript.
Acknowledgements. The authors express their sincere gratitude to all participants who took part in this study for their valuable time and cooperation.

ABSTRACT

This study explored the use of podcasts as a teaching resource to enhance entrepreneurial skills among Vocational Training (VT) students. This research was conducted in the Business and Entrepreneurship module of the Intermediate Culinary and Gastronomy program at a Secondary Education Institute (HEI) in Seville, Spain. The participants were students aged 16–51 years. A mixed-method design with a pretest-postest approach and qualitative analysis was applied using validated instruments: the Entrepreneurial Potential Test (ATE-S), a personal initiative questionnaire, and a business knowledge scale. The results show significant improvements in creativity and business knowledge, especially in the legal, strategic, and management fields. In contrast, leadership and problem-solving improved moderately, while motivation decreased, and personal control barely changed. Students positively valued the experience, highlighting the development of communication skills, although public speaking anxiety persisted after the activity. The study introduces the Technology as a Mediator of Entrepreneurial Potential (TeMEP) model, concluding that podcasts are an effective pedagogical mediator for integrating digital and entrepreneurial competences, although they require complementary strategies in public speaking and motivational reinforcement.

Keywords. Digital competence, educational podcast, entrepreneurship, methodology, technology, vocational training.

RESUMEN

Este estudio explora el uso de podcast como recurso didáctico para potenciar habilidades emprendedoras en el alumnado de Formación Profesional. La investigación se realizó en el módulo de Empresa e Iniciativa Emprendedora del ciclo de Grado Medio de Cocina y Gastronomía en un Instituto de Educación Secundaria en Sevilla (España). Participaron estudiantes de entre 16 y 51 años. Se aplicó un diseño mixto con enfoque pretest-postest y análisis cualitativo utilizando instrumentos validados: test de Potencial Emprendedor (ATE-S), cuestionario de iniciativa personal y una escala de conocimientos empresariales. Los resultados muestran mejoras significativas en creatividad y conocimientos empresariales, especialmente en las áreas legal, estratégica y de gestión. En cambio, el liderazgo y la resolución de problemas mejoraron de forma moderada, mientras que la motivación descendió y el control personal apenas varió. El alumnado valoró positivamente la experiencia, destacando el desarrollo de habilidades comunicativas, aunque persiste la ansiedad al hablar en público. El estudio introduce el modelo de Tecnología como Mediador del Potencial Emprendedor (TeMEP), concluyendo que el podcast es un mediador pedagógico eficaz para la integración de las competencias digitales y emprendedoras, aunque requiere de estrategias complementarias de oratoria y refuerzo motivacional.

Palabras clave. *Competencia digital, podcast educativo, emprendimiento, metodología, tecnología, formación profesional.*

INTRODUCTION

Over time, technological progress, together with the evolution of resources and ease of access to them, has led to significant transformations in the educational ecosystem, especially in relation to the Internet and digitisation processes (Arenas et al., 2021; Paredes-Chacín et al., 2020).

Among these, the growth of podcasts has opened up new possibilities for both individual and group learning, enabling students to explore areas of interest in greater depth and establish links with learning communities in digital environments (Cheung et al., 2011; Chiu et al., 2008; Siemens & Weller, 2011). Their incorporation into the classroom improves student motivation and participation, promoting comprehensive development through active technologies (Narváez-Pinango et al., 2024). The excitement these podcasts generate among students is no coincidence, given their evolution in recent years, internationally and in Spain, in particular. According to data from Statista (Orús, 2024), in 2023, more than three million people listened to podcasts in Spain, with young people under the age of 24 showing the highest level of acceptance of these entertainment formats. In 2024, the number of people listening to podcasts increased by 233% to 7 million, according to the 2024 Annual Digital Audio Study by IAB Spain. The 18-34 age group is the most active, representing 40% of frequent listeners, as indicated by the Edison Research study (Ramallo, 2025). This places Spain fifth among European countries in terms of active users and listening hours (Europapress, 2024). This makes podcasts an interesting tool for use in the classroom, given their popularity among vocational training students in the demographic group that listens to them the most.

The increase in the use of digital media and podcast consumption among current vocational training students is not surprising, as consumption habits differ between generations, as in other fields. Generation Z, “born between 1990 and 2010 Generation Z" (Reis, 2018), is more prone to using digital technologies in the classroom, as these have been part of their daily lives since childhood, and they are even emotionally affected if deprived of them (Soly et al., 2021). Therefore, it is necessary for the education sector to offer solutions to improve student motivation and engagement, since, as indicated in studies conducted by Avalos (Avalos, 2011), students generally improve as teachers learn to adapt their methodology to their individual needs.

Podcasts enable face-to-face and virtual collaboration among students (Tulley, 2011), suggesting that this tool is an alternative to traditional classes (Hall & Jones, 2023). The importance of student participation in podcast creation has been demonstrated. Students show greater interest and motivation when they are actively involved in their own learning process (Bureau et al., 2021; Lasser et al., 2010; O’Dowd, 2021; Reeve & Cheon, 2021), especially when they are given autonomy and opportunities for participation that foster a sense of belonging and responsibility for their own learning (Lassen et al., 2021; Sánchez-Élez et al., 2024), and when they are involved in authentic and collaborative tasks that connect with current contexts (Zhu et al., 2024). By learning to create these, they acquire a series of skills without the need for any prior experience, promoted by the trial-and-error strategy inherent in the flexibility of the tool (García-Marín, 2020).

Within this framework, the present study analyses how the use of podcasts as an active methodology in the Business and Entrepreneurship module of the intermediate vocational training course in Cooking and Gastronomy improves the skills necessary for entrepreneurship that form the pillars of digital entrepreneurship (Garcez et al., 2025). The research, carried out with 16 students from the Intermediate Vocational Training (TGM) course in cooking and gastronomy, evaluated factors such as entrepreneurial potential, knowledge of entrepreneurship, and personal initiative among the students. The results show an uneven impact on entrepreneurial potential, improving students’ business knowledge and personal initiative, as well as a concern among students about public speaking situations.

LITERATURE REVIEW

European Competences for the 21st Century

Since 2006, the European Union, with the Recommendation of the European Parliament and of the Council of 18 December 2006 has established eight key competencies that every person needs for personal fulfilment and development (Parliament Recommendation, 2006). Among these, digital competence and a sense of initiative and entrepreneurship, two interrelated skills, stand out as crucial.

Along the same lines, the Council Recommendation of 22 May 2018 on key competences for lifelong learning reinforces the improvement of these competences at all stages of education. This led to the 2013 European Digital Competence Framework for Citizens (DigComp), which defines the knowledge, skills, and attitudes of digital competence (Centeno and Herrero, 2023), and its 2017 extension, the European Framework for the Digital Competence of Educators (DigCompEdu). The aim is for teachers to take on an active role and develop their agency as reflective professionals (Boeskens et al., 2020).

Simultaneously, the EntreComp framework (2015) offers a common definition of entrepreneurship as acting on opportunities and ideas to generate financial, cultural, or social value (Bacigalupo et al., 2016; FFE-YE, 2012). This model structures entrepreneurship into three areas that directly reflect the definition given and 15 competencies, integrating both technical knowledge and personal skills, forming the pillars of digital academic entrepreneurship (Garcez et al., 2025).

At the national level, Organic Law 3/2022 of 31 March on the organisation and integration of vocational training introduced these concepts into the vocational training stage, with the objectives of promoting innovation, applied research, and entrepreneurship. To achieve these objectives, a combination of institutional leadership committed to active methodologies on the part of educational centres and teaching staff committed to innovation is necessary (García-Grau et al., 2022; Pila et al., 2020). This leads to the need to implement a TeMEP methodology that combines the acquisition of the skills by students within the curriculum established for vocational training.

Likewise, systematic studies group the skills necessary for entrepreneurship into those that make up entrepreneurial potential (Montaño-Sobrino et al., 2026), where communication acts as a cross-cutting axis that enhances leadership, creativity, problem-solving, and motivation to achieve, together with personal control (Bernal et al., 2021). Without effective communication, it is difficult for other entrepreneurial skills to reach their full operational potential, especially in collaborative and highly uncertain environments (Liñán et al., 2018). The psychological barriers faced by students, such as social anxiety due to fear of public speaking, are very limiting (Marinho et al., 2019) because they feel negatively judged by others and underestimate their own abilities (Takac et al., 2019). This has a negative impact on the development of skills such as self-efficacy, defined by Montesinos (Montesinos et al., 2025) as "people's perception of their performance capabilities", which in turn is related to effort, persistence, and academic success (Contreras et al., 2005; Van Dinther et al., 2011). All of these are directly related to the skills that comprise entrepreneurial potential.

The importance of communication in their future professional development is equally valued by students, who consider it essential for their training and professional future, as indicated in a study conducted by the Social Observatory of the "la Caixa" Foundation (2024). The study revealed that 75% of the participating students said they had gone blank during a presentation, and 52% had experienced an embarrassing and complicated situation. Anxiety is the main challenge they face, manifesting as physiological reactions when they have to communicate in front of an audience. They acknowledged that they had rarely received training on how to speak in public.

Technology as the key to acquiring entrepreneurial skills

The incorporation of technology into teaching and learning processes is a key strategy for the acquisition of digital and entrepreneurial skills as part of learning situations and their context (Romero et al., 2019) in vocational training. As established in the European DigComp and EntreComp frameworks, the development of transversal skills linked to the critical and creative use of ICT, as well as the ability to generate value through entrepreneurial initiatives, are essential for 21st-century students (European Commission, 2017, 2019).

In this regard, the importance of teachers must be highlighted. Colás-Bravo et al. (2019) emphasised that the digital competence process of students is directly mediated by teaching practices from a sociocultural approach, which shows that methodological innovation is inseparable from technological training.

The pedagogical uses of ICT described by Romero et al. (2019), which evolve according to how students use them, constitute a natural pathway for the simultaneous development of digital and entrepreneurial competencies. In particular, the creation and co-creation phases involve active work that fosters autonomy, problem solving, and student engagement, which are essential for the development of entrepreneurial potential.

In this context, educational podcasting is an ideal pedagogical tool for enhancing student learning. Its production requires a combination of technical (audio editing, feed programming, and social media management), communication (scriptwriting, voice-over, and storytelling), and management skills (planning, task coordination, and collaborative leadership) (García-Marín, 2020).

When proposed as a group activity in the Business and Entrepreneurship (EIE) course, podcasting becomes an interdisciplinary project in which students combine digital content production, teamwork, and effective communication, skills that are aligned with both entrepreneurial potential and the dimensions of EntreComp.

Furthermore, a systematic review of the use of podcasts in higher education shows positive effects on knowledge acquisition, group cohesion, and motivation (González et al., 2023) and the improvement of practical skills, provided that the teacher takes an active role in the design and implementation of these activities (O'Connor et al., 2020).

In light of the above, this study aims to determine whether the application of TeMEP with the use of podcasts improves the skills that make up the entrepreneurial potential of students and the acquisition of specific knowledge marked by the EIE module curriculum. It also aims to determine the impact of the use of this technology on students' communication skills and their perception of it.

METHODOLOGY

This study adopted a quasi-experimental pretest-posttest design with a single group, framed within a mixed-methods approach that integrated quantitative and qualitative evidence (i.e. open-ended questions). The integration of both types of data was carried out using a merging strategy in the joint interpretation phase, characteristic of triangulation or convergent design (Creswell, 2014; Creswell & Clarck, 2007; Morse, 2003; Tashakkori & Teddlie, 2010). Although this was not a classic observational study, the criteria of units of analysis, temporality, and dimensionality proposed by Anguera et al. (2018) were used as a reference to structure the qualitative corpus and link it to the quantitative results.

Participants

Given the size of the final sample, this study is best characterized as an exploratory pilot. The initial cohort comprised 16 students (6 males and 10 females), aged 16 to 51, enrolled in the second year of the Intermediate Vocational Training Program (TGM) in Cooking and Gastronomy at IES

Fray Bartolomé de las Casas in Morón de la Frontera (Seville, Spain), specifically within the Business and Entrepreneurship module.

The inclusion criteria were: (a) enrolment in the module, (b) regular attendance at face-to-face sessions, and (c) voluntary consent to participate in the research. Students with persistent absenteeism or who failed to complete all assessment instruments were excluded.

Following the post-test, the final sample consisted of 11 students (3 males and 8 females). This attrition was mainly due to prolonged absences during the workplace training period (external internships), which limited follow-up and made it difficult to monitor the intervention during its final phase. Despite this constraint, the exploratory design supports an initial validation of the TeMEP model in vocational education settings and provides useful qualitative and quantitative evidence to inform future research with larger samples.

Instruments

To carry out this study, previously validated instruments specifically designed to measure entrepreneurial potential, personal initiative among students, and the level of knowledge of different variables of entrepreneurship were used. All of them included a Likert-type questionnaire that assessed key variables related to the object of study, as well as a form to collect sociodemographic data.

- Entrepreneurial Potential Test (ATE-S) (Bernal et al., 2021).

This scale measures five dimensions (creativity, leadership, problem solving, motivation, and personal control) through 22 items measured on a scale of 1 to 5, with 1 being strongly disagree and 5 being strongly agree. For the study conducted, this instrument showed high consistency in both the pretest (α= 0.81) and postest (α= 0.90). The overall index is obtained by adding the scores for each dimension, with a score above 90 points considered to indicate high entrepreneurial potential. In addition to replicating the reliability reported in the original validation (α= 0.83 and explained variance 0.61%), descriptive analyses, non-parametric correlational analyses (Spearman), and Welch's t-tests were applied to compare the pre- and post-tests.

- Personal initiative assessment questionnaire (Gorostiaga et al., 2018).

This scale measures the dimensions that make up personal initiative according to the author (proactivity, self-initiation, and persistence) through 17 Likert-format items. The reliability was moderate, at 0.06 in the pretest and 0.65 in the postest. The calculated effect sizes (Hedges' g) were small (less than 0.5), indicating that personal initiative was minimally affected by the podcast methodology.

- Basic business knowledge scale (Bernal et al., 2021).

The business knowledge scale, composed of three subscales (management, legal, and strategic knowledge), consists of 18 Likert-type questions. In this study, the reliability of the scale was excellent, with a Cronbach's alpha of 0.91 in the pretest and 0.94 in the postest. Substantial improvements were observed in all dimensions after the interventions.

- Sociodemographic data were collected.

At the beginning of the test, participants were asked for information about their access to the studies they were pursuing, their parents' employment status, age, and gender. In addition, in the post-test, data were collected on the participants' impressions of the use of podcasts in the module and their impact.

The instruments were administered in a single file accessible via QR code and link, making it easy for students to access them through their mobile phones. As the group was in a classroom, it was possible to collect information quickly and answer any questions that might arise during the completion of the instrument.

Procedure

The study was conducted with the prior authorisation of the school management and the informed consent of the participants, ensuring the voluntary, anonymous, and confidential nature of their participation. The instruments were administered in digital form during face-to-face sessions in September 2024 (pre-test) and March 2025 (post-test). The estimated completion time was 12–15 minutes.

Between the two assessment phases, an educational intervention centred on podcast production was implemented, designed within the TeMEP model framework. The activity aimed not only to support the acquisition of curricular content but also to function as an active, co-creative process that promoted student autonomy and engagement. To enhance replicability, the intervention was structured into four key phases (see Table 1), integrating technical, communication, and management skills.

Table 1. Phases of the educational podcasting project under the TeMEP model

PHASES	DESCRIPTION AND SKILLS INVOLVED
PLANNING AND MANAGEMENT	Collaborative coordination and task leadership. Students define roles and objectives for the episode.
SCRIPTWRITING	Development of communication and storytelling skills. This involves researching business content and transposing it into an audio script.
RECORDING AND VOICE-OVER	Active creation phase where public speaking and managing anxiety in front of the microphone to the test.
EDITING AND POST-PRODUCTION	Technical use of digital tools for audio editing, feed programming and social media management.

The data were processed using SPSS software (version 29). Descriptive statistics were calculated for all scales and subscales, Spearman correlations between dimensions were calculated, and Welch's t-tests for independent samples were applied to compare both tests. The internal consistency of each scale was assessed using Cronbach's alpha coefficient, and effect sizes (Hedges' g) were calculated from the means and standard deviations to estimate the magnitude of the changes.

Qualitative data were examined using content analysis with inductive thematic coding. To strengthen consistency and reliability, the same researcher conducted two coding rounds at different points in time (intra-rater reliability). The resulting themes were then compared with the quantitative findings, and both datasets were integrated during the interpretative phase through convergent triangulation to identify points of convergence and divergence between qualitative and quantitative evidence.

RESULTS

Entrepreneurial Potential and Personal Initiative

A study was conducted on the variables that make up the concept under study, such as creativity, motivation, leadership, problem solving, and personal control. The means and standard deviations for each dimension were studied, and the results are shown in Table 2.

Table 2. Statistics for the variables that constitute entrepreneurial potential.

DIMENSION	PRE-TEST MEAN	DEVIATION	POST-TEST MEAN	DEVIATION	G_HEDGES
CREATIVITY	14.45	1.14	17.18	2.13	1.44
LEADERSHIP	15.63	2.97	16	2.68	0.12
PROBLEM SOLVING	16.72	2.96	16.9	2.74	0.06
MOTIVATION	22.36	3.07	17.54	2.01	-1.78
PERSONAL CONTROL	19.27	2.19	19.18	3.74	-0.028

Note: This table shows the variation between the pre- and post-tests, focusing on the variables that make up entrepreneurial potential.

Based on these results, the following changes were observed for each variable:

- Creativity: An increase in the means studied was observed. The standardised effect size was large (g_n=1.44) and significantly different (p= 0.003). This indicates that the activity encouraged the generation of ideas and innovation.
- Leadership: More moderate increases were observed (pre-mean = 3.6; post-mean = 4.1), with a medium effect size (g_n= 0.40). This improvement points to greater comfort when working in teams and making decisions.
- Problem solving: The change was positive but small (pre-test mean = 4.0; post-test mean = 4.4), with a small to medium effect size (g_n= 0.50). This suggests that the dynamics used helped to address practical challenges, although the margin for improvement was smaller because this dimension was already at a high level.
- Motivation: A small decrease was observed in this variable (pre-test = 4.2; post-test = 3.8). The effect size was negative and large (g_n= -1.78), with significant differences (p < 0.001). This reflects a possible decline in student motivation or that they found the methodology to be less motivating than expected.
- Personal control: A slight difference was also observed, with an effect size close to zero. No statistically significant changes were observed.

Overall, uneven effects were observed for ATE-S. Notable changes were observed in some variables and insignificant or negative changes in others. Therefore, it cannot be said that total entrepreneurial potential increased significantly, and specific changes must be made to the methodology to accommodate improvements in the other variables that were not positively affected by the podcast method used.

General, there was a small global increase (g=0.13) that did not reach significance (p=0.76). The scale as a whole showed a marginal improvement, although there were significant improvements in variables such as self-initiation and proactivity. Persistence was the variable that showed the worst result, with a slight decrease compared to the pre-test.

Table 3. Statistics for the variables that comprise personal initiative

SUBSCALE	PRETEST MEAN	DEVIATION	POST-TEST MEAN	DEVIATION	G_HEDGES
PROACTIVITY	31.18	5.528	33.81	5	0.117246521
AUTOSTART	16.81	3.945	19	5	0.426372151
PERSISTENCE	15	3.949	14	5	-0.242496437
TOTAL	65	10.3	66	12	0.126824639

Note: This table shows the variation between the pre- and post-tests, focusing on the variables that make up personal initiative.

Business knowledge

There was a notable increase in the means, and the effect sizes (Hedges' g) were large in all sub-dimensions.

- Legal knowledge: The mean increased from 13.0 to 22.7 points. The effect size was very large (g=2,62), and Welch's t-test showed a highly significant difference ($p < 0.001$).
- Strategic knowledge: increased from 17.7 to 25.2 points, with a large effect (g=1.25) and a significant improvement (p=0.003).
- Management: the average increased from 18.8 to 29.09 points; effect size, g=1.68 (p=0.006).

Table 4. Statistics for the variables that comprise business knowledge.

DIMENSION/ TOTAL	PRE-MEAN	PRE-TEST STANDARD DEVIATION	POST-TEST MEAN	POST STANDARD DEVIATION	HEDGES G
MANAGEMENT	18.8181	6.630508002	29.09090909	5.048852255	1.677014897
LEGAL	13	3.376388603	22.72727273	3.744086246	2.62494586
STRATEGIC	17.72727273	5.763521651	25.18181818	5.723952862	1.248563189
TOTAL KNOWLEDGE	49.54545455	15.03571506	77.0	13.93556601	1.822007467

Note: This table shows the variation between the pre- and post-tests, focusing on the variables that make up Business Knowledge.

In the final measurement, all the key dimensions were strongly related to each other. The total ATE score had a high positive correlation with total personal initiative (r=0.75) and a moderate correlation with business knowledge (r=0.63). Notably, personal initiative and entrepreneurial knowledge showed a very high correlation (r=0.83). This indicates that, at the end of the course, those students who gained the most knowledge were generally the same ones who developed stronger attitudes and initiatives. In particular, the sub-dimension "proactivity" has a close link with both total initiative (as is logical, r=0.88) and level of knowledge (r=0.83). In other words, the most proactive students tended to learn more business content.

It is interesting to note that the pretest showed weaker or even negative associations between dimensions.

Qualitative analysis of open-ended responses

The post-test questionnaire included several open-ended questions to gather students' opinions and feelings about the activity. The main themes that emerged from these open-ended questions are summarised below:

Entrepreneurial skills were perceived as the most important. When asked, "Once the course is over, what skills do you think are most important when starting a business? In general, all responses recognised multiple crucial skills such as creativity, communication, initiative, and responsibility. Older students tended to give more elaborate and complete answers (listing several skills simultaneously), while some younger students gave very brief or generic answers ("Everything", "Learning and enjoying").

Older students highlighted the importance of "*initiative, communication skills, and decisiveness in the face of adversity*" and "*responsibility, passion for what you do, and patience*," while others emphasized the need to "*innovate and stand out*."

Impact of podcasting on skills improvement. When asked, "Do you think that podcasting has improved any of these skills? Justify your answer," the unanimous response was affirmative. All

the students answered yes. This is in line with the objectives set and explains why the correlations show that proactivity and initiative are linked to knowledge acquisition.

The students justified this improvement by pointing out that with the podcast "*they feel less afraid and speak more fluently*" and that creating the content "*has made it easier to take the exam and study*"

Importance of communication skills in the classroom. When asked, "Do you consider it important to improve communication skills in the classroom? Justifying their answer," most students recognised the importance of communication and were in favour of continuing to reinforce it, while a minority thought that what had been done in the course was sufficient. Notably, the three men advocated for improved communication, whereas there was more diversity of opinion among the women. This could indicate that men were more aware of their communication shortcomings and therefore wanted more (in fact, quantitatively they had lower attitudes and reported greater nervousness), while women did not see it as so urgent to insist.

Feelings about public speaking: When asked, "How do you feel before giving a presentation or speaking in public?" The most common responses were nervousness, insecurity, confidence, and excitement, respectively. Stage fright emerges in expressions such as "*very nervous*" or "*nervous and embarrassed*," and some students even remarked that "*when you go on stage, you die of nerves.*" Nonetheless, resilience also appeared in comments like "I'm not good at it, but I try my best."

DISCUSSION

The data show that podcast production is associated with notable improvements in business knowledge and a marked increase in creativity, with small changes in leadership and problem-solving, stability in personal control, and a decrease in achievement motivation. This pattern is consistent with the idea that digital tasks at higher levels of pedagogical use (creation and co-creation) promote deeper learning and transfer, as opposed to passive/interactive consumption (Romero et al., 2019). This helps explain why the shift towards content creation (podcasts) translates into more knowledge and creativity, although motivation may suffer if it is not supported by a didactic design that transcends the "novelty effect" of technology (Hew, 2009).

In terms of entrepreneurial potential, the ATE-S conceptualises dimensions susceptible to development (creativity, achievement, leadership, personal control, and problem solving), providing a valid framework for interpreting educational changes in adolescents and young people (Bernal-Guerrero et al., 2021). The improvement in creativity and entrepreneurial knowledge coincides with the attitudinal domains promoted by the PEIEO Program (Cárdenas-Gutiérrez et al., 2023), where the dimensions presented are conceived as formative axes of entrepreneurial potential. However, the stability of personal control and the decline in motivation observed confirm what is stated in this program: the full development of this potential requires prolonged, experiential, and continuous educational processes that transcend specific interventions, favouring the sustained construction of entrepreneurial identity.

Unlike Narváez-Pinango et al. (2024), our study observed a decline in student motivation in the use of ICT. This is explained in studies such as those analysed by Hew (2009), who warned that short-term studies tend to be influenced by the novelty effect of the technology used, with motivation declining as its use becomes more commonplace. Similarly, Romero et al. (2019) stated that the initial motivation linked to technological innovation is exhausted if it is not accompanied by activities that lead to a deep understanding and problem solving in a learning community. Integrating participatory co-creation and greater formative feedback could mitigate this motivational decline.

The post-test correlations reinforce the pedagogical interpretation: those who learned the most (knowledge) exhibited the greatest initiative, especially proactivity (r=.83). This link between learning and action coincides with the findings of Gielnik et al. (2015), who highlighted that planning and decision-making are key mechanisms for activating initiatives in entrepreneurial contexts. Similarly, Boubker et al. (2022) show that action-oriented pedagogical designs favour consolidating entrepreneurial knowledge and attitudes.

With regard to oral communication, participants' testimonies confirmed the prevalence of anxiety before public speaking, a finding documented in the Spanish university population (García et al., 2015). According to the results obtained, strengthening communicative self-efficacy is a useful vector for improving academic and communication performance. Therefore, the podcast should be complemented with specific training in oral presentation and physiological activation management skills.

Finally, the experience supports the consideration of technology as a pedagogical mediator, where the role of the teacher, in line with DigCompEdu, is decisive in orchestrating creation and co-creation tasks that simultaneously develop digital and entrepreneurial skills (Colás-Bravo et al., 2019).

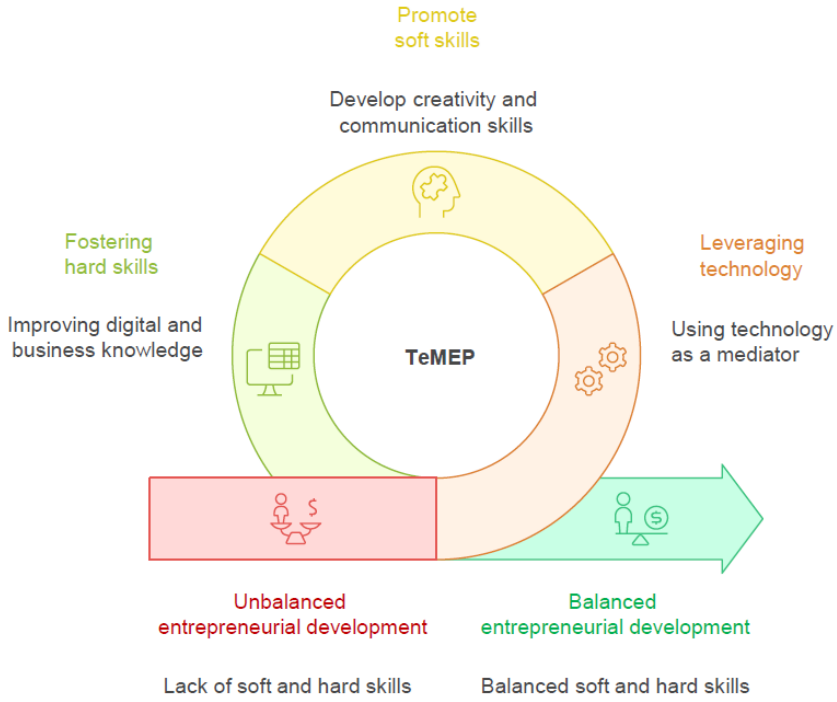
CONCLUSIONS

This study agrees with the results of Avalos (20122), who found that podcasts significantly improved students' skills overall as a teaching strategy in vocational training. These findings confirm that digital technology, when geared towards content creation and co-creation, becomes a driver of active, autonomous, and meaningful learning (Romero et al., 2019).

The results also revealed the persistence of difficulties in oral communication and stage fright, which have multiple causes (Olivares & Caballo, 2003) that are difficult to resolve in a single module if they have not been worked on previously. Therefore, the implementation of podcasts at earlier stages and in various modules could improve the difficulties encountered by students (Hancock et al., 2010). Thus, the integration of digital methodologies should be considered as part of a broad pedagogical ecosystem.

In this context, the concept of Technology as a Mediator of Entrepreneurial Potential (TeMEP) is introduced as an original contribution of this study. The concept is defined as a pedagogical approach in which technology acts as an integral mediator of entrepreneurial development, promoting both soft skills (creativity, communication, leadership, resilience, and motivation) and hard skills (digital skills, business knowledge, business management, and problem solving) in a balanced way. From this perspective, technology is conceived as a didactic mediation device that connects conceptual and technical learning with the personal and social development of students, promoting knowledge and entrepreneurial skills (Figure 1).

Figure 1. *TeMEP conceptual model (Technology as a Mediator of Entrepreneurial Potential)*



Note: Prepared by the author based on the study results.

Therefore, for the TeMEP model to be fully effective, technological mediation alone is insufficient. The pedagogical design must include cross-cutting public speaking modules that prepare students emotionally and technically before media exposure, supporting the comprehensive development of their entrepreneurial identity.

In terms of methodological limitations, the small sample size, single-group pre-post design, and loss of participants in the post-test limit the generalisation of the results. Future studies should include larger samples, control groups, and longitudinal follow-ups, as well as explore the role of moderating variables such as initial proactivity or communicative self-efficacy.

In conclusion, this study provides evidence that podcasts designed within the TeMEP framework are an effective pedagogical tool for entrepreneurial development in vocational education. Their value lies in their ability to articulate technical and social skills, placing students in scenarios of creation and collaboration, where technology becomes a mediating bridge between knowledge, action, and entrepreneurial identity.

REFERENCES

Arenas, A., Aguaded, I., & Sandoval, Y. (2021). Media literacy among university professors in Colombia. *Journal of Social Sciences, 27*(3), 272-286. https://www.redalyc.org/articulo.oa?id=28068740017

Avalos, B. (2011). Teacher professional development in Teaching and Teacher Education over ten years. *Teaching and Teacher Education* , 27(1), 10-20. https://doi.org/10.1016/j.tate.2010.08.007

Bacigalupo, M., Kampylis, P., Punie, Y., & Van den Brande, G. (2016). EntreComp: The Entrepreneurship Competence Framework. Publication Office of the European Union. https://data.europa.eu/doi/10.2791/160811

Bernal Guerrero, A., Cárdenas Gutiérrez, A.R., & Athayde, R. (2021). Entrepreneurial Potential Test: Adaptation to Spanish (ATE-S). *Bordon-Revista de pedagogía*, 73 (1), 19-37. https://doi.org/10.13042/Bordon.2021.71417

Boeskens, L., D. Nusche, & M. Yurita (2020), "Policies to support teachers' continuing professional learning: A conceptual framework and mapping of OECD data", *OECD Education Working Papers*, No. 235, OECD Publishing. https://doi.org/10.1787/247b7c4d-en .

Bureau, J. S., Howard, J. L., Chong, J. X. Y., & Guay, F. (2021). Pathways to Student Motivation: A Meta-Analysis of Antecedents of Autonomous and Controlled Motivations. *Review of Educational Research*, *92*(1), 46-72. https://doi.org/10.3102/00346543211042426

Cárdenas Gutiérrez, A.R., Bernal Guerrero, A. & Montoro Fernández, E. (2021). Construction and validation of the Basic Scale of Entrepreneurial Competencies for the Secondary Education level. A study conducted in Spain. *Plos One,* 16 (4), 0249903/1-21. https://doi.org/10.1371/journal.pone.0249903

Cárdenas-Gutiérrez, A.R., Martín-Gutiérrez, A., & Montoro-Fernández, E. (2023). *Educational programme for the development of entrepreneurial potential in adolescents: PEIEO*. Ediciones Aljibe.

Cavanagh, T. M., Leeds, C., & Peters, J. M. (2019). Increasing oral communication self-efficacy improves oral communication and general academic performance. *Business and Professional Communication Quarterly, 82*(4), 440–457. https://doi.org/10.1177/2329490619853242

Centeno Mediavilla, C., & Herrero Rámila, C. (2023, March). *The contribution of the European framework for digital competences for citizens – DigComp – to the development of digital competences. Cuadernos del Mercado de Trabajo*, (9). State Public Employment Service. https://bit.ly/3W2Oy9i

Cheung, C. M. K., Chiu, P., & Lee, M. K. O. (2011). Online social networks: Why do students use Facebook? *Computers in Human Behaviour, 27*(4), 1337-1343. https://doi.org/10.1016/j.chb.2010.07.028

Chiu, P. Y., Cheung C. M. K., & Lee, M. K. O. (2008). Online social networks: Why do 'we' use Facebook? *Communications in Computer & Information Science*, 19, 67–74. https://doi.org/10.1016/j.chb.2010.07.028

Colás-Bravo, P. C., Conde-Jiménez, J., & Reyes-de-Cózar, S. (2019). The development of digital teaching competence from a sociocultural perspective. *Comunicar*, *27*(61), 1–14. https://doi.org/10.3916/C61-2019- 02

Contreras, F., Espinosa, J.C., Esguerra, G., Haikal, A., & Todríguez, Al. (2005). Self-efficacy, anxiety, and academic performance in teenagers. *Diversitas; Perspectives in Psychology, 1* 2), 183-194. https://bit.ly/4q6MhYx

Euprapress Cultura. (7 October 2024). *Podcast consumption in Spain has increased by more than 30% in the last year, according to Spotify*. Europapress. https://bit.ly/4oaHJyq

FFE-YE. (2012). Impact of Entrepreneurship Education in Denmark - 2011. In L. Vestergaard, K. Moberg, & C. Jørgensen (Eds.). Odense: The Danish Foundation for Entrepreneurship - Young Enterprise. https://bit.ly/42CGnnW

Fundación "la Caixa", Observatorio Social (2024). *Oral communication training remains a pending subject among university students.* El Observatorio Social. https://bit.ly/4qpGzRR

Garcez, A., Mário Franco, M., & Silva, R. (2025). The influence of the pillars of digital academic entrepreneurship on university students' entrepreneurial intention. *European Journal of Innovation Management, 28* (2), 210–234. https://doi.org/10.1108/EJIM-01-2023-0051

García Aretio, L. (2020). Semantic Forest: Distance, Virtual, Online, Digital, eLearning Education/Teaching/Learning...? RIED. *Revista Iberoamericana de Educación a Distancia*, *23*(1), 9-28. https://doi.org/10.5944/ried.23.1.25495

García Grau, F., Valls Bautista, C., & Lázaro Cantabrana, J. L. (2022). Strategies for the Digital Transformation of an Educational Centre: A Systematic Review. *RiiTE Interuniversity Journal of Educational Technology Research*, 157–172. https://doi.org/10.6018/riite.533971

García-Marín, D. (2020). The Spanish podcast world as a non-formal learning community. Educational communication skills and strategies developed by independent podcasters. *Fonseca, Journal of Communication*, (20), 201–220. Retrieved from https://revistas.usal.es/cuatro/index.php/2172-9077/article/view/fjc202020201220

González Enríquez, I., Cutuli, M. S., & Mancha-Cáceres, O. I. (2023). Enhancing Collaborative Learning in Higher Education through Podcast Production: An Experiential Approach with Anthropology and Tourism Students. *Education Sciences*, *13*(9), 898. https://doi.org/10.3390/educsci13090898

Gorostiaga, A., Balluerka, N., Ulacia, I., & Aliri, J. (2018). Assessment of Personal Initiative in the Educational Field and its Relationship with Entrepreneurial Attitude and Academic Performance. *Revista Iberoamericana de Diagnóstico y Evaluación Psicológica*, 48(3). https://bit.ly/47565ma

Hall, N. M., & Jones, J. M. (2021). Student-Produced Podcasts as a Teaching and Learning Tool. *American Journal of Distance Education*, 37(1), 53–65. https://doi.org/10.1080/08923647.2021.1995256

Hancock, A. B., Stone, M. D., Brundange, S. B., & Zeigler, M. T (2010). Public speaking attitudes: does curriculum make a difference? *Journal of Voice, 24,* 302-307. https://doi.org/10.1016/j.jvoice.2008.09.007

Hew, K. F. (2009). Use of audio podcast in K-12 and higher education: A review of research topics and methodologies. *Educational Technology Research and Development, 57*(3), 333–357. https://doi.org/10.1007/s11423-008-9108-3

Laaser, W., Liliana Jaskilioff, S., & Rodríguez Becker, L. C. (2010). Podcasting: A New Medium for Distance Education? *Revista de Educación a Distancia (RED)*, (23). Retrieved from https://revistas.um.es/red/article/view/111681

Lassen, I., Arielle-Evans, A., Ríos, L., Lewandowski, H., & Dounas-Frazer, D. (2021, 4–5 August). *Student ownership and understanding of multi-week final projects*. Paper presented at Physics Education Research Conference 2021, Virtual Conference. Retrieved 8 August 2025, from https://bit.ly/491gv97

Liñán, F., Ceresia, F., & Bernal, A. (2018). Who Intends to Enrol in Entrepreneurship Education? Entrepreneurial Self-Identity as a Precursor. *Entrepreneurship Education and Pedagogy*, *1*(3), 222-242. https://doi.org/10.1177/2515127418780491

Marinho, A. C. F., Medeiros, A. M. D., Lima, E. D. P., Pantuza, J. J., & Teixeira, L. C. (2019). Prevalence and factors associated with fear of public speaking. *CoDAS, 31,* 6. https://doi.org/10.1590/2317-1782/20192018266

Martín-Albo, J., Núñez, J.L., & Navarro, J (2009). Validation of the Spanish Version of the Situational Motivation Scale (EMSI) in the Educational Context. *The Spanish Journal of Psychology, 12*(2), pp. 799-807, Complutense University of Madrid, Spain. https://bit.ly/4n3IN6e

Montaño-Sobrino, A. M., Conde-Jiménez, J., & Martín-Gutiérrez, A. (2026). Entrepreneurship and technological mediation in vocational training. A systematic review. *European Public & Social Innovation Review*, 11, 1–19. https://doi.org/10.31637/epsir-2026-1965

Montesinos, F., Polín, E., García-Pardina, A., Calderón-Pozo, C. Rodríguez-Rey, & R. Lobato, D. (2025). Self-efficacy and fear of public speaking questionnaire: psychometric properties in a sample of Spanish-speaking university students. *Current Psychology,* 44, 13661–13673. https://doi.org/10.1007/s12144-025-08135-w

Narváez-Pinango, M., Pozo-Revelo, D., & Álvarez-Tinajero, N. (2024). The impact of technological tools on mathematics learning. *Revista Ecos De La Academia*, *10*(19), e983, 1-15. https://doi.org/10.53358/ecosacademia.v10i19.983

O'Connor, S., Daly, C.S., MacArthur, J., Borglin, G., Richard G., & Booth, R. (2020). Podcasting in nursing and midwifery education: An integrative review, *Nurse Education in Practice*, 47, https://doi.org/10.1016/j.nepr.2020.102827 .

O'Dowd, R. (2021). What do students learn in virtual exchange? A qualitative content analysis of learning outcomes across multiple exchanges. *International Journal of Educational Research* . 109, 101804. https://doi.org/10.1016/j.ijer.2021.101804

Olivares, J. & Caballo, V. E. (2003). A tentative model of the genesis, development, and maintenance of social phobia. *Behavioural Psychology*, *11*, 483–515. https://bit.ly/42C0hPZ

Omar Boubker, O., Naoui, K., & Ouajdouni, A. (2022). The effect of action-based entrepreneurship education on intention to become an entrepreneur. *MethodsX, 9,* 101657. https://doi.org/10.1016/j.mex.2022.101657

Organic Law 3/2020, of 29 December, amending Organic Law 2/2006, of 3 May, on Education. Official State Gazette, 340 of 30 December 2020. https://www.boe.es/eli/es/lo/2020/12/29/3/con

Organic Law 3/2022, of 31 March, on the organisation and integration of vocational training. Official State Gazette, 78, of 1 April 2022. https://www.boe.es/eli/es/lo/2022/03/31/3/con

Organic Law 8/2013, of 9 December, on improving educational quality. Official State Gazette, 295, of 10 December 2013. https://www.boe.es/eli/es/lo/2013/12/09/8

Orús, A. (27 June 2024). *The podcast industry in Spain - Statistical data.* Statista. https://bit.ly/476xO6b

Paredes-Chacín, A. J., Inciarte, A., & Walles-Peñaloza, D. (2020). Higher education and research in Latin America: Transition to the use of digital technologies due to Covid-19. *Revista de Ciencias Sociales*, *26*(3), 98-117. https://www.redalyc.org/journal/280/28063519014/

Pila, J. C., Andagoya, W. G., & Fuertes, M. E. (2020). Teachers: A key factor in educational innovation. *Revista Educare*, *24*(2), 212-232. https://doi.org/10.46498/reduipb.v24i2.1327

Ramallo, M. (8 January 2025). *The rise of podcasting in 2025*. Tilde Comunicación. Retrieved from https://tildecomunicacion.com/el-auge-del-podcasting-en-2025/

Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning. https://www.boe.es/buscar/doc.php?id=DOUE-L-2006-82748

Redecker, C. & Punie, Y. (2017). Learning 2.0-The impact of social media on learning in Europe. *Policy brief. JRC Scientific and Technical Report. EUR JRC56958 EN.* Retrieved from https://publications.jrc.ec.europa.eu/repository/handle/JRC65589

Reeve, J., & Cheon, S. H. (2021). Autonomy-supportive teaching: Its malleability, benefits, and potential to improve educational practice. *Educational Psychologist*, *56*(1), 54–77. https://doi.org/10.1080/00461520.2020.1862657

Reis, T. A. (2018). Study on The Alpha Generation and The Reflections of Its Behaviour in the Organisational Environment. *Journal of Research in Humanities and Social Science*, 6(1), 9–19. http://questjournals.org/jrhss/papers/vol6-issue1/C610919.pdf

Romero, M., Laferrière, T., Hernández, L., & Patiño, A. (2019). Pedagogical uses of ICT according to the creative activity of the student. *Edutech Review International Education Technologies Review*, 6(1), 45–50. https://doi.org/10.37467/gka- revedutech.v6.1618

Sánchez-Elez, M., Pardines, I., García, P., Miñana, G., Román, S., Sánchez, M., & Risco, J.L. (2024). Enhancing students' learning process through self-generated tests. *Journal of Science Education and Technology*, *23*(1), 15-25. https://doi.org/10.1007/s10956-013-9447-7

Siemens, G., & Weller, M. (2011). The impact of social media on teaching and learning. *Journal of University and Knowledge Society (RUSC), 8*(1), 157-163. https://bit.ly/4n0ljyY

Soly, N., Benny, K., & Thomas, M.R. (2021). Technological perspectives of education for generation Z and generation Alpha. *Utkal Historical Research Journal*, *34*(3), 153–169. https://bit.ly/491iESd

Takac, M., Collet, J., Blom, K. J., Conduit, R., Rehm, I., & De Foe, A. (2019). Public speaking anxiety decreases within repeated virtual reality training sessions. *Plos One*, *14*(5), 1–17. https://doi.org/10.1371/journal.pone.0216288

Tulley, C. (2011). The rise of the podcast. *Journal of Business and Technical Communication*, *25*(3), 256–275. https://doi.org/10.1177/1050651911400702

Van Dinther, M., Dochy, F., & Segers, M. (2011). Factors affecting student self-efficacy in higher education. *Educational Research Review*, *6*(2), 95–108. https://doi.org/10.1016/j.edurev.2010.10.003

Verano, D., & Bolívar, A. (2015). *Public speaking confidence among college students*. XXIX AEDEM Annual Meeting. https://bit.ly/3ILjQyC

Zhu, Y., Abidi, L., Savelberg, H., Köhler, S. E., Kusurkar, R. A., & Dolmans, D. (2024). Fostering university students' autonomous motivation through a societal impact project: a qualitative study of students' and teachers' perspectives. *BMC Medical Education*, *24*(1), 1503. https://doi.org/10.1186/s12909-024-06494-9