



Facultade de Filoloxía

Traballo de
fin de grao

Using digital tools to teach and learn English pronunciation in secondary schools: The case of e- SoundWay Free Roaming (*e-SoundWayFR*)

María Paz Varela

Supervisado por Dra. María de los Ángeles Gómez González

Curso Académico 2024-2025

Xuño, 2025

Traballo de Fin de Grao presentado na Facultade de Filoloxía da Universidade de Santiago de Compostela
para a obtención do Grao en Lingua e Literatura Inglesas



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Digital Language Learning (DLL) increases accessibility and flexibility in language education. It provides personalized learning experiences enhanced with interactive features such as gamification and multimedia, making language learning immersive and culturally enriching. DLL is particularly useful for pronunciation instruction, addressing challenges that traditional methods often overlook.

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Santiago de Compostela, 25 de novembro de 2024.

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O uso de ferramentas dixitais na ensinanza e aprendizaxe da pronunciación do inglés nas escolas secundarias: O caso de e-SoundWay Free Roaming (*e-SoundWayFR*)

El uso de herramientas digitales en la enseñanza y el aprendizaje de la pronunciación del inglés en las escuelas secundarias: El caso de e-SoundWay Free Roaming (*e-SoundWayFR*)

Using digital tools to teach and learn English pronunciation in secondary schools: The case of e-SoundWay Free Roaming (*e-SoundWayFR*)

Resumo

A aprendizaxe dixital de linguas (DLL, polas súas siglas en inglés) aumenta a accesibilidade e a flexibilidade na ensinanza de idiomas, proporcionando experiencias de aprendizaxe personalizadas e melloradas con funcións interactivas como a gamificación e o uso de multimedia, o que permite unha aprendizaxe inmersiva e culturalmente enriquecedora. O DLL é especialmente útil para a ensinanza da pronunciación, xa que aborda as dificultades e os desafíos máis recorrentes ós que se enfrontan os estudantes e que os métodos tradicionais de ensinanza adoitan pasar por alto.

A pronunciación é crucial para a adquisición de idiomas, pero a súa ensinanza efectiva segue sendo un reto nas escolas secundarias españolas. A integración de ferramentas dixitais na ensinanza da pronunciación ofrece melloras prometedoras. As ferramentas de formación en pronunciación asistida por ordenador (CAPT, polas súas siglas en inglés) demostraron a súa valía, ofrecendo retroalimentación interactiva e a posibilidade dunha práctica da que a miúdo carecen as entornas tradicionais.

Este TFG ten como obxectivo avaliar *e-SoundWayFR* (*e-SoundWay Free Roaming*), unha aplicación dixital gamificada deseñada para mellorar a pronunciación do inglés entre estudantes hispano-falantes de secundaria. Este proxecto examina como *e-SoundWayFR* aborda as dificultades que os estudantes atopan na pronunciación do inglés, proporcionando ferramentas para superalas. O proxecto comeza cunha análise do estado actual da ensinanza da pronunciación do inglés nas escolas secundarias españolas, incluíndo unha visión xeral da normativa educativa concerninte á pronunciación e ós materiais actualmente en uso para este cometido. A continuación, realizarase unha análise comparativa de diversas ferramentas CAPT e *e-SoundWayFR*, o que permitirá identificar as súas características e as dimensións que deberían abordarse para satisfacer as necesidades de profesores e estudantes na educación secundaria.

Posiblemente, a través de entrevistas semiestructuradas e cuestionarios, outra dimensión da análise podería implicar analizar as percepcións dos docentes sobre as prácticas da ensinanza do inglés como lingua estranxeira (EFL, polas súas siglas en inglés) relacionadas coa pronunciación, así como as experiencias dos usuarios e dos estudantes tras probar *e-SoundWayFR*. Desta maneira, contribuirase de forma valiosa sobre como as ferramentas dixitais poden apoiar a adquisición do idioma e mellorar a conciencia fonolóxica neste nivel educativo.

Palabras clave: Aprendizaje Digital de Lenguas (DLL), Formación en Pronunciación Asistida por Ordenador (CAPT), enseñanza secundaria española, *e-SoundWayFR*

Resumen

El aprendizaje digital de lenguas (DLL, por sus siglas en inglés) aumenta la accesibilidad y la flexibilidad en la enseñanza de idiomas, proporcionando experiencias de aprendizaje personalizadas y mejoradas con funciones interactivas como la gamificación y el uso de multimedia, lo que permite un aprendizaje inmersivo y culturalmente enriquecedor. El DLL es especialmente útil para la enseñanza de la pronunciación, ya que aborda las dificultades y los desafíos más recurrentes a los que se enfrentan los estudiantes y que los métodos tradicionales de enseñanza suelen pasar por alto.

La pronunciación es crucial en la adquisición de idiomas, pero su enseñanza efectiva sigue siendo un reto en las escuelas secundarias españolas. La integración de herramientas digitales en la enseñanza de la pronunciación ofrece mejoras prometedoras. Las herramientas de formación en pronunciación asistida por ordenador (CAPT, por sus siglas en inglés) han demostrado su valor, ofreciendo retroalimentación interactiva y la posibilidad de una práctica de la que a menudo carecen los entornos tradicionales.

Este TFG tiene como objetivo evaluar *e-SoundWayFR* (*e-SoundWay Free Roaming*), una aplicación digital gamificada diseñada para mejorar la pronunciación del inglés entre estudiantes hispanohablantes de secundaria. Este proyecto examina cómo *e-SoundWayFR* aborda las dificultades que los estudiantes encuentran en la pronunciación del inglés, proporcionando herramientas para superarlos. El proyecto comienza con un análisis del estado actual de la enseñanza de la pronunciación del inglés en las escuelas secundarias españolas, incluyendo una visión general de la normativa educativa concerniente a la pronunciación y los materiales actualmente en uso para este cometido.

A continuación, se llevará a cabo un análisis comparativo de diversas herramientas CAPT y *e-SoundWayFR*, lo que permitirá identificar sus características y las dimensiones que deberían abordarse para satisfacer las necesidades de profesores y estudiantes en la educación secundaria.

Posiblemente, a través de entrevistas semiestructuradas y cuestionarios, otra dimensión del análisis podría implicar analizar las percepciones de los docentes sobre las prácticas de la enseñanza del inglés como lengua extranjera (EFL, por sus siglas en inglés) relacionadas con la pronunciación, así como las experiencias de los usuarios y los estudiantes

tras probar *e-SoundWayFR*. De esta manera, se contribuirá de forma valiosa sobre cómo las herramientas digitales pueden apoyar la adquisición del idioma y mejorar la conciencia fonológica en este nivel educativo.

Palabras clave: Aprendizaje Digital de Lenguas (DLL), Formación en Pronunciación Asistida por Ordenador (CAPT), enseñanza secundaria, *e-SoundWayFR*

Abstract

Digital Language Learning (DLL) increases accessibility and flexibility in language education. It provides personalised learning experiences enhanced with interactive features such as gamification and multimedia, making language learning immersive and culturally enriching. DLL is particularly useful for pronunciation instruction, addressing challenges that traditional methods often overlook.

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This TFG aims to assess *e-SoundWayFR* (*e-SoundWay Free Roaming*), a gamified digital application designed to improve English pronunciation among Spanish-speaking secondary school students. This dissertation examines how *e-SoundWayFR* addresses students' pronunciation challenges and provides tools to overcome them. The project begins with an analysis of the current state of English pronunciation instruction in Spanish secondary schools, including an overview of educational regulations regarding pronunciation teaching and the materials currently in use. Following this, a comparative analysis of various CAPT tools and *e-SoundWayFR* will allow us to identify their characteristics and the dimensions that should be targeted to address teachers' and students' needs in secondary education. Tentatively, through semi-structured interviews and questionnaires, another dimension of the analysis could involve the examination of instructors' perceptions on EFL (pronunciation) teaching practices, as well as their users' experiences and those of learners after testing *e-SoundWayFR*, thereby contributing valuable insights into how digital tools can support language acquisition and enhance phonological awareness at that educational level.

Key terms: Digital Language Learning (DLL), Computer-Assisted Pronunciation Training (CAPT), secondary education, *e-SoundWayFR*

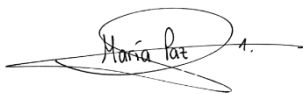
Eu, María Paz Varela (DNI 79342736-G), alumna do Grao en Lingua e Literatura Inglesas na Universidade de Santiago de Compostela, declaro que o presente Traballo de Fin de Grao, titulado *Using Digital Tools to Teach and Learn English Pronunciation in Secondary Schools: The Case of e-SoundWayFR*, é un traballo orixinal realizado por min.

Afirmo que non foi presentado previamente para a obtención de ningún outro título ou grao nesta ou noutra universidade e certifico que todas as fontes utilizadas están debidamente citadas.

Baixo a miña responsabilidade, comprométome a respectar os principios de integridade académica e honestidade investigadora establecidos pola Universidade de Santiago de Compostela.

Asinado:

María Paz Varela

A handwritten signature in black ink, appearing to read 'María Paz', with a large, sweeping horizontal stroke underneath.

Data: 11-06-2025

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Table of Contents

1.	Introduction.....	1
2.	Theoretical Framework.....	3
2.1	Digital Language Learning and Computer-Assisted Pronunciation Training: State-of-the-Art.....	3
2.1.1	Digital Language Learning (DLL)	3
2.1.1.1	Definition and Scope.....	3
2.1.1.2	Main Subfields in DLL: CALL, TELL, and MALL.....	4
2.1.1.2.1	CALL	4
2.1.1.2.2	TELL.....	8
2.1.1.2.3	MALL	9
2.1.1.3	Main Trends in DLL: VR and Game-Based Learning.....	11
2.1.2	Computer-Assisted Pronunciation Training (CAPT).....	14
2.1.2.1	Definition and Scope.....	15
2.1.2.2	Main CAPT Tools.....	16
2.1.2.3	Effectiveness of CAPT Tools	20
2.2	English Pronunciation in Spanish Secondary Schools.....	22
2.2.1	The Role of Pronunciation Instruction in Galician Educational Regulations	23
2.2.2	Current Challenges in Teaching English Pronunciation	24
3.	A Comparative Analysis of Existing Applications for Practising English Pronunciation.	26
3.1	Description of Selected CAPT Applications	28
3.1.1	<i>Duolingo</i>	28
3.1.2	<i>Rosetta Stone</i>	29
3.1.3	<i>ELSA Speak</i>	29
3.1.4	<i>Livango</i>	30

3.2	Comparison of Selected CAPT Applications	30
4.	<i>e-SoundWayFR</i> : English Pronunciation in the Way of St. James.....	32
4.1	Description.....	32
4.1.1	Contents.....	32
4.1.2	Technical Design.....	35
4.2	Evaluation of <i>e-SoundWayFR</i>	37
4.3	<i>e-SoundWayFR</i> : Teachers' Perceptions and Users' Experiences	40
4.3.1	Methodology	40
4.3.2	Instruments.....	41
4.3.2.1	Teachers' Questionnaire	42
4.3.2.2	Students' Questionnaire	43
4.3.3	Discussion of Results	43
4.3.3.1	Teachers' Questionnaire	43
4.3.3.2	Students' Questionnaire	49
5.	Conclusions and Further Research.....	54
6.	Reference List	57
7.	Appendices.....	63

List of Abbreviations

AI: Artificial Intelligence

AR: Augmented Reality

ASR: Automatic Speech Recognition

BL: Blended Learning

CAI: Computer-Assisted Instruction

CALL: Computer-Assisted Language Learning

CAPT: Computer-Assisted Pronunciation Training

CEFR: Common European Framework of Reference for Languages

CELL: Computer-Enhanced Language Learning

CLT: Communicative Language Teaching

CODA: Quality of University Learning Objects

DEO: Digital Educational Object

DLL: Digital Language Learning

EFL: English as a Foreign Language

EFP: English File Pronunciation

EPSS: English Pronunciation for Speakers of Spanish

EPSSML: English Pronunciation for Speakers of Spanish Multimedia Lab

ESL: English as a Second Language

F2F: Face-to-Face

FLL: French as a Foreign Language

GBLL: Game-Based Language Learning

HMD: Head-mounted display

ICALL: Intelligent Computer-Assisted Language Learning

IPA: International Phonetic Alphabet

HVPT: High Variability Phonetic Training

L1: First Language

L2: Second Language

LORI: Learning Objective Review Instrument

MALL: Mobile-Assisted Language Learning

MIT: Massachusetts Institute for Technology

MR: Mixed Reality

NLP: Natural Language Processing

VR: Virtual Reality

iVR: Immersive Virtual Reality

SSBE: Standard Southern British English

SRT: Speech Recognition Technology

TTS: Text-to-Sound

TELL: Technology-Enhanced Language Learning

XR: Extended Reality

List of Tables and Figures

Tables

Table 1. *The Three Phases of CALL*, pages 5-6

Table 2. *CEFR Scale of Phonological Control*, pp. 63-66

Table 3. *Comparison of CAPT APPS based on the adapted Gómez González's (2024) DEO Grid*, pp. 67-73

Table 4. *The main types of mini-games of e-SoundWayFR*, p. 34

Table 5. *Evaluation of e-SoundWayFR through the Adapted DEO Grid Framework (Gómez González, 2024)*, pp. 74,75

Figures

Figure 1. *Interface of a stop in e-SoundWayFR*, p. 33

Figure 2. *Home screen of e-SoundWayFR*, p. 35

Figure 3. *e-SoundWayFR navigation bar*, p. 35

Figure 4. *The Stage*, p. 35

Figure 5. *The Way*, p. 36

Figure 6. *Pilgrim Icon*, p. 36

Figure 7. *The Library*, p. 36

Figure 8. *Options Menu*, p.37

Figure 9. *Teachers' Questionnaire. Weekly time dedicated to pronunciation*, p. 44

Figure 10. *Teachers' Questionnaire. The Importance of Pronunciation in English Language Development*, p.45

Figure 11. *Teachers' Questionnaire. Classroom technology*, p. 45

Figure 12. *Teachers' Questionnaire. Type of digital resources used for teaching English pronunciation*, p. 46

Figure 13. *Teachers' Questionnaire. Concerns about using digital resources*, p. 46

Figure 14. *Teachers' Questionnaire. e-SoundWayFR's capacity to meet the expectations for teaching pronunciation*, p. 47

Figure 15. *Teachers' Questionnaire. Statements about e-SoundWayFR effectiveness*, p.48

Figure 16. *Students' Questionnaire. Amount of time that students spend online*, p. 49

Figure 17. *Students' Questionnaire. Activities in which students spend the most time online,* p. 49

Figure 18. *Students' Questionnaire. Type of online games preferred by students,* p. 50

Figure 19. *Students' Questionnaire. e-SoundWayFR's interactivity,* p. 50

Figure 20. *Students' Questionnaire. Does e-SoundWayFR feel like a game?,* p. 51

Figure 21. *Students' Questionnaire. Students' motivation to progress through stages,* p. 51

Figure 22. *Students' Questionnaire. Favourite e-SoundWayFR section,* p. 52

Figure 23. *Students' Questionnaire. Most difficult e-SoundWayFR section* p. 52

Figure 24. *Students' Questionnaire. General satisfaction with e-SoundWayFR,* p. 53

1. Introduction

Technology has become an indispensable part of modern life, seamlessly integrated into nearly every aspect of our daily routines. From the moment we wake up to the sound of a smartphone alarm, we rely on technology to stay connected, informed, and productive. It has transformed how people interact with the world, from communication and entertainment to work and healthcare. Unsurprisingly, it has also reshaped education, offering students innovative tools that enhance learning beyond the traditional classroom.

In the field of language learning, digital resources have proven particularly effective, providing greater flexibility, autonomy, and engagement for learners. These technological advancements are especially valuable for addressing one of the most challenging yet essential aspects of learning a second language: pronunciation. Many English learners struggle with speaking aloud, often fearing mispronunciations or feeling self-conscious about their accents. This is particularly true in secondary school classrooms, where many students hesitate to participate due to feelings of embarrassment or a lack of confidence. Traditional teaching methods, while effective in some areas, often fail to provide the extensive individual practice and feedback necessary for pronunciation improvement. Classroom time remains constrained, and teachers may not always have the resources to offer personalised correction to each student.

Digital Language Learning (DLL) has emerged as a powerful field to address these limitations. Many digital platforms incorporate gamification elements, speech recognition technology, and automated feedback, creating a more interactive and motivating learning environment. Within DLL, Computer-Assisted Pronunciation Training (CAPT) tools have gained attention for their ability to help students refine their pronunciation skills in a low-pressure, supportive setting. CAPT tools enable learners to practice pronunciation independently, receive instant feedback, and build confidence before speaking in front of others.

This BA dissertation explores the role of digital tools in pronunciation instruction, with a particular focus on *e-SoundWayFR*, a gamified platform designed to enhance English phonological awareness and pronunciation skills among Spanish-speaking secondary school students. By analysing the platform's features and its impact on learners, this study examines how digital innovation can support pronunciation training. In addition, by reporting on *e-*

SoundWayFR users' experiences, the study intends to provide valuable insights into the strengths, areas for improvement and potential of the tool in educational contexts.

My motivation for choosing this topic stems from both my academic background and my personal experience as a language learner. Education has always been one of my greatest passions, driven by the belief that learning should be an engaging and enriching experience for students. Throughout my studies, I have been particularly interested in how pedagogical methods evolve and how technology can contribute to more effective teaching practices.

As a language learner myself, I firmly believe that pronunciation is a key aspect of mastering English. Nevertheless, it can also be intimidating and highly complex. Clear and accurate pronunciation not only enhances communication but also builds confidence in speaking. CAPT tools make pronunciation practice more accessible and effective for all students, regardless of their background or proficiency level, helping them improve both their speech and their confidence in using English.

This BA dissertation aims to address three main questions:

1. Is pronunciation sufficiently emphasised in the Spanish and Galician educational curriculum?
2. Are existing CAPT apps adapted to the needs of Spanish secondary school learners?
3. How do teachers and students perceive the usefulness of *e-SoundWayFR* as a digital tool for learning English pronunciation?

To this end, Section 2 outlines the theoretical framework of the study by first introducing the concepts of Digital Language Learning (DLL) and Computer-Assisted Pronunciation Training (CAPT) and then analysing both national and regional educational regulations to assess the current state of English pronunciation instruction in Spanish secondary schools, with particular attention to the context of Galicia. Section 3 focuses on the evaluation of four existing CAPT applications, assessed using an adapted version of Gómez González's (2024) framework. Section 4 centres on *e-SoundWayFR*, a prototype tool recently developed by Professor María de los Ángeles Gómez González and her research team at USC, which offers significant advancements over previously analysed applications. This section provides a detailed description of the app's contents and technical design, followed by an examination of teachers' perceptions and students' experiences, collected through a questionnaire-based methodology. The final section summarises the study's main findings and proposes possible directions for future research.

2. Theoretical Framework

2.1 Digital Language Learning and Computer-Assisted Pronunciation Training: State-of-the-Art

This section provides a foundation for examining the role of digital tools in teaching and learning English pronunciation. It is organised around two key areas: Digital Language Learning (DLL) and Computer-Assisted Pronunciation Training (CAPT). DLL is concerned with the integration of technology into language education, while CAPT is a specialised subset within this broader field, offering interactive, technology-driven tools to address the unique challenges associated with pronunciation instruction.

2.1.1 Digital Language Learning (DLL)

2.1.1.1 Definition and Scope

Integrating digital tools in language education has transformed how learners acquire and develop linguistic skills. In recent decades, technological advancements have led to the rise of Digital Language Learning (DLL), a field that investigates the use of digital resources in second language (L2) acquisition.

Digital Learning refers to the incorporation of technology in the learning and teaching process. In 2016, the Alliance for Excellent Education defined Digital Learning as follows: “any instructional practice that effectively uses technology to strengthen a student’s learning experience” (qtd. in Carrier et al., 2017, p.1). In the same year, the Massachusetts Institute of Technology (MIT), which aims to enhance learning and teaching across the university through digital learning, affirmed the following:

Digital Learning technologies can enable students to grasp concepts more quickly and fully, to connect theory and application more adeptly, and to engage in learning more readily, while also improving instructional techniques, leveraging instructor time, and facilitating the widespread sharing of knowledge (qtd. in Carrier et al., 2017, p.1).

Considering this, DLL can be understood as a broad term that incorporates all uses of technology in language education, as well as the tools, techniques, methodologies, and activities that facilitate language acquisition through technological means. In essence, the

discipline focuses on integrating cutting-edge tools and platforms into the process of learning and teaching a second language (Carrier et al., 2017; Li and Lan, 2022).

DLL serves as an umbrella term that encompasses a wide range of technology-mediated approaches to language learning. These include labels such as Computer-Assisted Language Learning (CALL), Technology-Enhanced Language Learning (TELL), and Mobile-Assisted Language Learning (MALL), among others. Each of these disciplines reflects different technological affordances, but they all fall within the broader scope of DLL.

2.1.1.2 Main Subfields in DLL: CALL, TELL, and MALL

2.1.1.2.1 CALL

The acronym CALL refers to the integration of technology into language learning, teaching, and assessment. Despite the name, CALL has rapidly evolved to encompass not only computers but a wide range of technological devices, including mobile phones, interactive whiteboards, and DVD players. It has been implemented in diverse contexts, from classrooms and language labs to homes, public spaces, and online platforms. Consequently, CALL technologies can exist in both blended learning¹ (BL) environments and fully online learning contexts. Its primary goal is to enhance language learning by improving accessibility, motivation, and convenience (Singh, 2015).

CALL programs can address different elements of language instruction, such as grammar, pronunciation, and informal communication. They are shaped by factors like the target language, instructional language, learner's proficiency level, and teaching focus. CALL materials integrate multimedia, interactivity and feedback, and their development requires knowledge of different disciplines, such as language teaching, learning theories, and technological applicability (Agarwal, 2017).

CALL offers a wide range of benefits, including increased learner autonomy, opportunities for individualised practice and feedback, motivation, and exposure to authentic language use. Nevertheless, it also presents several limitations, like possible mismatches between software design and classroom realities. Overall, CALL can significantly enhance

¹ Blended learning (BL) is an educational approach that combines face-to-face (F2F) classroom instruction with online learning activities, allowing for varying degrees of technological integration. BL can be "wide," including both online and offline tools (e.g., CD-ROMs), or "narrow," referring strictly to F2F combined with online elements. Its flexible models, such as flipped classrooms, station rotation, or lab rotation, make it particularly effective for addressing time constraints in language instruction (especially in pronunciation) by offering personalised and self-paced learning opportunities. Nonetheless, effective implementation requires careful task alignment, teacher training, and attention to student engagement (Carrier et al., 2017).

language learning, but its success depends on thoughtful integration into the curriculum, adequate training, and access to appropriate infrastructure (Agarwal, 2017).

Several meta-analyses have examined the effectiveness of CALL resources. For example, Zhao (2003) reviewed 9 empirical studies published between 1997 and 2001, aiming to assess the general impact of technology on language instruction and how it can be effectively applied. The analysis revealed that technology-supported instruction is generally as effective as traditional methods (if not more) and beneficial in almost all areas of language education. Similarly, Bibauw, François, and Desmet (2017) conducted a meta-analysis of 36 studies focusing on dialogue-based CALL systems (those that allow users to engage in real-time interaction with automatic agents). They reported a medium effect on L2 proficiency development, with possible variation depending on factors such as learner proficiency level and test format. Lastly, Mohamed (2020) analysed 21 studies involving 1,313 participants to explore the impact of computer-delivered feedback in CALL. The study found a moderate positive effect, with significant variables including educational level, mother tongue, research context, and target language.

Considering the overall effectiveness and popularity of CALL, various scholars have attempted to categorise its evolution, resulting in different typologies. Nevertheless, the most influential and accepted model is Warschauer's (1996, 2000, 2004). Warschauer divides the history of CALL into three chronological phases: Structural CALL, Communicative CALL, and Integrative CALL, summarised in Table 1.

Table 1. *The Three Phases of CALL*

Aspect	Structural CALL	Communicative CALL	Integrative CALL
Duration	1970s-1980s	1980s-1990s	21 st Century
Technology	Mainframe Computers	Personal Computers	Computer Networking (Internet)
Educational Theory	Behaviourism	Cognitive Constructivism	Social Constructivism
English-teaching Paradigm	Grammar Translation and Audio-Lingual	Communicative Language Teaching	Content-Based ESP/EAP

Computer Role	Mechanical Tutor	Tool for fostering discussion, writing, analytical thinking, and creative engagement	Tool for communication and collaboration
Type of exercises	Repetitive language exercises with automatic, correct responses (e.g. dialogues, pattern exercises, vocabulary practice, grammar explanations, translation-based tasks)	Interactive and communicative exercises (e.g. text reconstruction activities, paced reading programs, language games)	Real-world communication tasks and collaborative projects
Objective	Accuracy	Fluency	Agency and authenticity

Note. Adapted from Warschauer, 2000, p. 64.

Nevertheless, it should be noted that these three stages do not follow a linear progression. In other words, the introduction of a new phase does not entail rejecting the programs and methods of the previous one. Rather, older approaches are integrated into the new ones.

Structural CALL emerged in the 1960s but was not implemented until the late 1970s and 1980s. It is heavily influenced by behaviourism², with the computer acting as a mechanical tutor that delivers repetitive language exercises designed to condition learners to produce automatic, correct responses. These exercises include vocabulary practice, grammar explanations, and translation-based tasks, but they lack open-ended interaction. While Structural CALL represents the first major step in integrating computers into language

² The behaviourist theory of learning, proposed by B.F. Skinner, is based on the idea that learning occurs through interactions with the environment and is shaped by reinforcement (positive and negative) and punishment. His approach, known as operant conditioning, suggests that behaviours are strengthened or weakened depending on their consequences (Cope and Kalantzis, n.d.; Kay and Kibble, 2016).

learning, its focus on repetition and accuracy limits its pedagogical effectiveness, particularly by overlooking communicative competence. Hence, by the late 1980s and early 1990s, Structural CALL was challenged by two factors: the rejection of behaviouristic language learning approaches and the increased potential of personal computers for language learning. During this time, Communicative Language Teaching (CLT)³ emerged, focusing on functional language use and communicative competence. This shift created a growing demand for the use of interactive and communicative methods in computer-based language teaching, giving rise to Communicative CALL, which rejects drill-based exercises in favour of contextualised language use and implicit grammar instruction (Warschauer 1996, 2000, 2004; Singh, 2015).

Communicative CALL encourages learners to produce original utterances and engage with the target language. It is rooted in cognitive theories, particularly Cognitive Constructivism⁴, which views learning as an active process of discovery. This approach positions the computer as a tool for fostering discussion and creative engagement, rather than only providing correct answers. Typical exercises include text reconstruction activities and paced reading programs, allowing learners to make choices and engage meaningfully with the language. By the 1990s, many educators argued that Communicative CALL had not reached its full potential, as computers were often used for isolated tasks that did not integrate well with the broader language learning process. These tasks, while useful, did not significantly contribute to overall language acquisition. As a result, educators started developing models that better integrated the various aspects of language learning, emphasising authentic language use in context (Warschauer 1996, 2000, 2004; Singh, 2015).

This new approach, rooted in Social Constructivism⁵, is known as Integrative CALL. Technological tools are now used as part of a continuous learning process, rather than relying

³ The CLT or Communicative Approach focuses on fostering communicative competence as the primary goal of language teaching. It also aims to recognise and improve teaching methods for the four essential language skills: speaking, listening, reading and writing. This approach emphasises the relationship between language and communication (Jarosz, 2019).

⁴ Cognitive constructivism, rooted in the theories of Jean Piaget and William G. Perry, holds that learners actively construct knowledge rather than passively absorb it. According to this perspective, learning is a process of discovery, where individuals interpret new information based on their cultural background, prior knowledge, and personal experiences. Instead of rote memorisation, cognitive constructivism emphasises exploration, questioning, and restructuring one's understanding to integrate new material (University of California, Berkeley. Graduate Student Instructor Teaching & Resource Center, 2016).

⁵ Social constructivism, developed by Lev Vygotsky, builds on cognitive constructivism by emphasising the collaborative nature of learning. Vygotsky argued that cognition originates in social interactions and that knowledge is co-constructed through engagement with a knowledge community. Language and culture play a crucial role in shaping human thought, as they allow individuals to assign meaning to their experiences (University of California, Berkeley. Graduate Student Instructor Teaching & Resource Center, 2016).

on isolated computer lab exercises. This approach allows students to communicate not just with computers, but also with other learners, teachers, and people from around the world (Warschauer 1996, 2000, 2004; Singh, 2015).

Over time, CALL has become a crucial component of education. As a result, it has evolved into a diverse field, branching into specialised subdivisions (e.g. CALL for young learners) and including many different acronyms, like CAI (Computer-Assisted Instruction), ICALL (Intelligent Computer-Assisted Language Learning), or CELL (Computer Enhanced Language Learning), among others (Agarwal, 2017).

2.1.1.2.2 TELL

Nowadays, students are no longer relying solely on computers for language learning. The growing variety of digital devices has led to the emergence of TELL, which encompasses the integration of different digital technologies (such as computers, the internet, virtual and augmented reality, and artificial intelligence) into second or foreign language acquisition. While CALL also includes many of these tools, some scholars prefer the term TELL for its more inclusive name.

As a key branch of DLL, TELL encompasses a wide range of tools, like web-based platforms, collaborative online spaces and gamified applications. Theoretically, TELL is grounded in several frameworks, including sociocultural theory⁶, constructivism, and cognitive load theory⁷. These perspectives emphasise the role of technology in fostering supportive environments where learners engage with authentic materials, receive immediate feedback, and participate in meaningful interaction (Pérez Peguero, 2024).

TELL offers significant benefits. It enhances language proficiency across all skill areas, fosters cultural understanding by creating immersive experiences through VR/AR technologies that simulate real-world environments, and enables meaningful cross-cultural

⁶ Sociocultural theory, developed by Lev Vygotsky, argues that human development, learning and thinking are fundamentally shaped by social interactions and cultural influences. According to this theory, children acquire knowledge and skills first through collaboration with more expert people (such as parents, teachers or peers) and then internalise these experiences to develop higher mental functions. The theory highlights key concepts such as the zone of proximal development, the range of tasks that a learner can perform with guidance, and emphasises that culture provides essential tools and strategies for intellectual adaptation, making learning a context-dependent and socially integrated process (Kendra, 2010).

⁷ Cognitive Load Theory examines how human memory processes information through three components: sensory, working, and long-term memory. Sensory memory filters environmental input, transferring relevant data to working memory, which has limited capacity (typically 5-9 information chunks). Working memory either discards information or organises it into "schemas" for long-term storage. These schemas become more efficient with repeated use, enhancing recall. CLT's educational value lies in managing information quantity to prevent working memory overload, ensuring effective schema formation for long-term retention and retrieval (Medical College of Wisconsin. Office of Educational Improvement, 2022).

exchanges through online collaboration tools. In addition, it also increases motivation through gamification and personalised learning experiences (Pérez Peguero, 2024).

A growing body of research demonstrates the effectiveness of TELL. For instance, Shadiev and Wang (2022) conducted a review of 34 studies (2011-2022) on how technology supports language learning. The authors categorised research by language skills (speaking and writing were the most studied), technologies (social tools like Facebook and collaborative platforms like Google Docs dominated), and learning activities (collaborative tasks and digital storytelling were common). Methodologically, most studies involved undergraduates and collected data through questionnaires, tests, and interviews. Results effectively showed that technology-enhanced learning improved language proficiency and skills like critical thinking. Challenges included mostly technical difficulties, emphasising the need for better technology training.

A similar study by Chen (2025) analysed the shift in Chinese university English education from traditional, teacher-centred, grammar-focused instruction to more interactive, student-centred, and technology-enhanced pedagogy. The study found that national reforms (many universities adopted digital tools and collaborative practices such as flipped classrooms and group work) and globalisation promoted communicative competence and intercultural skills. Despite significant progress, obstacles still exist, as implementation varies. Exam pressures, large class sizes, and disparities in resources, particularly between urban and rural areas, continue to hinder technology integration. Chen concludes that while technology-enhanced pedagogy is accelerating reform, teacher support and equitable resources are essential for effective implementation.

These findings confirm that TELL, as a central component of DLL, effectively supports language proficiency by enhancing motivation and engagement. Nevertheless, TELL implementation faces challenges, including unequal access to technology, gaps in digital literacy, the need for comprehensive teacher training to effectively integrate these technologies, high costs associated with advanced tools like VR/AR systems, and general resistance to moving away from traditional teaching methods (Pérez Peguero, 2024).

2.1.1.2.3 MALL

MALL refers specifically to the use of mobile technologies to support and enhance the process of second or foreign language acquisition. It has become another key innovation within DLL, driven by the widespread use of smartphones and tablets. One of the greatest advantages of MALL is that it allows learners to engage in language acquisition anytime and

anywhere, offering more flexibility than traditional classrooms. MALL platforms often integrate game-based elements and use AI technologies like speech recognition and Natural Language Processing (NLP)⁸, making language learning more immersive. MALL technologies also enable multimodal learning, combining visual, auditory, and social interaction elements, which has been shown to improve both communicative competence and intercultural interaction. MALL also integrates adaptive learning algorithms, which tailor content to individual student profiles by adjusting the difficulty of tasks as students' progress. Like its wider field, MALL environments can be conducted fully in person or online, including different technologies, like mobile phones or handheld computers. Key benefits of MALL include personalisation, authenticity, and connectivity (Chinnery, 2006; Kukulska-Hulme and Shield, 2008; Li and Lan, 2022).

For Mobile-Assisted Language Learning (MALL) to be effectively implemented, Stockwell and Hubbard (2013) propose several guiding principles. First, MALL tasks should be designed in alignment with second language acquisition theories and tailored to the specific advantages and limitations of both the technology and the learning environment. Since mobile contexts often involve distractions, tasks should be concise, flexible, and minimally affected by interruptions. Learners should be given control over notifications and the pacing of activities to reduce cognitive overload. Accessibility is also crucial, considering device availability, connectivity, and usability across diverse learner profiles. Moreover, as numerous students are unfamiliar with using mobile devices for educational purposes, guidance and training are essential. Finally, developers and educators must consider learners' existing digital habits to ensure smoother adoption and sustained engagement.

Different studies provide insight into the effectiveness of MALL. Liu, Chen, and Hwang (2018) developed a system where learners scanned QR codes attached to fitness equipment to listen to English vocabulary related to exercise. They demonstrated that this type of context-aware learning promoted vocabulary acquisition by immersing learners in real-world environments. Findings of the study indicated that participants had favourable views on the instructional and learning system, and that their listening comprehension significantly improved. Other studies, like Amalia (2020), investigate the effectiveness of MALL in teaching pronunciation at a secondary school. The study involved 52 high school

⁸ Natural language processing (NLP) is a part of computer science and artificial intelligence (AI) that employs machine learning to help computers understand and engage with human language (Stryker & Holdsworth, 2024).

students, who were divided into two groups (each with 26 students). One of the groups used a MALL application for pronunciation learning, while the other received traditional teaching. The results of the study indicated that the group using MALL technology demonstrated significant improvement in pronunciation skills compared to the other group.

Similarly, Sung, Chang, and Yang (2015) conducted a meta-analysis that reviewed 45 studies to quantify the effectiveness of mobile devices in language learning. They found that learning and teaching with mobile devices had a moderate overall effect, implying that around 70% of students using MALL would outperform their counterparts who learn languages without such devices.

Nevertheless, MALL tools have come in for some criticism. Excessive use of mobile phones for social networking, small screen sizes, limited audio-visual quality, and cognitive overload (especially when handling complex or multi-page information) hinder its effectiveness. Psychological and pedagogical barriers, such as student resistance and insufficient teacher training, may further complicate effective implementation. Additionally, despite common belief, access to MALL devices is not universal across all learner populations, especially in countries where challenges with infrastructure and significant gaps in digital access persist. Furthermore, connectivity issues, the need to limit online time, and usability difficulties among specific learner groups, such as older adults, complicate its application. To address these challenges, some authors have called for increased digital literacy training, the development of tailored user interfaces, and clearer pedagogical frameworks for both educators and students (Chinnery, 2006; Mthethwa, 2019; Kukulska-Hulme, 2020; Kumar, 2020; Sam and Shalini, 2021; Li and Lan, 2022).

2.1.1.3 Main Trends in DLL: VR and Game-Based Learning

In recent years, DLL has evolved rapidly, with Virtual Reality (VR) and game-based learning emerging as two of the most prominent and innovative trends in the field. VR encompasses various formats and tools, like desktop and tablet virtual environments, head-mounted displays (HMDs), and Augmented Reality (AR) and Mixed Reality (MR) devices. The primary advantage of VR in second language acquisition is that it creates authentic contexts that transcend geographical boundaries, thus increasing learner engagement (Li and Lan, 2022).

Empirical evidence increasingly supports the effectiveness of VR in L2 education. For instance, Li and Lan (2022) included a study in their article that analysed *Second Life*, a VR platform that allows students to interact with each other globally. In the study, American

students used the app to learn Mandarin Chinese vocabulary. Results showed that learners who used this platform needed half the number of exposures to achieve the same level of accuracy as those in traditional settings. Similarly, a meta-analysis by Chen et al. (2022) that reviewed 17 empirical studies published between 2000 and 2022 confirms the overall effectiveness of Extended Reality (XR, encompassing VR, AR, and MR), particularly in improving vocabulary and speaking skills. The strongest gains were observed among younger learners, while results for university students were less pronounced. Notably, VR and AR showed comparable benefits. The study underscores XR's capacity to create immersive, context-rich learning environments.

Another meta-analysis by Peixoto et al. (2021) reviewed 30 studies and found that immersive virtual reality (iVR) positively impacts foreign language learning compared to traditional methods. It also noted increased motivation and satisfaction among learners who used it. Notably, the studies they reviewed all used head-mounted displays and the Unity game engine. Nevertheless, the scarcity of studies on the topic and small sample sizes limited the generalisability of results.

Despite its potential, VR in language education faces several challenges. High costs, limited hardware access, and user discomfort (e.g. motion sickness) hinder its implementation. There is also a lack of language-specific content, and without pedagogical alignment, VR may prioritise novelty over learning. Traditional assessment methods often struggle to evaluate VR-based learning, and many teachers lack training in VR integration. Practical issues like limited devices, classroom management, and institutional resistance further complicate adoption. Overcoming these barriers requires tailored content, professional development for educators, and more rigorous, large-scale studies to validate VR's role in sustainable language learning (Lan, 2020; Bahari, 2022; Li and Lan, 2022).

Game-Based Language Learning (GBLL), also referred to as gamification in language learning, is another innovation within DLL. This discipline has gained popularity as an effective method for engaging digital-native learners. While many CALL, MALL, and VR platforms integrate game-based elements, GBLL is often studied separately due to the longstanding role of games in education. Nevertheless, unlike traditional entertainment games, GBLL tools are designed with explicit educational goals (Li and Lan, 2022).

GBLL is closely related to edutainment, a methodology that merges entertainment with education to enhance student engagement. This approach incorporates game elements such as visual storytelling, challenges, and rewards, including badges, leaderboards, points, and progress-tracking systems. These elements not only motivate learners but also provide

educators with valuable insights into student progress. Studies indicate that such gamified techniques encourage participation and improve language retention (Thurairasu, 2022).

Multiple ways exist to integrate GBLL into language learning, ranging from board games focused on grammar to role-playing games that develop communication skills. Digital platforms like *Kahoot!* have gained global popularity by fostering competition and engagement in classroom settings. Similarly, apps like *Busuu* and *Duolingo* have demonstrated effectiveness in English learning, offering vocabulary acquisition, grammar practice, and immersive communication opportunities. Research suggests that students exposed to game-based learning retain more vocabulary than those who do not, though the impact of gamification depends on implementation and learner involvement (Thurairasu, 2022).

Luo (2023) conducted a systematic review that evaluated the effectiveness of gamified tools in foreign language learning by synthesising findings from 21 empirical studies. The study aims to address gaps in understanding how gamification impacts language acquisition, engagement, and academic performance. Results revealed mixed effectiveness of gamified tools. While some studies reported positive outcomes, such as enhanced vocabulary retention or increased engagement, others found no significant differences or even negative effects, such as distraction among learners. English was the most studied language (52% of studies), with tools often targeting university students, leaving K-12⁹ learners underrepresented. Methodologically, short-term interventions and small sample sizes predominated. Technical and design flaws, where tools prioritised superficial aspects over meaningful pedagogical integration, represent challenges in the adoption of GBLL.

Another systematic review conducted by Yang et al. (2024) examined 83 studies on GBLL in K-12 education published between 2009-2022. They found that English is the main target language, and primary students are the most frequent users. Tutorial-style games are the most common, often implemented through a three-phase approach: pre-training, teacher-guided play, and post-game reflection. GBLL proves effective in enhancing language skills, motivation, and engagement, though issues like technical difficulties and cognitive overload remain. The study calls for more research with younger and older learners and urges collaboration among educators, designers, and researchers to strengthen GBLL's pedagogical impact.

⁹ Schooling years from kindergarten to 12th grade.

A different study conducted by Anane (2024) examined the use of *Kahoot!* in an online French as a foreign language (FFL) course at the University of Sharjah over three academic terms. Using a mixed-methods approach with 259 students, the study found that this platform significantly boosts student engagement, enjoyment, and memorisation. Regular use of quizzes both before and after lessons sustained interest, with over 70% of students expressing strong enthusiasm. Nevertheless, some students reported stress from the competitive format and minor technical issues. Despite this, no signs of fatigue emerged; instead, students requested more *Kahoot!* activities. The study concludes that, when implemented thoughtfully, *Kahoot!* is an effective tool.

Despite its advantages, the effectiveness of GBLL remains a topic of discussion. Individual learner differences influence outcomes: while high-achieving students perform well in both gamified and non-gamified conditions, lower-achieving students tend to benefit more from GBLL. All in all, GBLL fosters motivation, active participation, and engagement, making it particularly effective for younger learners. Given its potential benefits, GBLL should be considered an integral component of modern language education (Li and Lan, 2022; Thurairasu, 2022).

2.1.2 Computer-Assisted Pronunciation Training (CAPT)

In the evolving landscape of DLL, the adoption of specialised technologies for pronunciation training is gaining attention. CAPT tools have become powerful resources to improve learners' phonological awareness and speaking precision. While DLL offers a comprehensive framework for all forms of digitalised language learning, CAPT focuses specifically on pronunciation, tackling the difficulties that L2 learners encounter in this aspect of language acquisition.

Phonetic and phonological skills are crucial for L2 acquisition, as they play a critical role in achieving effective and intelligible communication. The Common European Framework of Reference for Languages (CEFR), a widely recognised international standard for describing language proficiency, defines phonological competence as the ability to perceive and produce the phonemes and allophones of a language, along with prosodic features such as stress, rhythm, and intonation. The CEFR emphasises the importance of pronunciation and intonation as fundamental skills necessary for effective communicative competence and, from the 2018 edition onwards, introduces a six-level scale of phonological control ranging from A1 to C2. This scale offers detailed descriptors of learners' ability to produce intelligible speech, focusing on segmental accuracy (phonemes and allophones) and

suprasegmental control (stress patterns, rhythm, and intonation). At the basic levels (A1-A2), learners are expected to pronounce familiar words intelligibly, although with a noticeable foreign accent. At intermediate levels (B1-B2), speech should become more intelligible and natural, with fewer systematic mispronunciations, especially in high-frequency items. At the advanced levels (C1-C2), users are expected to demonstrate full control of prosodic features and maintain a high degree of intelligibility across a wide range of communicative contexts. (Council of Europe, 2020). The complete scale is reproduced in Appendix 2, Table 2. *CEFR (Common European Framework of Reference) Scale of Phonological Control*, for further detail (Council of Europe, 2020, pp. 134-135).

This highlights that accurate pronunciation is crucial for successful communication in a second language. Without proper phonetic and phonological skills, learners may struggle to be understood, which can limit overall language proficiency (Gómez González and Lago Ferreiro, 2024). Therefore, systematic pronunciation training should be an integral part of language learning, equipping learners with the clarity, confidence, and communicative effectiveness needed for real-world interactions.

Nonetheless, pronunciation instruction remains significantly underemphasised in EFL contexts. As a result, pronunciation training is frequently postponed until advanced levels, largely due to the complexity of phonetic content for learners, the scarcity of appropriate materials, and time constraints (Gómez González and Lago Ferreiro, 2024). Moreover, effective pronunciation instruction demands personalised attention, which is not always possible in traditional classroom settings.

CAPT tools are promising resources in this regard, and, given the crucial role of phonetic and phonological competence in effective communication, incorporating CAPT into language curricula can help bridge existing gaps in pronunciation instruction, enabling learners to develop clearer, more intelligible speech.

2.1.2.1 Definition and Scope

CAPT tools can be defined as digital resources that have emerged within the broader field of DLL and are designed to help language learners improve their L2 pronunciation skills through technology-driven instruction. These systems, available on both desktop and mobile devices, provide L2 learners with self-paced practice, immediate feedback, and diverse pronunciation input. CAPT tools also integrate High Variability Phonetic Training (HVPT), exposing learners to a wide range of pronunciation models from different speakers, accents, and phonetic contexts, ultimately enhancing phonetic perception and production.

Furthermore, CAPT is strengthened by automatic speech recognition (ASR), which enables real-time speech-to-text conversion, error detection, and tailored feedback, allowing learners to refine their pronunciation with greater accuracy and adaptability (Amrate and Tsai, 2024).

According to Gómez González and Lago Ferreiro (2024), CAPT tools can be categorised into four main types:

1. Digital resources such as e-books, online dictionaries, blogs, and instructional websites created by specialists in English phonetics (e.g. John Wells or Peter Ladefoged) or by reputable organisations (e.g. the BBC and the British Council).
2. Technological tools related to phonetics and speech processing. These include phonetic transcription programs (e.g. *PhoTransEdit* or the IPA Online Keyboard), software for editing audio (e.g. *Audacity*) and Speech Recognition Technology (SRT) applications (e.g. *Voice to Text Pro* or *Twilio Voice*). Additionally, this category encompasses Text-to-Speech (TTS) systems that generate synthetic speech, acoustic analysis software (e.g. *Praat*), and ASR programs (e.g., *Dragon Anywhere* or *Says*) that can assess learners' pronunciation and provide corrective feedback.
3. MALL, involving the use of mobile devices and applications to support phonetic learning (e.g. *ELSA Speak*).
4. Digital audio-visual materials, such as podcasts, social media platforms, music, original-language films, and mass media content, all of which can serve as CAPT tools for pronunciation training.

The following section offers a general review of commonly used CAPT tools of each category and explores evidence regarding their effectiveness.

2.1.2.2 Main CAPT Tools

As previously explained, CAPT tools encompass a wide variety of resources, ranging from online dictionaries or phonetic websites to sophisticated AI-powered applications. Following the classification proposed by Gómez González and Lago Ferreiro (2024), this section aims to provide an overview of representative tools from each category, supported by studies that examine their pedagogical potential. Unlike Section 3 of this BA dissertation, the aim here is not to compare specific applications, but to illustrate the variety of CAPT resources currently available and examine the evidence of their effectiveness.

As stated by Gómez González and Lago Ferreiro (2024), the first category of CAPT tools includes, among other elements, instructional websites like the *EPSS Multimedia Lab* (EPSSML), an e-learning platform developed by the University of Santiago de Compostela to

teach English phonetics and phonology to Spanish-speaking learners in a blended learning environment. Designed as a complement to the textbook *English Pronunciation for Speakers of Spanish: From Theory to Practice*¹⁰, EPSSML combines theoretical explanations with practical exercises across seven thematic units. It offers resources such as an animated sound bank, recorded activities with solutions, and comparative insights into English and Spanish phonetic features, thus supporting both classroom instruction and autonomous pronunciation training (Gómez González et al., 2019).

Gómez González and Lago Ferreiro (2024) conducted a study using a comparative, mixed-methods design to evaluate the effectiveness of this platform in supporting English pronunciation training. The research involved 504 undergraduate EFL students from the University of Santiago de Compostela, who were divided into two groups: one received traditional, teacher-led instruction, while the other followed a blended learning approach that integrated the use of EPSSML. Data were collected through both quantitative and qualitative means. Students' academic performance over four academic years was analysed based on three types of assessments: an expository exam, seminar-based tasks, and a practical lab test. To complement this, qualitative data were gathered from a satisfaction questionnaire completed by 127 students in the EPSSML group, which aimed to evaluate their perceptions of the platform and the BL methodology. The study also examined potential gender-based differences. Their findings demonstrated that BL significantly improved students' academic performance, motivation, and engagement. The study reported a substantial decrease in the number of students who failed to take the final exam, an increase in the pass rate, and overwhelmingly positive attitudes toward both the EPSSML platform and the BL methodology, with 91.3% of surveyed students expressing satisfaction. In addition, the study found no significant gender-based differences in students' perceptions of the platform, with both male and female students reporting similar levels of engagement and satisfaction, underscoring the inclusivity and accessibility of the platform.

This category of CAPT tools also includes online dictionaries like *Google Translate* and *U-Dictionary*, which integrate pronunciation features such as audio playback and accent options. Azis (2024) investigated the pedagogical impact of these apps in a study involving

¹⁰ *English Pronunciation for Speakers of Spanish: From Theory to Practice*, by María de los Ángeles Gómez González and Teresa Sánchez Roura, is a theoretical and practical guide to English pronunciation specifically designed for Spanish-speaking learners. The book takes a contrastive English-Spanish approach, covering both segmental and suprasegmental features, and combines theory with written and audio-based exercises. It is complemented by the EPSS Multimedia Lab website, which offers interactive resources, audio files, and visual materials to support learning.

22 Indonesian high school students. Using a mixed-methods approach (questionnaires and interviews), the research assessed students' perceptions of mobile dictionaries for pronunciation practice. The results showed that most students reported improvement in pronunciation and agreed that utilising these tools was beneficial in improving their pronunciation skills. In general, students viewed mobile dictionaries as motivating and accessible tools, but they also highlighted that their effectiveness was constrained by internet dependency, excessive ads and the lack of accurate phonetic transcriptions.

Another category of CAPT tools includes phonetic transcription programs like *PhoTransEdit*, developed by a Spanish programmer and English student to help English as a L2 students improve their pronunciation through learning phonetic transcription. The program works by converting text into its phonetic representation using IPA. To evaluate the pedagogical effectiveness of *PhoTransEdit*, Gautama (2020) conducted a study that aimed to determine the effectiveness of the program in improving the pronunciation skills of English students, as well as students' perceptions of the tool. The study involved thirty students from the English Department at UNISBA Blitar (Indonesia), all of whom had already completed a phonology course and possessed basic knowledge of phonetic transcription. The participants were divided into two groups of fifteen: an experimental group trained with *PhoTransEdit* and a control group taught without using the program. The research focused on segmental pronunciation features, such as vowels, consonants, and diphthongs. During the first phase, both groups of students completed a 40-item transcription test both before and after the instructional treatment to assess improvement. In the second phase, the experimental group completed a questionnaire designed to gather their opinions on the program. Additionally, eight randomly selected participants were interviewed to provide qualitative insights into their learning experience.

The results showed that the *PhoTransEdit* group achieved significantly higher scores on the post-test compared to the control group, indicating a positive impact on phonetic transcription skills. In addition, learners expressed a strong preference for using digital tools like *PhoTransEdit* over traditional dictionaries. Students described the tool as accessible, easy to use, and effective for improving both their understanding of IPA and their overall pronunciation. The study concluded that *PhoTransEdit* is a valuable resource for supporting pronunciation training in formal learning contexts.

The same category of CAPT tools also encompasses TTS systems. Duong (2022) investigated the effects of TTS systems (tools that turn written text into speech automatically) on EFL pronunciation learning. The study was conducted with 60 Vietnamese high school

students and consisted of mixed-methods research that combined the use of quantitative questionnaires and qualitative interviews. Researchers planned six TTS-supported lesson plans using textbook materials. Results showed a significant pronunciation improvement, both in phoneme accuracy, stress and intonation. Regarding students' perceptions, most of them showed a positive attitude toward TTS systems and were willing to use them in pronunciation learning in the future. A similar study conducted by Abdel-Reheem Amin (2024) examined AI-powered TTS applications, that is, those systems that merge artificial intelligence and speech synthesis technology to convert written text into natural-sounding spoken language. The study was conducted with 90 EFL students from Saudi Arabia who also followed a mixed-methods approach. They received training on AI TTS applications and, over five sessions, they practised segmental and suprasegmental features. After those sessions, students completed questionnaires and interviews to evaluate their perceptions of the apps' effectiveness in pronunciation learning. The study found AI TTS systems highly effective for enhancing pronunciation, as most students reported improved accuracy, found the app intuitive, planned on continuing to use it for self-study, and described the practice as enjoyable.

The next category of CAPT tools, according to Gómez González and Lago Ferreira (2024), involves the use of MALL. Fouz-González (2020) conducted a study on the *English File Pronunciation* (EFP) app, a MALL tool that won the English-Speaking Union President's Award for New Technology in ELT 2016. The app is specifically designed to support pronunciation training through interactive listening and speaking, allowing users to practise both segmental and suprasegmental aspects (*Say It: English Pronunciation Android app*, n.d.). Fifty-two B2-level university students were divided into two groups: one group used the app for two weeks, 20 minutes every day, while the other group did not (after post-tests, this group also trained with the app and was retested). Results found that it significantly improved Spanish EFL learners' perception and production of challenging English sounds, such as /æ/, /ɑ:/, and /s-z/ contrasts. The study demonstrated that learners who used the app showed measurable improvements in both imitative and spontaneous pronunciation tasks, although the gains varied across different sounds and tasks.

Finally, the last category of CAPT tools, according to Gómez González and Lago Ferreira (2024), concerns the use of digital audio-visual materials and mass media content. Related to this, an innovative study was conducted by Zhang et al. (2024) in which they

investigated the value of an embodied music training¹¹ program for improving pronunciation skills. 48 Chinese adolescent English learners participated in this study, which was conducted in three forty-minute sessions. They were divided into two groups: the embodied music group, which engaged in rhythmic and melodic activities involving body movements (e.g., clapping), and the non-embodied music group, which received traditional music lessons where they appreciated music pieces and received music knowledge. Both groups completed tests that included a speech imitation task in six unfamiliar languages and an English oral reading task, rated for accentedness, comprehensibility, fluency, and segmental and suprasegmental accuracy. Results of the study showed that the embodied music group demonstrated significant gains in speech imitation and L2 pronunciation, outperforming the non-embodied group. Participants in the embodied music group also reported higher enjoyment and effectiveness, despite rating the sessions as more challenging. Notwithstanding, the study has limitations like the shortness of the intervention, and further research is needed. Overall, embodied music training offers a promising approach to improving L2 pronunciation.

Together, these examples illustrate the diversity and versatility of CAPT tools currently in use, as well as their potential to support and enhance pronunciation learning in a wide range of contexts.

2.1.2.3 Effectiveness of CAPT Tools

As discussed in the previous section, empirical research consistently supports the pedagogical potential of a wide variety of CAPT tools, from instructional websites and transcription software to TTS systems, mobile applications, and audiovisual resources. Despite their different technological formats, all the studies reviewed highlight positive outcomes in improving learners' pronunciation skills. These findings suggest that CAPT tools can serve as valuable resources for enhancing both the perception and production of L2 sounds.

¹¹ Embodied music training is an approach rooted in Dalcroze Eurhythmics, which uses body movements (e.g., clapping, swaying, or dancing) to enhance musical skills like rhythm and pitch perception by integrating sensory, motor, and cognitive processes. Research shows that this method also benefits second language (L2) pronunciation, as synchronising movement with music strengthens auditory-motor connections, improving speech rhythm and segmental accuracy. The link between music and language lies in shared neural mechanisms for processing rhythm and melody, facilitating transfer effects even without direct linguistic input. Studies suggest embodied music training may be particularly useful for learners of stress-timed languages (e.g., English) by reinforcing prosodic patterns through physical engagement (Zhang et al., 2024).

The broader efficacy of CAPT tools has also been supported by several meta-analyses. A case in point is Mahdi and Al Khateeb's (2019) review of 20 studies examining the impact of CAPT applications on L2 learners' pronunciation. Their findings revealed that CAPT approaches proved more effective than traditional methods, especially for suprasegmental features like intonation and stress, though also beneficial for segmental features. Beginner and intermediate learners benefited more than advanced learners, and classroom settings yielded stronger results than learning outside the classroom. Assessment formats also played a role, with conversations and multiple-choice tasks producing larger effects than word lists or reading aloud. These results suggest that CAPT is a pedagogically valuable tool for pronunciation training, especially in a BL setting. Nevertheless, the authors highlighted that these findings are not conclusive, given the limited number and scope of studies, most of which focused on university learners. They stressed the need for further research, especially long-term studies with more diverse participants, to explore key variables such as age, proficiency level, and learning context.

More recently, Ngo, Chen, and Lai's (2024) conducted another meta-analysis of 15 empirical studies, this time focusing on analysing the effectiveness of CAPT tools incorporating ASR technology in improving ESL/EFL learners' pronunciation. Results showed that ASR does help in pronunciation instruction, especially when explicit corrective feedback (like detailed corrections and visual feedback) is provided, which works better than indirect feedback (like simple "correct/incorrect" messages). ASR was also more helpful for segmental pronunciation than for suprasegmental features. Longer training periods (5 weeks or more) were more effective, and practising with peers led to better results than practising alone. Adults and learners at the intermediate level showed the most improvement. Nevertheless, the study had limitations, such as the small number of studies reviewed and the inability to analyse how distinct types of pronunciation tests (like reading aloud vs. open-ended speaking) might affect the results.

Further evidence of CAPT's effectiveness can be found in Gómez González and Lago Ferreiro's (2024) review of studies, which confirmed that CAPT tools enhance learners' phonetic and phonological awareness, as well as their perceptive and productive skills, leading to better academic performance and increased motivation. Nevertheless, they also identified several limitations, including the lack of strong pedagogical foundations in many CAPT tools, which often prioritise commercial success over educational effectiveness. Additionally, some applications provide generalised or inaccurate feedback, which may frustrate or mislead learners.

Considering these findings, it can be concluded that CAPT tools (despite their limitations) are valuable resources for improving English pronunciation. Their ability to provide repeated exposure, varied input, personalised feedback, and self-paced practice makes them perfect to address many of the challenges that traditional pronunciation faces. As technology continues to evolve, future CAPT systems may become even more adaptive, inclusive, and effective in supporting pronunciation learning across various levels and learner profiles.

Nevertheless, the successful integration of pronunciation training in the classroom does not depend solely on the availability of digital tools. It also requires clear curricular guidelines. In this regard, it is essential to consider how English pronunciation is addressed in the Spanish educational context. The following section analyses the current national and regional regulations concerning secondary education, aiming to understand the role pronunciation is given within the curriculum, particularly in Galicia.

2.2 English Pronunciation in Spanish Secondary Schools

The teaching of English pronunciation in Spanish secondary schools is dictated by national educational regulations established under *Ley Orgánica 2/2006*, as amended by *Ley Orgánica 3/2020*, and further detailed in *Real Decreto 217/2022*. These legislative frameworks define the competencies and objectives for foreign language learning at the national level, which are then adapted by each autonomous community to align with regional educational priorities.

At the national level, pronunciation is recognised as a component of the communicative competence students must develop in a foreign language. Real Decreto 217/2022 states that students should be able to “understand and express themselves in one or more foreign languages in an appropriate manner” (Ministerio de Educación y Formación Profesional, 2022, p.9). Nevertheless, there is no specific guidance on how this should be achieved, nor on how pronunciation should be systematically taught, leaving its implementation largely undefined. The only references to pronunciation set broad expectations for different stages of secondary education. Thus, for the first two years of secondary school, students are expected to recognise and produce “basic sound, accentual, rhythmic, and intonation patterns, as well as the general communicative meanings and intentions associated with these patterns” (Ministerio de Educación y Formación Profesional,

2022, p.137). By the third and fourth years, this expectation remains largely unchanged, with students required to understand and produce “common sound, accentual, rhythmic, and intonation patterns, along with their associated communicative meanings and intentions” (Ministerio de Educación y Formación Profesional, 2022, p.139). The decree fails to outline a clear progression of phonetic skills, as well as specify which aspects of pronunciation should be explicitly taught at each stage.

This lack of specificity results in significant variability in pronunciation training across the national territory, as its implementation is largely determined by regional policies and the discretion of individual schools and teachers. Hence, given that the empirical study conducted in this research focuses on secondary schools in Galicia, the following subsection will examine how these national guidelines are interpreted and implemented within this autonomous community.

2.2.1 The Role of Pronunciation Instruction in Galician Educational Regulations

Following the national educational framework, the teaching of English pronunciation in Galicia is dictated by *Decreto 156/2022*, *Decreto 117/2023*, and the *Orde do 26 de maio de 2023*, which define the curriculum and evaluation criteria for foreign language learning in secondary education. As with the national decree, these regulations emphasise communicative competence as a key objective but offer little to no structured guidance on how pronunciation should be systematically taught and assessed.

Real Decreto 156/2022 acknowledges pronunciation as a component of oral communication. Nevertheless, much like *Real Decreto 217/2022*, it does not specify which phonetic features should be addressed at each stage of learning, nor does it establish a progression in pronunciation skills throughout secondary education. Unlike grammar and vocabulary, which follow a structured sequence, pronunciation remains vaguely defined, leaving its instruction largely at the discretion of individual teachers.

The objectives related to pronunciation are identical to those outlined in *Real Decreto 217/2022*. For the first two years of secondary education, students are expected to recognise and produce “basic sound, accentual, rhythmic, and intonation patterns, as well as the general communicative meanings and intentions associated with these patterns” (Consellería de Cultura, Educación, Formación Profesional e Universidades, 2022, pp. 50284, 50287). In the third and fourth years, these expectations remain, once again, practically unchanged, requiring students to understand and produce “common sound, accentual, rhythmic, and

intonation patterns, along with their associated communicative meanings and intentions” (Consellería de Cultura, Educación, Formación Profesional e Universidades, 2022, pp. 50291, 50294).

The *Orde do 26 de maio de 2023* further reinforces this flexibility in pronunciation instruction, stating in Article 12 that each school must develop its own “concreción curricular” to adapt the general objectives to its specific context (Consellería de Cultura, Educación, Formación Profesional e Universidades, 2023, p. 36281). While this flexibility allows for diverse teaching approaches, it also creates inconsistencies in pronunciation instruction. In some schools, teachers may integrate explicit phonetic training, while in others, pronunciation may be limited to incidental corrections during oral activities. This lack of standardisation suggests that pronunciation, despite being a crucial aspect of communicative competence, may not receive the instructional emphasis it requires.

2.2.2 Current Challenges in Teaching English Pronunciation

Despite its critical role in communicative competence, the teaching of English pronunciation in secondary education faces multiple challenges that hinder its effective assimilation by students.

One of the primary obstacles is the limited emphasis placed on pronunciation within official curricula. As discussed in the previous subsection, neither national nor regional educational regulations provide a structured progression of phonetic skills, nor do they specify which pronunciation features should be explicitly taught at different educational levels. This lack of clear guidelines often results in pronunciation being treated as a secondary skill rather than an integral component of language instruction. Consequently, teachers may not allocate sufficient time to pronunciation training, prioritising other linguistic skills such as grammar, vocabulary, and reading comprehension. In addition, pronunciation is often perceived as a difficult area to teach, requiring both specialised knowledge and effective pedagogical strategies that go beyond traditional listen-and-repeat exercises. In many classrooms, pronunciation is addressed incidentally rather than through explicit, structured practice.

The lack of technological resources and specialised pronunciation tools in many schools further aggravates these challenges. As this study has exemplified, CAPT tools offer innovative solutions for pronunciation practice, but their integration into secondary education remains limited. Many teachers and institutions are unfamiliar with CAPT technologies or lack access to the necessary infrastructure to incorporate them into their teaching practice.

Indeed, this has been proved by recent studies. Castillo Rodríguez, Torrado Cespón, and Lago Ferreiro (2023) investigated the beliefs of non-native English teachers regarding the ideal characteristics of digital pronunciation resources. Their study surveyed 127 teachers from both secondary and university education, focusing on their current practices and preferences when teaching pronunciation. Results indicated that secondary school teachers primarily relied on textbook materials and made little use of specialised digital tools for pronunciation. Nevertheless, both secondary and university teachers expressed their interest in accessing digital resources that were easy to integrate into classroom activities. Teachers emphasised that the ideal CAPT tool should be, among other characteristics, accessible, open, and adaptable to different educational contexts.

Complementing these findings, Santos Díaz, Gómez González, and Díaz Lage (2024) conducted another study to explore how pronunciation is taught and perceived in EFL classrooms across Spain. They surveyed 494 students and 127 teachers at both pre-university and university levels, and results revealed significant gaps in pronunciation practice, especially in compulsory secondary education. Students reported that Spanish learners of English struggle with both segmental and suprasegmental features and highlighted that suprasegmental features were rarely addressed in class. Nevertheless, teachers considered that vowel sounds were the most difficult for students to acquire, which may explain the little attention given to suprasegmental features. Other difficulties signalled by teachers were transcription (for the pre-university group) and rhythm (for the university group). Furthermore, results also showed that digital resources were seldom used, but teachers' responses defended the inclusion of internet activities for practising pronunciation. Finally, both teachers and students expressed concerns about the lack of time devoted to pronunciation and the anxiety students felt during speaking practice. These findings highlight the need to introduce more structured pronunciation training supported by innovative tools such as CAPT, especially CAPT tools tailored to the specific needs of Spanish-speaking learners.

Considering these findings, the following sections will explore how such tools, particularly *e-SoundWayFR*, can address these gaps by offering structured, interactive pronunciation practice tailored to students' needs. The number of applications designed to improve English pronunciation has grown significantly over the past decades, but sometimes the wide range of apps available hinders the selection of those that really fulfil pedagogical, technical, and content standards, as well as their effective integration into teaching curricula. Some of the most widely recognised apps include *Busuu*, *FluentU*, *HelloTalk*, *Sounds of*

Speech Iowa, ABA English, Budi.ai, Blue Canoe, and Babbel, among others. As space constraints preclude an analysis of the many available CAPT applications or apps, in what follows, we shall focus on four of them, which satisfied our two selection criteria. The first was popularity in user ratings (above 4 out of 5 stars), while the second was that the app in question should have a specific component on English pronunciation. The selected applications are *Duolingo* (4.7/5), *Rosetta Stone* (4.6/5), *ELSA Speak* (4.6/5), and *Livango* (4.8/5). These four CAPT apps are assessed in turn.

3. A Comparative Analysis of Existing Applications for Practising English Pronunciation.

To conduct a systematic and rigorous evaluation of the four CAPT tools selected, the DEO¹² Grid rubric proposed by Gómez González (2024) has been adapted to suit the specific requirements of secondary school settings. This rubric provides a comprehensive analytical framework that includes 50 criteria grouped into three main dimensions: content, pedagogical, and technical. It is based on international standards such as UNE 71362:2020¹³, LORI¹⁴, and COdA¹⁵, enabling the assessment of key aspects such as the quality and updating of content, curricular alignment, adaptability, interactivity, accessibility, and motivation, among others. Hence, given the scope of this study and the profile of the target users (secondary school students and teachers), the most relevant criteria from Gómez González's

¹² Digital Educational Object

¹³ The UNE 71362:2020 standard, established by the Spanish standardization organism (UNE), provides a framework for assessing the quality of digital educational materials. It outlines fifteen key evaluation criteria: (1) Didactic description, (2) Quality of content, (3) Capacity to generate learning, (4) Adaptability, (5) Interactivity, (6) Motivation, (7) Format and design, (8) Reusability, (9) Portability, (10) Robustness, technical stability, (11) Structure of the learning scenario, (12) Navigation, (13) Operability, (14) Accessibility to audio-visual content, and (15) Accessibility to text content (Gómez González, 2024, p. 3)

¹⁴ Learning Object Review Instrument (LORI) is a quality rating tool for digital learning resources developed by the E-Learning Research and Assessment Network. It outlines nine evaluation items: (1) content quality, (2) learning goal alignment, (3) feedback and adaptation, (4) motivation, (5) presentation design, (6) interaction usability, (7) accessibility, (8) reusability, and (9) standards compliance (Gómez González, 2024, p.3).

¹⁵ "Calidad de Objetos de Aprendizaje Universitarios", 'Quality of University Learning Objects' (COdA) outlines ten quality criteria organised in two dimensions: pedagogical (Cognitive value and pedagogic coherence; Content quality; Capacity to generate learning; Interactivity and adaptability; and Motivation) and technical (Format and layout; Usability; Accessibility; Visibility; and Compatibility) (Gómez González, 2024, p.3).

(2024, p.4) DEO Grid that have been selected for the comparative analysis of the four applications under study are:

Content dimension:

1. Quality and accuracy of content (verified and updated)
2. Learning goals alignment with the educational curriculum/syllabus
3. Relationship between contents and prior knowledge/experience
4. Relationship between contents and learning objectives
5. Dynamic audio-visual contents and resources relevant to the text
6. Multimedia or multimodal content
7. Aid tools and resources (Artificial Intelligence (AI), among others)

Pedagogical dimension:

8. Capacity to generate learning
9. Capacity to promote critical thinking
10. Capacity to provide applicable learning
11. Capacity to engage in self-directed learning
12. Feedback
13. Motivation
14. Interactivity
15. Adaptability to learners' level and individual differences and needs
16. Gamification pedagogy
17. Coach

Technical Dimension

18. Ease of installation
19. Compatibility with different devices and platforms
20. Simple and user-friendly interface
21. Clear organisation
22. Quality and clarity of Navigation Menu
23. Quality and clarity of Help Menu
24. Quality of images and videos
25. Quality of sound
26. Accessibility online and offline
27. Progress identification
28. Possibility to save your progress and continue later
29. Free of charge and no ads

In addition to these 29 criteria, an additional parameter has been incorporated to assess whether each tool has been specifically designed with Spanish-speaking secondary students in mind, as this factor may enhance their effectiveness and ease of integration in the Spanish educational context. With this addition, the adapted DEO Grid includes a total of 30 evaluation criteria.

Through this comparative analysis, the study aims to identify the strengths and limitations of the selected CAPT applications, as well as to reveal potential “gaps” that highlight unmet educational needs among students. These findings will point out the need for the development and implementation of innovative digital solutions such as *e-SoundWayFR*, specifically designed to address the unique challenges faced by Spanish high school students in pronunciation learning.

3.1 Description of Selected CAPT Applications

3.1.1 Duolingo

Duolingo, available for Android and iOS, is a popular app that offers courses in over 40 languages (English included). By combining gamified exercises with science-based teaching methods, *Duolingo* makes learning engaging and effective. Its AI-powered features adapt lessons to students’ level and pace, offering a personalised experience (*Duolingo-The world's best way to learn a language*, n.d.).

For pronunciation, Duolingo incorporates speech recognition exercises that provide immediate feedback, along with phonetic transcriptions to support pronunciation improvement. Nevertheless, the only available accent is American English. Since pronunciation is not the app’s primary focus, users seeking more intensive practice may need to rely on additional resources (*Duolingo-The world's best way to learn a language*, n.d.).

Duolingo also provides a free version for schools, aligned with CEFR standards. For individual users, the app offers a free version, which includes a wide range of exercises but is ad-supported and has limitations and a premium version, *Duolingo Plus*, which offers an ad-free experience, offline access, and advanced progress tracking (*Duolingo-The world's best way to learn a language*, n.d.).

3.1.2 Rosetta Stone

Rosetta Stone, also available for Android and iOS, offers courses in 25 languages, English included. The platform, aligned with CEFR standards, is known for its immersive learning methodology, which emphasises natural language acquisition by integrating real-life situations to promote applicable learning. The app places a notable emphasis on pronunciation thanks to its proprietary TruAccent speech recognition technology, which provides instant feedback by comparing users' pronunciation to that of native speakers. Moreover, at the end of each unit, students can have a conversation with a pre-recorded native speaker, allowing learners to practice real-world scenarios in a supportive environment. Nevertheless, the app does not provide phonetic transcriptions, and the only two accents available are British English and American English (*How Rosetta Stone Works | The Rosetta Stone Method*, n.d.).

Like *Duolingo*, *Rosetta Stone* also provides customised solutions for educational institutions, allowing teachers to monitor their students' progress and adjust instruction based on individual needs (*Rosetta Stone for Schools*, n.d.). Unfortunately, access to the app requires payment, both for individuals and schools. Only a free trial is offered for new users.

3.1.3 ELSA Speak

ELSA Speak, available for both Android and iOS devices, is a CAPT app designed specifically for English learners, with a strong focus on pronunciation. The app offers personalised study plans tailored to users' interests and proficiency levels, keeping learners engaged through interactive games and challenges. The app reinforces pronunciation by providing exercises and role-playing simulations where users receive feedback from an AI tutor on their pronunciation, fluency, and intonation, as well as grammar and vocabulary. Additionally, it features phonetic transcriptions to further aid in learning. (*ELSA SPEAK*, n.d.).

Aligning with CEFR standards, *ELSA Speak* allows users to select their preferred accent and pronunciation style from various options, including American, British, Australian, Indian, German, Italian, and Swedish English. Users can also customise the voice gender and tone to suit their preferences (*ELSA SPEAK*, n.d.).

The app offers a specific version for educational institutions that allows teachers to tailor the content to their students' level and curriculum and track their progress (*ELSA for Schools*, n.d.). While *ELSA Speak* offers a free version, access to most features, including role-play, pronunciation exercises and AI feedback, requires a paid subscription.

3.1.4 *Livango*

Livango, available only for Android, offers an English course that focuses on essential vocabulary and grammar through gamified elements. The app features spaced repetition for vocabulary and daily exercises that integrate listening, speaking, reading, and writing. The content, aligned with CEFR proficiency standards, includes the 1,000 most common English words, lessons on current events, grammar explanations, flashcards, and spelling practice. In terms of pronunciation, *Livango* offers native-speaker audio, phonetic transcription, and targeted speaking and listening exercises. Moreover, the app allows users to choose between American and British English accents. Nevertheless, pronunciation is not the app's primary focus, so the available exercises in this area may offer limited effectiveness (*Aprender Inglés con Livango*, n.d.).

Livango does not offer a dedicated version or platform for educational institutions. The app is designed for independent, self-directed learning (*Aprender Inglés con Livango*, n.d.). Regarding access, *Livango* offers free content for A1 and A2 levels, but a paid subscription is required to unlock levels B and C, as well as more advanced materials.

3.2 Comparison of Selected CAPT Applications

To evaluate and compare the four selected CAPT applications, each was assessed against the 30 adapted DEO Grid criteria (Gómez González, 2024), covering content, pedagogical, and technical dimensions, as well as contextual suitability for Spanish-speaking secondary students.

Appendix 2, Table 3. *Comparison of CAPT APPS based on the adapted Gómez González's (2024) DEO Grid* provides a detailed description of each application's strengths and limitations across the three dimensions, providing a side-by-side comparison of the four selected apps.

As can be appreciated in Table 3, all four CAPT apps perform strongly on the three dimensions, offering accurate, CEFR-aligned content and user-friendly interfaces. Nevertheless, they differ in their focus, emphasis on pronunciation, and access to advanced features. *Duolingo* and *Livango* provide broad language learning opportunities with exercises for vocabulary acquisition, grammar, and pronunciation. However, because pronunciation instruction is not their only focus, learners who seek targeted training in this area may find their exercises and feedback quite limited.

Rosetta Stone and *ELSA Speak* place a higher emphasis on pronunciation. Nevertheless, they both depend significantly on paid subscriptions: *Rosetta Stone* to access

all its content and *ELSA Speak* to access its most advanced and useful features (like AI-driven practice and detailed feedback). *ELSA Speak* stands out as the most specialised CAPT tool for pronunciation, targeting both segmental and suprasegmental features. *Rosetta Stone* also addresses both segmental and suprasegmental features, but its feedback on prosody and intonation is less detailed and explicit. *Duolingo* and *Livango* tend to focus more on segmental features and offer almost no explicit training on suprasegmental components.

Moreover, neither of these CAPT tools specifically target the unique phonological difficulties faced by students with Spanish as their L1. This means that the apps do not focus on addressing common pronunciation challenges such as vowel contrasts, consonant clusters or stress patterns that are particularly problematic for Spanish speakers, which constitutes the main gap that needs to be addressed. Apart from this, although these apps align with international standards, such as the CEFR, they are not specifically aligned with the Spanish secondary education curriculum, making their integration more challenging. In addition, as already mentioned, most apps lack explicit practice on suprasegmental aspects, or if they do offer it, it is under a paid subscription. Access and cost barriers are also important. Having to pay a subscription fee to access the app limits equitable access for students and schools.

Moreover, the variety of English accents offered by these apps is quite limited. The only app that offers more accents than British and American is *ELSA Speak*, but some of the accents available are not from native English areas, like Italian, for instance. Phonetic transcription is also essential for learners to be aware of how words should be pronounced. In this aspect, all apps provide phonetic transcription to some extent, but *Rosetta Stone*. Nevertheless, phonetic transcription is normally limited and only appears in certain exercises.

Despite the valuable features offered by *Duolingo*, *Rosetta Stone*, *ELSA Speak*, and *Livango*, none of these applications constitutes an optimal solution for Spanish secondary students seeking to improve their English pronunciation. Their lack of targeted support for the specific phonological challenges faced by Spanish L1 learners, limited curricular alignment, and, in some cases, restricted access to advanced features reveal important gaps in the current landscape of CAPT tools. Taking this into account, the following section introduces *e-SoundWayFR*, a CAPT application specifically designed to address these gaps and to meet the unique needs of Spanish-speaking high school students.

4. *e-SoundWayFR*: English Pronunciation in the Way of St. James

4.1 Description

4.1.1 Contents

e-SoundWayFR (*English Sounds on the Way: Free Roaming*), winner of the 2025 Teaching Innovation Award from the Faculty of Philology of the USC, is a unique CAPT application designed specifically to enhance the learning and instruction of English pronunciation among Spanish high-school students. The app, still in prototype phase, is based on the EPSS methodology, providing a comprehensive pedagogical foundation that addresses the specific challenges Spanish-speaking learners encounter when acquiring English pronunciation. It can be regarded as a serious game that features a virtual journey along the French Way of the Camino de Santiago (Gómez González, Lago Ferreiro, et al., 2024).

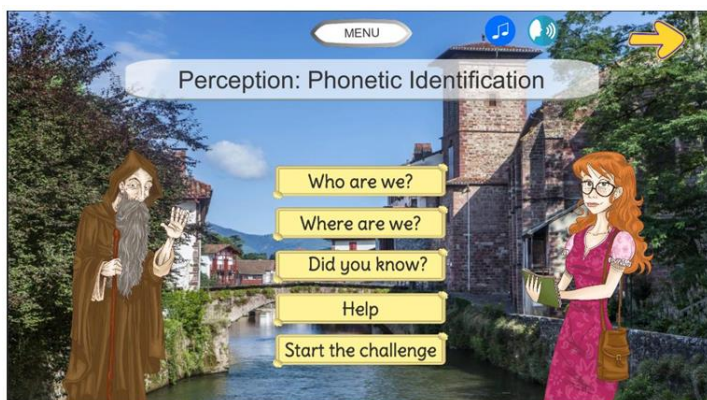
This journey is guided by Patience, a virtual coach who provides instructions, tips, and feedback. Users are also accompanied by 15 additional English-speaking characters (6 women and 9 men), each representing a historical or contemporary pilgrim relevant to the Camino, like Edith Wharton, for instance. These avatars introduce learners to their regional accents, share personal stories, and offer cultural insights, further deepening the immersive experience (Gómez González, Lago Ferreiro, et al., 2024).

According to Gómez González, Lago Ferreiro, et al. (2024), the app's contents are structured across 34 stages, each representing a segment of the French Way. Microlearning is central to the platform's design, so content is delivered in each stage in brief segments called "learning pills." Moreover, each stage features up to 12 interactive stops, with the entire platform encompassing a total of 614 challenges: 266 for perception (listening and sound discrimination), 154 for production (speaking and pronunciation), and 194 for transcription (linking sounds to written symbols and spelling). Each stop contains up to 5 options, which, as Figure 1 shows, include:

1. *Who am I / Who are we?* Information about an avatar that is being introduced for the first time.
2. *Where are we?* Geographical information.
3. *Did you know?* Information about legends or stories of the corresponding place

4. *Help.* Information about phonetics and pronunciation.
5. *Start the challenge.* Allows you to start the mini-game.

Figure 1. Interface of a stop in e-SoundWayFR



Furthermore, the app also includes articulatory diagrams to illustrate sound production, and trilingual audiobook content (English, Spanish, Galician) for the stories, anecdotes, and legends narrated by the game's characters. Contents in the app are carefully organised to ensure easier internalisation and understanding by students. They can be divided into three main categories:

1. **Vowels, diphthongs, and consonants:** The app divides the 49 SSBE phonemes into 12 distinct categories. In these levels, users practice distinguishing and producing both individual sounds and sound contrasts (e.g., /i:/ vs. /ɪ/). Individual vowel sounds correspond to stages 1 to 10. Vowels are divided into 5 groups: /i: ɪ/ (Group 1), /e ɜ: ə/ (Group 2), /ʌ æ ɑ:/ (Group 3), /ɔ: ɒ/ (Group 4), and /u: ʊ/ (Group 5), contrasted with Spanish vowels (/i/, /e/, /a/, /o/ and /u/). Vowel glides correspond to stages 11 to 18. They are divided into 2 groups: closing diphthongs /eɪ aɪ ɔɪ əʊ aʊ/ and centring diphthongs /ɪə eə ʊə/ (Group 6), and diphthongs plus /ə / /eɪə aɪə ɔɪə əʊə aʊə/ (Group 7). Consonants are studied between stages 19 to 27. They are divided into 4 groups: plosives /p t b d g k/ (Group 8), fricatives /f v θ ð h s z ʃ ʒ/ (Group 9), affricates /tʃ dʒ/ (Group 10), nasals /m n ŋ/ (Group 11) and approximants /l r j w/ (Group 12).
2. **Connected speech phenomena:** Exercises focus on understanding and producing natural speech patterns, such as linking, assimilation, and elision. This corresponds to stages 28 and 29.
3. **Prosody:** Activities address stress, rhythm, and intonation, helping learners develop a more natural and intelligible accent. Prosody is studied across stages 30 to 33 (stage 34 functions as a final revision).

In addition, the app includes up to 12 distinct types of mini-games, illustrated in Table 4. Each mini-game constitutes a multimodal experience by combining audio, text, and visuals. The app includes, in each mini-game, a button (How to play) with general instructions to play the game.

Table 4. *The main types of mini-games of e-SoundWayFR.*

<i>Skill</i>	<i>Mini-game</i>
Perception	Identification
	Odd-One-Out
	Variation
	Connected Speech
Production	Listen & Repeat
	Minimal Pairs
	Connected Speech
Transcription	Missing Symbols
	Direct
	Reverse
Pastimes	Crossword Puzzles
	Word Search Puzzles

Note. Table drawn from Gómez González, Lago Ferreiro, et al., 2024, p. 15.

The reference accent is Standard Southern British English (SSBE), but, following the HVPT mode, learners are also exposed to seven additional native English accents: General American, Scottish Standard English, West Country, Yorkshire, Irish English, Australian English, and Canadian English. This exposure not only enhances listening comprehension but also prepares users for real-world interactions with speakers from diverse English-speaking regions (Gómez González, Lago Ferreiro, et al., 2024).

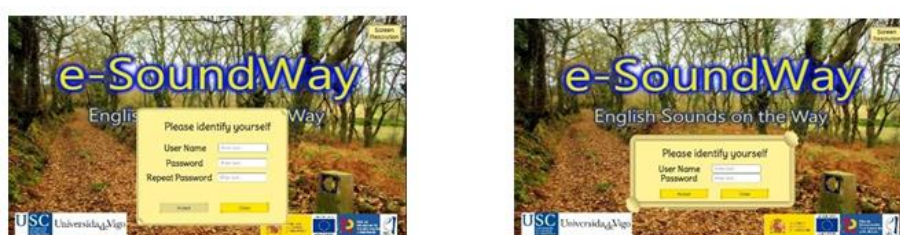
Hence, key advantages of *e-SoundWayFR* before other commercial alternatives are:

1. Specifically designed for Spanish-speaking high school students, targeting the most common pronunciation difficulties identified in this group.
2. Dedicated modules on intonation, stress, and rhythm that place equitable emphasis on segmental and suprasegmental features.
3. Exposure to diverse English accents, which enhances global listening comprehension and prepares learners for real-world communication.
4. Extensive and consistent practice on phonetic transcription. The app incorporates phonetic transcription counterparts at all levels.

4.1.2 Technical Design

The technical development of *e-SoundWayFR* is the result of interdisciplinary collaboration between experts in phonetics, linguistics, education, and software engineering. The application uses the Unity game engine, which allows future extensions into mobile (MALL) and other digital learning environments. Users begin by creating a profile (as shown in Figure 2), with game progress stored locally. Hence, should login credentials be lost, recovery of saved data is not possible, emphasising the importance of careful credential management (Lago Ferreira et al., 2025).

Figure 2. Home screen of *e-SoundWayFR*



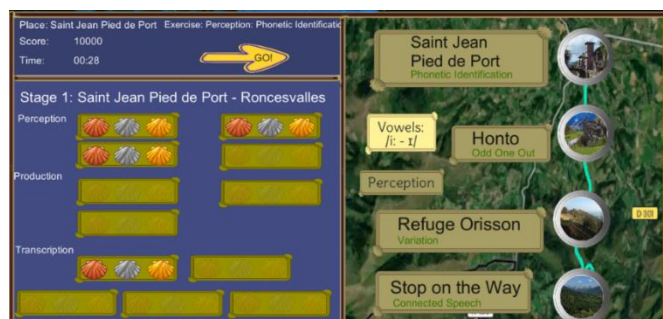
According to Gómez González, Lago Ferreira, et al. (2024), the main navigation, as illustrated in Figure 2, is organised around six main modules accessible via icons at the top of the screen: Exit Game, Stage, The Way, Pilgrim Menu, The Library, and Options.

Figure 3. *e-SoundWayFR* navigation bar



The Stage provides an overview of the current stage's stops and their corresponding mini-games. It includes information on player progress, earned medals, and stop descriptions.

Figure 4. *The Stage*



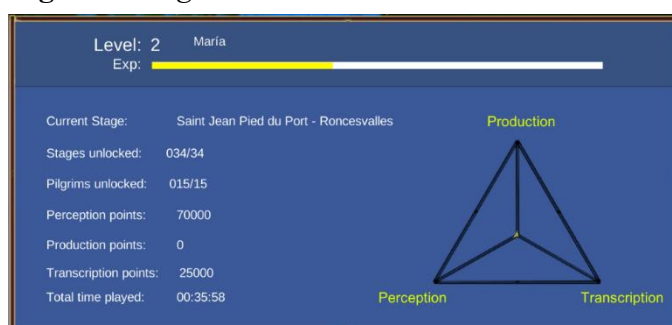
The Way allows users to freely select any of the 34 stages along the French Way.

Figure 5. The Way



The Pilgrim icon serves as a personalised dashboard, tracking scores, time spent playing, and progress across the three core skills (perception, production, and transcription). This is visualised through a three-dimensional pyramid graph.

Figure 6. Pilgrim Icon



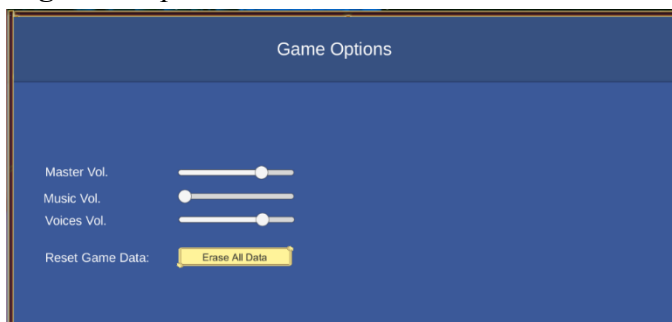
The Library section offers access to trilingual audiobooks and supplementary cultural resources. In this section, you will find the biographies of the characters from the game, information about the places that appear in the game, and additional resources to expand your knowledge of English phonetics through the EPSS Multimedia Lab website (Gómez González, Lago Ferreiro, et al., 2024).

Figure 7. The Library



Finally, the Options menu enables users to adjust audio and to reset the game.

Figure 8. *Options Menu*



Another important technical aspect is that the application includes speech recognition technology, enabling real-time pronunciation assessment. This delivers dynamic, context-sensitive feedback tailored to the user's performance. Pronunciation tasks within the mini-games vary in complexity, ranging from single-word exercises to full-sentence challenges. Depending on user performance, bronze, silver, or gold scallop medals will be awarded. Hence, gamification is essential in *e-SoundWay*, not only for the reward system but also for the design and functionality of mini-games and levels (Lago Ferreira et al., 2025).

The immersive experience provided by the app's design and theme is further enhanced by background music featuring works by Galician groups such as *Luar na Lubre*. The app also incorporates rich audiovisual stimuli, such as pictograms and professional audio recordings from University College London, ensuring that actual native speakers of English record all audio (Lago Ferreira et al., 2025).

Finally, screen resolution can be adjusted using function keys F1 through F4, with F4 enabling full-screen mode, ensuring adaptability to different user environments and preferences (Lago Ferreira et al., 2025).

In the following section, *e-SoundWayFR* will be assessed against the 30 adapted DEO Grid criteria (based on Gómez González's 2024 DEO Grid proposal).

4.2 Evaluation of *e-SoundWayFR*

As the previous sections highlight, *e-SoundWayFR* stands out as a comprehensive, innovative, and valuable digital tool. Its content dimension is particularly strong, as all materials are grounded in the EPSS methodology, ensuring both quality and accuracy. The contents are not only academically rigorous and updated, but they were also designed with the Spanish secondary education students in mind. The app also demonstrates a keen awareness of learners' prior knowledge and experiences by addressing the most common

pronunciation difficulties encountered by Spanish speakers, thus building on and responding to their linguistic background. Each mini-game and stage is carefully organised to relate directly to clear learning objectives, ensuring that users always understand the purpose and expected outcome of each activity. The platform is rich in dynamic audiovisual content, including professional audio recordings, animations, avatars, realistic images, and diagrams, all of which are highly relevant to the linguistic and cultural themes explored in each stage. Moreover, *e-SoundWayFR* integrates text, sound, images, and interactive elements, offering a creative and multimodal learning environment. The inclusion of a speech recognition module provides learners with real-time, personalised feedback on their pronunciation, further enhancing the learning experience with innovative technology.

From a pedagogical perspective, *e-SoundWayFR* excels in its capacity to generate meaningful learning. The structured progression through the 34 stages and 614 challenges systematically develops users' perception, production, and transcription skills. The mini-games are not only engaging but also stimulating, often requiring learners to solve phonetic puzzles, thereby promoting critical thinking. The skills acquired through the application are directly applicable to real-world English communication, improving users' pronunciation effectively. The platform is designed for self-directed learning, allowing students to navigate freely among stages and progress at their own pace. Feedback is also immediate, with users receiving medals and visual progress indicators after each activity.

Gamification (especially the system of rewards) helps maintain learner motivation over time. Interactivity is especially present in the mini-games, where users test their abilities in production, perception, and transcription of English sounds. The application is also adaptable to individual differences, as learners can select stages that match their current level of proficiency or focus on specific areas of difficulty. Throughout the journey, the presence of a virtual coach and supporting characters ensures that learners receive guidance and encouragement.

Technically, *e-SoundWayFR* is designed for ease of installation and use. Nevertheless, the app is only downloadable on Windows devices and has no web version, hindering its compatibility. The interface is simple and user-friendly, with clear and intuitive organisation. The navigation menu is well-structured, and the help menu offers concise instructions and e-learning pills to support users as they progress. The quality of images, videos, and sound is consistently high. A drawback is that the application can only be used online. In addition, even though learners' progress is identified and visualised, it is only saved locally.

Importantly, *e-SoundWayFR* is free of charge and contains no advertisements, making it accessible to all students and teachers. Hence, the app meets the demands of teachers surveyed in Castillo Rodríguez, Torrado Cespón, and Lago Ferreiro's (2023) study, who, as previously analysed, mentioned accessibility, openness, and adaptability to different educational contexts as key features for the ideal CAPT tool.

Finally, and crucially, the application was conceived and developed specifically for Spanish-speaking secondary students, following an exhaustive analysis of the needs and the requirements of the Spanish curriculum. This targeted design enhances its effectiveness and ease of integration in the Spanish educational context.

Appendix 3, Table 5. *Evaluation of e-SoundWayFR through the Adapted DEO Grid Framework* (Gómez González, 2024) condenses these findings.

Overall, *e-SoundWayFR* bridges the identified gaps of previously analysed CAPT tools. Unlike them, *e-SoundWayFR* is grounded in the EPSS methodology, directly addressing the specific pronunciation difficulties of Spanish learners. In addition, in response to the study by Santos Díaz, Gómez González, and Díaz Lage (2024), which revealed that Spanish learners of English struggle with both segmental and suprasegmental features (often with suprasegmental features being barely addressed in lessons), the application provides extensive and explicit practice in both areas, including dedicated modules on intonation, stress, and rhythm (often overlooked in other applications). Its gamified structure, immersive cultural content, and exposure to a wide range of native English accents ensure that learners not only develop accurate pronunciation but also gain intercultural awareness and listening skills relevant to real-world communication. With free access and a user experience tailored to the needs and backgrounds of Spanish secondary students, *e-SoundWayFR* stands out as a unique alternative that overcomes the critical limitations of existing CAPT solutions.

To fully comprehend the potential of *e-SoundWayFR*, the following section outlines the methodology, instruments, and results derived from its implementation in three different high schools in Galicia.

4.3 *e-SoundWayFR*: Teachers' Perceptions and Users' Experiences

4.3.1 Methodology

To evaluate the educational potential and usability of *e-SoundWayFR*, a small-scale study was conducted in collaboration with three Galician high schools. The aim was to collect feedback from both teachers and students who had used the platform. The process consisted of several phases, from initial contact with the schools to the analysis of data gathered through specifically designed questionnaires.

First, a formal email was sent to four secondary schools in Galicia, requesting their participation in the study. These high schools are:

1. CPI As Revoltas (Cabana de Bergantiños)
2. IES Maximino Romero de Lema de Baio (Zas)
3. IES Rosalía de Castro (Santiago de Compostela)
4. IES Plurilingüe de Ames (Ames)

We decided to contact these four centres to conduct a study that would allow us to verify actual engagement with the application (both from teachers and students) and not only questionnaire responses. Therefore, no additional institutions were contacted.

Once the schools expressed their willingness to collaborate, we prepared three different consent forms (Appendix 4): one for students and their legal guardians (if the students were underage), another one for the principal of each institution, and a third one for the English teachers responsible for the collaboration. In addition, two questionnaires were created for teachers and students to complete after using the app (Appendix 5). Having this prepared, we submitted an ethics approval request to the USC Bioethics Committee (Appendix 6), which was granted on December 10, 2024 (approval code USC 96/2024). After this, the consent forms were sent to the high schools

Several visits were made to the schools involved to introduce the project, support the implementation of the platform, and gather materials. The schedule and nature of the visits were as follows:

1. **CPI As Revoltas (Cabana de Bergantiños):**
 - 11/11/2024: Initial visit to present the project and platform to the corresponding teacher.

- 24/01/2025: Follow-up visit to collect signed consent forms. The English teacher independently coordinated multiple class sessions in which students from the fourth grade of ESO tried *e-SoundWayFR*. No additional visits were required to this school, so from that point on, communication with the centre was conducted through email.
- 2. IES Maximino Romero de Lema (Baio, Zas):**
- 2/12/2024: Initial visit to present the application to the English department, which in this case consisted of two teachers.
 - 25/03/2025: Second visit to collect signed consent forms and schedule the trial sessions.
 - 29/04/2025: First application trial session with 2nd-year Bachillerato students.
 - 7/05/2025: Second trial session with 1st-year Bachillerato students. In this centre, two guided sessions were conducted to assist with the testing of the platform.
- 3. IES Rosalía de Castro (Santiago de Compostela):**
- 17/12/2024: Initial meeting to present the tool. In this case, the visit was conducted by María de los Ángeles Gómez González, a full professor at the English Department of USC and tutor for this BA dissertation, and me. Unfortunately, collaboration with this school could not proceed due to a technical incompatibility between the operating systems: while the application was designed exclusively for Windows, the school's equipment operated exclusively on Linux.
- 4. IES Plurilingüe de Ames (Ames):**
- Communication was conducted entirely via email. The school installed *e-SoundWayFR* on a Windows computer in the ICT lab, allowing students to try the app in small groups (2-3 students per session). The installation of the app on more computers was not possible due to incompatibility between Windows and Linux.
- After testing the application, participating students and teachers completed their respective questionnaires. These instruments, designed to collect both quantitative ratings and qualitative feedback, are detailed in the following section. Their responses provide valuable insights into user experience and areas for improvement.

4.3.2 Instruments

Both questionnaires were created with *Google Forms* and distributed online, following the model of previous investigations conducted by the research project e-ProFun, but adapting the contents and objectives to this specific study. Both questionnaires are completely anonymous and were distributed in Spanish.

The teacher questionnaire includes five thematic blocks that explore participants' background, their views on English pronunciation teaching, the use of digital tools, their opinions on working conditions, and the evaluation on *e-SoundWayFR*. The student questionnaire was structured into three main sections focusing on participants' digital habits, their perceptions of the tool, and their motivation and learning process. Each questionnaire combined closed-ended questions (Likert scales and multiple-choice) with open-ended questions. Detailed descriptions of both questionnaires are provided in the following subsections.

4.3.2.1 Teachers' Questionnaire

The teacher questionnaire, titled *Teaching English on the Way: Your Insights on e-SoundWayFR*, was answered by 6 teachers. It consisted of 40 questions organised into five sections.

1. **Sociodemographic data (11 questions).** This section included information about gender, age, academic background, years of experience, and teaching context.
2. **Pronunciation: from legislation to classroom reality (8 questions).** The importance of pronunciation in the curriculum. This section explores teachers' attitudes toward pronunciation instruction, the time they devote to it, and their self-perceived competence.
3. **Use of digital resources for English teaching (10 questions):** Questions in this section address the digital environment of each centre, the types of devices available, and the degree of integration of digital tools into English teaching. Particularly relevant was the question regarding the operating systems available at the school, an important factor in this project, as the application currently runs only on Windows, which limited participation in some cases.
4. **Teacher's working conditions (2 questions):** Participants evaluated aspects such as their access to continuous professional development, autonomy in selecting materials, and digital competence.
5. **Evaluation of *e-SoundWayFR* (9 questions):** This final section focused on their overall satisfaction with the tool, its perceived utility for teaching pronunciation, ease of integration, and potential difficulties encountered. Teachers were also asked whether they would recommend the tool to colleagues and what improvements they would suggest.

4.3.2.2 Students' Questionnaire

The student questionnaire, titled *Learning English on the Way: Your Insights on e-SoundWayFR*, received 64 responses. It includes 35 questions grouped into three thematic blocks:

1. **About you: Digital Habits (5 questions).** This section explores students' everyday digital practices, their online gaming preferences, and the time they spend using digital devices, which helps to understand their engagement with a gamified tool like *e-SoundWayFR*.
2. **About e-SoundWayFR: User Experience with e-SoundWayFR (15 questions).** A core section focused on evaluating the application's usability, gamification features (reward system, interactivity, metaphor of the Camino de Santiago), and perceived learning gains.
3. **Learning Purpose: Motivation and Learning Outcomes (15 questions).** Students were asked to self-assess their phonetic and phonological progress, describe their use of supplementary materials (e.g., help section, library), and indicate their level of satisfaction with the overall experience. A final open-ended item invited them to share suggestions for improvement.

4.3.3 Discussion of Results

The analysis of both teacher and student questionnaires provides valuable insights into the perceived effectiveness of *e-SoundWayFR* in secondary education contexts. The next subsection provides a detailed overview of the results obtained from the questionnaires.

4.3.3.1 Teachers' Questionnaire

Most teacher respondents were women (66.7%) and in their early thirties (66.7%). Although their experience in teaching English varied, most (83.3%) had fewer than ten years of teaching experience. All participants had been working at their current schools for between one and five years, and all were employed in public institutions, predominantly located in rural (50%) or semi-rural (33.3%) areas. Class sizes were evenly distributed: 50% of the teachers reported teaching groups of 16-20 students, while the other 50% taught classes with more than 20 students. As for the number of classrooms per grade, three teachers (50%) reported more than five, one (16.7%) reported two, and two (33.3%) reported only one.

The participants' academic backgrounds were diverse: two teachers (33.3%) held degrees in English Philology, another two (33.3%) in English Language and Literature, and the remaining two (33.3%) had completed a Master's in Secondary Education with a

specialisation in Foreign Language: English. Half of the respondents reported a C2 level of English proficiency, while the other half held a C1 level.

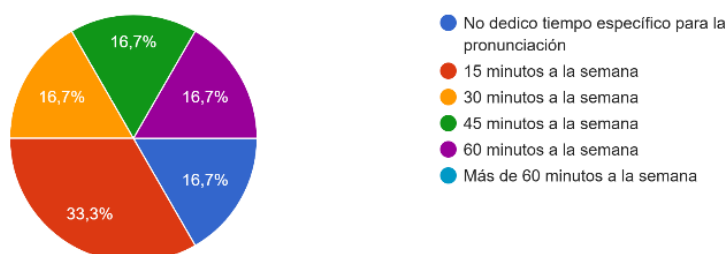
All teachers taught English across multiple grades in both compulsory secondary education and Bachillerato. Specifically, three teachers (50%) taught in three grades, two (33.3%) in two grades, and one (16.7%) in four. The number of weekly English sessions per class ranged from three to five, depending on the grade level and individual teacher schedules.

Crucially, the time allocated specifically to pronunciation instruction was minimal. One teacher (16.7%) reported devoting no time to it, two (33.3%) allocated only 15 minutes per week, while one teacher each (16.7%) reported dedicating 30, 45, and 60 minutes, respectively. Despite this limited focus, most teachers (66.7%) rated pronunciation as highly important, assigning it a 4 or 5 on a 5-point Likert scale. This contrast suggests a clear gap between teachers' perceived value of pronunciation and the actual instructional time devoted to it.

Figure 9. *Teachers' Questionnaire. Weekly time dedicated to pronunciation.*

13. Seleccione la opción que más se aproxima al tiempo semanal que le dedica a la enseñanza específica de la pronunciación de la lengua extranjera, inglés.

6 respuestas

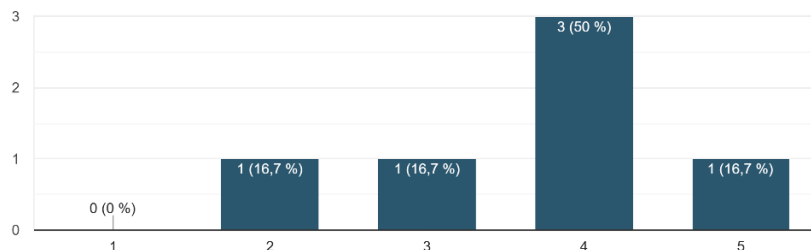


When asked about the regional curriculum, most teachers (83.3%) confirmed that phonetics and pronunciation are included (though often ambiguously and without specific criteria, as we have analysed). Most teachers agreed that pronunciation is essential for mastering English (66.7% rated this statement 4 or 5 out of 5).

Figure 10. Teachers' Questionnaire. The Importance of Pronunciation in English Language Development.

15. ¿Considera importante el trabajo de pronunciación en el desarrollo del área de lengua extranjera, inglés?

6 respuestas



However, opinions differed regarding the extent to which pronunciation should occupy a prominent place in English lessons: two teachers rated its importance as a 4, two as a 3, and two as a 2 on a 5-point scale. A majority (66.7%) believed that pronunciation should be integrated into all classroom activities rather than taught as a separate component. When asked whether pronunciation is sufficiently addressed in the official curriculum, most respondents gave moderate evaluations, with 83.3% assigning a score of 2 or 3. Additionally, most teachers (83.3%) felt that the amount of weekly classroom time was insufficient to meet curricular goals related to pronunciation instruction, rating this item a 1 or 2 out of 5. Despite these constraints, all teachers reported feeling prepared to teach pronunciation, with 33.3% rating their preparedness as a 4 and 66.7% as a 5. Nevertheless, half of the participants identified significant challenges, including large class sizes, students' limited phonetic knowledge, and a lack of sufficient instructional time.

Regarding classroom technology, students predominantly used laptops (50%), followed by desktop computers (33.3%) and mobile phones (33.3%). The operating systems in use were evenly split between Linux (50%) and Windows (50%).

Figure 11. Teachers' Questionnaire. Classroom technology

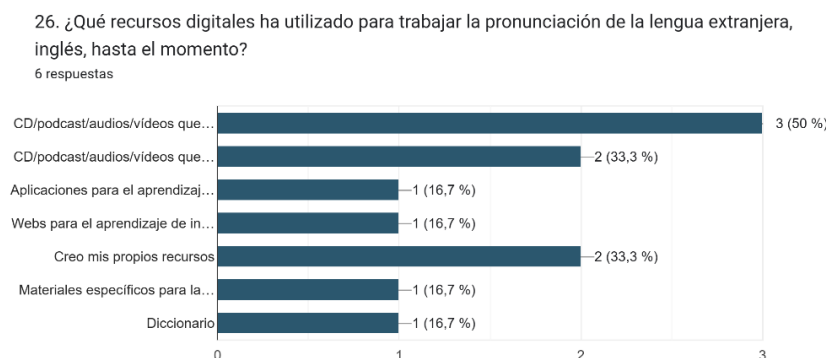
23. ¿Con qué tipología de dispositivos digitales trabaja el alumnado en el aula?

6 respuestas



For digital resources, teachers mostly relied on textbook audio and video materials (50%), and only one (16.7%) used English learning apps, despite its valuable benefits, as this study has analysed.

Figure 12. *Teachers' Questionnaire. Type of digital resources used for teaching English pronunciation.*



When evaluating digital resources for teaching English, half the teachers gave digital tools the highest score (5) for helping develop oral skills. Teachers expressed interest in digital platforms that align with the curriculum and saw potential in using a tool like *e-SoundWayFR* (66,7% rated it a 4 or 5 out 5). However, they also voiced concerns: student distraction (83.3%), difficulty tracking progress (100%), and uncertainty about student advancement (83.3%) were the most common issues.

Figure 13. *Teachers' Questionnaire. Concerns about using digital resources.*



The most valued features in a digital pronunciation app were adaptability to group context (4 out of 6 gave this 5 points), freedom to select activities and content (5 out of 6 gave 5 points), variety of activities (3 gave 5 points), progress tracking (3 gave 5 points), and adaptation to individual learning levels (4 gave 5 points).

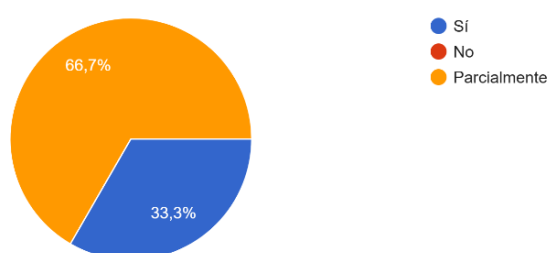
All teachers confirmed that their regional education authorities had activated digital tools for managing didactic programming, and most teachers felt confident in their digital

competence (three rated it a 4) and felt able to introduce digital resources in their classrooms without major difficulties (one rated this a 5, two a 4, and two a 3).

Overall satisfaction with *e-SoundWayFR* was moderate: 66.7% rated it a 3, 16.7% a 4, and 16.7% a 2. When asked if the platform met expectations for teaching pronunciation, 33.3% felt it did, while 66.7% felt it only partially did.

Figure 14. Teachers' Questionnaire. *e-SoundWayFR's* capacity to meet the expectations for teaching pronunciation.

33. ¿Considera que e-SoundWayFR cumple con las expectativas como herramienta para enseñar pronunciación?
6 respuestas



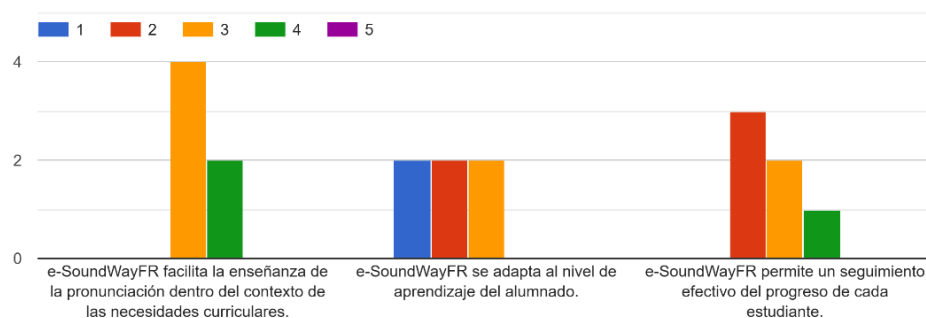
Teachers found the most useful aspects of the platform to be its gamification, engaging story-based approach (especially the Camino de Santiago theme), and activities focused on pronunciation production, such as minimal pairs. However, some activities, like phonetic transcription, were considered too difficult for secondary students. Furthermore, teachers reported that integrating *e-SoundWayFR* into their classes was challenging, primarily due to the app's advanced level. When asked to rate the ease of integration (on a scale from 1 = very difficult to 5 = very easy), 33.3% of participants gave it a 1 and 66.7% a 2. The most frequently cited obstacles included limited classroom time (66.7%), restricted access to devices (50%), and the perception that the content was too advanced for the typical secondary school learner (33.3%). Among the suggested improvements were simplifying the login process, increasing audio volume, and adapting the content more closely to the cognitive and linguistic levels of secondary and high school students.

Instructors were also asked to evaluate three specific aspects of the application. Regarding its usefulness for facilitating pronunciation instruction, four participants assigned a score of 2 and two a score of 4. In terms of its suitability for high school students, ratings indicated that the content was perceived as often too difficult: two teachers gave it a 1, two a 2, and two a 3. As for the platform's capacity to support student progress monitoring, responses were moderate, with three teachers assigning a 2, two a 3, and one a 4. Although

teachers acknowledged the app's potential for tracking progress, they emphasised the need for clearer, more individualised feedback and enhanced monitoring functionalities.

Figure 15. *Teachers' Questionnaire. Statements about e-SoundWayFR's effectiveness.*

38. Valore, del 1 al 5, las siguientes afirmaciones



Finally, when asked if they would recommend the platform to other teachers, 66.7% responded affirmatively. All teachers agreed that the platform has strong potential if these issues are addressed.

Based on these findings, it can be concluded that teachers generally acknowledged the importance of pronunciation in English language instruction, with the majority rating it as essential for language mastery. However, the actual instructional time allocated to pronunciation was limited, with most teachers reporting less than 45 minutes per week dedicated specifically to this area. This discrepancy reveals a misalignment between pedagogical recognition and classroom implementation, likely exacerbated by the lack of explicit curricular guidance.

While all participants expressed confidence in their ability to teach pronunciation, half reported facing notable challenges. These included large class sizes, students' insufficient phonetic background, and limited instructional time, factors that hinder the effective integration of pronunciation training. Although digital tools were viewed as beneficial for developing oral skills, only one teacher reported incorporating English learning apps into regular classroom practice. Nevertheless, there was clear interest in platforms that align with curricular objectives and offer flexible, diverse learning activities.

Teachers also expressed concerns regarding the integration of *e-SoundWayFR*. Key issues included student distraction, limited mechanisms for progress tracking, and the advanced nature of some content, which many found unsuitable for the secondary school context. Overall, satisfaction with the platform was moderate. Most participants indicated that *e-SoundWayFR* only partially met their expectations, although several features were

positively received. These included the use of gamification, the thematic connection to the Camino de Santiago, and targeted pronunciation activities. In contrast, components such as phonetic transcription were considered too complex for their students.

To enhance its classroom applicability, teachers proposed various improvements, including simplifying the login process, increasing audio volume, and adapting the content to better match the cognitive and linguistic profiles of secondary-level learners. Despite the identified challenges, most respondents stated that they would recommend the tool to colleagues, recognising its pedagogical potential if key usability issues are addressed.

4.3.3.2 Students' Questionnaire

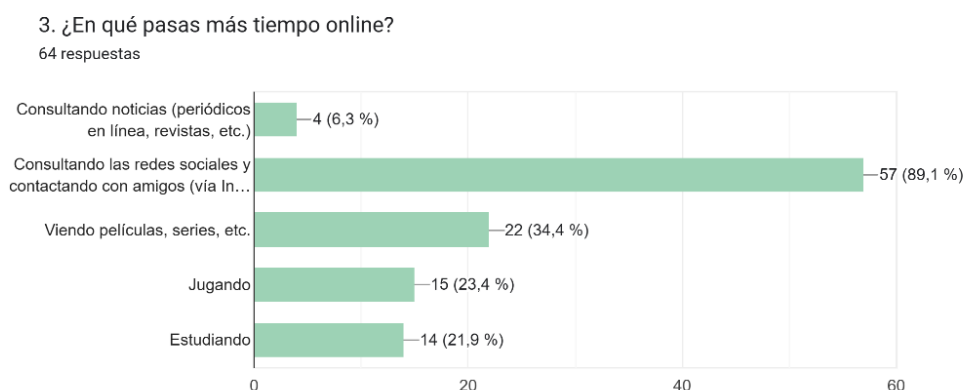
Among the student respondents, 45.3% were in 2º Bachillerato, 34.4% in 1º Bachillerato, and 20.3% in 4º ESO. Students reported spending considerable time online: 45.3% spent 2 to 4 hours per day, 42.2% spent more than 4 hours, and 12.5% spent less than 2 hours daily.

Figure 16. *Students' Questionnaire. Amount of time that students spend online.*



The most common online activity was using social media and communication apps, with 89.1% spending the majority of their time on these platforms. Watching movies or series was reported by 34.4%, and 23.4% spent time playing games.

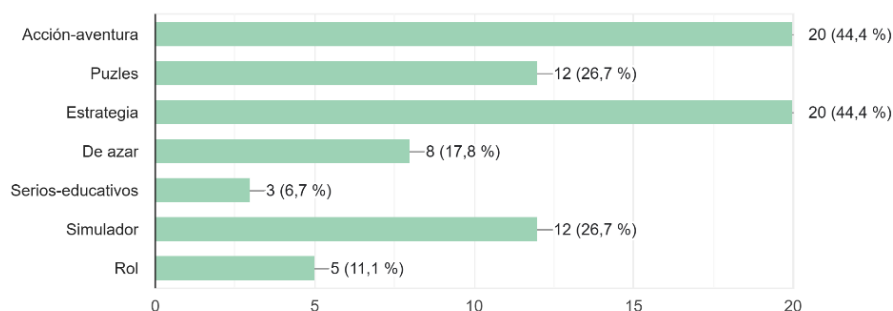
Figure 17. *Students' Questionnaire. Activities in which students spend the most time online.*



Gaming was not a dominant activity for most students: 35.9% said they did not play online games at all, 26.6% played less than 30 minutes per day, and only 4.7% played more than 2 hours daily. Among those who did play games, the most popular genres were action/adventure (44.4%) and strategy (44.4%).

Figure 18. *Students' Questionnaire. Type of online games preferred by students.*

5. ¿Qué tipo de juegos prefieres, si es que juegas a alguno?
45 respuestas

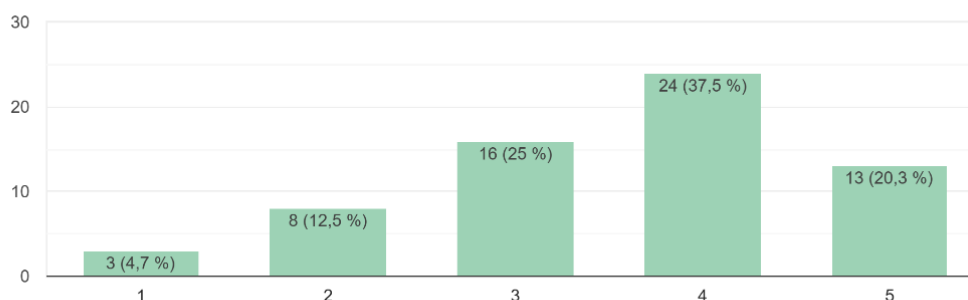


When asked about how many stages they completed, the most common response was completing 3 stages (18.8%), followed by 2 and 5 stages (both 14.1%). A smaller group finished 7 stages (12.5%), and 3.1% (2 students) completed 15 stages. Most students (90.6%) used the app under their teacher's guidance, while only 9.4% used it independently. Students reported several issues with the app, including audio problems (such as low volume) and interface difficulties (like unclear instructions or confusing mini-games). Despite this, 85.9% found the instructions clear enough.

Regarding interactivity, on a 5-point scale, 37.5% of students rated it a 4, 25.0% a 3, and 20.3% a 5.

Figure 19. *Students' Questionnaire. e-SoundWayFR's interactivity.*

10. ¿Consideras que la interactividad del juego es intuitiva para el usuario?
64 respuestas



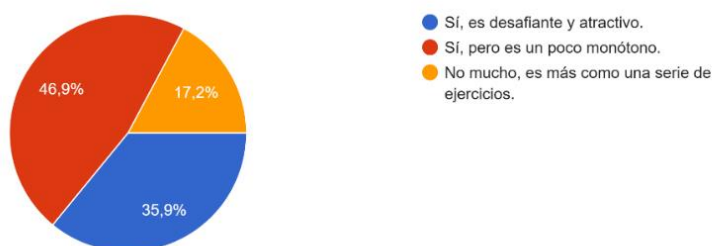
When asked about aspects they disliked, students mentioned difficulty identifying images in some mini-games, and the overall difficulty of the content. In fact, most students considered the app to be particularly demanding: 40.6% rated it a 4, 37.5% a 3, and 14.1% a 5.

The reward system was well received, with 89.1% responding positively. The Camino de Santiago theme was also popular: 40.6% rated it a 5, 31.3% a 4, and only 7.8% gave it a 1 or 2. Additionally, 75% of students expressed interest in competing with other players, indicating an area of improvement for the app.

When asked if *e-SoundWayFR* felt like a game, 46.9% said, “Yes, but it’s somewhat repetitive,” 35.9% found it “challenging and engaging,” and 17.2% felt it was more like exercises than a game. Those who were less positive suggested adding more interactivity and peer competition.

Figure 20. *Students’ Questionnaire. Does e-SoundWayFR feel like a game?*

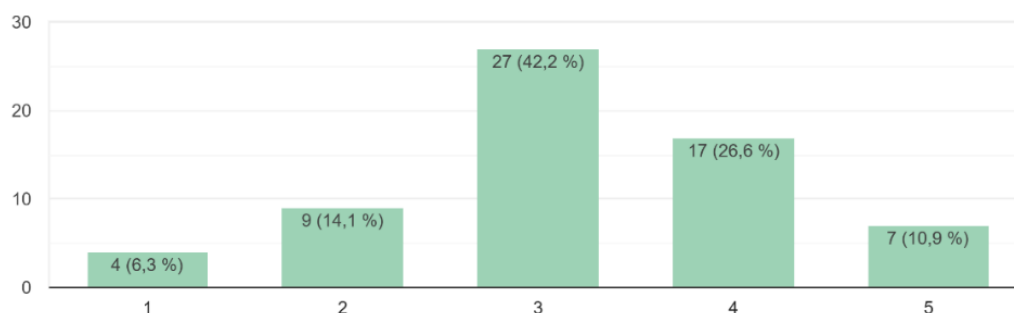
17. ¿Da e-SoundWayFR la sensación de ser un juego?
64 respuestas



The organisation of the stages was appreciated by 89.1% of students. Regarding motivation to go from one stage to the next, most students selected 3 (42.2%) or 4 (26.6%) on a 5-point scale, with 10.9% feeling highly motivated (5).

Figure 21. *Students’ Questionnaire. Students’ motivation to progress through stages.*

20. ¿Te sientes motivado/a para pasar de una etapa a otra?
64 respuestas



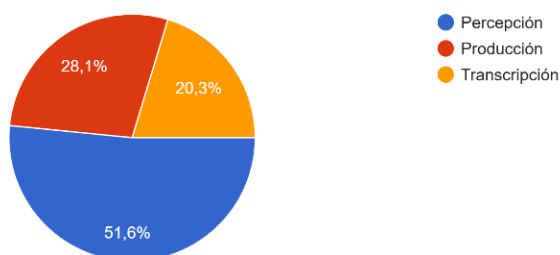
The Help section was not frequently used: 45.3% consulted it only when unfamiliar with a topic, 35.9% never used it, and just 10.9% used it consistently before playing. Nevertheless, 84.4% found the Help section sufficient, though 9.4% thought it was too long and 6.3% too short. The Library section was used by only 18.8% of students, and a large majority (92.2%) did not use any additional resources outside the app. Those who did typically asked their teachers or used printed phonetic alphabet sheets.

Student engagement with improving scores was mixed: 51.6% regularly used the “try again” option, while 48.4% were satisfied with earning a bronze medal. Nearly half (48.4%) played each stage only once, 29.7% played each stage twice, and a few repeated stages more often or were unsure.

When asked about their favourite section of the game, students preferred the Perception activities (51.6%), followed by Production (28.1%) and Transcription (20.3%).

Figure 22. *Students' Questionnaire. Favourite e-SoundWayFR section.*

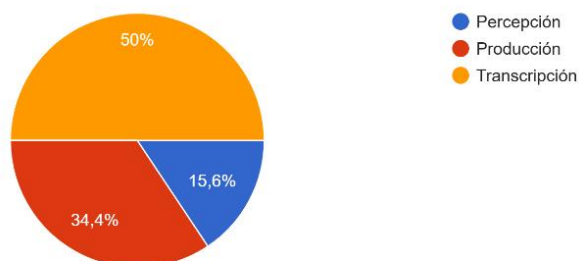
28. ¿Cuál es tu sección favorita del juego?
64 respuestas



The most difficult section was Transcription (50%), then Production (34.4%), and Perception (15.6%).

Figure 23. *Students' Questionnaire. Most difficult e-SoundWayFR section.*

29. ¿Qué sección del juego te resultó más difícil?
64 respuestas

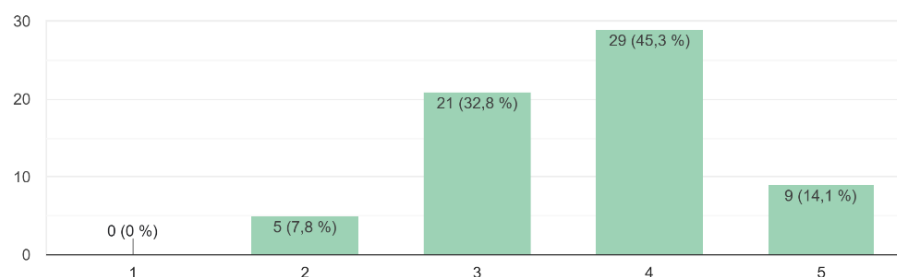


Students reported some improvement in their English Phonetics and Phonology skills: 37.5% rated their progress as a 3, 34.4% as a 4, and 4.7% as a 5. Overall satisfaction with *e-SoundWayFR* was moderately positive: 45.3% rated it a 4, 32.8% a 3, and 14.1% gave it the highest score (5).

Figure 24. *Students' Questionnaire. General satisfaction with e-SoundWayFR.*

31. ¿Cómo evaluarías tu satisfacción general con e-SoundWayFR?

64 respuestas



Most students (89.1%) said they would recommend *e-SoundWayFR* to other students in a similar situation. They particularly valued the originality, engaging visuals, the Camino de Santiago theme and the medals and rewards system. For future improvements, students suggested more competitive or multiplayer features.

Overall, students' responses indicated that their primary online activities involved browsing social media and using communication applications. Although most students reported spending a significant amount of time online, gaming was not a dominant activity; only a small proportion devoted substantial time to online games. Nevertheless, learners responded positively to the gamified elements of *e-SoundWayFR*, with many identifying features such as the reward system and the Camino de Santiago metaphor as their favourite aspects of the platform.

The experience with *e-SoundWayFR* was largely positive, particularly in terms of the clarity of instructions and the logical organisation of the platform's stages. The gamification components, especially the reward system and thematic narrative, were widely appreciated. However, some students reported technical issues, including poor audio quality (likely due to the shared computer lab setting and the absence of headphones) and interface-related difficulties.

Student motivation and perceived learning outcomes varied. While many felt encouraged to progress through the stages, engagement with supplementary resources, such as the Help and Library sections, was limited. This limited usage may explain why some

users requested clearer instructions, despite the app offering comprehensive guidance on phonetic content and mini-game functionality. Furthermore, there was considerable interest in enhanced interactivity and peer competition, suggesting that these features could further strengthen motivation and engagement.

In summary, the findings suggest that the prototype *e-SoundWayFR* holds strong potential as a pronunciation learning tool, provided its content is better tailored to the needs and cognitive profiles of secondary school learners, and that current usability challenges are addressed effectively.

5. Conclusions and Further Research

This study aimed to explore the potential of digital tools in supporting English pronunciation instruction in Spanish secondary schools, with a particular focus on *e-SoundWayFR*. Three research questions guided this investigation: the extent to which pronunciation is prioritised in the educational curriculum, whether existing CAPT tools address the needs of Spanish learners, and how teachers and students perceive the prototype *e-SoundWayFR* after using it for several sessions.

Firstly, the analysis of national and regional regulations shows that pronunciation remains a marginalised component. Despite its centrality to communicative competence, official guidelines fail to outline a clear progression of pronunciation instruction across educational levels. As a result, pronunciation is often neglected and devoted insufficient classroom time.

Secondly, the comparative evaluation of four widely used CAPT tools (*Duolingo*, *Rosetta Stone*, *ELSA Speak* and *Livango*) reveals that although these applications include useful features, such as AI technology, speech recognition, gamification, and multimodal content, none of them fully meets the specific pedagogical needs of Spanish secondary school learners. Most were not designed with this population in mind, lacking adequate focus on suprasegmental features, exposure to various accents, and consistent phonetic transcription.

Finally, the findings presented in this study reinforce the view that high-quality, pedagogically grounded CAPT tools have significant potential to enhance pronunciation instruction in secondary education. *e-SoundWayFR*, in particular, addresses key gaps identified in widely used pronunciation apps by offering a learner-centred design tailored to Spanish-speaking students. Rooted in the *EPSS (English Pronunciation for Speakers of Spanish)* contrastive phonetics methodology, the platform offers exposure to diverse English

accents, integrates consistent phonetic transcription, and provides focused practice on both segmental and suprasegmental features. Its integration of historical and cultural content related to the Camino de Santiago further enhances learner engagement and adds a rich intercultural dimension to pronunciation learning.

The tool received generally positive feedback from both teachers and students, who recognised its capacity to complement traditional instruction through structured content, task variety, and an engaging design. However, several constraints were identified. Chief among these were the advanced complexity of certain tasks, particularly transcription exercises, and technical limitations such as limited compatibility with school devices. These issues were further compounded by the platform's reliance on a free navigation model, which, while suitable for autonomous learners in higher education, appears insufficient for ensuring progression and differentiation in the secondary school context.

In light of these challenges, both teachers and students proposed specific areas for improvement. These include simplifying the login process, increasing audio volume for use in shared environments, and better aligning activity difficulty with the cognitive and linguistic profiles of secondary learners. Students also emphasised the need for greater interactivity and the integration of competitive or multiplayer elements to foster motivation and sustained engagement.

While these areas require further development, *e-SoundWayFR* nonetheless stands out as a robust and promising CAPT application. Its design exemplifies the potential of digital tools to deliver pronunciation instruction that is both pedagogically sound and culturally enriching. Importantly, the platform demonstrates the value of iterative design processes grounded in real classroom feedback.

Looking ahead, future research should seek to expand the evidence base through broader and longer-term implementation across diverse educational settings. Additionally, further development of *e-SoundWayFR* could explore enhanced adaptability through improved device compatibility (including Linux and web-based versions) and greater integration with MALL environments to support increased accessibility. These directions would not only strengthen the platform's usability but also contribute meaningfully to the growing field of technology-enhanced pronunciation learning.

In this regard, a recent development that further consolidates the educational value of the project is the forthcoming official publication of the *e-SoundWay* game and its accompanying manual by the University of Vigo Publishing Service (Gómez González, Lago Ferreiro, Torrado Cespon, Díaz Lage, & Fraguero, in press). Entitled *Los sonidos del inglés*

en el Camino de Santiago (e-SoundWay). *Un juego serio para aprender la pronunciación inglesa*, the publication includes QR codes that allow users to download both available versions of the game: *e-SoundWayFR (Free Roaming)*, which is the version described and analysed in the present study, and *e-SoundWayTR (The Route)*, designed for more advanced learners, primarily at the university level. The main distinction between the two lies in their navigation structure: while *e-SoundWayFR* allows users to freely select any stage of the Camino, *e-SoundWayTR* follows a sequential progression model, where new stages are unlocked only after reaching a minimum score in the previous ones. The manual, published in Spanish, Galician, and English, offers a comprehensive explanation of the pedagogical foundations and technical features of both versions, thus enhancing the project's accessibility, multilingual scope, and potential for implementation across various educational contexts.

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7. Appendices

Appendix 1

Table 2. *CEFR Scale of Phonological Control*

	Phonological control		
	Overall phonological control	Sound articulation	Prosodic features
C2	Can employ the full range of phonological features in the target language with a high level of control – including prosodic features such as word and sentence stress, rhythm and intonation – so that the finer points of their message are clear and precise. Intelligibility and effective conveyance and enhancement of meaning are not affected in any way by features of accent that may be retained from other language(s).	Can articulate virtually all the sounds of the target language with clarity and precision.	Can exploit prosodic features (e.g. stress, rhythm and intonation) appropriately and effectively in order to convey finer shades of meaning (e.g. to differentiate and emphasise).
C1	Can employ the full range of	Can articulate virtually all the	Can produce smooth, intelligible

	phonological features in the target language with sufficient control to ensure intelligibility throughout. Can articulate virtually all the sounds of the target language; some features of accent(s) retained from other language(s) may be noticeable, but they do not affect intelligibility	sounds of the target language with a high degree of control. They can usually self-correct if they noticeably mispronounce a sound.	spoken discourse with only occasional lapses in control of stress, rhythm and/or intonation, which do not affect intelligibility or effectiveness. Can vary intonation and place stress correctly in order to express precisely what they mean to say.
B2	Can generally use appropriate intonation, place stress correctly and articulate individual sounds clearly; accent tends to be influenced by the other language(s) they speak, but has little or no effect on intelligibility.	Can articulate a high proportion of the sounds in the target language clearly in extended stretches of production; is intelligible throughout, despite a few systematic mispronunciations. Can generalise from their repertoire to predict the phonological features of most unfamiliar words (e.g. word stress)	Can employ prosodic features (e.g. stress, intonation, rhythm) to support the message they intend to convey, though with some influence from the other languages they speak.

		with reasonable accuracy (e.g. while reading).	
B1	Pronunciation is generally intelligible; intonation and stress at both utterance and word levels do not prevent understanding of the message. Accent is usually influenced by the other language(s) they speak.	Is generally intelligible throughout, despite regular mispronunciation of individual sounds and words they are less familiar with.	Can convey their message in an intelligible way in spite of a strong influence on stress, intonation and/or rhythm from the other language(s) they speak.
A2	Pronunciation is generally clear enough to be understood, but conversational partners will need to ask for repetition from time to time. A strong influence from the other language(s) they speak on stress, rhythm and intonation may affect intelligibility, requiring collaboration from	Pronunciation is generally intelligible when communicating in simple everyday situations, provided the interlocutor makes an effort to understand specific sounds. Systematic mispronunciation of phonemes does not hinder intelligibility, provided the interlocutor makes an effort to	Can use the prosodic features of everyday words and phrases intelligibly, in spite of a strong influence on stress, intonation and/or rhythm from the other language(s) they speak. Prosodic features (e.g. word stress) are adequate for familiar everyday words and simple utterances.

	interlocutors. Nevertheless, pronunciation of familiar words is clear.	recognise and adjust to the influence of the speaker's language background on pronunciation.	
A1	Pronunciation of a very limited repertoire of learnt words and phrases can be understood with some effort by interlocutors used to dealing with speakers of the language group. Can reproduce correctly a limited range of sounds as well as stress for simple, familiar words and phrases.	Can reproduce sounds in the target language if carefully guided. Can articulate a limited number of sounds, so that speech is only intelligible if the interlocutor provides support (e.g. by repeating correctly and by eliciting repetition of new sounds).	Can use the prosodic features of a limited repertoire of simple words and phrases intelligibly, in spite of a very strong influence on stress, rhythm and/or intonation from the other language(s) they speak; their interlocutor needs to be collaborative.

Note. Table drawn from the Common European Framework of Reference for Languages: *Learning, Teaching, Assessment. Companion Volume* (Council of Europe, 2020, pp. 134-135).

Appendix 2.

Table 3. *Comparison of CAPT APPS based on the adapted Gómez González's (2024) DEO Grid.*

Criteria	<i>Duolingo</i>	<i>Rosetta Stone</i>	<i>ELSA Speak</i>	<i>Livango</i>
1. Quality and accuracy of content	Accurate and regularly updated material	Accurate and immersive content; regularly updated	Accurate and regularly updated material	Accurate and regularly updated material
2. Learning goals alignment with the educational curriculum/syllabus	Aligned with CEFR standards	Aligned with CEFR standards	Aligned with CEFR standards	Aligned with CEFR standards
3. Relationship between contents and prior knowledge	Possibility to adapt to users' prior knowledge in terms of difficulty	Possibility to adapt to users' prior knowledge in terms of difficulty	Most lessons are personalised, ensuring their correspondence to the user's prior knowledge and performance (most personalisation is reserved for premium users)	Possibility to adapt to users' prior knowledge in terms of difficulty
4. Relationship between contents	Moderate to strong	Strong alignment:	Strong alignment:	Moderate to strong

and learning objectives	alignment: content targets vocabulary, grammar, reading, and listening skills; supports general language proficiency, but less focus on real-life communication or fluency	content is structured to build listening, speaking, reading, and basic writing skills through immersive lessons that match foundational language learning objectives	lessons are designed to improve pronunciation, fluency, and speaking confidence	alignment: content targets vocabulary, grammar, reading, and listening skills; supports general language proficiency, but less focus on real-life communication or fluency
5. Dynamic audio-visual contents and resources relevant to the text	Partially: dynamic audio-visual content such as images and sound clips, but these resources are often limited and simple	Partially: dynamic audio-visual content such as images and sound clips, but these resources are often limited and simple	Dynamic audio content, but visuals are minimal and not always text-based	Partially: dynamic audio-visual content such as images and sound clips, but these resources are often limited and simple
6. Multimedia or multimodal content	Yes, but with simple images	Yes, but simple: images	Yes, but with simple images	Yes, but with simple images

7. Aid tools and resources (AI, among others)	AI-enhanced features, such as interactive conversations with virtual characters. However, these tools remain limited and are available only in specific contexts, offering only basic pronunciation feedback	AI to enhance phonetic precision, but it focuses merely on articulation, not prosodic features.	Sophisticated AI that analyses pronunciation, fluency, stress, and intonation, and provides personalised and immediate feedback. These features are only available in the paid version.	No AI, but it incorporates speech recognition
8. Capacity to generate learning	Yes, especially for vocabulary acquisition	Yes, through immersive methodology and progressive, structured lessons	Yes, through AI feedback and personalised practice (available exclusive in the premium version)	Yes, through regular practice, spaced repetition, and the ability to mark difficult items for review
9. Capacity to promote critical thinking	Yes, but basic through translation and sentence construction tasks	Yes, through simulated real-life scenarios	Yes, through simulated real-life scenarios	Yes, but basic

10. Capacity to provide applicable learning	Broadly applicable learning through contextual practice	Broadly applicable learning through contextual practice	Yes, through role-play and practical speaking exercises that imitate real-life communication	Broadly applicable learning through contextual practice
11. Capacity to engage in self-directed learning	Yes: users set their own goals, receive feedback, and study at their own pace	Yes: users set their own goals, receive feedback, and study at their own pace	Yes: users set their own goals, receive feedback, and study at their own pace	Yes: users set their own goals, receive feedback, and study at their own pace
12. Feedback	Immediate feedback, but very simple	Immediate and helpful, but its depth and customisation are limited	Immediate, detailed AI-driven feedback on pronunciation, fluency, intonation, grammar, and vocabulary (only for the premium version)	Immediate feedback, but very simple
13. Motivation	Yes, through gamified elements like streaks,	Yes, through progress bars	Yes, through personalised goals and	Yes, through gamified elements like levels

	levels, or badges,		progress tracking	
14. Interactivity	Yes	Yes	Yes. Highly interactive with voice recognition exercises and role-play	Yes
15. Adaptability to learners' level and individual differences, and needs	Yes: adapts lessons based on performance and progress	Moderate: linear path	Yes, but mainly in the premium version	Limited learners can choose their proficiency level, but there is no adaptability to individual needs
16. Gamification pedagogy	Yes: points, streaks, badges, and levels to motivate learning	No	Limited	Yes: daily challenges and unlockable levels
17. Coach	Yes	No	Yes	Yes
18. Ease of installation	Easy to install via app stores	Easy to install via app stores	Easy to install via app stores	Easy to install via app stores
19. Compatibility with different devices and platforms	Compatible with Android, iOS, and web	Compatible with Android, iOS, and desktop	Compatible with Android and iOS	Android exclusively

20. Simple and user-friendly interface	Yes: intuitive and accessible design	Yes: intuitive and accessible design	Yes: intuitive and accessible design	Yes: intuitive and accessible design
21. Clear organisation	Yes: content is well-structured and easy to navigate	Yes: content is well-structured and easy to navigate	Yes: content is well-structured and easy to navigate	Yes: content is well-structured and easy to navigate
22. Quality and clarity of Navigation Menu	Clear and accessible navigation	Clear and accessible navigation	Clear and accessible navigation	Clear and accessible navigation
23. Quality and clarity of Help Menu	Basic help resources, mostly FAQ-based	Basic help resources, mostly FAQ-based	Basic help resources, mostly FAQ-based	Basic help resources, mostly FAQ-based
24. Quality of images and videos	Sufficient, but generally simple and not highly dynamic	Sufficient, but generally simple and not highly dynamic	Sufficient, but generally simple and not highly dynamic.	Sufficient, but generally simple and not highly dynamic.
25. Quality of sound	High quality	High-quality	High-quality	High-quality
26. Accessibility online and offline	Offline access is available only with the premium version	Yes	Yes, but limited offline access for some lessons and features.	Yes
27. Progress identification	Yes	Yes	Yes	Yes
28. Possibility to save your progress	Yes	Yes	Yes	Limited for the free version

and continue later				
29. Free of charge and no ads	No. The free version includes ads; the ad-free version is only available via paid subscription	No	Free version but limited in access to lessons and features ¹⁶	Free for basic levels (A1 and A2)
30. Specifically designed with Spanish-speaking secondary students in mind	No	No	No	No

¹⁶ Most features are only available for the premium version

Appendix 3.

Table 5. *Evaluation of e-SoundWayFR through the Adapted DEO Grid Framework (Gómez González, 2024)*

Criteria	<i>e-SoundWayFR</i>
1. Quality and accuracy of content	High accuracy and quality
2. Learning goals alignment with the educational curriculum/syllabus	Grounded in the EPSS methodology
3. Relationship between contents and prior knowledge	Content responds to Spanish-speaking students' most common pronunciation difficulties, demonstrating awareness of learners' prior knowledge
4. Relationship between contents and learning objectives	Carefully constructed to relate directly to clear learning objectives
5. Dynamic audio-visual contents and resources relevant to the text	Rich in dynamic audiovisual content, including professional audio recordings, animations, avatars, realistic images, and interactive diagrams
6. Multimedia or multimodal content	Yes, integrating text, images (avatars, complex backgrounds, and illustrative pictures), music, and audio (professional audio recordings)
7. Aid tools and resources (AI, among others)	No AI, but it incorporates a speech recognition technology
8. Capacity to generate learning	Yes, it progressively develops users' perception, production, and transcription skills
9. Capacity to promote critical thinking	Yes, mini-games often require learners to analyse, discriminate, and solve phonetic puzzles
10. Capacity to provide applicable learning	Yes, skills apply to real-world communication
11. Capacity to engage in self-directed learning	Yes: users set their own goals, receive feedback, and study at their own pace

12. Feedback	Immediate feedback. Users receive medals and visual progress indicators
13. Motivation	Yes, through gamified elements and the reward system
14. Interactivity	Yes
15. Adaptability to learners' level and individual differences, and needs	Yes, learners can choose stages adequate to their current level of proficiency or focus on specific areas of difficulty
16. Gamification pedagogy	Yes: reward system, levels
17. Coach	Yes
18. Ease of installation	Easy to install
19. Compatibility with different devices and platforms	Limited. Only available for Windows devices. No web version.
20. Simple and user-friendly interface	Yes: intuitive and accessible design
21. Clear organisation	Yes: content is well-structured and easy to navigate
22. Quality and clarity of Navigation Menu	Clear and accessible navigation
23. Quality and clarity of Help Menu	Very complete, with instructions and phonetic information
24. Quality of images and videos	High quality
25. Quality of sound	High quality. Professionally recorded
26. Accessibility online and offline	Online only. An internet connection is needed
27. Progress identification	Yes: a three-dimensional pyramid graphically shows users' progress
28. Possibility to save your progress and continue later	Limited. Progress is only saved locally.
29. Free of charge and no ads	Yes
30. Specifically designed with Spanish-speaking secondary students in mind	Yes

Appendix 4.

Consent Forms



DOCUMENTO INFORMATIVO

Proyecto de investigación: Trabajo de Fin de Grado *Using digital tools to teach and learn English pronunciation in secondary schools: The case of e-SoundWayFR*, enmarcado en el Proyecto de investigación “Effective English pronunciation in digital environments for the primary school EFL/CLIL class and beyond: Linguistic, pedagogical and didactic foundations” (acrónimo e-ProFun, código TED2021-130283B-C21 - TED2021-130283B-C22)

Financiado por: MCIN/AEI y “Unión Europea NExtGenerationEU/PRTR

Responsable del Proyecto: María Paz Varela, estudiante del Grado en Lengua y Literatura Inglesas

Supervisión: María de los Ángeles Gómez González, codirectora del Proyecto de Investigación y Tutora del TFG en cuestión.

El presente proyecto de investigación tiene como objetivo identificar y evaluar las necesidades del profesorado y alumnado en relación con la pronunciación de la lengua inglesa y la conciencia fonológica en el contexto del aula. Estudios recientes señalan que la formación en esta área en España necesita ser optimizada. En respuesta a esta necesidad se ha desarrollado *e-SoundWay Free Roaming*, una plataforma digital gamificada para la enseñanza y aprendizaje de la pronunciación del inglés en la educación secundaria.

Se solicita la participación del alumnado del centro educativo _____ en el uso de esta plataforma. Tras un periodo de prueba de la herramienta (aproximadamente un trimestre), y bajo la supervisión de su profesor/a _____ se les pedirá que respondan un cuestionario breve para evaluar su experiencia de uso.

Aseguramos que tanto los protocolos del cuestionario como la investigación derivada del mismo se adhieren a los principios éticos propuestos por el [Comité de Ética de la Investigación de la Universidad de Santiago de Compostela](#) y respetan la privacidad y confidencialidad de los participantes implicados. De este modo, todos los datos serán anonimizados conforme a las cláusulas referentes al consentimiento informado que acompañan a este documento. Asimismo, confirmamos que la participación es voluntaria y sin compensación alguna, y que, por tanto, los estudiantes podrán retirarse en cualquier momento sin que esto afecte de ninguna forma a su situación académica. En este supuesto, el o la participante podrá informarlo directamente a la responsable del proyecto, María Paz Varela, o a su profesor/a _____, pudiendo decidir qué hacer con los datos obtenidos hasta ese momento (destrucción o conservación previamente anonimizados).

Los datos resultantes de aquellos/as que sí participen se salvaguardarán, pudiendo utilizarse la información pertinente principalmente en el Trabajo de Fin de Grado a presentar tras la culminación de los estudios de Grado de la responsable del proyecto y, secundariamente, en investigaciones futuras del grupo de investigación asociado, así como en publicaciones de índole académico. Debido a que la información está totalmente anonimizada, no será posible identificar



personalmente a los participantes en los resultados. Además, toda persona que colabore con la responsable del proyecto en actividades académicas relacionadas con el mismo tiene el deber y compromiso de mantener la confidencialidad.

Agradecemos de antemano su atención y colaboración, dejando constancia de que este proyecto, así como el tratamiento de los datos de los y las participantes fue aprobado por el Comité de Bioética de la Universidad de Santiago de Compostela el 10 del mes 12 del año 2024.

María Paz Varela.

Estudiante del Grado en Lengua y Literatura Inglesas.

Correo electrónico: maria.paz.varela@rai.usc.es



CONSENTIMIENTO INFORMADO

Para la participación en los cuestionarios y en el marco de este estudio

Proyecto de investigación: Trabajo de Fin de Grado *Using digital tools to teach and learn English pronunciation in secondary schools: The case of e-SoundWayFR*, enmarcado en el Proyecto de investigación "Effective English pronunciation in digital environments for the primary school EFL/CLIL class and beyond: Linguistic, pedagogical and didactic foundations" (acrónimo e-ProFun, código TED2021-130283B-C21 - TED2021-130283B-C22)

Responsable del Proyecto: María Paz Varela, estudiante del Grado en Lengua y Literatura Inglesas

(Tutorizada por la Dra. María de los Ángeles Gómez González)

Contacto: maría.paz.varela@rai.usc.es

- ☐ Confirmando que he leído y entendido el documento informativo que precede a este formulario, y que he tenido la oportunidad de formular preguntas y dudas relativas al mismo.
- ☐ Confirmando que he recibido respuestas y aclaraciones satisfactorias a mis preguntas.
- ☐ Entiendo que soy libre de abandonar el estudio en cualquier momento, sin necesidad de explicar las razones de mi abandono y sin ningún tipo de consecuencias para mí.
- ☐ Entiendo que no recibiré un informe individualizado de mis resultados durante el uso de la aplicación.
- ☐ Consiento en participar en el estudio y en los cuestionarios correspondientes arriba indicados.
- ☐ Consiento que la información recogida en esta investigación pueda ser empleada, con garantía de mi anonimato, en futuros trabajos de la misma línea de investigación y en trabajos académicos.
- ☐ Consiento que la información recogida en esta investigación pueda ser compartida, con garantía de mi anonimato, con otros/as investigadores/as a través de redes o repositorios de investigación colaborativa.
- ☐ Recibo una copia de este documento.



El/la participante,	El/la padre, madre o tutor/a legal del o de la participante,	El/la responsable que recauda el consentimiento:
Fecha:	Fecha:	Fecha:
Firma:	Firma:	Firma:
Nombre:	Nombre:	Nombre:



DOCUMENTO INFORMATIVO

Proyecto de investigación: Trabajo de Fin de Grado *Using digital tools to teach and learn English pronunciation in secondary schools: The case of e-SoundWayFR*, enmarcado en el Proyecto de investigación “Effective English pronunciation in digital environments for the primary school EFL/CLIL class and beyond: Linguistic, pedagogical and didactic foundations” (acrónimo e-ProFun, código TED2021-130283B-C21 - TED2021-130283B-C22)

Financiado por: MCIN/AEI y “Unión Europea NExtGenerationEU/PRTR”

Responsable del Proyecto: María Paz Varela, estudiante del Grado en Lengua y Literatura Inglesas

Supervisión: María de los Ángeles Gómez González, codirectora del Proyecto de Investigación y Tutora del TFG en cuestión.

El presente proyecto de investigación tiene como objetivo identificar y evaluar las necesidades del profesorado y alumnado en relación con la pronunciación de la lengua inglesa y la conciencia fonológica en el contexto del aula. Estudios recientes señalan que la formación en esta área en España necesita ser optimizada. En respuesta a esta necesidad, se ha desarrollado *e-SoundWay Free Roaming*, una plataforma digital gamificada para la enseñanza y aprendizaje de la pronunciación del inglés en la educación secundaria.

Se solicita la participación del alumnado y profesorado de inglés del centro educativo _____ en el uso de esta plataforma. Tras un periodo de prueba de la herramienta (aproximadamente un trimestre), y bajo la supervisión de su profesor/a _____ se les pedirá a los alumnos/as que respondan un cuestionario breve para evaluar su experiencia de uso. Asimismo, se les pedirá a los profesores correspondientes que respondan a un cuestionario de características similares.

Aseguramos que tanto los protocolos del cuestionario como la investigación derivada del mismo se adhieren a los principios éticos propuestos por el [Comité de Ética de la Investigación de la Universidad de Santiago de Compostela](#) y respetan la privacidad y confidencialidad de los participantes implicados. De este modo, todos los datos serán anonimizados conforme a las cláusulas referentes del consentimiento informado que acompañan a este documento. Asimismo, confirmamos que la participación es voluntaria y sin compensación alguna, y que, por tanto, los estudiantes podrán retirarse en cualquier momento sin que esto afecte de ninguna forma a su situación académica. En este supuesto, el o la participante podrá informarlo directamente a la responsable del



proyecto, María Paz Varela, o a su profesor/a _____, pudiendo decidir qué hacer con los datos obtenidos hasta ese momento (destrucción o conservación previamente anonimizados).

Los datos resultantes de aquellos/as que sí participen se salvaguardarán, pudiendo utilizarse la información pertinente principalmente en el Trabajo de Fin de Grado a presentar tras la culminación de los estudios de Grado de la responsable del proyecto y, secundariamente, en investigaciones futuras del grupo de investigación asociado, así como en publicaciones de índole académico. Debido a que la información está totalmente anonimizada, no será posible identificar personalmente a los participantes en los resultados. Además, toda persona que colabore con la responsable del proyecto en actividades académicas relacionadas con el mismo tiene el deber y compromiso de mantener la confidencialidad.

Agradecemos de antemano su atención y colaboración, dejando constancia de que este proyecto, así como el tratamiento de los datos de los y las participantes fue aprobado por el Comité de Bioética de la Universidad de Santiago de Compostela el 10 del mes 12 del año 2024.

María Paz Varela.

Estudiante del Grado en Lengua y Literatura Inglesas.

Correo electrónico: maria.paz.varela@rai.usc.es



CONSENTIMIENTO INFORMADO

Estimado/a Director/a,

Por medio de la presente, solicitamos autorización para que los estudiantes y el profesorado de inglés del centro educativo _____ participen en el proyecto de investigación mencionado anteriormente. El objetivo de este estudio es evaluar la plataforma *e-SoundWay Free Roaming*, diseñada para mejorar la enseñanza y aprendizaje de la pronunciación del inglés en el contexto de la educación secundaria en España.

La participación consistirá en el uso de esta plataforma durante aproximadamente un trimestre, bajo la supervisión de su profesor/a _____. Posteriormente, se pedirá a los estudiantes y profesores correspondientes que completen un breve cuestionario para evaluar su experiencia con la herramienta.

Este proyecto ha sido aprobado por el Comité de Ética de la Universidad de Santiago de Compostela y asegura la confidencialidad y anonimato de los participantes, en cumplimiento con la normativa vigente en protección de datos.

La participación de los estudiantes y profesores es voluntaria, sin compensación y podrán retirarse en cualquier momento sin consecuencias académicas.

Agradecemos su apoyo y colaboración.

Atentamente,

María Paz Varela.

Estudiante del Grado en Lengua y Literatura Inglesas

Correo electrónico: maria.paz.varela@rai.usc.es

Dra. María de los Ángeles Gómez González

Codirectora del Proyecto de Investigación y Tutora del TFG

Correo electrónico: mdelosangeles.gomez@usc.es



Yo, _____, en calidad de Director/a del Centro _____
autorizo la realización del presente proyecto en nuestras instalaciones y la participación
de nuestros alumnos/as y profesores/as en el cuestionario correspondiente.

Confirmando que he entendido las condiciones de desarrollo del cuestionario, así como el
tratamiento de los datos recogidos en el marco de esta investigación. Decido, en
representación del centro, permitir la participación libre de los profesores/as y
alumnos/as en las actividades del proyecto.

En _____, a _____ de _____ de

Firmado: _____



DOCUMENTO INFORMATIVO

Estimado/a profesor/a:

Desde la Universidad de Santiago de Compostela se está realizando el Trabajo de Fin de Grado *Using digital tools to teach and learn English pronunciation in secondary schools: The case of e-SoundWayFR*. El trabajo se enmarca en el proyecto de investigación “Effective English pronunciation in digital environments for the primary school EFL/CLIL class and beyond: Linguistic, pedagogical and didactic foundations” (acrónimo e-ProFun, código TED2021-130283B-C21 - TED2021-130283B-C22), financiado por MCIN/AEI y “Unión Europea NExtGenerationEU/PRTR” y dirigido por la Dra. María de los Ángeles Gómez González y el Dr. Fernando Fraga Varela de la Universidad de Santiago de Compostela.

Uno de los objetivos del Proyecto consiste en identificar y evaluar las necesidades del profesorado y alumnado de enseñanza secundaria en relación con la pronunciación de la lengua inglesa y la conciencia fonológica en el contexto del aula. Numerosos estudios coinciden en que la formación en España de este importante componente de la lengua inglesa necesita ser optimizada al presentar unos resultados manifiestamente mejorables. Para revertir esta situación en el seno de un proyecto anterior, [e-LPHON4L](#), hemos desarrollado la plataforma digital *e-SoundWay Free Roaming*.

Nos interesa especialmente situar este tipo de contenidos en la experiencia diaria de las aulas (la metodología que sigue el profesorado, su temporalización y los medios de los que disponen en los centros educativos, así como el grado de satisfacción de la herramienta tanto por parte del profesorado como del alumnado de educación secundaria). Hemos diseñado sendos cuestionarios, profesorado y alumnado, para recabar las percepciones de ambos colectivos con respecto a la plataforma mencionada, *e-SoundWay Free Roaming*. Es por ello por lo que tu colaboración es fundamental para poder comprender esta realidad, y tener presente tu conocimiento y experiencia con la herramienta de cara a poder optimizar el recurso.

Nos gustaría contar contigo respondiendo a un breve cuestionario. Los datos serán anonimizados y se guardará total confidencialidad por parte de los miembros del equipo que participen en el proceso.

La participación es voluntaria, de no hacerlo no supondría ningún tipo de perjuicio. Los datos recogidos se usarán exclusivamente para los fines de esta investigación o de otras investigaciones posteriores que se puedan desarrollar por parte del equipo de investigación con objetivos similares. Por esta razón, una vez recogidos los datos, serán conservados de forma anonimizada.



Para cualquier duda o cuestión en relación con esta propuesta puedes contactar conmigo a través del correo maria.paz.varela@rai.usc.es poniendo en el asunto “Participación Cuestionario *eSoundWay: Free Roaming*”.

Gracias por tu colaboración.

María Paz Varela. Estudiante del Grado en Lengua y Literatura Inglesas y autora del TFG *Using digital tools to teach and learn English pronunciation in secondary schools: The case of e-SoundWayFR*.

Correo electrónico: maria.paz.varela@rai.usc.es

María de los Ángeles Gómez González. Codirectora del Proyecto de Investigación y Tutora del TFG en cuestión.

Correo electrónico: mdelosangeles.gomez@usc.es



CONSENTIMIENTO INFORMADO

☐ DOY MI CONSENTIMIENTO PARA

Participar en el presente cuestionario en el marco del Trabajo de Fin de Grado *Using digital tools to teach and learn English pronunciation in secondary schools: The case of e-SoundWayFR*, enmarcado a su vez en el proyecto “Effective English pronunciation in digital environments for the primary school EFL/CLIL class and beyond: Linguistic, pedagogical and didactic foundations” (acrónimo e-ProFun, código TED2021-130283B-C21 - TED2021-130283B-C22).

Entendí las condiciones de desarrollo del Cuestionario y el tratamiento de los datos recogidos y decido participar libremente sabiendo que se abordarán cuestiones relacionadas con mi experiencia profesional como profesor/a en Educación Secundaria.

En _____, a _____ de _____ de _____

Firmado: _____

Appendix 5

Questionnaires

7/6/25, 5:41

Teaching English on the Way: Your Insights on e-SoundWayFR

Teaching English on the Way: Your Insights on e-SoundWayFR

Estimado/a profesor/a:

Solicitamos su colaboración para participar, cubriendo este cuestionario, en el Trabajo de Fin de Grado *Using digital tools to teach and learn English pronunciation in secondary schools: The case of e-SoundWayFR*.

Este trabajo se enmarca en el proyecto de investigación "Effective English pronunciation in digital environments for the primary school EFL/CLIL class and beyond: Linguistic, pedagogical and didactic foundations" (acrónimo e-ProFun, código TED2021-130283B-C21 - TED2021-130283B-C22), financiado por MCIN/AEI y "Unión Europea NExtGenerationEU/PRTR" y dirigido por la Dra. María de los Ángeles Gómez González y el Dr. Fernando Fraga Varela de la Universidad de Santiago de Compostela. Cuenta, además, con la aprobación del Comité de Bioética de la Universidad de Santiago de Compostela con el código USC 96/2024.

El objetivo de este cuestionario es explorar la perspectiva del profesorado de educación secundaria que imparte la materia de lengua extranjera, inglés, sobre la importancia de la pronunciación de la lengua inglesa, así como las estrategias y recursos que utilizan para abordar esta competencia en el aula. Asimismo, se pretende conocer el contexto de trabajo del profesorado en la actualidad, indicando posibles factores que puedan facilitar o dificultar la implementación de propuestas para trabajar la pronunciación. Finalmente, se recopilarán las opiniones y el nivel de satisfacción del profesorado en relación con la herramienta e-SoundWay Free Roaming.

Para ello se han estructurado las preguntas en cinco bloques. El primero de ellos se corresponde con datos sociodemográficos, el segundo se centra en la importancia de la pronunciación en las propuestas de enseñanza, el tercero alude al uso de recursos digitales para la enseñanza de la lengua inglesa y el cuarto está dirigido a obtener una panorámica del contexto laboral del profesorado. Finalmente, el último bloque recogerá las opiniones del profesorado con respecto a la herramienta en cuestión.

Este cuestionario es anónimo y el tiempo estimado de respuesta es de aproximadamente 15 minutos. Le agradecemos que responda con sinceridad, marcando la casilla que mejor se ajuste a su situación. ¡Muchas gracias por su colaboración!

* Indica que la pregunta es obligatoria

7/6/25, 5:41

Teaching English on the Way: Your Insights on e-SoundWayFR

1. **He entendido las condiciones de aplicación de este cuestionario y decido participar libremente en el estudio.** *

Marca solo un óvalo.

- ☐ Sí *Salta a la pregunta 2*
☐ No *Salta a la sección 2 (ATENCIÓN)*

ATENCIÓN

Lo sentimos, pero para continuar con el cuestionario es imprescindible que acepte los términos y condiciones. Por favor, revise la información proporcionada y seleccione 'Sí' si está de acuerdo.

BLOQUE 1

Datos Sociodemográficos.

2. 1. Género *

Marca solo un óvalo.

- ☐ Mujer
☐ Hombre
☐ No binario
☐ Otro
☐ Prefiero no responder

7/6/25, 5:41

Teaching English on the Way: Your Insights on e-SoundWayFR

3. 2. Edad *

Marca solo un óvalo.

- ☐ 20-25
- ☐ 26-30
- ☐ 31-35
- ☐ 36-40
- ☐ 41-45
- ☐ 46-50
- ☐ 51-60
- ☐ 61-65
- ☐ +65

4. 3. Años como docente *

Marca solo un óvalo.

- ☐ 1-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ 21-25
- ☐ 26-30
- ☐ 31-35
- ☐ +35

7/6/25, 5:41

Teaching English on the Way: Your Insights on e-SoundWayFR

5. 4. Años como docente impartiendo "lengua extranjera, inglés". *

Marca solo un óvalo.

- ☐ 1-5
☐ 6-10
☐ 11-15
☐ 15-20
☐ 21-25
☐ 26-30
☐ 31-35
☐ +35

6. 5. Años como docente en el centro actual. *

Marca solo un óvalo.

- ☐ 1-5
☐ 6-10
☐ 11-15
☐ 16-20
☐ 21-25
☐ 26-30
☐ 31-35
☐ +35

7/6/25, 5:41

Teaching English on the Way: Your Insights on e-SoundWayFR

7. 6. Indique su nivel de formación académica en relación con la enseñanza de la lengua inglesa. *

Marca solo un óvalo.

- ☐ Grado en Lengua y Literatura Inglesas
- ☐ Grado en Filología Inglesa
- ☐ Grado en Educación Primaria con mención en Lengua Extranjera: Inglés
- ☐ Grado en Traducción e Interpretación
- ☐ Máster en Formación del Profesorado de Educación Secundaria (especialidad en Lengua Extranjera: Inglés)
- ☐ Otro: _____

8. 7. Indique si posee alguno de los niveles de acreditación que propone el Marco de Referencia de la Competencia Digital Docente. *

A continuación, se presentan las correspondencias entre los certificados de inglés de Cambridge y los niveles del Marco Común Europeo de Referencia para las Lenguas (MCER). Por favor, indique únicamente el certificado que posea con mayor nivel.

- **A2 Key (KET)** - Nivel A2
- **B1 Preliminary (PET)** - Nivel B1
- **B2 First (FCE)** - Nivel B2
- **C1 Advanced (CAE)** - Nivel C1
- **C2 Proficiency (CPE)** - Nivel C2

Marca solo un óvalo.

- ☐ A1
- ☐ A2
- ☐ B1
- ☐ B2
- ☐ C1
- ☐ C2

7/6/25, 5:41

Teaching English on the Way: Your Insights on e-SoundWayFR

9. 8. Ubicación del centro actual *

Para la clasificación de su localidad, tenga en cuenta los siguientes criterios según el Instituto Nacional de Estadística (INE):

- **Rural:** menos de 10,000 habitantes.
- **Semirrural:** entre 10,000 y 30,000 habitantes.
- **Urbana:** más de 30,000 habitantes.

Marca solo un óvalo.

- ☐ Rural
- ☐ Semirrural
- ☐ Urbano

10. 9. Titularidad del centro actual *

Marca solo un óvalo.

- ☐ Público
- ☐ Privado
- ☐ Concertado

11. 10. ¿Cuál es la ratio habitual de alumnado en las aulas de su centro? *

Marca solo un óvalo.

- ☐ 1-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ +20

7/6/25, 5:41

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12. 11. ¿Cuántas aulas hay habitualmente por cada curso en su centro? *

Número de grupos en cada nivel.

Marca solo un óvalo.

- ☐ 1
☐ 2
☐ 4
☐ +5

BLOQUE 2

La pronunciación: de la legislación a la realidad del aula

13. 12. Señale aquellos cursos en los que imparte docencia de lengua extranjera (inglés) actualmente y el número de sesiones semanales que imparte en cada nivel. *

Marca solo un óvalo por fila.

	No imparto	1 hora semanal	2 horas semanales	3 horas semanales	4 horas semanales	5 horas semanales
1º ESO	☐	☐	☐	☐	☐	☐
2º ESO	☐	☐	☐	☐	☐	☐
3º ESO	☐	☐	☐	☐	☐	☐
4º ESO	☐	☐	☐	☐	☐	☐
1º BACH	☐	☐	☐	☐	☐	☐
2º BACH	☐	☐	☐	☐	☐	☐

7/6/25, 5:41

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14. 13. Seleccione la opción que más se aproxima al tiempo semanal que le dedica a la enseñanza específica de la pronunciación de la lengua extranjera, inglés. *

Marca solo un óvalo.

- ☐ No dedico tiempo específico para la pronunciación
- ☐ 15 minutos a la semana
- ☐ 30 minutos a la semana
- ☐ 45 minutos a la semana
- ☐ 60 minutos a la semana
- ☐ Más de 60 minutos a la semana

15. 14. ¿Se recogen en el currículo de educación secundaria de su comunidad autónoma aspectos sobre el trabajo de la fonética y/o pronunciación de la lengua extranjera, inglés? *

Marca solo un óvalo.

- ☐ Sí
- ☐ No
- ☐ No lo sé

16. 15. ¿Considera importante el trabajo de pronunciación en el desarrollo del área de lengua extranjera, inglés? *

Marca solo un óvalo.

	1	2	3	4	5	
Nad	☐	☐	☐	☐	☐	Muy importante

7/6/25, 5:41

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17. 16. Valore, de 1 a 5, las siguientes afirmaciones sobre la pronunciación en las *
propuestas de enseñanza de la lengua extranjera, inglés.

*Siendo 1: totalmente en desacuerdo; 2: en desacuerdo; 3: ni de acuerdo ni en desacuerdo;
4: de acuerdo; 5: totalmente de acuerdo.*

Marca solo un óvalo por fila.

	1	2	3	4	5
En mi opinión, la pronunciación es clave en el dominio de la lengua extranjera, inglés.	☐	☐	☐	☐	☐
En mi opinión, la pronunciación debe ocupar un tiempo importante en las clases que imparto.	☐	☐	☐	☐	☐
En mi opinión, la pronunciación debe trabajarse de forma transversal, sin dedicar un tiempo específico para ello.	☐	☐	☐	☐	☐
En mi opinión, el peso que tiene la pronunciación es adecuado en el currículo de la materia de lengua extranjera,	☐	☐	☐	☐	☐

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9/25

7/6/25, 5:41

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En la enseñanza,
ingres.
En mi opinión,
En mi opinión,
aprendo de
regiones
semanales
quantitative
materias
adecuadas
para cultivar
las demandas
del currículum
del currículo.

18. 17. ¿Se siente capacitado para enseñar pronunciación en lengua extranjera, inglés?

Marca solo un óvalo.

1 2 3 4 5

Nad ☐ ☐ ☐ ☐ ☐ Muy capacitado

19. 18. ¿Encuentra dificultades a la hora de enseñar pronunciación en lengua extranjera, inglés?

Marca solo un óvalo.

☐ Sí

☐ No

7/6/25, 5:41

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20. 19. Si la respuesta anterior fue sí, indique a continuación qué tipo de dificultades encuentra en la enseñanza de pronunciación.

Sección sin título

BLOQUE 3

Uso de recursos para la enseñanza de la lengua extranjera, inglés.

21. 20. ¿Ha participado en la elaboración del Plan Digital del Centro? *

Marca solo un óvalo.

- ☐ Sí
☐ No

22. 21. ¿Se desarrolla en su centro algún programa o iniciativa específica de digitalización? *

Nacional, autonómico, acuerdo con grupo editorial, iniciativa particular del centro para adquisición de dispositivos, etc.

Marca solo un óvalo.

- ☐ Sí
☐ No
☐ No sé

23. 22. En caso afirmativo, especifique el programa o iniciativa de digitalización que se desarrolla en su centro.

7/6/25, 5:41

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24. 23. ¿Con qué tipología de dispositivos digitales trabaja el alumnado en el aula? *

Por favor, marque todas las opciones pertinentes.

Selecciona todos los que correspondan.

- ☐ Ordenador de sobremesa
- ☐ Chromebook
- ☐ Portátil
- ☐ Tablet
- ☐ Móvil
- ☐ Otro: _____

25. 24. ¿Qué tipología de sistema operativo tienen los dispositivos que utiliza en el aula? *

Marca solo un óvalo.

- ☐ Windows
- ☐ Linux (Ubuntu, Debian...)
- ☐ MacOS
- ☐ IOS
- ☐ Android
- ☐ No sé

7/6/25, 5:41

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26. 25. ¿De qué equipamiento informático dispone el alumnado de su centro educativo? *

Marca solo un óvalo.

- ☐ No disponen de equipamiento informático
- ☐ Cada alumno/a dispone de un dispositivo de su propiedad que utiliza de forma individual
- ☐ Cada alumno/a dispone de un dispositivo que es propiedad del centro y que utiliza de forma individual
- ☐ El alumnado utiliza los dispositivos de forma grupal (no hay dispositivos para todos en el aula)
- ☐ El alumnado utiliza los dispositivos disponibles en el aula de informática del centro educativo

27. 26. ¿Qué recursos digitales ha utilizado para trabajar la pronunciación de la lengua extranjera, inglés, hasta el momento? *

Por favor, indique todas las opciones pertinentes.

Selecciona todos los que correspondan.

- ☐ CD/podcast/audios/vídeos que sugiere el libro de texto específicamente creados para el desarrollo de la materia
- ☐ CD/podcast/audios/vídeos que busco libremente y que no son específicamente creados para el desarrollo de la materia
- ☐ Aplicaciones para el aprendizaje de inglés
- ☐ Webs para el aprendizaje de inglés
- ☐ Creo mis propios recursos
- ☐ Materiales específicos para la pronunciación del inglés creados por otros maestros/as
- ☐ Otro: _____

7/6/25, 5:41

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28. 27. Valore del 1 al 5 las siguientes afirmaciones sobre el uso de recursos para ^{*} la enseñanza de lengua extranjera, inglés.

Siendo 1: totalmente en desacuerdo; 2: en desacuerdo; 3: ni de acuerdo ni en desacuerdo; 4: de acuerdo; 5: totalmente de acuerdo

Marca solo un óvalo por fila.

	1	2	3	4	5
El libro de texto es un material adecuado para trabajar la pronunciación en el aula.	☐	☐	☐	☐	☐
Uso el libro de texto como material imprescindible en mi materia.	☐	☐	☐	☐	☐
Actualmente cuento con buenos recursos para trabajar la pronunciación.	☐	☐	☐	☐	☐
Las herramientas digitales facilitan el aprendizaje de destrezas orales de un idioma.	☐	☐	☐	☐	☐
Utilizo recursos digitales en mis propuestas de enseñanza, más allá de la pronunciación,	☐	☐	☐	☐	☐

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14/25

7/6/25, 5:41

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para otro tipo
de objetivos:

El uso de
recursos
digitales en el
aula me
genera
inseguridad.

☐☐☐☐☐

Una
herramienta
digital como la
presente, que
apoya el
aprendizaje de
la fonética
basándose en
contenidos del
currículo, me
resulta
interesante.

☐☐☐☐☐

Podría utilizar
en el aula una
una
herramienta
digital como la
presente,
creada para el
aprendizaje de
la fonética.

☐☐☐☐☐

7/6/25, 5:41

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29. 28. Dentro de las cuestiones que me preocupan sobre el uso de recursos digitales en el aula se encuentran:

*

Por favor, marque todas las opciones pertinentes.

Selecciona todos los que correspondan.

- ☐ Que el alumnado se disperse.
- ☐ No poder hacer un seguimiento de lo que hace el alumnado.
- ☐ Que las actividades dejen de ser motivadoras para el alumnado por el tipo de propuesta de estos ejercicios.
- ☐ Que realmente no pueda conocer si hay un avance en el estudiante.
- ☐ No tener margen para adaptar la propuesta a mi alumnado o al contexto de mi aula.
- ☐ No poseer el conocimiento técnico para el uso de recursos digitales con mi alumnado en el aula.
- ☐ Otro: _____

7/6/25, 5:41

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30. 29. Valore del 1 al 5 la importancia de los aspectos que tendría en cuenta a la hora de diseñar una aplicación que permitiese a tu alumnado aprender sobre la pronunciación de la lengua extranjera, inglés. *

Siendo: 1: nada importante; 2: poco importante; 3: algo importante; 4: bastante importante; 5: muy importante

Marca solo un óvalo por fila.

	1	2	3	4	5
Poder adaptar el tipo de tareas al contexto del grupo/clase.	☐	☐	☐	☐	☐
Poder seleccionar el tipo de actividades y contenidos según vayamos avanzando en la materia.	☐	☐	☐	☐	☐
Que cuente con variedad en las actividades.	☐	☐	☐	☐	☐
Que permita conocer el progreso que realiza el alumnado.	☐	☐	☐	☐	☐
Que se adapte el nivel de aprendizaje de cada alumno.					

https://docs.google.com/forms/d/1bI4qthl7h_vIDbboleBnRMRBU2UKX9jpr3GZAmXbEDw/edit

17/25

7/6/25, 5:41

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Que se
adapte el
nivel de
aprendizaje
de cada
alumno.

☐☐☐☐☐

BLOQUE 4

Contexto laboral del profesorado.

31. 30. ¿Ha activado la administración educativa en su comunidad autónoma herramientas para la gestión digital de la programación didáctica?

*

Marca solo un óvalo.

☐ Sí

☐ No

7/6/25, 5:41

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32. 31. Valore del 1 al 5 las siguientes afirmaciones sobre las condiciones laborales del profesorado. *

Siendo 1: totalmente en desacuerdo; 2: en desacuerdo; 3: ni de acuerdo ni en desacuerdo; 4: de acuerdo; 5: totalmente de acuerdo.

Marca solo un óvalo por fila.

	1	2	3	4	5
La formación permanente que me ofrecen desde la administración responde a las necesidades sentidas por el profesorado.	☐	☐	☐	☐	☐
Tengo la Competencia Digital Docente necesaria para atender las demandas actuales de mi profesión.	☐	☐	☐	☐	☐
Tengo la formación necesaria para atender a las actuales exigencias del currículum.	☐	☐	☐	☐	☐
Puedo introducir recursos digitales en el aula sin que suponga un problema para mí.	☐	☐	☐	☐	☐

Tengo

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19/25

7/6/25, 5:41

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autonomía
Tengo
como docente
autonomía
para tomar
como docente
decisiones
para tomar
con relación a
decisiones los recursos
con relación a
que utilizo en
los recursos
el aula.
que utilizo en
el aula.
Considero que
tengo
Considero que
autonomía
tengo
profesional en
autonomía
la toma de
profesional en
decisiones
la toma de
respecto a mi
decisiones
aula y centro
respecto a mi
educativo.
aula y centro
educativo.

☐ ☐ ☐ ☐ ☐

☐ ☐ ☐ ☐ ☐

BLOQUE 5

Describe su satisfacción con e-SoundWayFR

33. 32. ¿Qué tan satisfecho/a está con la plataforma e-SoundWayFR? *

Marca solo un óvalo.

1 2 3 4 5

Nad ☐ ☐ ☐ ☐ ☐ Muy satisfecho/a

34. 33. ¿Considera que e-SoundWayFR cumple con las expectativas como herramienta para enseñar pronunciación? *

Marca solo un óvalo.

☐ Sí

☐ No

☐ Parcialmente

7/6/25, 5:41

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35. 34. ¿Qué aspectos de e-SoundWayFR le resultaron más útiles para la enseñanza de la pronunciación en el aula? *

36. 35. ¿Cuál es el nivel de facilidad o dificultad que encuentra al integrar e-SoundWayFR en sus clases? *

Marca solo un óvalo.

1 2 3 4 5

Muy ☐ ☐ ☐ ☐ ☐ Muy fácil

37. 36. ¿Qué tipo de dificultades ha encontrado al integrar e-SoundWayFR en sus clases?

Por favor, marque todas las opciones pertinentes y responda únicamente si ha encontrado alguna dificultad.

Selecciona todos los que correspondan.

- ☐ Falta de tiempo en el horario escolar.
- ☐ Acceso limitado a dispositivos tecnológicos (tablets, ordenadores, etc.)
- ☐ Conexión a internet inestable.
- ☐ Dificultad para adaptar el contenido de la plataforma al nivel de los estudiantes.
- ☐ Falta de capacitación o familiaridad con el uso de plataformas digitales.
- ☐ Otro: _____

7/6/25, 5:41

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38. 37. ¿Qué cambios o mejoras sugeriría para que la plataforma sea más útil para *
el profesorado?

7/6/25, 5:41

Teaching English on the Way: Your Insights on e-SoundWayFR

39. 38. Valore, del 1 al 5, las siguientes afirmaciones *

Siendo 1: totalmente en desacuerdo; 2: en desacuerdo; 3: ni de acuerdo ni en desacuerdo;
4: de acuerdo; 5: totalmente de acuerdo.

Marca solo un óvalo por fila.

	1	2	3	4	5
e-SoundWayFR facilita la enseñanza de la pronunciación dentro del contexto de las necesidades curriculares.	☐	☐	☐	☐	☐
e-SoundWayFR se adapta al nivel de aprendizaje del alumnado.	☐	☐	☐	☐	☐
e-SoundWayFR permite un seguimiento efectivo del progreso de cada estudiante.	☐	☐	☐	☐	☐

40. 39. ¿Recomendaría e-SoundWayFR a otros profesores? *

Marca solo un óvalo.

☐ Sí

☐ No

7/6/25, 5:41

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41. 40. Agradecemos cualquier otro comentario que desee hacer sobre cualquier aspecto de *e-SoundWayFR*.

Este contenido no ha sido creado ni aprobado por Google.

Google Formularios

7/6/25, 5:39

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Learning English on the Way: Your Insights on e-SoundWayFR

Estimado usuario/a:

Te invitamos a colaborar en este cuestionario, que forma parte del Trabajo de Fin de Grado titulado *Using digital tools to teach and learn English pronunciation in secondary schools: The case of e-SoundWayFR*.

Este trabajo se desarrolla en el marco del proyecto de investigación "Effective English pronunciation in digital environments for the primary school EFL/CLIL class and beyond: Linguistic, pedagogical and didactic foundations" (acrónimo e-ProFun, código TED2021-130283B-C21 - TED2021-130283B-C22), financiado por MCIN/AEI y "Unión Europea NExtGenerationEU/PRTR" y dirigido por la Dra. María de los Ángeles Gómez González y el Dr. Fernando Fraga Varela de la Universidad de Santiago de Compostela. Además, cuenta con la aprobación del Comité de Bioética de la Universidad de Santiago de Compostela con el código USC 96/2024.

El objetivo de este cuestionario es conocer tus impresiones sobre la aplicación e-SoundWay Free Roaming, utilizada para el aprendizaje de la pronunciación en inglés. Queremos entender cómo te ha ayudado en tu aprendizaje, qué aspectos valoras positivamente y si has encontrado alguna dificultad en su uso. Tus opiniones son fundamentales para mejorar esta herramienta y hacerla más efectiva.

El cuestionario se ha dividido en tres bloques. El primero se centra en conocer tus hábitos en línea, el segundo evalúa tu nivel de satisfacción con e-SoundWayFR y el tercero explora tu motivación y proceso de aprendizaje.

La encuesta es completamente anónima y se estima que su duración sea de aproximadamente 10 minutos. Agradecemos tu sinceridad en las respuestas, ya que tus comentarios son muy valiosos para nosotros. ¡Muchas gracias por tu colaboración!

* Indica que la pregunta es obligatoria

7/6/25, 5:39

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1. **He entendido las condiciones de aplicación de este cuestionario y decido participar libremente en el estudio.** *

Marca solo un óvalo.

- ☐ Sí *Salta a la pregunta 2*
☐ No *Salta a la sección 2 (ATENCIÓN)*

ATENCIÓN

Lo sentimos, pero para continuar con el cuestionario, es imprescindible que aceptes los términos y condiciones. Por favor, revisa la información proporcionada y selecciona 'Sí' si estás de acuerdo.

SOBRE TI

Tus hábitos en línea.

2. 1. ¿En qué curso estás? *

Marca solo un óvalo.

- ☐ 1º ESO
☐ 2º ESO
☐ 3º ESO
☐ 4º ESO
☐ 1º BACH
☐ 2º BACH

7/6/25, 5:39

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3. 2. ¿Cuántas horas *online* pasas al día? *

Marca solo un óvalo.

- ☐ Menos de 1 hora
☐ Entre 1 y 2 horas
☐ Entre 2 y 4 horas
☐ Más de 4 horas

4. 3. ¿En qué pasas más tiempo *online*? *

Selecciona todos los que correspondan.

- ☐ Consultando noticias (periódicos en línea, revistas, etc.)
☐ Consultando las redes sociales y contactando con amigos (vía Instagram, Tiktok, WhatsApp, etc.)
☐ Viendo películas, series, etc.
☐ Jugando
☐ Estudiando

5. 4. ¿Cuánto tiempo dedicas a jugar *online*? *

Marca solo un óvalo.

- ☐ No juego online
☐ Menos de 30'
☐ Entre 30' y 1 hora
☐ Entre 1 y 2 horas
☐ Más de 2 horas

7/6/25, 5:39

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6. 5. ¿Qué tipo de juegos prefieres, si es que juegas a alguno?

No respondas a esta pregunta si has seleccionado la opción "No juego online" en la pregunta anterior.

Selecciona todos los que correspondan.

- ☐ Acción-aventura
- ☐ Puzzles
- ☐ Estrategia
- ☐ De azar
- ☐ Serios-educativos
- ☐ Simulador
- ☐ Rol

SOBRE e-SoundWayFR

Describe tu satisfacción con e-SoundWayFR

7. 6. ¿Cuántas etapas terminaste cuando jugaste a e-SoundWayFR ? *

Por favor, responde con un número (1, 5, 12, etc.)

8. 7. ¿Utilizaste e-SoundWayFR por tu cuenta o tu profesor lo incorporó a su clase? *

Marca solo un óvalo.

- ☐ Lo utilicé por mi cuenta.
- ☐ Mi profesor/a lo incorporó en su clase.

9. 8. En caso de haber encontrado dificultades técnicas, especifica cuáles.

7/6/25, 5:39

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10. 9. ¿Son las instrucciones para jugar suficientemente claras? *

Marca solo un óvalo.

☐ Sí

☐ No

11. 10. ¿Consideras que la interactividad del juego es intuitiva para el usuario? *

Marca solo un óvalo.

1 2 3 4 5

Nada ☐ ☐ ☐ ☐ ☐ Muy intuitiva

12. 11. ¿Qué aspectos de la aplicación no te gustaron, si es que hubo alguno?

13. 12. ¿Consideras que e-SoundWayFR es lo suficientemente desafiante? *

Marca solo un óvalo.

1 2 3 4 5

Nada ☐ ☐ ☐ ☐ ☐ Muy desafiante

7/6/25, 5:39

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14. 13. ¿Consideras que el sistema de recompensas es efectivo? *

Marca solo un óvalo.

☐ Sí

☐ No

15. 14. Si respondiste negativamente a la pregunta anterior, por favor, sugiere maneras de mejorar el sistema de recompensas para hacerlo más atractivo.

16. 15. ¿Consideras atractiva la metáfora del juego inspirada en el Camino de Santiago? *

Marca solo un óvalo.

1 2 3 4 5

Irrel ☐ ☐ ☐ ☐ ☐ Muy atractiva

17. 16. ¿Echas de menos el aspecto social, es decir, competir contra otros jugadores? *

Marca solo un óvalo.

☐ Sí

☐ No

7/6/25, 5:39

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18. 17. ¿Da e-SoundWayFR la sensación de ser un juego? *

Marca solo un óvalo.

- ☐ Sí, es desafiante y atractivo.
- ☐ Sí, pero es un poco monótono.
- ☐ No mucho, es más como una serie de ejercicios.

19. 18. Si tu respuesta a la pregunta anterior fue "no mucho", ¿qué cambios harías para mejorarlo?

20. 19. ¿Te gusta la organización de cada etapa? *

Marca solo un óvalo.

- ☐ Sí
- ☐ No

21. 20. ¿Te sientes motivado/a para pasar de una etapa a otra? *

Marca solo un óvalo.

	1	2	3	4	5	
Poco	☐	☐	☐	☐	☐	Muy motivado

7/6/25, 5:39

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PROPÓSITO DE APRENDIZAJE

Describe tu nivel de motivación y proceso de aprendizaje.

22. 21. ¿Consultaste la sección de *HELP* (ayuda) en todas las etapas? *

Marca solo un óvalo.

- ☐ Sí, siempre antes de jugar a los juegos.
- ☐ No, solo si no conocía el tema al principio.
- ☐ No, solo si tenía dificultades para ganar las medallas.
- ☐ No, nunca.

23. 22. ¿Qué te pareció la sección de *HELP* (ayuda)? *

Marca solo un óvalo.

- ☐ Suficiente
- ☐ Demasiado larga
- ☐ Demasiado corta

24. 23. ¿Consultaste la sección de *LIBRARY* (biblioteca)? *

Marca solo un óvalo.

- ☐ Sí
- ☐ No

7/6/25, 5:39

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25. 24. ¿Utilizaste algún recurso adicional fuera de la aplicación para completar los desafíos? *

Marca solo un óvalo.

☐ Sí

☐ No

26. 25. Si utilizaste recursos adicionales, por favor especifica cuáles.

27. 26. ¿Intentaste mejorar tu puntuación en cada etapa? *

Marca solo un óvalo.

☐ Sí, siempre usaba la opción de 'try again' (inténtalo de nuevo).

☐ No, me conformaba con haber obtenido el bronce.

28. 27. En promedio, ¿cuántas veces jugaste a cada etapa? *

Por favor, responde con un número (1, 3, 5, etc.).

29. 28. ¿Cuál es tu sección favorita del juego? *

Marca solo un óvalo.

☐ Percepción

☐ Producción

☐ Transcripción

7/6/25, 5:39

Learning English on the Way: Your Insights on e-SoundWayFR

30. 29. ¿Qué sección del juego te resultó más difícil? *

Marca solo un óvalo.

- ☐ Percepción
☐ Producción
☐ Transcripción

31. 30. ¿Consideras que has mejorado tu nivel en Fonética y Fonología Inglesas? *

Marca solo un óvalo.

1 2 3 4 5
No (☐ : ☐ : ☐ : ☐ : ☐) Significativamente

32. 31. ¿Cómo evaluarías tu satisfacción general con e-SoundWayFR? *

Marca solo un óvalo.

1 2 3 4 5
Poc ☐ : ☐ : ☐ : ☐ : ☐ Muy satisfecho

33. 32. ¿Recomendarías este juego a otras personas en tu misma situación? *

Marca solo un óvalo.

- ☐ Sí
☐ No

7/6/25, 5:39

Learning English on the Way: Your Insights on e-SoundWayFR

34. 33. ¿Cuáles fueron los aspectos del juego que más te gustaron? *

35. 34. ¿Qué aspectos mejorarías? *

36. 35. Agradecemos cualquier otro comentario que desees hacer sobre cualquier aspecto de *e-SoundWayFR*.

Este contenido no ha sido creado ni aprobado por Google.

Google Formularios

Appendix 6

Ethics approval request to the USC Bioethics Committee



COMITÉ DE ÉTICA NA INVESTIGACIÓN DA USC
Colexio de San Xerome
Praza do Obradoiro s/n
Tel. 982823558
Correo electrónico: comité.etica.investigacion@usc.es

Asistentes a reunión do CEI:

Cifuentes Martínez, Jose Manuel -Presidente
Fernández Copa, María -Secretaria
Aguar Fernández, Pablo
Azevedo Gómez, Ana Manuela de
Fernández Herrero, Beatriz
Fernandez Lorenzo, Juan Luis
Magariños Ferro, Beatriz
Martínez Costas, José
Rodríguez Boente, Sonia Esperanza
Vázquez Rodríguez, Sonia
Villarino del Río, Natalia

JOSÉ MANUEL CIFUENTES MARTÍNEZ, PRESIDENTE DO COMITÉ DE ÉTICA NA INVESTIGACIÓN DA UNIVERSIDADE DE SANTIAGO DE COMPOSTELA,

INFORMA:

Coa presenza dos membros de CEI que se citan, e unha vez analizados os informes dos grupos de traballo correspondentes, os cales teñen ponderado os aspectos metodolóxicos, éticos e legais do proxecto de investigación cuxos datos se refiren a continuación, e teñen avaliado a cualificación do investigador responsable e do equipo investigador, así como as posibilidades do proxecto conforme a lexislación vixente,

O Comité de Ética na Investigación da USC **ACORDA** a emisión de **INFORME FAVORABLE**

Título do proxecto: **Effective English pronunciation in digital environments for the primary school EFL/CLIL class and beyond: Linguistic, pedagogical and didactic foundations.**

Código: **USC 96/2024**

Investigador responsable: **María de los Ángeles Gómez González**

En Lugo, con data da firma electrónica.

CIFUENTES
MARTINEZ JOSE
MANUEL - 02198348P
Firmado digitalmente por
CIFUENTES MARTINEZ JOSE
MANUEL - 02198348P
Fecha: 2024.12.10 11:37:58
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NOTA: **O presente informe unicamente avala aquelas actuación/actividades que se desenvolvan a partir da data de sinatura do mesmo**