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Podcasts' effects on the EFL classroom: a socially relevant intervention

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Abstract

ICT tools have gained particular importance in the English as a foreign language classroom in order to promote students' interaction, exchange of opinions, negotiation of meaning, or digital competence. Technological development and the impact of multimedia and virtual spaces on students' lives make educational institutions and teachers explore new tools and strategies to learn the target language. Podcasts present content available on the Internet and can become an influential teaching strategy that may improve the teaching–learning process of EFL. This study aims to investigate the effect of audio podcasts, which deal with social inequality issues, on secondary education students' EFL linguistic competence. A sample of seventy-eight students was randomly distributed into a control and an experimental group during a term in a high school in Madrid (Spain). As instruments for data collection, the grades obtained in the different skills in the pre and post-tests and the different task performance scores were analysed in both groups. The methodological framework is defined as a quasi-experimental design that provides quantitative data. The results confirm the hypothesis that the creation and use of podcasts are beneficial for improving EFL linguistic competence, especially speaking and listening skills. Practical implications aimed at organising English classes to improve EFL proficiency are discussed.

Keywords: Podcasts, English as a foreign language, Linguistic competence, Educational innovation, ICT

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Graphical abstract

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Introduction

Teaching and learning English has become a necessity since English is, without doubt, the lingua franca (Jenkins, 2009) in the world, the communicative vehicle of business, trade, research, science, technology, and education. English is the most common first foreign language learnt in Spain (98.5% of students in Elementary school and 97.7% of Secondary Education students according to the Ministry of Education and Vocational

Training (2016)), but its learning and use are focused on the in-class activities despite the wide range of activities that can be performed outside the class, such as watching movies or TV series through streaming platforms (e.g., Netflix, HBO Max, Disney +, Amazon Prime, Apple TV, Filmin), watching theatre plays in the original version or using English when playing videogames. Oral skills seem to be the least developed by Spanish students due to the high average rate of students per classroom (thirty-six in high secondary education according to the Ministry of Education, 2013), which substantially hinders group activities designed to develop communication skills (Rodríguez-Pérez, 2012).

With this scenario, technological tools seem to have become the driving force in many educational institutions (Yugsán-Gómez et al., 2019), especially audio-visual devices (Kay, 2012), and they will be soon incorporated in almost every component of all educational institutions. Information and Communication Technologies (hereafter, ICT) can be appropriately used in education to ease, simplify learning, and improve learners' performance (Richey, 2008). Using ICT tools in the classroom affects the way of teaching and helps to expand and build up knowledge and skills, which may affect students' learning (Nielsen et al., 2020). They are transforming the means we experience, communicate, and learn due to the rapid improvement of devices (Gómez et al., 2015). For Sambell and Brown (2020), how ICT is pedagogically implemented is relevant to students' learning and academic performance. Students must master ICT tools to develop their digital competence and be sufficiently prepared for modern global society (Daniel, 2002). According to the Organisation for Economic Cooperation and Development (2005), ICT should be used: (i) to train students in skills in their learning process that will be needed in their future professional careers, (ii) to provide access to information and communication outside the classroom, (iii) to support the individual development via an external network, and iv) to support and transform the learning and teaching process. In this line of ICT implementation in classrooms, this research focuses on a technological tool such as podcasts in the English as a foreign language (hereafter, EFL) classroom.

Several reviews on the application of podcasts in education provide positive benefits in learning (oral language) and motivation toward EFL (Indahsari, 2020; Son, 2018; Zou et al., 2018). In this sense, using podcasts could be considered a possible alternative and efficient educational innovation in EFL teaching-learning in classrooms. Hence, in this research, we have used podcasts in a didactic proposal in a face-to-face secondary education context. Simultaneously, immersed in the context of the Sustainable Development Goals (SDG) of the 2030 Agenda and with heterogeneous students' classrooms working together, the social awareness content of SDG 10 of the 2030 Agenda is selected for the didactic proposal. Al Sheef and Althobaiti (2019) indicated that podcasts helped when working on culture, values, and history. In this direction of educational innovation, no similar research that uses podcasts with social awareness content in EFL and combines oral language and written language tests has been found. It motivates us to address this need, and we propose novel research on the didactic implementation of podcasts with social content and compare oral and written language tests in EFL in face-to-face secondary education. Accordingly, the following question arises: Do podcasts improve students' EFL linguistic competence? The empirical research results may suggest implications that constitute opportunities for EFL teaching and learning.

Literature review

The following sections present a brief review of the scientific literature on podcasting, previous work on podcasting in EFL, and the purpose of the research.

Podcasts as an educational resource

The term “podcast” is the blending of two words: “iPod” and “broadcast” (Rosell-Aguilar, 2007). Nonetheless, an iPod is not imperative since all that is needed is a computer with speakers or a device that can play digital audio files. Hence, Collier-Reed et al. (2013) described podcasts as internet-based broadcasting of audio or video files; They refer to the digital content that can be downloaded through compressed data online or Really Simple Syndication (RSS) (Escobar, 2018). For Lazzari (2009), podcasting is a way of diffusing any digital media file (since it can contain texts, images, and videos on particular subjects or ideas) over the Internet for playback on portable media players; Podcasts have become very popular due to their increasing availability of free software and tools to create podcasts (Edirisingha et al., 2007) and the rapid expansion of broadband and permanent access to the Internet in mobile devices such as smartphones or tablets (Yug-sán-Gómez et al., 2019). Although its use in education has not been very standardised yet, Stelzner (2018) highlighted the interest of the public in this format and the increase of 25% in marketing campaigns. For Nwosu et al. (2017), it is a tool that allows the development and distribution of educational content. To use podcasts, students need to be familiarised with their functioning and have suitable technical equipment. A podcast can be about every field of interest, so students find, in this learner-centered resource, a tool that fosters their autonomy and which can be about their interests and needs (Anusienė & Kavaliauskienė, 2009). Also, taking into account the cognitive development of secondary education students and the fact that they lose concentration and attention after a five-minute span (Singh, 2017), podcasts may be a suitable and efficient tool to work on linguistic skills, above all, the oral ones, in the EFL classroom. In addition, podcasts have become valuable resources because of their portability and time-shifting condition (Fox, 2008). The ubiquitous and self-paced learning they provide make them an extraordinary and motivating resource that can be used inside and outside formal teaching scenarios and adapted to every learner’s needs. They may increase students’ control over their learning, can be used for different educational purposes, and deepen student understanding (McGarr, 2009). According to Al Sheef and Althobaiti (2019), there are four types of podcasts: (i) audio podcasts, often in an MP3 format with a relatively small file size and easy to produce, (ii) vodcasts or video podcasts, which include video and audio contents, (iii) enhanced podcasts, often in an MP4 format which are a combination of audio podcasts with synced images, URL links to websites and chapter markers, and (iv) screencasts, which is a digital recording of computer screen output with audio narration.

Podcasts have a novel format and are an advantage over other educational tools (López, 2019) and can be used either to listen to or to be created by students, or for both purposes. When being created by students, they need to work in cooperative groups so that students enforce their team-building skills and sense of belonging to a community (Al Fadda & Al Qasim, 2013; Lonn & Teasley, 2009). They can become assessment

process-performance tasks (Clark et al., 2009; Johassen & Hung, 2008) and provide more suitable learning opportunities for students with visual disabilities (Yugsán-Gómez et al., 2019). They can also work well when adding visual support such as slides, images, or subtitles for hearing-impaired students. Thus, the podcast becomes a vodcast and can make the podcast accessible to the community when we are able to anticipate these barriers in advance (Escobar, 2018).

Previous research

Podcasts have proven to provide successful language learning outcomes within a constructivist pedagogical framework, which insists on the essential role of social interaction in cognitive development (Vygotsky, 1978), through which students build their knowledge through interaction with their teacher and peers. Podcasts have also been associated with multiple-intelligences theory (Gardner, 1994) since Ralph and Olsen (2013) argued that they could provide more appropriate support for auditory learners. When enhanced with videos or links, it supports visual intelligence too. For Reyna and Meier (2018), using student-created podcasts is still at an early stage, but over time will increase in use. Through podcasts, two linguistic skills are mainly developed: listening and speaking. When listening to already-made podcasts, students develop their listening comprehension, which includes processes involved in interpreting the sense of the language by recognising the speech sound and understanding the meaning of words or the syntax of sentences (Nadig, 2013). It requires a complex cognitive psychological process in which attention, perception, language use, memory, problem-solving, creativity, and thinking occur (Al Sheef & Althobaiti, 2019). It is an interactive process where linguistic and world knowledge interact when listeners interpret the mental representation they can make when they listen to something (Brown, 2001). As Yavuz and Çelik, (2017) argued, listening is one of the earlier conditions of the speaking skill in the language learning process.

According to Escobar (2018), it is necessary to research the best resources in the teaching-learning process. Thus, podcasts could be integrated into the curricula as a valuable tool in the EFL classroom. As Barron (2006) stated, podcasting favors the sense of rapport, realism, and motivation, three issues that become essential in the secondary education EFL classroom. Nikolou and Darra (2018) claimed podcasts could attract students' attention, and Xiangming et al. (2020) explained that podcasts could deliver knowledge. McMinn (2011) insisted that podcasting may encourage students to use the English language outside of the EFL classroom. By broadcasting the podcasts to a broad audience, students may feel more motivated, so they carefully write, proofread and edit the scripts before recording the podcast to provide accurate and comprehensible content. Limited research has studied the impact of podcasts as a learning tool in the EFL classroom to enhance and improve EFL proficiency in secondary education. Farangi et al. (2015), as well as Ducate and Lomicka (2009), showed how podcasting could work as an interactive learning tool that can improve speaking skills, perhaps since this activity was contextualised and integrated into the students' environment, as it occurred in Rosell-Aguilar's (2013) work. Mbah et al. (2014) demonstrated that podcasts improved students' pronunciation, Sze (2006) stated it could also help intonation, and Travis and Joseph (2009) proposed several speaking tasks (e.g., spontaneous talks, justifying opinions) through podcasts. Sathe and Waltje (2008) designed a

mini-language laboratory to improve oral comprehension and expression, and Lomicka and Lord (2011), as well as Fitria et al. (2015), used the podcast to develop listening and speaking skills as well as pronunciation. Through podcasts, students discuss, brainstorm, solve problems, and cooperate in team groups (Gannod et al., 2008). Son (2018) and Ashton-Hay and Brookes (2011) supported podcasts can significantly contribute to the development of linguistic skills, especially speaking and listening. They can enhance the learning of language structures, interviewing, and script writing, apart from listening and speaking (Zou et al., 2018). Several authors have revealed that podcasts can improve, in general terms, the language learning process (Wei & Ram, 2016; Yeh, 2013). Yoestara and Putri (2019) demonstrated how students could improve their listening and speaking skills due to podcasts. Moreover, Hasan and Hoon (2013) stated that podcasts could support all linguistic skills. Gholami and Mohammadi (2015) argued that podcasting through mobile learning with offline and online services increased students' motivation. Most of the research done has been focused on the development of the listening skill (Abdulrahman et al., 2018; Al Sheef & Althobaiti, 2019; Kay, 2012; Rahman et al., 2018; Salsabila et al., 2021; Sayadi & Heidar, 2018; Şendağ et al., 2018; Shahid & Ali, 2017). Indahsari (2020) showed that students improved their listening skills and motivation toward EFL learning. Besides, it has also been studied how podcasts can improve the student learning experience when being integrated into the curriculum (Abdous et al., 2009), and some other studies work on students' perceptions about their use in their language learning process (Istanto & Indrianti, 2011; Rachmaniputri et al., 2021).

Research purpose

The purpose of this research is to develop the linguistic competence of the students of this study while working with SDG 10 (social awareness) of the 2030 Agenda. For this purpose, we intend to use podcasts in a didactic implementation with social content in EFL in the face-to-face secondary education context. Studies on the use of podcasts in EFL provide positive evidence in oral language skills but not in written language tests and working with social content.

In this study, we explore the performance of secondary education EFL students in oral and written language tests, comparing students who used the podcasts within the Cooperative Language Learning framework and students who used traditional Communicative Language Teaching tasks, all with socially aware content (SDG 10 of the 2030 Agenda: to reduce inequality within and among countries). The following research question arises: Do podcasts improve students' EFL linguistic competence?

The objective of this research is to evaluate how the use of podcasts on social inequality can develop secondary education students' EFL linguistic competence.

According to the scientific literature findings and the proposed objective, the hypothesis of this study is as follows: Podcasts facilitate the development of EFL linguistic competence.

Method

The study is a quasi-experimental research design with a quantitative data methodology using test and task performance scores. To avoid bias of different performance levels, we performed an inferential analysis of English language proficiency regarding academic performance before starting the intervention. First, the design used was to analyse the

performance scores of all the groups instructed through Communicative Language Teaching; Second, to apply the intervention with podcasts in the experimental group and finally, to analyse the performance scores in both groups. The independent study variable was the learning methodology and the type of tasks performed: Communicative Language Teaching conventional tasks in the control group and podcasting following the precepts of Language Cooperative Learning in the experimental group. The dependent variable is the linguistic competence operationalised through the scoring of eight indicators: initial and final tests, which were divided into five parts (speaking, listening, writing, reading comprehension, and use of English) and six tasks, further developed in instruments.

Participants

The sample of this study consisted of seventy-eight ninth-graders. Their age ranged from 13 to 15 years old ($M: 13.93$; $SD: 0.43$), with a slightly flagged percentage of students who identified with the female sex, 51,28% versus 48,71% of male ones. They were randomly assigned into two groups: a control group ($n=39$, average age 14.02; $SD: 0.07$) which comprised 53.84% of male and 46.15% of female students, and a second or experimental group ($n=39$, average age 13.85; $SD: 0.06$) formed with 43.58% of male and 56.41% of female students. All of them were Spanish, with Spanish as their mother tongue. The selection of the sample was intentional through non-probabilistic sampling by accessibility. The inclusion criteria for the participants were to be enrolled in the ninth grade of secondary education at the high school, to attend class regularly, to have signed parental/legal guardian consent, and not to present learning difficulties or psychopathological problems.

Instruments

The instruments for data collection were administered during the months of March, April, and May (third term) to assess the usefulness of podcasts in respect of the development of students' linguistic competence. They were created ad hoc and based on the different targets of goal 10 of the 2030 Agenda: reduced inequality within and among countries. They were structured equally in the control and experimental groups but performed differently by students. The different tasks were assessed from 0 to 10 points, considering being from 0 to 4.99 points failed (F), 5–5.99 points, passed (D), 6–6.99 points, good (C), 7–8.99 quite good (B) and 9–10 excellent (A). They developed as follows:

- Task 1: students talked about target 1, which works on the achievement and sustainability of income growth of the bottom 40% of the population at a rate higher than the national average. The grade for this assignment corresponded to the points obtained using the rubric in "Appendix 1", from 0 to 10 marks.
- Task 2: students worked on the empowerment and promotion of social, economic, and political inclusion, irrespective of age, sex, disability, race, ethnicity, origin, religion, or economic or other status (target 2). The grade for this assignment was obtained using the rubric in "Appendix 1", from 0 to 10 points.

- Task 3: discussion about equal opportunities and reduction of disparity of outcomes by eliminating discriminatory laws, policies, and practices and promoting appropriate legislation, policies, and action (target 3). The grade for this assignment was based on the points obtained using the rubric in “Appendix 1”, from 0 to 10 points.
- Task 4: discussion about target 6, based on the enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions to deliver more legitimate and effective institutions. The grade for this assignment corresponded to the points obtained using the rubric in “Appendix 1”, from 0 to 10 marks.
- Task 5: students worked on target 7, focused on facilitating orderly, safe, and responsible migration and mobility of people through well-managed migration policies. The grade for this assignment was obtained using the rubric in “Appendix 1”, from 0 to 10 points.
- Task 6: students worked on targets 10a and 10b. They needed to reflect on the differential treatment for developing countries and foreign direct investment. The grade for this assignment corresponded to the points obtained using the rubric in “Appendix 1”, from 0 to 10 points, distributed as follows: 2.5–2 points, excellent; 1.5 points, proficient; 1 point, partially good; 0.5–0 points, incomplete.
- Initial test; It comprised five parts:
 - Reading comprehension test: students answered five open-ended questions about a delivered text. Each correct question obtained 0.2 points (a total of 1 point). They also needed to answer ten multiple-choice questions (with four options), which also checked their understanding of the given text. Each correct answer received 0.1 points (a total of 1 point). The maximum score a student could get was 2 points.
 - Written expression test: students needed to write an essay about social inequality. The writing was graded with a scale from 0 to 2 points following a written assessment rubric (based on Casal, 2006, see “Appendix 2”). The points were distributed as follows: a maximum of 0.3 points for each category (0.3 points, excellent; 0.25 points, good; 0.20 points, partially good; 0.15 points, weak; 0.1–0 points, extremely weak).
 - Listening test: Students needed to listen to an audio file whose topic was social inequality. They needed to answer five open-ended questions (0.2 points each, total score of 1 point) and ten multiple-choice questions (with four options). Each correct answer received 0.1 points (a total of 1 point). The maximum score in this test was 2 points.
 - Speaking test: The teacher interviewed students in pairs. The teacher randomly chose one of the six topics that worked throughout the term. The podcast/interview rubric (see “Appendix 1”) was used to grade this test. The maximum score was 2 points distributed as follows: a maximum of 0.5 points to each of the four categories (0.5 points, excellent; 0.4 points, proficient; 0.3–0.2 points, partially proficient; 0.1–0 points, incomplete).

- Use of English: students needed to do one exercise in which they were asked to fill in the gaps with nouns, verbs, adjectives, prepositions, or adverbs. It comprised ten spaces, and each correct answer received 0.05 points (a total score of 0.5 marks). In the second exercise, students needed to conjugate the verb provided between brackets. There were ten gaps. Each correct answer received 0.05 points (total score of 0.5 points). In the third exercise, students read another text with spaces and a lemma. Students made up suitable nouns, adjectives, verbs, or adverbs through word formation. There were also ten gaps (0.05 points for each correct answer), and the total score was 0.5 points. Finally, in the fifth exercise, students needed to paraphrase ten sentences using a word given. This way, they needed to create idioms and collocations. Each correct sentence received 0.05 points, with a total score of 0.5 points. The maximum score for this part of the test was 2 points.
- Final test: the final test comprised the same five parts as the initial test, previously described (with different examples).

Procedure

The English department agreed on the proposal of working with podcasts in the EFL classes in order to work with SDG number 10 of the 2030 Agenda. This way, it could be tested if students improved their linguistic competence while working on their social inequality awareness. Afterward, the necessary permission was requested from the school principal to carry out the research at the educational center. We sent the parental-guardian consent forms to all the families whose children were part of the experimentation. They were also informed that they could leave the study at any time. The control and experimental groups were created randomly. The control group followed the principles of Communicative Language Teaching. All the students worked as a group with the teacher or in small groups to perform the speaking tasks. However, in the experimental group, students were arranged in heterogeneous groups of three students to create podcasts. They were presented the target and needed to research to gather all the necessary information to develop an authentic podcast. In order to record the podcasts, students listened to some “model” podcasts and were told they needed to respect the following guidelines: (i) research the topic, (ii) organise their thoughts, (iii) plan what they would say in the podcast, and who would say it. The publishing aspect of podcasting students’ work motivated them to engage as much as possible in the different podcasts. Thus, to increase their motivation and broadcast it to a larger audience, they were informed that the best three podcasts on each topic would be included in a special section in the school radio station (a total of eighteen podcasts). This way, they could be listened to by the whole educational community, not only by their peers but by all the students, teachers, administration staff, and parents of the school.

This experimentation started in March and lasted for one term until May. The final test was administered in June, respecting the final examination schedule. The teacher was the same for both groups to eliminate bias. The EFL classes were held in the morning from 9.10 am to 12.10 pm in the two groups for six weeks. Twenty-four sessions of approximately fifty-five minutes and four sessions per week were held to develop this

Table 1 Descriptive and inferential statistics results

	Control group		Experimental group		Mann–Whitney U	Effect size
	Mean	Standard Deviation	Mean	Standard Deviation		
Initial test	5.78	1.29	6.52	1.75	0.07	0.63
Task 1	6.44	3.24	6.47	3.55	0.63	0.50
Task 2	5.77	2.67	6.33	2.85	0.51	0.55
Task 3	8.60	1.28	7.76	1.93	0.06	0.64
Task 4	5.34	2.75	5.17	2.52	0.80	0.51
Task 5	5.91	3.23	7.91	2.26	0.00	0.69
Task 6	6.15	2.64	7.52	2.28	0.01	0.65
Final test	5.86	1.75	7.05	1.71	0.00	0.68

Source: Own creation

experimentation. The order of the tasks was the same for all of them and scheduled on the same day and time (each task was performed or delivered every two weeks) in their usual classrooms and the English lab, with optimal lighting, ventilation, and acoustic conditions. All the data were collected in compliance with the ethical Helsinki Declaration guidelines, and the confidentiality of the data was guaranteed.

Data analysis

The IBM Statistical Package for the Social Sciences (SPSS) 25 for Windows was used for the descriptive and inferential data analyses. Provided the sample size, the Kolmogorov–Smirnov test was performed to check normality, obtaining that none of the variables complied with normality (initial test, tasks 1, 2, 3, 4, 5 and final test, $p=0.000$; task 6, $p=0.010$) since they were less than $p<0.05$. First, a descriptive analysis based on means and standard deviation was used; secondly, an inferential analysis with the Mann–Whitney U test was performed between the initial and the final results to verify the research objective and hypothesis. An inferential analysis with the Mann–Whitney U test was also completed among the six tasks, as well as a non-parametric effect size with Common Language Effect Size (CLES) (McGraw & Wong, 1992) of all the inferential constraints. For all analyses, the significance level was $p<0.05$.

Results

The descriptive statistical analyses, with the means and the standard deviation for each variable, are shown in Table 1. The marking criteria for all the tasks were from 0 to 10 points, being from 0–4.99 points failed (F), 5–5.99 points, passed (D), 6–6.99 points, good (C), 7–8.99 quite good (B) and 9–10 excellent (A). Preliminary analysis using the initial test (Table 1) of English performance between the control group and the experimental group was performed using the Mann–Whitney U test, obtaining no significant differences between the two groups with $\alpha=0.05$.

Regarding the inferential analysis, the non-parametric Mann–Whitney U test was applied. Table 1 shows that the results for task 1, task 2, task 3, and task 4 were not significantly different between the control and experimental groups. However, the result for task 5 was $p=0.00$, task 6 $p=0.01$, and the final test $p=0.00$ with moderate effects sizes measured with CLES. These figures were lower than $\alpha=0.05$, so there were significant

differences between the control and experimental groups. These results confirm that there was a difference between the use of conventional communicative activities and the creation of podcasts in the EFL classroom since it seems that, as far as students were more used to creating and managing this kind of activity, they looked more confident and mastered the language, both in form and content, more successfully. These results answer the objective and hypothesis raised. After three months of the use of podcasts, students were familiar with the tool, and it seemed that the null hypothesis of maintaining the equal distribution of the variables between the two groups only occurred in the first four tasks since there were significant differences in the grades obtained in tasks 5 and 6 and the final test. Thus, the use of podcasts turns out to be more convenient. In addition, the different dimensions of the final test were analysed to detect if there was a significant difference between the control and the experimental group. The Mann–Whitney U test indicated that there were significant differences in favor of the experimental group regarding oral skills: speaking ($p=0.001$; $\alpha=0.05$) and listening ($p=0.024$; $\alpha=0.05$), whereas there were no significant differences between the groups in the written skills: writing ($p=0.141$; $\alpha=0.05$), reading comprehension ($p=0.054$; $\alpha=0.05$) and use of English ($p=0.428$; $\alpha=0.05$). Therefore, creating and using podcasts significantly improved speaking and listening skills as dimensions of EFL learning linguistic competence. However, in the initial or pre-test, there were no significant differences between the control group and the experimental group in any of the independently analysed dimensions: speaking ($p=0.939$; $\alpha=0.05$), listening ($p=0.743$; $\alpha=0.05$), writing ($p=0.106$; $\alpha=0.05$), reading comprehension ($p=0.459$; $\alpha=0.05$) and use of English ($p=0.270$; $\alpha=0.05$), so we can infer the improvement in the oral skills are due to the creation and use of podcasts in the experimental group. Moreover, the differences in the control group between the initial and final tests were not significant ($p=0.594$; $\alpha=0.05$) before and after the experimentation at a passing level (D). More specifically, the students of the control group did not significantly improve their English usage or their linguistic skills: speaking ($p=0.862$), listening ($p=0.141$), writing ($p=0.148$), reading comprehension ($p=0.246$), and use of English ($p=0.499$). Nevertheless, in the experimental group, the difference between the initial test and the final test was not significant either ($p=0.09$; $\alpha=0.05$), but the students of this group increased their grade from good (C) in the initial test to quite good (B) in the final test and significantly improved their speaking ($p=0.025$) and listening skills ($p=0.031$).

Discussion and conclusion

The purpose of this research was to analyse whether podcasts improved the EFL linguistic competence among secondary education students. Language proficiency is a Sustainable Development Goal of the 2030 Agenda within the framework of this educational stage. For this purpose, seventy-nine students were randomly distributed between a control group (who did not use podcasts but Communicative Language Teaching tasks) and an experimental group (who created and used podcasts using Language Cooperative Learning). They performed two tests (initial and final tests) and six tasks in the English classroom using content from Goal 10 of the 2030 Agenda, which focuses on social consciousness. These findings will allow us to improve the teaching–learning process in the EFL classroom in secondary education and, possibly, in other educational stages.

The obtained results confirm the hypothesis that podcasts facilitate the development of English linguistic competence in the EFL class. The experimental group had significantly higher scores than the control group in the final English test, which showed that the students who created and used podcasts improved their English proficiency. In order to check that the control and experimental groups were equivalent in terms of English language proficiency and that there were no significant differences, we performed an inferential analysis on an initial test. These data demonstrate that the podcast as a technological tool in the EFL classroom improves English language proficiency operationalised as academic performance in the final exam. These data agree with those found by other authors (Son, 2018; Zou et al., 2018), who revealed improvements in language skills, such as listening and speaking, when using podcasts in the EFL classroom. In this line, Wei and Ram (2016) emphasised that podcasts enhanced the language learning process. Students in the experimental group had to create, research, and experience a podcast in cooperative work with other students. It implied, on the one hand, greater depth and knowledge in autonomous language learning (Xiangming et al., 2020) and, on the other hand, increased values of group work, cooperation, and motivation (Dyson et al., 2021; Indahsari, 2020). In the final test, the control group slightly improved reading, writing, and use of English, whereas they obtained lower grades in speaking and listening. However, the experimental group improved the scores in all the linguistic skills and Use of English, with a moderate effect size and a significant improvement in speaking and listening parts. In other studies focused on podcasts, there is evidence for improvement in listening (Salsabila et al., 2021), speaking (Yoestara & Putri, 2019), and writing (Bamanger & Alhassan, 2015). Therefore, this research, as the aforementioned works, highlight the benefit of using podcasts in EFL classes in the teaching–learning process (Li, 2009).

In the experimental group, academic performance increased between the initial test with a grade of good (C) and the final test with a grade of quite good (B) in the final test, while in the control group, the initial and final marks were similar at a pass (D). Despite the influence of factors that may affect the data, it is possible to infer that the experience in the podcast intervention may have been more motivating and increased the academic grade. In the analysis of the specific tasks, significance is only observed in tasks five and six in favour of the experimental group. We believe that the students in the experimental group were more acquainted with the cooperative way of working and podcasting in the fifth and sixth tasks. We can assume that they had already analysed the fundamental points of successful podcasts by listening to the podcasts played on the school radio station during the previous weeks (those belonging to tasks 1, 2, 3, and 4). Furthermore, tasks 5 and 6 dealt with targets 7, 10a, and 10b of goal 10 of the 2030 Agenda, which focus on migration and mobility of people and the treatment towards developing countries. Students were aware of these issues since they had already worked on these problems in the History lessons and in the student mentoring programme, which encourages the development of students' academic, professional, and personal skills and also promotes the development of transversal competencies, awareness of students' responsibilities and ethical values within society. However, in tasks 3 and 4, the results were higher in the control group. We believe these results were due to the fact that several couples in the control group showed great enthusiasm for discriminatory laws and policies around the world. These students were more

engaged and involved in these two tasks, which presupposed a high impact on their grades, and hence, on the means of the whole group. The content on social awareness (goal 10 of the 2030 Agenda) selected to work on English language proficiency is considered relevant in today's education with diverse classrooms where all students have to interact and work with everyone promoting equality (Felder, 2019).

The accomplishment of the didactic proposal using podcasts in the experimental group of students provides them with a meaningful learning context by developing diverse linguistic and academic competencies in the EFL classroom, which highlights the possibility of using it with all students and different subjects in bilingual environments. This process of changing the traditional classroom into a more active classroom incorporating technology is in line with the current educational movement of active pedagogical methodologies (Márquez, 2022) and the implementation of the sustainable development goals of Agenda 2030 to achieve quality education. The educational implication of this research aims at adding technological tools such as podcasts to the teaching–learning process of EFL in secondary education. Concerning the teaching process, it would be appropriate for teachers to opt for English classes for instruction involving the use of technology, such as podcasting, to optimise students' linguistic competence and performance. It could be advisable to make students include their podcasts in their portfolio so they could reflect on their EFL learning. Farangi et al. (2015) revealed that podcasting in the classroom was an appropriate interactive resource for learning English, and McMinn (2011) indicated that it was also an enabling resource for students to continue learning and practicing English outside of the EFL classroom itself. This technological tool could be applied to all EFL curriculum content. In this regard, Abdous et al. (2009) found an improvement in the learning experience. For Strelan et al. (2020), ICT tools, such as podcasting, were mediators of learning and guided teachers who have to train to make their classrooms more interactive and creative (Kleimola & Leppisaari, 2022). Using technological resources enriches pedagogical practice by complementing the teaching activity (Almusharraf, 2021).

Regarding the learning process, students who use podcasts in the classroom create and construct their learning (Vygotsky, 1978). In the same line as N'gambi and Lombe's (2012) research, students using podcasts could control and reflect on their self-paced flexible learning within a constructivist learning environment. When working cooperatively when creating the podcasts, students constructed and directed their own learning, enhanced peer support, and received reciprocal learning. Similarly to Güler and Özkan's (2018) research, due to podcasts, students exchanged ideas with their peers comfortably in a cooperative learning atmosphere which led them to critical thinking. They built new knowledge obtained through the research work and discussion about existing knowledge through active processes of interaction, discovery, and reflection, fundamental steps within the constructivist learning perspective. As Rosell-Aguilar (2007) stated, podcasting is deeply interwoven with social constructivism as far as students construct their knowledge through active exploration, observation, processing, and interpretation.

This research has some limitations, mainly the sample size and the instruments used created ad hoc, so any generalisation to other groups should be made with caution. This research is a starting point for future studies on podcasting in the EFL field, both inside and outside the classroom, in different levels of formal and non-formal education. The use of

longitudinal studies with the utilization of podcasting over a year or years collecting several performance measures, analysing the students' acceptance and reaction toward the podcasts as learning tools, and the assessment of the perception of students and teachers would be other variables to be considered in future studies.

Summing up, this research confirms the existence of significant differences between the use of podcasting versus its non-use in the EFL English classroom in secondary education. Specifically, it provides an effective educational practical experience of the use of podcasting applied to the teaching of EFL with positive effects on English language proficiency operationalised in academic achievement; specifically, they significantly improve oral skills toward written ones. Podcasts prepare students better for the final test by obtaining a higher score on the last English test. More effective educational experiences for learning EFL that require active participation and positively impact students' learning and academic performance should be facilitated in the EFL classrooms. This optimisation of language proficiency is in line with the sustainable development goals of the 2030 Agenda.

Appendix 1

See Table 2.

Table 2 Podcast / Interviews Assessment Rubric

	Exemplary	Proficient	Partially Proficient	Incomplete	Points
Introduction	Catchy & clever introduction Provides relevant information & establishes a clear purpose engaging the listener immediately	Describes the topic & engages the audience as the introduction proceeds	Somewhat engaging (covers well-known topic), & provides a vague purpose	Irrelevant or inappropriate topic that minimally engages listener Does not include an introduction or the purpose is vague & unclear	
Content	Creative & original content enhances the purpose of the podcast/interview in an innovative way Accurate information & succinct concepts are presented	Accurate information is provided succinctly	Some information is inaccurate or long-winded	Information is inaccurate	
Delivery & interview	Well rehearsed, smooth delivery in a conversational style Highly effective enunciation & presenter's speech is clear & intelligible Open ended questions are used that draw interesting & relevant information from the interviewee	Rehearsed, smooth delivery Enunciation, expression, pacing are effective throughout the podcast/interview Open ended questions & follow-up questions are used appropriately	Appears unrehearsed with uneven delivery Enunciation, expression, rhythm are sometimes distracting during the podcast/interview Open-ended questions & follow-up questions are occasionally irrelevant to the topic	-Delivery is hesitant & choppy & sounds like the presenter is reading -Enunciation of spoken word is distant and muddled & not clear -Only yes-or-no questions are used -No follow-up questions are asked	
Grammar & vocabulary	Shows a good degree of control of a range of simple & some complex grammatical forms Uses a range of appropriate vocabulary to give & exchange views on a wide range of the given topic	Shows a good degree of control of simple grammatical forms, & attempts some complex grammatical forms Uses a range of appropriate vocabulary to give & exchange views on a range of topics	Shows a good degree of control of simple grammatical forms Uses a range of appropriate vocabulary when talking about the given situation	Shows a poor degree of control of simple grammatical forms Uses a very limited range of appropriate vocabulary when talking about the given situation	

Source: Own creation (based on Bell (2007) and UCLES (2008))

Appendix 2

See Table 3.

Table 3 Written assignment assessment rubric

	Excellent	Good	Partially good	Weak	Very weak
1. The essay has a title					
2. The essay has an introduction, a development and a conclusion					
3. Each of the paragraphs of the essay develops a coherent idea regarding functional diversity					
4. Ideas regarding functional diversity flow well and the text is cohesive					
5. The text summarises the use of the given topic and provides thoughtful proposals					
6. Students show commitment and responsibility in their essay proposals					

Source: Own creation (adapted from Casal (2006))

Abbreviations

EFL	English as a Foreign Language
ICT	Information and Communication Technology

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BCY is the researcher who has designed the work, analysed the data and written the introduction. CPA analysed and interpreted the data and wrote the discussion. Both authors read and approved the final manuscript.

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