PEDAGOGICAL MEDIATION
IN THE DIGITAL ERA

Research and Practices in Technology-enhanced Language Learning

Virtualex Research Group

Compilers:

Diana Liceth Martínez Verdugo - Juan Carlos Acosta López

UNAD Universidad Nacional Abierta y a Distancia ACREDITADA EN ALTA CALIDAD

ECEDU Escuela de Ciencias de la Educación

Maestría Mediación Pedagógica en el Aprendizaje del Inglés

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Preface

In the past decade, digital technology has transformed the landscape of education, particularly in language learning. From artificial intelligence to gamified learning environments and big data, these tools have unlocked new possibilities to engage students, fostering creativity and promoting self-directed learning. However, the successful integration of these technologies hinges on the role of teachers and their ability to mediate and guide the learning process, ensuring that digital tools are used effectively and purposefully. This relationship between technological innovation and pedagogical mediation serves as the cornerstone of this book, as it aims to explore how language educators can harness the potential of digital tools, keeping a strong focus on meaningful learning outcomes.

Most of the research presented in this book is based on the latest research presented at the 3rd International Congress on Pedagogical Mediation in Language Learning, an academic event organized by the Master´s Program in Pedagogical Mediation in English Learning at UNAD. This congress brought together researchers, educators, and practitioners to explore the intersection of pedagogical mediation and technology. The congress served as a platform to discuss how innovations in digital technology can transform language teaching and learning, highlighting the critical role of pedagogical strategies in ensuring that technology fosters innovative educational progress. This book, therefore, offers a comprehensive collection of studies and practical insights that reflect current research and future directions in this rapidly evolving field.

The Need for Research on Technological Innovation and Pedagogical Mediation

Currently, language education faces numerous challenges. Historical events such as the COVID-19 pandemic and the rapid development of technologies like language-generative AI have significantly accelerated the adoption of digital tools, but they also underscore the importance of research in this field, which now cannot be overstated. While there is an ever-growing plethora of digital tools and platforms for language learning, there is a critical need for research examining how these technologies

can be purposefully integrated into teaching practices. This book bridges the gap by presenting research that highlights not only the potential of technological innovations but also the central role of pedagogical mediation in ensuring their effectiveness. The focus is not merely on the tools themselves but on how they can be used to design tasks, create interactive learning environments, assess learning outcomes, and support learners in achieving specific educational goals.

The digital context or "the digital era of education" has brought a new scenario and a different perspective on using educational systems to face the required transformations. In order to cope with the new situations that arise mostly from technological trends, globalization, and new paradigms of social relationships, new models of pedagogical practices must be proposed to develop the essential competencies in learners to grasp how to learn and adapt, easily and more effectively, to new situations.

Indeed, beyond the characteristics that educators expect from language learners—such as creativity, reflexivity, problem-solving, flexibility, and critical spirit—the implementation of technology raises new challenges and expectations, starting with providing equal opportunities for everyone and effective learning processes. This book aims to explore how current research in Colombia and abroad is addressing some of these new challenges, opportunities, and expectations in an attempt to contribute to the growing literature on the intersection between pedagogical mediation in language learning and technological innovation.

Themes and Structure of the Book

This book is organized around several key themes that represent the intersection of technological innovation and pedagogical mediation in language learning. Each theme is explored through a blend of theoretical perspectives, case studies, and practical applications, ensuring that the content is both research-driven and relevant to classroom practice.

This book, "Pedagogical Mediation in the Digital Era of Education: Research and Practices in Technology-enhanced Language Learning," is organized around key themes of pedagogical mediation, technological innovation, and their intersection in shaping modern language learning practices. The structure of the book is carefully designed to guide the reader through an interesting narrative starting with theoretical foundations, then continuing with practical tools and strategies, moving into assessment and feedback methodologies, and concluding with the global implications of connecting language learners across diverse cultural and geographical contexts.

This layout was inspired by the need to create a comprehensive resource that reflects

both the current research and the future directions of technological innovation in language education. As mentioned earlier, most of the research presented within this volume was initially discussed during the 3rd International Congress on Pedagogical Mediation in Language Learning. The congress highlighted the growing role of pedagogical mediation in language education. From these rich discussions and presentations at the congress, key themes began to emerge, shaping the four-part structure of the book.

Overview of Chapters of the Book and How to Use It

The book is divided into four parts, each focusing on different but interrelated themes: Foundations of Technological Innovation and Pedagogical Mediation, Digital Tools and Strategies in Language Learning, Assessment and Feedback in Digital Language Learning, and Global Connections in Language Education. Each part presents research from various educational contexts, which provide both theoretical insights and practical applications for language educators and researchers.

Part I: Foundations of Technological Innovation and Pedagogical Mediation

The first section of the book establishes the theoretical and pedagogical underpinnings for integrating technological innovation into language education. This part focuses on the foundations necessary for understanding how digital tools support language learning, and it emphasizes the role of ICT (Information and Communication Technologies), LKT (Learning and Knowledge Technologies), and EPT (Empowerment and Participation Technologies).

Chapter 1, "Disruptive Innovation in Education" discusses how Project-Based Learning (PBL) and other interactive pedagogical models, combined with ICT, LKT, and EPT, enhance language learning and develop global competencies in pre-service teachers. The chapter sets the stage by addressing how these tools foster active learning, creativity, and collaboration, and positions disruptive innovation as a cornerstone of 21st-century education. Chapter 2, "Digital Educational Resources in the Centers for Communication and Knowledge Development" looks into how digital educational resources (DERs) are leveraged in writing and communication centers. It provides a classification framework for these resources and highlights how writing centers have evolved into multidisciplinary spaces for intellectual growth. Finally, In Chapter 3, "Harnessing Artificial Intelligence for English Language Learning in the post-Pandemic Era," a systematic literature review is presented to explore how artificial intelligence is fundamentally transforming English language learning. This chapter highlights the potential of AI to improve adaptability, interactivity, and motivation in

English Language Learning (ELL) and offers valuable insights for the implementation of future educational technology.

Part II: Digital Tools and Strategies in Language Learning

In this part, the focus shifts from theory to practice by examining specific tools and strategies that educators can implement to enhance digital literacy and language learning outcomes.

Chapter 4 is titled "The Influence of Students' Technology Appropriation on Their Digital Literacy Development". This chapter explores how students' interaction with technology affects their digital literacy in the EFL classroom. By analyzing students' technology appropriation and its impact on their learning, the chapter provides insights into the digital challenges and opportunities within EFL settings. Chapter 5, "Model of Didactic Sequence for Gamified Digital Educational Resources" examines the design and implementation of gamified digital educational resources to improve oral production skills in virtual language learning environments. This chapter introduces a structural model that can be applied in online teaching, emphasizing the role of gamification in increasing learner motivation and enhancing oral communication skills. These chapters demonstrate practical applications of digital tools since they offer strategies for integrating technology in a way that supports both language acquisition and digital literacy. The emphasis here is on "actionable methodologies" that educators can adopt to make language learning more engaging and effective.

Part III: Assessment and Feedback in Digital Language Learning

The third part of the book centers on the critical role of assessment and feedback in digital learning environments. These chapters explore innovative approaches to evaluation and self-regulation, especially in virtual settings.

Chapter 6, "Self-Authorship Mediated by a Visual Dialogue with AI" investigates how students' interactions with AI-powered tools, like Bing Image Creator, can foster self-authorship and mental well-being. By reframing students' fears, such as the fear of public speaking, the chapter demonstrates how AI can be used as a tool for emotional and cognitive development in language learning. Conversely, Chapter 7 titled "Systematization of an Assessment for Learning (AfL) Experience in a Virtual English Course" discusses how digital learning resources can be used to support assessment for learning (AfL) practices in a virtual environment. This chapter highlights both the affordances and limitations of current digital assessment tools, which makes the case for improved professional development in digital AfL practices. Both chapters contribute to the discourse about

how technology can be harnessed to not only enhance learning but also to facilitate more personalized and reflective assessment processes in language education.

Part IV: Global Connections in Language Education

The final part of the book examines how technology fosters global connections, which enable learners to engage with diverse cultures and perspectives through language learning.

In this last section of the book, Chapter 8, "Connecting Classrooms Globally" presents a case study related to the impact of Collaborative Online International Learning (COIL) on Colombian high school students. The chapter highlights how COIL can enhance communication skills, cultural awareness, and collaboration among students from different countries, which fosters a sense of global citizenship and prepares students for a globally interconnected world. Chapter 9, "Pedagogical Innovation in Teaching English as a Foreign Language", presents a case study on the integration of theoretical foundations and digital culture in university-level teacher training. This chapter serves as a bridge between theory and practice by focusing on metacognitive strategies and the need for cultural integration in teacher training programs. This final section closes the book by emphasizing the transformative potential of technology in breaking down geographical barriers and creating opportunities for cross-cultural communication and collaboration.

As we can see, each part of this book builds upon the previous one, creating a cohesive narrative that spans theoretical foundations, practical applications, and global implications of technological innovation in language education. We believe that the research presented here provides educators and researchers with the necessary tools, strategies, and insights to navigate the landscape of digital language learning.

As educators, researchers, and policymakers look toward the future of language education, this book offers valuable insights into how technological innovation and pedagogical mediation can work together to enhance teaching and learning. It is our intention that the chapters presented here can provide not only research-driven analysis but also practical guidance on designing effective, learner-centered digital materials and environments that support language development. Ultimately, this book aims to inspire educators to reflect on their own practices and to explore new ways to integrate technology into their classrooms in interactive, meaningful, and pedagogically sound ways.

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She has also contributed to research, leading research lines and groups in educational fields, and has played a key role in designing undergraduate and postgraduate programs in distance, virtual, and face-to-face education. Her work includes publications, papers, and contributions in areas such as bilingualism, interculturalism, pedagogy, evaluation, didactics, and more.

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1

FOUNDATIONS OF TECHNOLOGICAL INNOVATION AND PEDAGOGICAL MEDIATION

Chapter 1

Disruptive Innovation in Education: From ICT Tools to LKT and EPT Environments

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Introduction

The leaps and bounds of technology, particularly Artificial Intelligence (AI), have greatly impacted society. From personalized advertisements on search engines to intelligent robots, including ChatGPT interactions, smart thermostats at home, and autonomous vehicles, among others, technology has become an integral part of our daily lives. This has also brought about new challenges in higher education, as students entering university are either digital natives or digital immigrants who have had to adapt to a digitized society (Prensky, 2001). As a result, EFL training programs, especially those with large groups, must prioritize the concept of digital citizenship in their curricula, bearing in mind a transition from traditional face-to-face instruction to blended learning environments (Christensen et al., 2008). This could be achieved by implementing three vital components: Information and

Communication Technologies (ICT), Learning and Knowledge Technologies (LKT), and Empowerment and Participation Technologies (EPT) (Trujillo, 2022). In other words, education could become more personalized and flexible, fostering the development of pre-service teachers' declarative, procedural, and attitudinal skills.

Several sectors, including education, have been influenced by the swift advancement of technology, particularly Artificial Intelligence As a result, the integration of Information and Communication Technologies (ICT), Learning and Knowledge Technologies (LKT), and Empowerment and Participation Technologies (EPT) into educational settings has triggered a fundamental discourse on their potential to transform from traditional teaching methodologies into innovative and technological practices. As a result, the shift from conventional face-to-face instruction to the usage of blended learning environments has challenged teachers to revise their pedagogical methods to meet the needs of 21st-century skills. Indeed, these skills, such as critical thinking, collaboration, and digital literacy, are indispensable for students to navigate and thrive in a digital society (Mischel & Ritter, 2021; Soler et al.,2021; Trujillo, 2022).

The role of teachers has become increasingly multifaceted in fostering knowledge and encouraging the development of students' competencies and skills. Consequently, undergraduate English students must develop competencies that include pedagogical expertise, digital literacy, and the ability to integrate ICT tools efficiently into their curricula. This modification implies a reconceptualization of pre-service teacher training programs, which must improve these competencies to prepare future educators for the trials of contemporary classrooms (Galán, 2021). For this reason, documentaries and other multimedia resources have appeared as appreciated resources in the academic context to provide teachers with opportunities to discover real-life applications of pedagogical technologies and be critically involved with the hints of digital citizenship in contemporary education (Soler et al., 2021).

With the increasing importance of digital citizenship and the integration of EPT and LKT in education requirements, it is important to have a comprehensive understanding of their impact on learning processes. For this reason, universities must implement these technologies to evaluate how they impact teaching practices and student results. Documentaries and other narrative types can work effectively as a means of illustrating the challenges and opportunities associated with these innovations. In this case, they provide insights into how teachers can influence them to enhance learning and foster the development of 21st-century skills (Pliushch & Sorokun, 2022). Teachers can gain a deeper understanding of the

disruptive innovations in education and their role in determining the future of teaching and learning by critically inspecting and incorporating these digital resources.

The main purpose of this study is to describe the implementation of a pedagogical proposal that integrates Project-Based Learning (PBL) and flipped classroom models to enhance documentary filmmaking skills among undergraduate English students who have completed the EFL Oral and Written Communication course at Universidad Nacional de Colombia. The study also aims to provide insights into their potential to revolutionize traditional teaching methodologies in blended learning environments with the implementation of digital resources in educational settings (Galán, 2022). As a result, the specific objectives are:

To describe the process of implementing a pedagogical proposal that integrates Project-Based Learning (PBL) and flipped classroom methodologies, based on documentary filmmaking skills, to enhance the learning experience for undergraduate English students.

To analyze undergraduate English students' perceptions regarding the effectiveness of PBL and flipped classroom models in improving language skills and 21st-century skills.

To examine the effectiveness of integrated methodologies with ICT tools, LKT, and EPT environments in enhancing student engagement and learning outcomes within the context of undergraduate documentary filmmaking, and to assess their potential to transform traditional higher education settings.

Theoretical Framework

Literature review

Ranjan and Rana's (2023) study is related to the integration of developing technologies in design education, revealing substantial improvements in student engagement and creativity. The study points out the transformative digital resources discussed in similar research. In this case, it targets 150 undergraduate students at an Indian design institute. This study used mixed-methods methodology, its primary instruments included surveys to collect quantitative data on student engagement and creativity and interviews to gather qualitative insights from the participants. Furthermore, this study suggests that these innovations enhance more dynamic and effective learning experiences. What is more, the parallels between the two studies underline the broader implications of integrating technology into educational practices. The present study expands on Ranjan and Rana's findings by exploring

how these technological advancements could be thoroughly integrated into curricula to meet students' learning needs and encourage critical thinking. Indeed, this study contributes to the ongoing discourse on the future of education in the digital age.

Bowen et al. (2022) aimed to evaluate the effectiveness of technology education curricula in training students for future challenges. The study involved high school students in the United States of America, with a sample size of 500 students and a mixed-methods approach. In this case, the researchers combined surveys and interviews to collect quantitative and qualitative data, which were analyzed using statistical software and thematic coding to identify trends and significant themes. The study concluded that technology education curricula purposefully increased problem-solving skills and students' critical thinking. Similarly, this research is relevant to ongoing studies on the integration of technology in education. For example, it emphasizes the significant role of curriculum design in developing vital 21st-century skills. The findings can be taken into account in the current research, which focuses on how educational technological curricula could be used to prepare students for the changing world's needs. The study also provides insights into how technology curricula could be improved to better adapt to industry requirements which is a key consideration in the present research on innovative educational practices.

Dindler et al. (2020) proposed exploring how participatory design can promote computational empowerment among students. The research involved middle school students from Denmark, with a sample size of 120 participants. Furthermore, the study employed a qualitative approach, where the researchers used participatory workshops and students were actively engaged in designing computational resources. Data were collected through interviews, observations, and student-created artifacts, and a thematic analysis was applied to identify patterns and insights. The findings point out that participatory design enhanced students' computational thinking and creativity in digital atmospheres. This study is highly pertinent to current research on innovative educational practices, as it asserts the importance of involving students in the design process to foster their learning experiences. The findings support the concept that when students participate in producing their learning tools, they progress toward a deeper understanding and more meaningful learning of the content.

For this reason, the insights from this study could provide strategies for integrating participatory design into broader educational environments. Smith et al. (2023) carried out a study to establish a research agenda for computational empowerment within emerging technology education. In this case, it highlights the importance of empowering students in in educational settings. The

research includes teachers and students, with approximately 200 participants, and North American institutions. The study employed a qualitative methodology with interviews, workshops, and surveys for data collection. The approach was participatory, where participants were involved in identifying significant areas for computational empowerment. Likewise, the thematic coding was analyzed which showed that computational empowerment could be achieved through personalized educational practices that integrate emerging technologies into the curriculum.

This study's conclusions are significant for current research as they underscore the need for a structured framework to guide effective computational empowerment efforts in education. As a result, the findings emphasize the importance of creating inclusive and adaptable educational settings where students can engage with emerging technologies. Moreover, the study contributes to the present research by offering insights into the practical implementation of computational empowerment strategies, which provide future educational practices and policy-making. Hess and Macomber (2021) proposed a study to explore the use of documentary filmmaking as a feminist pedagogical resource in higher education. Its population includes undergraduate students enrolled in gender studies courses at a university in the United States of America, with approximately 30 students who designed documentaries as part of their coursework.

The qualitative method gathered student reflections, interviews, and analysis of the films produced. The instruments used included video cameras and editing software. For this reason, data analysis includes thematic coding of student reflections and film content to determine the impact of documentary filmmaking on feminist learning results. The conclusions show that documentary filmmaking improves students' engagement with feminist theory, and the study enhances critical thinking and self-reflection. The findings highlight those students felt more connected to the material and were able to express complex ideas through their films. As a result, this study is related to the present research by indicating the effectiveness of integrating creative methodologies such as filmmaking into traditional academic atmospheres to increase students' understanding and enhance practical skills through active learning.

Conceptual Framework

Documentary Filmmaking

According to Nichols (2016), documentary filmmaking originates in the early 20th century, and it has served as a medium to document societal actions and real events. Nichols emphasizes the genre's ethical role and asserts its responsibility to straightforwardly represent reality while provoking critical thinking in spectators. Documentaries outline reality and shape human understanding of truth through engaging audiences in political, cultural, and social dissertations (Zryd, 1996). In education, documentary filmmaking has been recognized as a powerful pedagogical resource. Furthermore, Nichols (2016) argues that the medium's capacity for emotional and narrative engagement makes it effective in teaching in multifaceted environments. In fact, Aufderheide (2008) highlights how documentary films in educational environments promote research skills, critical thinking, and ethical reflection among students (Aufderheide, 2008). The implementation of documentary filmmaking into pedagogy can promote experiential learning, where it is possible for students to explore current social realities by means of analytical and creative perspectives.

Disruptive Innovation in PBL and Flipped Classroom Models

Project-Based Learning (PBL) is associated with a cooperative learning process that aims to engage students in problem-solving scenarios that culminate in a specific product, in this case, a documentary film (Beckett & Miller, 2006; Barron & Darling-Hammond, 2008). Flipped classrooms are linked with an instructional strategy that aims to engage students in blended learning environments to develop higher-order thinking skills (Christensen et al., 2008; Noguera et al., 2022). Christensen et al. (2008) emphasize that disruptive innovation could be seen in blended learning as integration of technology essentially changes traditional pedagogical systems. This modification moves away from lecture-based methodologies to a more purposeful and interactive model that includes online resources alongside face-to-face classrooms. This change has the potential to make education more flexible, accessible, feasible, and more affordable to several students (Pliushch & Sorokun, 2022).

Pliushch and Sorokun (2022) point out that blended learning often involves transforming teaching paradigms that develop exclusively classroom-based education. By incorporating technology, it could develop more active and engaging learning experiences, such as the elaboration of a project. Blended learning can be especially beneficial for bigger classes, as it allows for a more personalized learning atmosphere and

cooperative learning. Online resources can be tailored to individual learning requirements, handling interactive and adaptive content that caters to diverse learning styles and needs (Morales & Rodríguez, 2019). In fact, blended learning could promote the accessibility of learning resources, enhancing pedagogical mediations, accommodating diverse learners, and incorporating projects and teamwork.

ICT and Creativity

As previously mentioned, integrating Information and Communication Technologies (ICT) into the classroom can significantly enhance teaching in large groups. This is because it allows individual potential and group interaction in a meaningful learning environment (Soler et al., 2021). Web 2.0 teaching tools are related to online resources that let students access information using the web and interact with both the content and other peers (Michalón et al., 2017). Some examples of ICT tools involve structured software such as Learning Management Systems (LMS) and Multi-User Virtual Environments (MUVE) (Cela et al., 2017), as well as English language learning websites and mobile applications, including podcasts, online boards, online journals, wikis, blogs, e-books, digital storytelling, Liveworksheet, Edmodo, Puzzle, Genially, Voicethread, Nearpod, Pear Deck, Quizizz, E-creation, Speakpipe, Wordwall, Mentimeter, among others. It is worth noting that there are also technological animation tools for lesson planning, which facilitate the incorporation of engaging materials such as memes, GIFs, stickers, videos, photographs, and TikTok reels.

These resources can improve the teaching of communicative skills: writing, reading, listening, and speaking skills by providing students with opportunities to creatively practice using the language in online environments. According to Cobo (2009), ICT tools are technological devices that enable interpersonal communication and collaboration in the generation, exchange, management, and access to knowledge. In the contemporary era, a teacher must have strong foundations in linguistic, pedagogical, and research competencies to integrate engaging interactions using digital resources (Morales & Rodríguez, 2019). Technological tools encourage creativity, allowing students to respond with relevant solutions to learning challenges in individual and group activities. The unexpected event of COVID-19 has led to a significant increase in Web 2.0 tools within educational contexts, creating diverse pedagogical mediations (Divjak et al., 2022).

Technology has greatly improved the human experience for the better. It has broken down the barriers of time and space, as digital citizens are largely working towards creating a vast database of technological tools in educational settings. Exclusive and costly domains for downloading applications are fading away. Instead, this is the midst of a digital Golden Age, where these online resources are accessible to anyone through

a search engine. ICT tools can eradicate the barriers of traditional classrooms, allowing for the creation of disruptive innovations in educational settings. This can only be achieved, if there is a shift in the educator role, who must have a diverse set of skills including language, pedagogy, research, and Web 2.0 tools (Divjak et al., 2022).

LKT and Pedagogical Mediations

The integration of ICT tools in the digital citizenship classroom is encouraged. However, it is not guaranteed that teachers will implement them effectively regarding pedagogical mediation. Consequently, it is necessary to shift from ICT media to using Learning and Knowledge Technologies (LKT). LKT refers to the meaningful uses of ICT to enhance learning by implementing dynamic training practices that explore the various didactic uses of digital technology (Enríquez, 2012). This means Web 2.0 tools must be incorporated within systematic planning, using a fundamental approach, method, and methodology. For example, flipped learning is an instructional strategy and a type of blended learning that aims to increase students' engagement with readings, videos, or tutorials at home, and then work on active problem-solving activities during class time. The flipped classroom has been proven to be an effective methodology, as it allows for a more autonomous environment where students take an active role in their learning, rather than being dependent on the teacher (Noguera et al., 2023).

However, students may attend class unprepared and without participating, which defeats the purpose of flipping classrooms. That is why the quality and format of online homework can greatly impact students' motivation. In that sense, online homework should be well-prepared and effective to keep students engaged and motivated (Noguera et al., 2023). Additionally, it is important to promote collaborative projects and provide constructive feedback to students. Self-regulation, which refers to the ability to plan, monitor, and control one's learning, is essential for large groups in personalized and adaptive learning environments (Divjak et al., 2022).

In the era of big data, technology has also greatly impacted synchronous and asynchronous communication in the classroom, leading to fostering personalization and differentiation (Soler et al., 2021). This is particularly evident when communication between teachers and students is more efficient over the Internet, as long as proper netiquette and a code of conduct are well managed (Fernández et al., 2015). Emails and instant messaging on social networks can be useful for staying connected with the educational community. In recent decades, automation and communication have significantly impacted education by facilitating access and interaction through automated MOOC courses and chatbots. However, it is relevant to note that education is one of the most challenging contexts to automate (Cela et al., 2017).

A question arises as follows: Can robots and Artificial Intelligence replace teachers, particularly language teachers? Effective education goes beyond the use of ICT resources, as student-centered LKT mediations also shape it. The educational process is not simply transferring information in the classroom; it also requires that pedagogical materials be adapted to meet students' learning needs and abilities. The use of Learning and Knowledge Technologies (LKT) fosters diversity and inclusion through interactive classroom methodologies (Enríquez, 2012). It is also possible to generate a permanent dialogue of information and knowledge in synchronous and asynchronous time through virtual forums, tutorials, explanatory videos, interactive games, and activities in blended learning settings. Teachers in language training programs should use ICT tools with diverse topics. They can also facilitate collaborative interaction in various social, cultural, political, and economic scenarios, all centered around foreign language learning (Noguera, 2023).

EPT and the Humanization of ICT Tools

In the educational process, the declarative knowledge of ICT tools is not enough. It must be complemented with the procedural knowledge of effectively teaching using technologies through LKT mediations. Furthermore, this pedagogical purpose also requires attitudinal knowledge under the construction of EPT scenarios.

Empowerment and Participation Technologies should be integrated into learning environments, as they can influence and shape social interactions (Trujillo, 2022). For example, an over-reliance on digital technologies has created extreme dependency among both digital natives and digital immigrants. Teachers and the entire institutional community should also encourage an educational process that transforms their classroom into a critical thinking environment. This includes fostering empowerment and democratic participation in the development of a local, national, and global society that uses technology responsibly and ethically (de Lima et al., 2017).

Cooperative learning in the educational process cannot simply be automated or robotic communication. EPT scenarios deal with the socio-affective skills of the digital citizen (García et al., 2016). The language teacher is essential in promoting emotional skills in the classroom, contributing to the development of a diverse and inclusive society (Trujillo, 2022). It means that effective communication must be promoted with the fundamental values of responsibility, tolerance, respect, perseverance, honesty, and teamwork. Teaching English to large groups can be challenging, but many strategies can foster socio-affective skills.

Some of these strategies include starting the class by outlining the rules of participation, so

students can keep a respectful atmosphere while completing the task. Moreover, promoting group work and collaborative projects can allow students to support each other in mastering the work (García et al., 2016). Mixed-ability groups refer to students with different skills and abilities, both linguistic and non-linguistic competencies. When teaching large classes, it can be challenging to identify these different skills. Therefore, implementing blended learning environments with mixed-ability groups can foster active participation among diverse learners (Divjak et al., 2022). EPT mediations involve environments of social cohesion, the development of critical thinking skills, and multiple intelligences, the democratization of knowledge, participation, and the empowerment of students in sustainability, as well as empowering learners to participate in innovative projects (Trujillo, 2022).

This casts doubts on both the aims of education and the English proficiency scores within the Colombian educational system (Jiménez et al., 2017). Do the language teachers only develop activities that promote convergent and linguistic thinking, or can they encourage lateral and divergent thinking in an English class? There are also fairly obvious and constant indirect questions about the roles of education in digital citizenship: Are we promoting all three skills (declarative, procedural, and attitudinal) through the use of Information and Communication Technologies (ICT), Learning and Knowledge Technologies (LKT), and Empowerment and Participation Technologies (EPT)? Are foreign language teaching programs encouraging students' citizenship competencies to thrive in modern society? Are we inspiring and preparing pre-service language teachers to nurture these competencies in their future classrooms to contribute to a better digital and citizenship society? ICT tools can impact learning processes effectively when teachers are digitally literate and understand how to integrate them into the curriculum of LKT and EPT mediations (Trujillo, 2022).

Methodology

This study is rooted in a qualitative and descriptive approach to explore the intricacies of students' experiences with documentary filmmaking within an educational context. Similarly, the methodological design involves several systematic processes to ensure accuracy and reliability. This design was structured to ensure a rigorous examination of the research objectives. According to Charly et al. (2022), qualitative research allows for an in-depth investigation of participants'

perceptions. In this case, the study makes it suitable for studies that aim to understand multifaceted social phenomena, such as the impact of integrating Project-Based Learning (PBL) and flipped classroom models in an English environment. The descriptive nature of the study affords a detailed interpretation of how these pedagogical approaches encourage the learning process, where it is feasible to capture the wealth of students' experiences to improve the pedagogical context.

Furthermore, the study's sample comprised 27 randomly selected students from the Oral and Written Communication course in the Bachelor of English program at Universidad Nacional de Colombia. According to Patton (2015), the methodology enhances the credibility of qualitative research through a diverse representation of participants, which supports generalizing the findings (Marshall & Rossman, 2016). The choice of this sample size and sampling method reflects the study's purpose to explore a specific educational intervention in-depth, which provides a nuanced understanding of its effects on student learning. The study used a variety of instruments to collect data, such as students' documentary artifacts organized in self and peer assessments, posters, and survey results.

According to Yin (2018), using multiple data sources and triangulation supports the validity of qualitative research by allowing researchers to cross-check information and identify consistent patterns. In addition, the students' artifacts are used as tangible evidence of their engagement with the pedagogical methods, while the surveys gave insights into their reflections and experiences. As a result, this combination of data sources lets the researchers build a comprehensive representation of the impact of PBL and flipped classroom methodologies on students' documentary filmmaking skills. Likewise, researchers conducted a thematic coding for data analysis, which is a qualitative method that includes identifying and categorizing themes within the data (Braun & Clarke, 2006). This approach lets the researchers systematically analyze the students' artifacts and survey responses. The analysis leads to the identification of significant themes related to the description of pedagogical implementation. In fact, the study concluded that the integration of PBL and flipped classroom models meaningfully enhanced students' documentary filmmaking skills, where it is feasible to demonstrate the potential of these approaches to transform traditional teaching practices to more engaged and effective active learning experiences in higher education (Freeman et al., 2014).

Results

The pedagogical proposal was structured around a framework that combined Project-Based Learning (PBL) with flipped classroom models to enhance documentary filmmaking abilities among undergraduate English students who had completed the EFL Oral and Written Communication course at a public university. The project was organized into four phases: Preparation, Planning, Research & Development, and Presentation & Evaluation (Papandreou, 1994). Each phase corresponded to specific lessons that progressively developed students' knowledge and skills in documentary filmmaking.

The preparation phase of the instructional framework aimed to establish a solid foundation in documentary filmmaking. Lesson one introduced students to documentary genres, prompting critical analysis through pre-class viewings and in-class discussions. This inverted classroom element enabled students to independently explore diverse documentary formats before collectively delving deeper. The second lesson examined the fundamental components of documentary filmmaking. Collaborative analysis and a documentary evaluation workshop enhanced students' discrimination of essential elements like narrative progression, ethical implications, and visual expression. The inverted classroom approach facilitated self-directed learning and comprehensive exploration of the subject matter using pre-class filmmaking resources.

The planning phase was essential in transitioning preliminary ideas into tangible documentary film products. Lesson three initiated this process by guiding students in generating and selecting documentary themes, emphasizing identifying pertinent social or cultural challenges. Students articulated core concepts, establishing a clear project through collaborative work. The inverted classroom component empowered students to autonomously identify real-world issues, cultivating a sense of possible project topics. Lesson four equipped students with the tools to concretize their ideas. Students constructed a comprehensive project outline through in focused research, script development, and storyboard creation. The inverted classroom model facilitated the development of essential technical procedures through pre-class tutorials, optimizing in-class time for collaborative enhancement and feedback. Let us analyze a script excerpt and a storyboard excerpt in Table 1 to exemplify narrative structure development:

Table 1. Group 1 script

Video	Audio
The scene takes place first in a bedroom: This person does not want to wake up, so they stay in bed for more time than needed. (FS) Then a close-up of the phone showing the alarm (CU) Then, the person wakes up tired (MS) Fade to the next scene	Nat sound: Some background sound of the place where it is being recorded. The sound of the alarm ringing Actor: "5 minutes more"
The same person is in front of a computer, watching a video, and on their side a pile of books and homework. (FS) Then next shot. The person takes the phone and sees the computer uninterested in beginning to do their homework, showing a medium shot from the back showing the screen of the computer. (MS). The fade to the next scene	Narrator: Have you ever put off a task or dissociated from an activity? For instance, when you have to begin a report that is due in two days, but you first check your phone to look for some ideas and finally just end 1 hour wasted on the cycle of useless TikTok videos. This is called Procrastination. And what is it? It is the act of unnecessarily and voluntarily delaying or postponing something, usually a task, despite knowing that there will be negative consequences for doing so. Nat sound: background soft music.
A full shot of a building, some students are leaving the place (FS) A brief interview of 2 persons, they are students who experienced procrastination and are answering brief questions. (MS). In the background, students leaving a building after class blurred. Fade to the next scene	Interviewer: • What concept or idea do you have about procrastination? • Do you procrastinate often? In which cases do you procrastinate? • How Do you feel about that? Interviewer: Answer question. Nat Sound: People talking muffled in the background, maybe some light wind.
Rapid full-shot of a building (FS). The next shot is an Interview of a teacher in a classroom or empty room, a brief interview on how procrastination works and how to avoid it. (MS). Blurred to the next scene	Interviewer: Ask questions about the reason for procrastination and how to avoid it • What is the main reason why we procrastinate? • How does a procrastinator avoid procrastinating? Is there some sort of treatment or therapy process? • Do you know of exercises to help fight procrastination? Interviewee: Answer questions and give tips. Nat Sound: Silence or climate sound in the background.

Note: Student's artifacts: Group 1 Script

The script effectively constructs a narrative framework for a documentary exploring procrastination. The story maintains audience interest and offers depth, transitioning from personal testimonials to expert insights. The strategic application of diverse camera perspectives enhances visual storytelling, while student and teacher interviews reinforce credibility and authority. The narrator's voiceover is a unifying element, integrating visual components with the central theme. Moreover, the selection of background sounds and music contributes to the overall atmosphere, immersing viewers in the world of procrastination and its consequences. Figure 1 presents a storyboard excerpt created by a student group to exemplify students' ability to conceptualize their documentaries visually:

Figure 1. Storyboard

Note: Student's artifacts: Group 2 Storyboard

The storyboard shows students' comprehension of visual storytelling through a coherent shot sequence, varied camera perspectives, and pertinent visual details that reinforce the narrative. While the artistic merit of the drawings is attributed to the use of the Prequel app, the storyboard effectively conveys the intended sequence of events and the documentary's visual aesthetic.

The Research and elaboration phase of transforming conceptual ideas into concrete documentary products began with Lesson 5. It introduces a diverse selection of ICT and AI tools to foster production quality and efficiency. Students mastered software for video editing, audio capture, and transcription, as well as AI-driven tools for script development and automated editing through hands-on activities and guided exploration. The flipped classroom implementation ensured prior student familiarity with these tools to optimize in-class time for practical application and problem resolution. Lesson 6 immersed students in the core filmmaking process. Students learned to construct narratives through visual and auditory elements through practical editing workshops. The introduction of subtitling and translation highlighted the significance of accessibility, expanding the potential documentary audience. The flipped classroom section fostered independent filming and problem-solving abilities, cultivating resilience and creativity in overcoming production obstacles. Figures 2 and 3 present documentary film screenshots:

Figure 2. Documentary screenshot 1

Note: Student's artifacts: Group 2 – Documentary film "Emerald Carver"

A documentary showcasing Colombia's emerald carving heritage significantly reinforces the nation's identity. This medium allows students to cultivate a profound appreciation for traditional artistic expressions.

Figure 3. Documentary screenshot 2

Note: Student's artifacts: Group 1 - Documentary film "Procrastination"

A documentary centered on the issue of procrastination among university students, featuring students' experiences and expert perspectives. While procrastination commonly affects students, a documentary film can illustrate this challenge, showcasing its effects on academic achievement, psychological well-being, and quality of life.

The Presentation and Evaluation phase focused on showcasing students' products and stimulating critical reflection. The documentary screening event offered a platform for students to present their completed projects to a broader audience, fostering a sense of accomplishment. Subsequent review encouraged in-depth reflection on the entire documentary process. Students analyzed their work, identifying strengths and weaknesses while sharing valuable insights through self and peer assessment. The flipped classroom framework was implemented by requiring pre-class reflective journal entries that facilitated in-depth class discussions. This phase culminated in a comprehensive understanding of the documentary filmmaking process with transferable skills and a profound appreciation for the art form. Students crafted visual posters to promote the documentary screening event in Figure 4:

Figure 4. *Documentary event poster*

Note: Student's artifacts: Group 2 documentary film poster

These promotional materials followed key principles of effective poster design, featuring clear and concise messaging, visual elements, and pertinent information. The posters successfully communicated the documentary's theme, date, and location. Students optimized the promotional campaign's reach by strategically positioning the posters in high-traffic campus areas of the university.

The assessment strategy adopted a holistic approach, considering not only the final result but also the learning process. It prioritized ongoing feedback through rubrics, reflective sessions, self-assessment, and peer collaboration based on the principles of PBL and the flipped classroom model. This comprehensive assessment framework evaluated students' ability to integrate theory and practice, along with their collaborative skills and critical self-assessment. Students participated in peer evaluations of their classmates' documentaries to cultivate a collaborative learning environment and enhance critical thinking in Figure 5:

Figure 5. Documentary peer review

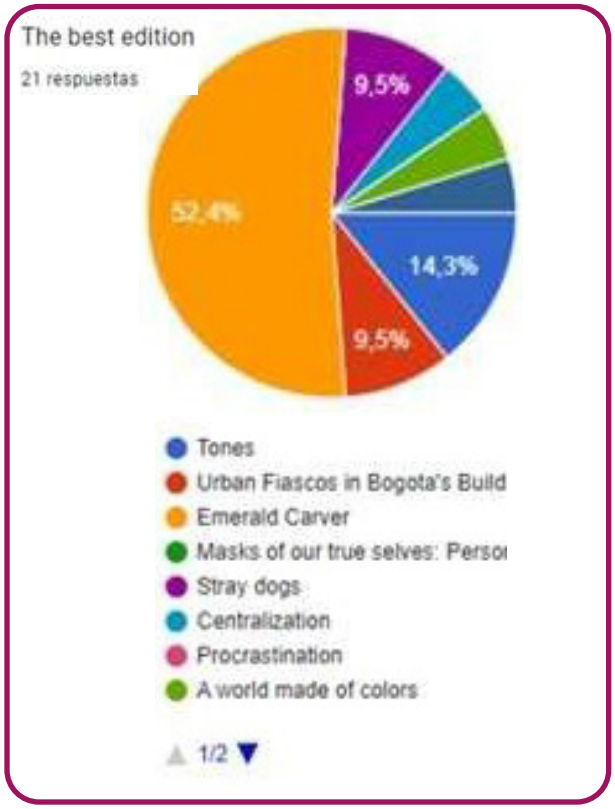
Overall I think it was an excellent piece, the video quality was good, the overall sound mix was sufficient, the use of b-roll and music allowed the documentary to breathe in between scenes and allowed the viewer to really take in the setting and take a moment to appreciate the craft of the emerald carving. As for the topic itself, it was interesting. The way it was handled from an expert's perspective and the insight it provided was nice and engaging.

All in all, I think it was a really well done piece and my only pointer would be to try and use more natural structures when translating from another language, as the subtitles while not bad, they followed a little too much the Spanish speech and it felt hollow, when in reality what the Carver was conveying in Spanish was full of knowledge and emotion yet that was not properly conveyed with the subtitles even if they were grammatically sound. But, again, it is not an issue that profoundly hinders to any degree the piece, so I will say it one last time, the piece was really solid and well made.

Note: Student's artifacts: Student A - Documentary peer assessment

Students provided constructive critiques and suggestions for improvement through written feedback. The peer evaluation process unveiled responses showing varying levels of detail and specificity in their assessments. Some students focused on general film impact, while others provided in-depth commentary on specific elements like cinematography, narrative structure, and editing. For instance, Student A offered valuable insights on audio editing and emphasized the importance of accurate translation and subtitling. The peer assessment process facilitated the development of evaluative skills and enhanced classmates' work. Students engaged in a peer evaluation survey in Figure 6 to gauge the overall influence and efficacy of the documentary filmmaking process. The survey categorized classmate projects into three primary areas: best documentary, best editing, and most impactful message. Trends in student preferences and viewpoints were identified by gathering the survey data:

Figure 6. Short Film Awards



Note: Student's artifacts: Documentary survey results

Survey results indicated diverse student opinions. For instance, one documentary was recognized for its narrative and overall impact with the "best documentary" award, while another was praised for its skillful editing. The survey data also highlighted the documentary messages offering insights into audience preferences and priorities. A self-evaluation format was employed to understand students' perceptions of their progress and development during the documentary filmmaking process. Students assessed their performance regarding various project aspects, including script development, storyboard creation, project management, overall quality, teamwork, 21st-century skills, English language proficiency, and translation abilities. Moreover, students offered open-ended feedback about their overall learning process:

Student B: *"Creating the documentaries was a [sic] interesting experience, we learned and shared with our classmates. The process and the training of generating an idea were a challenge, at least for me". (Excerpt from self-evaluation format. Student B.)* (Excerpt from self-evaluation format. Student B.) Student B's feedback indicated a generally positive experience with the documentary filmmaking process. The person enjoyed the collaborative learning environment but encountered difficulties conceptualizing the documentary's central idea.

Student C: *"The best features of the course were the innovative activities with making of the documentaries … the truth is that they helped me greatly with my speaking, writing, and translation skills".* (Excerpt from self-evaluation format. Student C.) Student C emphasized the positive influence of documentary filmmaking on their language proficiency. The student specifically highlighted the course's "innovative" activities, suggesting that the practical, project-based approach was engaging and effective. The person also affirmed improvements in speaking, writing, and translation skills, highlighting the potential of documentary filmmaking as a language learning tool.

Student D: *"Improve not only my English skills but also my abilities [sic] in teamwork and editing. Moreover, seeing my classmates' documentaries was also interesting as we all had different ideas and ways of exposing the topics."* (Excerpt from self-evaluation format. Student D.) Student D's feedback highlighted the project's comprehensive impact on their development. The student noted improvements in English language proficiency and teamwork, and editing skills. Self-assessments revealed diverse student perceptions, with some expressing confidence in collaborative and 21st-century skills, while others identified areas for growth, such as scriptwriting. Open-ended comments provided meaningful insights into students' learning processes, focusing on successes and challenges. The self-assessment process fostered self-reflection, enabling students to recognize strengths, weaknesses, and areas for future development.

The pedagogical proposal integrated PBL and the flipped classroom model, creating a dynamic and student-focused learning environment. The flipped classroom enabled students to acquire foundational knowledge independently, and they can apply this knowledge during collaborative, critical thinking class activities. PBL guided the learning process by encouraging students to address real-world challenges, fostering in-depth comprehension and practical skill learning.

Discussion

Integration of PBL and Flipped Classroom Models

Integrating PBL and flipped classroom models significantly impacted student engagement and motivation within the documentary filmmaking process. This combination created a meaningful learner-centered environment. Students demonstrated increased autonomy by actively participating in problem-solving and project management. The flipped classroom model enabled students to regulate their learning pace, while PBL fostered deep engagement through collaborative exploration. This integration framework fostered a sense of purpose as students applied theoretical knowledge to practical filmmaking challenges (Cardillo, 2022; Zhang, 2023). Consequently, students showed active class participation, dedicated project involvement, and positive feedback. The instructional design significantly improved students' documentary filmmaking abilities, with high-quality final projects. Students effectively translated theoretical concepts into practical filmmaking regarding their scripts, storyboards, and completed documentaries. For example, the scripts featured important characters, engaging narratives, and a clear comprehension of documentary structure. The storyboards demonstrated students' skills in visualizing their films and understanding of visual storytelling techniques. The final documentaries highlighted integrating filmmaking components, such as cinematography, sound design, and editing, into powerful films. These outcomes indicate that the integration of PBL and flipped classroom approaches offered students a strong foundation in documentary filmmaking, allowing them to produce work of high quality (Cardillo, 2022; Zhang, 2023).

Language and 21st-Century Skills

The flipped classroom model allowed students to progress through the course material at their own speed, giving them the autonomy to engage with the content independently (Divjak et al., 2022). Pre-class activities, like watching tutorials and

conducting independent research, engaged students with the foundational knowledge necessary for active participation during class. This approach created a more inclusive learning environment that catered to various learning styles (Morales & Rodríguez, 2019. The flipped classroom approach maximized opportunities for the practical application of knowledge by shifting the focus of classroom time to collaborative problem-solving and project-based tasks. This disruptive innovation led to better student involvement in discussions and group work, fostering more effective and engaging collaborative learning experiences (Noguera et al., 2023).

Combining documentary filmmaking with English language instruction proved highly effective in improving students' language learning skills. Participants reported notable gains in speaking, writing, and translating through their projects. The authentic language use in scriptwriting, conducting interviews, and creating subtitles provided extensive opportunities for practice and skill enhancement. Additionally, the collaborative aspect of the filmmaking process helped develop oral communication skills as students participated in discussions, brainstorming sessions, and peer feedback (Kautská, 2021). The course allowed them to apply their language abilities practically and meaningfully, language proficiency by immersing students in real-world topics for documentary films.

Integrating PBL and flipped classroom methodologies successfully promoted the development of essential 21st-century skills among students (Soler et al., 2021). The course structure emphasized critical thinking, encouraging students to analyze complex problems, make decisions, and assess the process critically. Creativity was cultivated through the generation of original ideas, exploration of diverse perspectives, and the creation of distinctive visual and narrative styles. Digital literacy was greatly improved as students engaged with various digital tools and platforms for research, production, and the socialization of their work (Trujillo, 2022). Mastery of different software applications, conducting online research, and effective digital communication were key competencies developed throughout the course. Collaboration was a central component, as students worked in teams to plan, produce, and present their documentaries, enhancing their interpersonal and communication skills (Noguera et al., 2023).

Collaboration during class sessions was a key element of the instructional design because it maximized the use of class time for hands-on activities and feedback. Students became actively involved in the filmmaking process through workshops, group projects, and problem-solving exercises. The flipped classroom approach greatly enriched the quality and depth of in-class discussions, as students could

work on background knowledge before class. This preparation allowed for more effective and collaborative interactions, with students concentrating on higher-order thinking and problem-solving rather than merely absorbing basic information. Integrating these aspects fostered a dynamic and engaging learning environment where students could collectively build knowledge, offer peer feedback, and improve their documentary projects (Noguera et al., 2023).

Assessment Strategies

The comprehensive assessment approach used in this study played a crucial role in student learning and development. This approach integrates continuous feedback, self-assessment, peer evaluation, and summative assessment. The strategy was well-aligned with the principles of PBL and the flipped classroom. Self and peer assessments encouraged metacognition and critical thinking to reflect on and critique both their own work and that of their classmates. This reflective process deepened their understanding of the learning goals and empowered them to take charge of their educational process. Continuous feedback offered ongoing guidance and support, allowing students to make improvements to their work. The combination of these assessment elements created a formative and summative feedback, enriching the learning experience and significantly contributing to developing their documentary filmmaking skills (Rodríguez et al., 2008).

Student reflections and self-assessments provide key insights into the learning process and its influence on personal and academic growth (Rodríguez et al., 2008). The survey analysis shows that students largely viewed the documentary filmmaking project as challenging and rewarding. Many students reported a strong sense of achievement upon completing the project, noting the acquisition of new skills and knowledge. Common difficulties included managing time, handling technical issues, and balancing academic responsibilities with the project's demands. Despite these challenges, students highlighted the crucial role of teamwork, communication, and problem-solving in overcoming obstacles. The reflections indicate that the course promoted student autonomy, creativity, and critical thinking.

/CT Tools, LKT Pedagogical Mediations and EPT Environments

The use of Information and Communication Technologies (ICT) and AI tools was fundamental in advancing the documentary filmmaking process, as key resources throughout all stages of PBL and flipped lessons. In the preparation and planning phases, students used ICT and AI tools for tasks such as research, scriptwriting, and storyboarding. During the research and elaboration stage, ICT tools were vital for filming, editing, and post-production, while AI tools could be implemented for transcription and translation software.

The flipped classroom approach was also supported by ICT tools, providing online resources, tutorials, and virtual collaboration platforms that enabled students to interact with content independently. This integration of ICT and AI tools not only improved efficiency but also broadened the creative possibilities for students, significantly contributing to the success of their documentary projects on contemporary topics (Soler et al., 2021).

Learning and Knowledge Technologies (LKT) played an essential role in pedagogical mediations (Enríquez, 2012). These technologies supported the integration of PBL and flipped classroom strategies, significantly enhancing the documentary filmmaking process. LKTs foster language skill development by enabling students to engage in research, writing, and communication through digital platforms. Additionally, LKTs facilitated effective collaboration via online tools, promoting teamwork. In the PBL framework, LKTs provided the resources needed for students to access information, conduct research, and develop their documentary projects. The flipped classroom model also depended on LKTs for delivering pre-recorded materials, facilitating online discussions, and offering feedback in online settings. The course created a dynamic, flexible learning environment that emphasized student-centered learning and the cultivation of 21st-century skills using LKTs (Pliushch & Sorokun, 2022).

Empowerment and Participation Technologies (EPT) enhanced meaningful student interaction throughout the documentary filmmaking. These technologies enabled collaboration among peers, allowing students to work together and share their projects. EPTs were crucial in fostering 21st-century skills like digital literacy, communication, and critical thinking (de Lima et al., 2017). In the context of PBL, EPTs empowered students to take control of their learning by offering tools for research, teamwork, and project management. The flipped classroom approach also benefited from EPTs, as students used online platforms to access pre-recorded materials, participate in discussions, and receive feedback. EPTs supported a more student-centered, adaptable, and inclusive learning environment through the development of both technical and interpersonal skills (García et al., 2016).

Conclusion

Implementing project-based Based Learning with flipped classroom models significantly improved undergraduates' documentary production abilities (Cardillo, 2022; Zhang, 2023). The framework cultivated a profound comprehension of filmmaking and gave students the tools to produce remarkable documentaries. Key insights from this research highlight the importance of learner-centered education, teamwork, and technology's role in enriching the learning experience (García et al., 2016; Soler et al., 2021). These results indicate that this teaching framework can be effectively implemented in other university settings, other disciplines, and educational contexts, especially those prioritizing students' practical competencies and creative development.

Disruptive innovations, including ICT tools, LKT pedagogical mediations, and EPT environments, have the potential to greatly impact EFL training programs (Trujillo, 2022) greatly. In blended learning, this may involve continuously adjusting the curriculum, incorporating online materials in face-to-face interactions to enhance learning outcomes (Christensen et al., 2008). Furthermore, it is imperative to mention that disruptive innovation may lead to discussions among experts about possible issues and criticism. While blended learning can transform educational processes positively, challenges might emerge in the process, including access to technology and the technological proficiency of both teachers and students. These complexities must be addressed to ensure equitable opportunities for all learners (Morales & Rodríguez, 2019).

In essence, although this research focused on English language learners, the underlying principles and strategies can be modified to suit various academic fields. For example, this framework could be applied to other language programs to improve language proficiency. Moreover, project-based and inverted classroom techniques can be extended to subjects like history, science, or social studies, where students can produce documentaries to delve into intricate topics and sharpen 21st-century skills. Effective implementation requires adapting activities and evaluations to match the specific nature of each subject and student's needs. Educators can modify and employ similar procedures in different educational contexts to enhance student participation, critical thinking, and problem-solving capabilities (Cardillo, 2022; Zhang, 2023).

Participants faced various challenges during the documentary production process. Although many students worked cooperatively to resolve the product, some struggled to conceptualize initial

documentary ideas. Furthermore, acquiring technical abilities in script development and editing, utilizing digital and artificial intelligence tools, proved challenging for certain students. The course integrated strategies such as idea-generation sessions, peer evaluation, and practical workshops to mitigate those difficulties. Educational challenges encompassed balancing the requirements of project-based and flipped classroom approaches, managing group interactions, and offering sufficient assessment for students with diverse needs (Cardillo, 2022; Zhang, 2023). Future applications can prioritize creating more focused support frameworks and materials to effectively meet student demands.

Further research should examine the long-term effects of the combined 'project-based and flipped classroom model on students' foreign language competences and skills. It implies studying how these teaching methods impact graduates' 21st-century skills. Furthermore, exploring the potential of this model in other creative domains, such as animation, video game development, or advertising, could offer an additional understanding of its adaptability and efficacy. Comparative analyses can also contrast the results of program participants with non-participants to analyze the distinctive advantages of this model (Divjak et al., 2022).

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Chapter 2

Digital Educational Resources in the Writing and Communication Centers

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Introduction

Driven by the need to improve the development of academic writing and communicative skills in their students, especially in those with low performance, higher education institutions gave rise to academic spaces outside the classroom, focusing on addressing those difficult topics for students. These spaces were called *writing centers* and, according to the specialized literature, they emerged in the United States and Great Britain at the beginning of the twentieth century, but it was not until the 1970s that they became popular throughout the world (Boquet, 1999; Carino, 1995; North, 1984; Waller, 2002). In Latin America, the heyday of these centers occurred at the beginning of the 21st century (Gavari & Tenca, 2017).

The dynamics in these centers to address the problems and topics of interest were given through tutorials to overcome such

difficulties. Over time, didactics and educational research supported the potential of these spaces as a significant contribution to the training of professionals, and thanks to this, nowadays most institutions no longer see them as mere academic spaces to work on writing. However, other components of communication came to be addressed in order to broaden the scope of these centers. Examples include the Center for Writing and Communication of the Massachusetts Institute of Technology in the United States, the Centro de Aprendizaje, Redacción y Lenguas of the Instituto Tecnológico Autónomo de México - ITAM in Mexico, the Centro para el Desarrollo de Competencias Comunicativas - Comunicarte of the Universidad de la Sabana in Colombia, and the Centro Virtual de Escritura, Lenguaje y Expresión of the Universidad Nacional Abierta y a Distancia - UNAD in Colombia.

The evolution of these centers has led them not only to address issues and topics from an educational point of view but also to be perceived as spaces for intellectual production, research, and innovation (Londoño-Alape, 2024b). This applies to all the centers that have established this, including those whose main subject of interest is writing. Some centers that hint at this perspective are the Centro de Excelencia para la Investigación y Difusión de la Lectura y la Escritura of the Pontificia Universidad Católica Madre y Maestra in the Dominican Republic, the Centro de Redacción Multidisciplinario of the Universidad Interamericana de Puerto Rico del Recinto Metropolitano, and the Centro de Estudios en Lectura y Escritura of the Universidad EAFIT in Colombia.

Thanks to this evolution, many of these communities no longer focus on writing, but on all the elements that constitute human communication (reading, orality, thinking, language, cognition, etc.) and approach them not only from a pedagogical and educational perspective but also from the perspective of knowledge itself, research and development. To expand the scope of these centers, we will refer to them in this paper as Writing and Communication Centers (WCCs).

Currently, the dynamics of these communities go beyond tutoring and the use of printed material to create a pedagogical and scientific gear that includes information and communication technologies, knowledge management, and emerging technologies applied to education. All this has materialized into the different actions and resources proposed by the centers, among which digital resources stand out.

The design and supply of materials for teaching and learning represent one of the main purposes of any educational proposal in any educational institution. This is no longer a practice exclusive to the privacy of the classroom, but we see educational material circulating everywhere to achieve all kinds of objectives. The WCCs, being

part of these educational spaces, have also been interested in facilitating these resources, especially those centers with virtual platforms, so that those interested can easily access them.

This paper reports on the development and results of a study conducted with the aim of analyzing the digital educational resources (DERs) offered by these centers in terms of their purposes, contents, and novelties. This general purpose was operationalized in the following steps that constituted the specific objectives of the study: to report the current state of DERs existing in the centers under study; to establish definitions, classifications, and typologies of these resources as a conceptual and pedagogical contribution to the WCCs; to evaluate the dynamics of the centers in relation to the DERs and their alignment with the established purposes; to highlight the particularities related to the resources that stand out for their innovation to serve as an example to other centers of the same nature; to establish opportunities to improve for current and future centers in order to energize their educational resources effectively.

In this chapter, we will first present the theoretical framework constructed as the initial step to define and understand the nature of DERs and to propose a new classification of these resources. Second, we will present the methodology used to approach the WCCs and the specific processes set to study the resources they offer regarding typologies, features, and purposes. Third, in the results section, we present the analysis of DERs conducted from the four main processes stated for this goal: the establishment of the state of the art, the search for DERs in the centers, the creation of a classification of DERs, and the analysis of the DERs in the centers. Finally, some discussions and conclusions are presented regarding the methodologies developed, the proposed classification, the search results, and the analysis performed.

Theoretical Framework

Digital Educational Resources (DERs) are now the basic tool for creating innovative learning environments. For several years, educational processes have been responding to the guidelines and demands of the knowledge society. This means that the integration of ICT in learning is increasingly relevant to creating digital narratives in the pedagogical environment. For the creation of competencies and the overcoming of digital literacy gaps, then, the development and application of efficient and creative digital educational resources become fundamental.

DERs are educational materials and information encoded and stored on computers or

Internet servers. These resources respond to the fulfillment of specific learning objectives and are easily adapted to the needs and interests of students and teachers. To understand the importance of digital educational resources, it should be considered that they fulfill specific functions to promote learning activities more efficiently (Alberola-Mulet et al., 2021; Rozo & Real, 2019). These educational resources are developed to help acquire knowledge by informing about a particular topic and reinforcing themes and processes. Hand in hand with the above, they are essential to deploy and strengthen digital skills and abilities and to evaluate the acquired knowledge.

DERs are especially characterized by their dynamism and interactivity. They include various formats and languages, such as images, animations, and videos, among others. The benefits of using digital educational resources are multiple and varied, and that is why they are a clear necessity in any learning model. DERs can be classified according to their format as textual, audio, audiovisual, graphic and illustrative, multimedia, virtual learning environments (VLEs), and educational portals.

From textual and audio resources to immersive learning environments and educational portals, these resources have made education more accessible, interactive, and engaging. However, challenges such as cognitive overload, accessibility, and the need for well-designed content must be addressed to maximize their educational potential.

Textual Resources

Londoño-Alape (2024b) defines textual resources as informative resources whose content is mostly presented in a written sequence, although other visual representations may accompany it. Some examples are literary works, research reports, annual reports, scripts, journalistic columns, academic essays, e-books, online articles, and interactive reading platforms.

Digital textual resources often include interactive elements, such as hyperlinks, annotations, and glossaries, which enrich the learning experience and facilitate a deeper understanding of the material. So, we can say that they support autonomous learning by enabling learners to control the pace and complexity of the content they engage with, thus catering to their individual needs and proficiency levels. They also offer learners the flexibility to access a vast array of content at any time and place. However, the effectiveness of these resources depends on their design and the degree to which they align with the learners' goals and abilities.

The effectiveness of textual resources in virtual environments has been linked to their interactive nature. For instance, e-books often include features such as glossaries, embedded questions, and links

to external resources, which promote active learning. Moreover, studies by Godwin-Jones (2017) indicate that learners benefit from adaptive learning systems that customize reading materials based on individual progress, making the learning process more personalized. Studies have shown that digital reading materials can significantly impact language acquisition, especially when integrated with other multimedia elements (Trever, 2023).

Audio Resources

From the audiocassettes of the 1970s to digitally recorded music on an invisible Cloud, audio has come a long way as a teaching and learning aid. It is an extremely valuable method for capturing and presenting information. Audio provides a quick, cost-effective alternative to text for connecting with students and providing up-to-date content, interviews, discussions, or lecture materials.

Additionally, when talking about foreign language learning, audio resources are integral to developing listening skills, pronunciation, and oral comprehension. Podcasts, audiobooks, and language learning apps with audio features expose learners to authentic spoken language in various accents and contexts. These resources are particularly beneficial for developing phonological awareness, a critical language acquisition component that influences reading and speaking proficiency (Trever, 2023). Providing exposure to native speakers, audio resources often incorporate interactive exercises that require learners to respond to prompts or complete listening tasks, thereby reinforcing their auditory processing. The portability of audio resources makes them accessible for learners in diverse environments, allowing for continuous language practice even when traditional study methods are not feasible.

A study by Vishnupriya and Bharathi (2022) emphasizes the role of audio resources in promoting autonomous learning. With the flexibility to listen anytime and anywhere, learners can incorporate English practice into their daily routines, which is particularly beneficial for adult learners with busy schedules. However, challenges such as varying accents and speech rates in authentic audio materials may pose difficulties for beginners. Therefore, it is essential to provide scaffolding, such as transcripts or vocabulary lists, to support comprehension.

Audiovisual Resources

Audiovisual materials are educational resources that combine sound and visual elements to enhance the learning experience. These materials include various formats such as videos, slideshows, interactive whiteboards, podcasts, and animations. By engaging multiple senses, audio-visual materials can make complex subjects more accessible, stimulate interest, and improve retention. They combine visual and auditory stimuli to create a dynamic and engaging

learning experience. Videos, language learning platforms with integrated video lessons, and interactive video exercises fall into this category. These resources are particularly effective in illustrating contextual language usage, showcasing cultural nuances, and providing visual cues that aid comprehension (Mayer, 2020).

Research has demonstrated that audiovisual resources can enhance memory retention and understanding of complex language concepts by providing multiple input modes (Vishnupriya & Bharathi, 2022). The visual component of these resources supports learners in deciphering meaning through facial expressions, gestures, and situational contexts, while the auditory component reinforces pronunciation and listening skills. Furthermore, the interactive nature of many audiovisual resources allows learners to engage actively with the content, fostering a more immersive and effective learning experience.

When referring to language learning, audiovisual resources have gained prominence due to their immersive nature. Videos, movies, and language-learning platforms like YouTube and English Central offer learners a dynamic way to engage with the language (Treve, 2023). Even audiovisual resources are particularly effective in teaching pragmatics and cultural nuances, which are often difficult to convey through text alone. Videos provide contextualized language input, enabling learners to observe body language, facial expressions, and other non-verbal cues integral to communication. Furthermore, using subtitles in videos has been shown to improve vocabulary acquisition and listening skills (Treve, 2023).

Graphic and Illustrative Resources

Londoño-Alape (2024b) defines graphic and illustrative resources as informative resources whose content is presented by means of graphics, illustrations, or images and characterizes them by having little or no text or well-summarized information. Some examples are graphic organizers, infographics, comic strips, timelines, graphic representations, and videographies.

Graphic organizers support the cognitive processes involved in learning by enabling learners to visualize connections between concepts, thereby facilitating deeper comprehension and recall. Additionally, the integration of graphics with textual and audio elements in digital resources can create a more comprehensive and engaging learning experience (Mayer, 2020).

On the other hand, infographics have gained popularity in virtual language learning environments. They combine text and visuals to present information in a concise and visually appealing manner, which can aid in the retention of vocabulary and grammar rules (Treve, 2023).

Studies by Senzaki et al. (2017) have shown that using flashcards, whether digital or physical, enhances vocabulary acquisition through repetition and active recall. Visual organizers, such as mind maps and charts, help learners organize information logically, facilitating better understanding and memory retention (Mayer, 2020). However, the effectiveness of graphic resources depends on their design and relevance to the learning content. Poorly designed visuals can confuse learners and detract from the learning experience. Therefore, it is crucial to follow design principles prioritizing clarity, simplicity, and alignment with the instructional goals.

Particularly in language learning, these resources are useful in teaching vocabulary, grammar rules, and language structures, as they provide a visual context that can simplify complex ideas (Mayer, 2020). For example, a diagram illustrating the structure of a sentence can help learners understand the relationships between different parts of speech and how they contribute to meaning.

Multimedia Resources

Multimedia resources assist learners in getting on well with mental representations using different media elements, which support information processing. Information, which is made up of content and sometimes learning activities, is presented with the use of a combination of text, image, video, and audio by digital learning resources (Abdulrahaman, 2020). It has been demonstrated, by research on using multimedia for learning, that there are more positive results observed in learners who combine pictures and words than those who use words only.

Multimedia resources synthesize textual, audio, audiovisual, and graphic elements, providing a holistic approach to language learning. Language learning software, interactive games, and e-learning platforms are examples of multimedia resources that cater to various learning styles and preferences (Mayer, 2020). These resources offer a rich, interactive environment that can adapt to the needs of individual learners, providing personalized feedback and allowing for self-paced learning.

The interactive nature of multimedia resources allows for immediate feedback, essential for language learning. For example, language learning apps often include quizzes, pronunciation guides, and interactive dialogues that provide learners with instant feedback on their performance. Research by Abdulrahaman (2020) suggests that multimedia resources are particularly effective in maintaining learner motivation as they offer varied and engaging content that caters to different learning preferences.

However, the challenge lies in the potential for distraction due to the abundance of stimuli in multimedia resources. Learners may become overwhelmed by the interactive

features, leading to a reduced focus on the language content (Mayer, 2020). Therefore, the design of multimedia resources should strike a balance between engagement and educational value, ensuring that the primary focus remains on language learning.

Using multimedia in language learning has been shown to improve motivation, engagement, and overall learning outcomes (Treve, 2023). By combining different media types, these resources create a multisensory learning experience that can accommodate diverse cognitive styles and preferences. Moreover, the interactivity of multimedia resources allows learners to experiment with language in a risk-free environment, encouraging exploration and practice without the fear of making mistakes.

Virtual Learning Environments

Virtual Learning Environments (VLEs) are immersive, computer-generated spaces where learners can interact with language content and other learners in real time. These environments range from simple chat rooms and discussion forums to complex virtual worlds and simulations.

Virtual educational environments are grounded in several educational theories, including constructivism, experiential, and situated learning. Constructivist theories suggest that learners build knowledge through experiences and interactions with their environment. VLEs, by providing immersive and interactive experiences, align well with constructivist principles (Zajda, 2021). Experiential learning emphasizes the importance of direct experience in the learning process, which VEs facilitate through simulations and interactive scenarios. Situated learning posits that learning is most effective when it occurs in the context where knowledge is used, a principle that VEs support by creating realistic or contextualized learning environments (De Back et al., 2021).

VLEs such as virtual classrooms and immersive language games have transformed education by providing interactive and engaging learning platforms. Virtual reality and augmented reality have emerged as innovative tools in this category, offering immersive experiences that replicate real-world language use scenarios (De Back et al., 2021).

VLEs provide a unique opportunity for language learners to practice their skills in a social context, engaging in authentic communication with native speakers and other learners. Research has highlighted the potential of VLEs to enhance language learning by providing opportunities for social interaction, cultural exchange, and contextualized language use (Li et al., 2022). The immersive nature of these environments allows learners to experience language in a way that is like real-world interaction, thereby improving fluency, confidence, and intercultural competence.

In that way, VLEs provide learners with the opportunity to practice language skills in simulated real-life situations, which enhances speaking and listening proficiency. Language games, such as those found on platforms like Second Life and Minecraft, offer a gamified approach to learning, where learners can interact with others in a virtual world while practicing their language skills. However, the effectiveness of these environments depends on the quality of the content and the level of learner engagement.

Educational Portals

Educational portals are online platforms that provide access to a wide range of language learning resources, including courses, tutorials, assessments, and forums. These portals often integrate various types of content, from textual and audio resources to multimedia and virtual environments, offering a comprehensive and flexible approach to language learning (Zajda, 2021) Educational portals such as Duolingo, Coursera, and edX have gained popularity for their ability to provide structured learning paths while allowing learners to progress at their own pace.

The collaborative features of educational portals, such as discussion boards, peer reviews, and group projects, also contribute to their effectiveness by fostering community and encouraging social learning (De Back et al., 2021). Moreover, using adaptive learning technologies in these portals can provide personalized learning experiences that adjust to the needs and progress of each learner, thereby enhancing learning outcomes.

Educational portals, such as Massive Open Online Courses (MOOCs), language learning websites, and online tutoring platforms, have democratized access to education. These portals offer a wide range of resources, from structured courses to informal learning materials, catering to learners of all levels (Zajda, 2021).

MOOCs have gained popularity as they provide free or low-cost access to high-quality English courses from renowned institutions. Platforms like Coursera, edX, and FutureLearn offer courses that cover various aspects of English language learning, including grammar, vocabulary, and communication skills. Online tutoring platforms, such as italki and Preply, connect learners with native speakers for personalized language practice, offering flexibility and convenience.

The effectiveness of educational portals lies in their ability to provide structured learning pathways, immediate feedback, and opportunities for social interaction. However, challenges such as the digital divide, lack of personalized feedback in MOOCs, and the potential for low learner

engagement due to the self-paced nature of these platforms have been highlighted in the literature (De Back et al., 2021). Therefore, it is important to complement these portals with supportive measures, such as mentorship and community-building activities, to enhance their impact on learning.

Methodology

The analysis of the Digital Educational Resources (DERs) in the Writing and Communication Centers (WCCs) was carried out within the framework of the research project called "Implementation of a path for knowledge management in English language, in the CVELE of UNAD" of the VIRTUALEX research group, which sought to develop projects, educational resources and academic and research services in English language within the Virtual Center for Writing, Language, and Expression (CVELE by its initials in Spanish), for the benefit of the UNAD community.

To do so, the first step was to establish trends, needs, and opportunities regarding this type of center for the design of the path for knowledge management through a contrastive analysis of the centers that were like CVELE, nationally and internationally, concerning its purposes, themes, dynamics, and others. 92 centers worldwide were randomly selected from 23 different countries.

The number of centers corresponds to what was found after consulting various sources. On the one hand, we took into account international academic organizational collectivities that deal with these issues, such as the Red Latinoamericana de Centros y Programas de Escritura (RLCPE), the Red de Lectura y Escritura de Educación Superior (REDLEES), the Asociación Latinoamericana de Estudios de la Escritura en Educación Superior y Contextos Profesionales (ALES), the International Writing Centers Association (IWCA), the Council of Writing Program Administrators (CWPA), the Conference on College Composition and Communication (CCCC) and the European Writing Centers Association (EWCA). Thus, most of the sample of centers was obtained thanks to the information provided by these organizations.

On the other hand, we also took into account many of the centers that were referenced in the specialized literature consulted and those of which the research team was aware. This meant including centers of great relevance and recognition, regardless of whether they belonged to outstanding institutions or academic networks like those mentioned above. These strategies contributed to the final sample of WCCs.

Within the framework of the aforementioned project, several aspects were analyzed in the centers, such as the topics of interest, the didactic proposals executed to address

these topics, the projects they managed, and the research they had generated, among others, but digital resources is the topic that concerns us in this chapter, because as we have already discussed, these resources are vital for any educational process today, especially in virtual and distance education.

We were then interested in identifying the DERs that these communities shared, mainly through their web pages, in order to describe, compare, and evaluate the academic and educational dynamics of the resources with respect to their purposes, beneficiaries, typologies, uses, and other aspects that would allow us to discover how they are used to dynamize their knowledge. The tracking of DERs was carried out by means of an analytical matrix that was designed after establishing a state-of-the-art and theoretical framework with respect to these resources. This first step was essential to obtain the criteria and information that would be used to analyze the resources on the web pages of the centers.

To present the findings related to the types of resources offered by the WCCs and their functionalities, a procedural organization was established that emerged from four processes or phases carried out in the study: first, we reviewed the state of the art of DERs to find out what the specialized literature had to say on the subject. This allowed us to recognize definitions, characterizations, typologies, and applications of these resources, as well as their evolution, possibilities, and challenges. This state-of-the-art is presented in the theoretical framework of this article.

Second, we searched for resources in the centers included in the sample. This allowed us an initial approach to the types of resources they offer, as well as their characteristics and uses, among other aspects. At this point, the analysis was not yet done since the first objective was an initial identification. Likewise, because a process was still needed, corresponding to phase 3.

Third, based on the information from phase 1 (state of the art) and phase 2 (identification of DERs in the WCCs), we constructed an organization or classification and characterization of DER as a new theoretical proposal and as input for the analysis carried out in phase 4. This organization is presented in Table 1.

Fourth, we carried out the analysis of the resources found in phase 2, using the classification produced in phase 3. In the analysis, we expected to find in detail how these resources fit the established classification, the topics and problems they addressed, their characteristics, and how they responded to the training needs established by the centers, among other data they provided.

As we can see, all these processes (phases) included therein represent the general process to arrive at the analysis of educational resources in the WCCs.

The development of this methodology was necessary since this analysis needed to have a theoretical and procedural foundation that would allow us to obtain a new categorization of resources in order to be able to start with some typologies and characteristics.

After the development of the aforementioned processes, we obtained a categorization of digital resources, shown in Table 1, that was useful for the organization of the analysis of the resources offered by the centers.

Table 1. Typologies of Digital Educational Resources

Textual Resources	*I*nformative resources, whose content is mostly presented through the written system, although nowadays, most of these texts include other types of language to accompany the content, such as icons, images, and graphics.
Audio Resources	Informative resources, whose content is reproduced only sonorously. They require, for their design, appropriate tools for recording and eye-catching and concise content.
Audiovisual Resources	Informative resources, whose content is reproduced sonorously and is always accompanied by graphic, animated, or textual elements.
Graphic and illustrative resources	Informative resources, whose content is presented using graphics, illustrations, or images. They have little or no text or well-summarized information.
Multimedia Resources	Formative and informative resources that combine educational formats and usually include several types of digital resources. They usually interactively develop a didactic sequence.
Virtual Learning Environments	Virtual training spaces allow learning and knowledge management through a predetermined didactic structure, where multimedia digital resources, web tools, interactive activities, and synchronous and asynchronous spaces for communication are set. It guarantees easy access to education thanks to its principles of accessibility, flexibility, (re)usability, and interoperability, among others.
Educational Portals	Educational spaces on the web that offer a large amount of content, information, and digital didactic resources on a general topic or that can be multi-thematic within the same field. They are usually organized in sub-sites and interact with other portals and external resources.

Because of the complexity that demands a classification and standardization of educational resources, it is important to mention that the organization proposed here is not univocal, so the resources listed can take on other nuances and characteristics according to the purposes for which they are used. In other words, any given resource could belong to more than one typology, depending on its uses and the new elements attributed to it. This, considering that educational technology is causing educational resources to evolve at an accelerated pace, making them acquire new functions and characteristics (Anderson & Rivera-Vargas, 2020; Berti, 2018; Tlili et al., 2021). This phenomenon has made the classification of resources a complex task. As an example, let us think of an infographic, which can be classified as graphic or illustrative if it contains a high percentage of images, icons, and so on. However, if its content is highly textual, it can be classified as textual. However, if auditory elements are added to this resource or converted into video format, its categorization could change, thanks to these new elements. Nevertheless, despite the living character of digital resources, the categorization presented in this study is proposed as an analysis strategy.

Results

Based on the typologies of digital resources and after the analysis of the resources of the WCCs, Table 2 presents the offer of educational resources found in these communities worldwide. The order of the resources is hierarchical, which means that textual resources are the most common. Within textual resources, the most common resource is the academic guide, and the most popular way of presenting them is in PDF format. Virtual learning environments appear to be the least offered. Next, we will describe and illustrate them in the analytical and evaluative framework executed.

Table 2. DERs in the Writing and Communication Centers.

Order	Typology	Resources	Format
1	Textual Resources	1. Guides 2. Manuals 3. Literature books 4. Scientific papers	1. PDF 2. HTML
2	Audiovisual Resources	1. Workshops 2. Lectures 3. Tutorials	1. MP4 Recordings (videos)
3	Educational Portals	1. Writing Centers 2. Digital Libraries 3. Digital Dictionaries 4. Writing Software	1. Websites (HTML) 2. Applications
4	Graphic and Illustrative Resources	1. Infographics 2. Pedagogical grids (rubrics-matrix) 3. Didactic cards	1. PDF 2. Image (JPEG - JPG) 3. Power point
5	Audio Resources	1. Podcasts 2. Radio Programs	1. MP3 Recordings 2. Webpages
6	Multimedia Resources	1. Interactive presentations 2. Virtual learning objects. 3. Virtual information objects	1. HTML 2. MP4 Recordings (videos)
7	Virtual Learning Environments	1. Virtual academic courses	1. HTML platforms

1. Textual Resources

The analysis of a large number of digital materials on the webpages of the WCCs allowed us to establish that textual resources are the most offered typology by the centers to dynamize their knowledge, given that all of them offer a type of written document. Likewise, there are many types of written texts in all centers, considering the large number of topics of interest and sources from

which the texts come; however, we see a predilection for certain typologies that are the most appropriate to disseminate the knowledge they wish to convey. Thus, the most popular document in 93% of the centers is the (academic) guide, which is a tool that presents the principles or procedures on a particular topic or on how to achieve the development of some task. In the academic context, the guides orient or facilitate learning effectively concerning a subject or topic.

Pino Torrens and Urías Arbolaez (2020) consider them as a didactic resource that allows the planning, orientation, organization, direction, and facilitation of teaching and learning processes, so they have a pedagogical design that guarantees their usefulness and relevance, not only for the understanding of the subject in question but also as support for the development of self-managed study skills. Hence their preference.

Some examples of these guides are the Didactic Guide for the Elaboration of an Academic Paper proposed by the Centro de Redacción Multidisciplinario from Universidad Interamericana de Puerto Rico del Recinto Metropolitano; the guides oriented to the writing process offered by the Centre for Academic Writing at Coventry University in England; the Centro de Escritura Javeriano of the Universidad Javeriana de Bogotá offers guides about how to write the methodological section of a thesis, a hierarchical essay plan and how to structure argumentative texts; The program Leer y Escribir Mejor of the Fundación Universidad de Bogotá Jorge Tadeo Lozano, in Colombia, offers PDF guides in which we find the research article.

Regarding the characteristics of the guides the centers offer, the first issue to stand out is their originality, since the centers design most of them. This is evident mainly in the technical format they use (use of logos, institutional symbols, and others) and the copyright policies they establish. In other cases, the guides are not designed by the staff of the centers but belong to another office of the institution, which also promotes the use of the institution's own resources.

Another characteristic is related to the didactics. This means that the guides are designed exclusively for educational purposes, which requires pedagogical planning, and the dissemination of the document is in the same educational field.

Regarding the type of information they present, the most common topic is related to academic writing, and the common goals of the guides are oriented to the technical writing of an academic paper, the academic writing process, and academic texts, especially the essay, the abstract, and the thesis.

Second among written texts are manuals, which are writings that bring together the basic and essential aspects of a subject for readers to understand how something works fully. The Oxford Advanced Learner's Dictionary defines a manual as a book describing how to do or operate something. A prevalent example of this type of writing that we find in many WCCs is the APA style manual, which is a document that presents the rules by which academic and scientific works should be governed concerning the style and organization of these, how to cite and reference other works correctly, among other issues. Writing manuals are also very popular as they offer guidelines to optimize writing and reduce errors of style and form. However, although most of the centers have adopted and disseminated the style manual written by the American Psychological Association (APA), many centers (around 49% of the WCCs) have written their own style manuals and others have adopted other popular manuals such as The Chicago Manual of Style (around 21% of the WCCs), The Modern Language Association Style (around 19% of the WCCs) and The Vancouver Style (around 20% of the WCCs).

Some examples of these manuals are the "Standardization Manual for Formatting and Writing a Thesis," designed by the Armadillo Lab Academic and Professional Writing Center of the University of Chile, and the Chicago Manual of Style by the Centro de Escritura from Instituto Tecnológico y de Estudios Superiores de Monterrey, in México.

Both guides and manuals are considered books as long-length, and there is an emphasis on textual content, boundaries to their form, and book information architecture (Kovač et al., 2019). They are used to present topics more related to the subjects of interest, such as writing, reading, and academic texts, among others. They do so in a succinct, concatenated, and detailed manner. However, there are other types of books disseminated by the centers, particularly to present literary works (in different literary genres) and scientific works such as essays and research reports.

Around 62% of the total sample of WCCs in this study proposes literary works on their web pages, such as fiction stories, poems, and novels. These works, as opposed to manuals and guides, are characterized by their authenticity. Let us recall that didactic material has a pedagogical origin, is specially designed by teachers and education experts, and is used to support learners' educational process (Szőköl, 2024) while authentic material is the opposite; does not have a pedagogical origin, is designed by other industries other than education (trade, entertainment, arts, etc.), and reflect the language as used by native speakers in everyday life (Fayziev & Toshkuvvatov,

2024). Even though authentic material is not designed in an educational context, it is used in teaching practices for the same goal as didactic materials: to support the formal learning process. In this case, the WCCs propose this type of book to their academic community since they are related to their main field of study: language, communication, reading, and so on.

In the case of scientific texts proposed by the centers, they generally belong to scientific journals and are the product of research related to their topics of interest. The general tendency of the centers is to share essays, research papers, journals, reviews, and other types of scientific work that they have developed (WCCs staff) and have been published in journals that belong to the centers or the educational institutions.

Regarding the formats in which these texts are presented, we see that PDF (Portable Document Format) is the preferred way to do so, as this allows the documents to be easily hosted on the web, edited without altering the original design and content, easily transferred to various electronic platforms, downloaded, and transferred to physical format.

The second preference for presenting written resources is directly on the web, through HTML (HyperText Markup Language), the language used to build web pages. The centers prefer to publish their textual resources in this way because this offers the possibility to define the organization of the content on the web page, to connect web pages with others (within the same website or with other websites), to help search engines find the information, and to make it impossible to alter the content (by others).

To conclude this category, it should be clarified that the four types of written documents and the two formats described here are not the only ones disseminated by the centers, as there are others such as primers, dictionaries, reports, stories, didactic material, etc., which are also presented in Word format, but are less common than those described above.

2. Audiovisual Resources

The second type of DERs shared by the centers are the audiovisual resources, which present their content audibly and visually. The auditory refers to the oral narration that is recorded and introduced in the resources, and the visual refers to the elements embodied in the resource, whether linguistic (words, paragraphs), graphic (tables, maps), or illustrative (drawings, icons). The visual and the auditory must complement each other coherently to convey the desired information assertively as an integrated multisensory experience (Kurniawan, 2016).

Audiovisual resources can be used for various purposes, present their content in multiple ways, include a wide variety of resources, and come from various sources, so there are also several typologies of them, such as teaching videos, television programs, webinars, video tutorials, and documentaries, among others. However, the analysis executed at the centers revealed that although videos are a fairly popular resource for transmitting knowledge, the typologies shared are very limited.

We consider that this is mainly due to the fields of knowledge and the topics covered, which are related to education, teaching, communication, learning, and linguistics, among others. Because of this, it is not common to use, for example, advertising videos, videocasts, video blogs, music videos, and movies, among many others, in the WCCs. Among the WCCs included in this study, there is a major interest in the didactic material, considering that the centers prefer to design their own resources to provide convenient and suitable resources to develop the topics they address. This means that the material designed is didactic and not authentic, since we must remember that authenticity refers to real and daily life. A simulated dialogue, a drawing of a geographic map, or an imitation of a newspaper cannot be authentic since they are not produced in natural environments. Because of this, it is important to use external resources not only for the institution but also for the education field. This definitely brings students closer to real-life communicative situations through natural and contextualized language (Tolentino Quiñones, 2021). Any authentic video can be used for educational purposes, so the great suggestion to the centers is to expand the variety of audiovisual resources that can be used in educational processes, regardless of the subject or discipline.

As we can see in the classification (Table 2), three types of audiovisual material are the most common among centers: workshops, lectures, and tutorials. It was not an easy task to establish these three classifications, given that most centers do not present them as such and that there is no clear and consensual definition of what these videos should be about. For example, one of the most common topics addressed in the videos is the typologies of academic genres (essay, thesis, summary, etc.), but while some centers presented a video with this content as a workshop, other centers presented it as a tutorial. Even worse, most centers do not define a typology for the videos they present. They are "videos", so it was necessary for us to view and analyze them in order to get a classification.

Based on the assigned classification, video workshops are the most common type of audiovisual material among the centers, given their clear educational function. The Writing Center at St. Thomas University, Canada, offers a recorded workshop on How to start researching, taking into account the particularities of this task according to the assignment at the university; the Center for Learning Academic Writing and Critical Thinking at the Universidad de Las Américas Puebla in Mexico offers a bank of its videos related to copyright and plagiarism. These are recordings of workshops and conferences held there.

According to Ørngreen and Levinsen (2017), a workshop refers to "an arrangement whereby a group of people learn, acquire new knowledge, perform creative problem-solving, or innovate about a domain-specific issue" (p. 71). Considering this, we can see the practical, interactive, and formative characteristics of this type of methodology; nevertheless, we cannot attribute this to the videos offered by the centers given that they are generally recorded in a formal educational environment and are developed under two main modalities: on the one hand, those that instruct on some specific aspect of the major topics they deal with, so they are short and concise, and on the other hand, those that are recorded and uploaded to the network, which correspond most of the time to events carried out in person or even virtually. Consequently, those videos are merely informative since they do not allow user interaction. We conclude that WCCs do not actually propose a workshop utilizing a video but rather employing a published video, a workshop that was carried out in any modality.

The second most popular type of audiovisual resource is the video lecture, described as a recorded talk or exposition, generally led by an expert, regarding a specialized topic and directed to a specific audience. It is a discursive genre of an expository, argumentative, or combined nature with its own structure, whose ultimate purpose, to inform, varies according to the audience to which it is addressed and may assume instructive or scientific dissemination purposes (Robles Garrote, 2014). We find an example in the Centro de Apoyo para la Lectura, la Oralidad y la Escritura from Colegio de Estudios Superiores de Administración (CESA) in Colombia that shares the recording of a talk that addressed the APA 7th edition and the Writing Center of the Goethe University Frankfurt am Main in Germany that has published videos that address writing strategies according to different types of writing.

Given the academic nature of this technique, the centers share specialized knowledge that is related especially to educational issues, such as learning,

pedagogy, communication, and research produced by external actors. This means that studies conducted by experts whose results contribute to the topics of interest. Some examples of specific issues addressed in the lectures found on the web pages of the WCCs are autonomous learning habits, scientific writing, and oral speech.

Among the frequent characteristics of these lectures, we find that the videos are medium length, last between 5 and 10 minutes, are usually delivered as monologues, their main intention is to inform about a specialized topic, and, in several cases, the speakers use visual aids to support the speech.

Concerning the tutorials, the third most popular audiovisual resource in the centers, they intend to instruct on various topics related to the areas of study of the centers. However, the tendency is that this instruction is mainly conceptual or theoretical rather than methodological or practical. This leads to the videos being informative rather than formative in nature. As an example, we have a video that explains what an essay is, what its parts are, and some keys to writing it; or a video that explains what the APA norms are and what structures should be followed to cite an author and to write a bibliographic reference. These two topics are the most common in most WCCs.

The Resource Center for Learning and Research of the University Santo Tomas in Colombia offers on its website video tutorials on some bibliographic indexes and internal platforms for the management of academic life. The University of Calgary Student Success Centre presents videos from a collection called Study Skills Videos that cover topics such as how to prepare for an exam, what to do during and after the exam, how to read better, and more.

3. Educational Portals

One of the goals of the centers' websites is to share learning materials, informative sources, and other formative resources that complement students' learning process. Educational portals are a common resource found in most centers that count on a website (around 91%). That is why these arose as a type of resource in the study, considering their popularity. These portals are characterized by websites containing a robust set of resources for teaching and learning and the dissemination of knowledge within the framework of some topic or topics aimed at a particular audience (Scolari, 2010).

One of the characteristics of the portals shared by the WCCs is that all of them are external, which means that they are not the property of the centers. However,

they belong to other institutions of higher education, ministries of education, secretariats of education, private educational organizations, and other entities related to the field of education.

We noted that these portals, in general, do not have a predetermined structure, and the topics, resources, and services they offer are not standardized, which has allowed an infinite number of portals to exist, all with different characteristics, so that they can hardly be similar. Perhaps the only thing common to them is their purpose: to offer a site equipped with didactic resources that contribute to the educational community's construction of knowledge. Despite this, we tried to organize these portals considering their topics and purposes. Writing centers, digital libraries, digital dictionaries, and writing software resulted from that organization.

Considering that writing is one of the interests of these centers, it is natural that they share similar sites as part of their portfolio of external resources. The web pages of other writing centers are the most popular educational portals shared by the centers, and WCCs tend to refer to other WCCs in the same country. However, some also do so with centers in other countries. 83% of centers that count on a website suggest external writing centers.

Some centers enjoy popularity among other centers in the academic field worldwide, mainly because of the quality of the proposals and the striking organizations they have, and in other cases, because some of them have close relationships thanks to collaborations. Thus, the most referenced centers by others are the Purdue Writing Lab at Purdue University, both on-site and virtual, and the Harvard University Writing Center, both in the United States. In Latin America, we have the Writing Center of the Tecnológico de Monterrey in Mexico, the Spanish Center of the Universidad de los Andes, and the Javeriana Writing Center of the Pontificia Universidad Javeriana, both in Bogotá and Cali, Colombia.

When referencing another WCC, the centers do so in two main ways. The first is to suggest the centers in general so that users can visit them and see how they can help them. The second way is to suggest a particular resource hosted by the suggested center. Although sometimes the resource and site are mentioned, the link to it is not specified, and sometimes it is. Whatever the form, the overall objective for any center is always to suggest external resources that complement users' training.

The second type of suggested portals by WCCs is related to databases created to store, organize, and disseminate mainly the academic production developed within the institutions, but also other recognized databases, which are essential for the

functioning of academic processes. We refer then to digital libraries, which are Internet sites devoted to the creation and preservation of collections of electronic books and other types of materials (Cabrera Fagundo, 2015), without the need for users to purchase the materials they wish to consult. The creation and preservation of these collections involve the participation of many intermediate institutions, which is partly what makes digital libraries so interesting.

The WCCs, being educational communities belonging to university institutions and having purposes related to the dissemination and production of knowledge, also have the responsibility to promote the use of these databases and to contribute to them with intellectual work products, so, commonly, 43.48% (20 WCCs) of the centers refer to them in their educational resources. With this, we clarify that these libraries do not belong to the centers but to the institutions (universities) they belong to. The libraries of their universities are mainly shared; nevertheless, some centers also share libraries from external universities.

Some examples of digital university libraries found in centers are the various specialized libraries of the Massachusetts Institute of Technology that the Center for Writing and Communication of that university presents on its website. For its part, the Center for Reading and Writing of the Hildesheim University Foundation in Germany presents the general university library as a scientific information center, which provides printed and electronic media for research, teaching, and study. Similarly, the Writing Center at Colorado State University in the United States suggests the libraries of that university for locating writing-related content.

On the other hand, in the rest of the centers, we could not verify the use of these resources, even though we found that some centers call themselves centers for research or promote scientific knowledge. As there is no evidence of managing library networks or creating products and publishing them in these databases, we make a strong recommendation to these centers to promote these spaces, since, as we have stated, it is an inherent responsibility of these centers, and much more for those that establish this in their purposes.

Continuing with the list of educational portals, we find in third place the digital dictionaries that are designed and disseminated on web pages. These can be understood as lexical databases with a variety of formats (text, audio, image) whose main purpose is to instruct about terms and expressions about their semantics, etymology, phonetics, grammar, and others to understand their context and proper use (Dziemianko, 2017). Being digital resources on the

web, most of them are free to consult and are characterized by ease of consultation and constant updating. Hence, the interest on the part of the centers that promote them, since it is indisputable that when talking about the development of literacy and communication skills in any language, the use of these tools is essential for such purposes.

In terms of languages, each center offers dictionaries mainly in its mother tongue. However, several centers also handle other languages, so dictionaries in those languages are also promoted. Some common examples of these resources are the Diccionario Panhispánico de Dudas, Oxford English Dictionary, and Longman Dictionary of Contemporary English, suggested by the Centro de Aprendizaje, Redacción y Lenguas from Instituto Tecnológico Autónomo de México and the Writing Center of the University of Cape Breton in Canada.

Finally, within the category of portals, we find some very particular and significant resources for WCCs purposes, which are related to the development of writing. We refer to those applications, software, or interactive platforms that allow independent work. These sites are generally based on artificial intelligence, so their users live a real learning experience as they can put their knowledge into practice, self-evaluate their processes, and receive suggestions for improvement, among many other actions that definitely enhance autonomous learning. We define them as software for writing, which are external resources that the centers embed into their websites, so learners are aware of their usefulness. These technological tools are used to help with various processes related to digital writing, such as spell checking, error correction, correct textual organization, and originality of ideas, among other issues of concern to educational institutions.

Some of the most outstanding tools proposed by the centers are: *Writing Tool*, an online tool for assisting writing (suggested by the Writing Center of the Goethe University of Frankfurt am Main in Germany); *Grammarly*, an application that corrects and enhances writing (suggested by the Office of Academic Writing in Russia and the University Writing Center at the University of Texas at Austin in the United States); *Plagiarism Detector*, a program to check the originality of writing (suggested by the Centro de Escritura from Universidad Michoacana de San Nicolás de Hidalgo, in México,); *Write and Improve*, an interactive application for training in writing (suggested by the Centro de Recursos para la Escritura Académica in México).

4. Graphic and Illustrative Resources

In fourth place among the DERs are those that stand out for how the information is organized and the elements used to

accompany the content. This type of material usually contains text; however, it does not stand out for this, but for its organization through various didactic elements that make the resource in general much more attractive and effective when it comes to transmitting content. Some of these elements are the great variety of tables, graphs, graphic organizers, and diagrams, among others. These are widely used as they help highlight data and classify information (Kurniaman & Zufriady, 2019).

Other elements that stand out within these resources are the images or illustrations, which are used to complement textual content or to accompany content. Regardless of their purpose, these should be telling, coherent, and appropriate. These visual elements can be included as drawings, photographs, animations, or figures, among others. Some examples of graphic and illustrative resources are infographics, timelines, mind maps, presentations, and brochures.

Despite the great variety of these resources, the centers do not stand out for their variety; on the contrary, their offer is very limited both in quantity and variety: only in 41% of the centers (39) could we see some of these resources.

From the analysis, we could identify four main types of resources that present the content by organizing it through tables, graphics, symbols, shapes, images, and other elements. The most popular visual resource among the centers is the infographic, which is used to create digital content in a synthesized format using text and images in an attractive and organized way (Arenas-Arredondo et al., 2021). Some common topics to develop through infographics are genres in academic writing, how to develop reading, oral presentations, and punctuation marks. From the percentage of centers that have designed and published graphic resources (41%), only 35% have published infographics, corresponding to just 13 WCCs.

The pedagogical grids appear as the second most popular graphic resource, proposed in 17% of the total sample of centers (15). These grids are used to visualize the elements that make up a graphic piece, where information is generally presented in tables, squares, and other shapes so that it is easy to understand. They are training tools designed by the centers to support the learning processes, more specifically related to assessment, as most are made available as needed. Some examples of grids are self-assessment tasks, evaluation matrices, and book analyses.

Other common resources we find on the web pages of 9 centers (10%) are the didactic cards used to present key ideas related to a very specific topic. They are useful for synthesizing important

concepts like definitions, formulas, or dates. They frequently include images, symbols, colors, and shapes to make them more appealing. These cards are always didactic since they have a clear teaching purpose and are generally used in language education. They allow students to achieve communicative competencies through the vocabulary obtained (Garcia-Medina et al., 2019). Some of the most common topics taught in these cards by the centers are grammar issues, spelling, punctuation marks, and study tips.

Some examples of these resources can be found at the Centro de Escritura of the Universidad Michoacana de San Nicolás de Hidalgo in Mexico which proposes an extensive bank of infographics that address various topics related to academic writing; the Center for Teaching and Learning at Texas A&M University, in Qatar, that offers infographics on learning styles and some strategies to enhance them; the Centro de Lectura y Escritura from the Corporación Universitaria Rafael Núñez in Colombia presents a card containing "Tips for your exposition"; the Centro de Lectura y Escritura from Universidad Autónoma de Occidente in Colombia offers some cards that deal with conjunctions.

5. Audio Resources

Some of the least common resources used by the centers for educational purposes are those whose content is reproduced orally, mainly through MP3 recordings that can be downloaded from the internet and played both online and offline. Nowadays, the Internet and the development of associated technologies facilitate access to this material, making it possible to listen to a wide range of audio material that can be found on the net (Hedderich, 2010).

Regarding educational material, audio resources can be classified into two categories: authentic and didactic. As we have already discussed, the first refers to resources that are not from the educational field but are used for educational purposes. They are not designed by education professionals or in educational contexts but belong mainly to the entertainment and advertising industries. However, they are used in teaching to bring students closer to reality (Bajrami & Ismaili, 2016; Joseph Macwan, 2015). Radio, podcasting, the music industry, and talk shows are examples of sources from which authentic audio material can come.

On the other hand, we have those resources that are designed by the educational environment itself. Their purpose is to inform and train about some topic or process concerning the curricula's contents. These are called didactic resources or materials (Dos Reis et al., 2018; Pisarenko, 2017). Simulated

dialogues and monologues, teaching songs, and audiobooks are specific examples of didactic audio material.

Considering this vast universe of resources and that "currently, audio learning resources account for a large proportion of the total online learning resources, especially for students majoring in languages and music" (Wang et al., 2022, p. 23), it was surprising to find that audio material is not very popular on the websites of the centers, both in variety and quantity, since the offer is limited just to podcasts and radio programs, and that no authentic materials were found. Nevertheless, it is important to highlight that all audio material is an original creation, designed by the centers themselves and not taken from external sites, as is often the case with other resources, especially textual resources and educational portals.

Thus, the podcast is the most popular (and almost the only) audio resource globally since it is the most used and the most designed within these centers (5 centers). Its favoritism is because it can transmit various content, whether educational, entertaining, informative, specialized, etc. It is the favorite of teachers, researchers, and experts in content creation since they require much bibliographic work in the case of historical and conceptual podcasts. For dialogic podcasts, they talk to experts.

Some of the podcasts proposed by the WCCs are "Literatura sin límites" proposed by the Centro de Lectura y Escritura from Universidad Autónoma de Occidente in Colombia; "Scientific Writing" by the Writing Center of the Goethe University Frankfurt am Main in Germany; "Una Palabra" by the Centro de Aprendizaje, Redacción y Lenguas from Instituto Tecnológico Autónomo de México; "How We Write" by the University Writing Center at the University of Texas at Austin in the United States.

Radio programs are the other auditory resources offered in 4 centers. These are less common due to the complexity involved in making these resources. Examples are the radio programs about culture and society transmitted by the Centro de Escritura from Instituto Tecnológico y de Estudios Superiores de Monterrey in Mexico; the program "La hora de la Ñ" by the Centro de Español from Universidad de Ibagué and "CELEE Cultural" by the Centro de Lectura y Escritura en Español from Universidad del Rosario, both in Colombia.

6. Multimedia Resources

Within the proposed classification, we included multimedia resources as a distinct typology since they have characteristics that differentiate them from others. From a basic conception, a multimedia resource allows combining a

single system of media, such as image, sound, and data processing, to facilitate interactivity (Aguilar & Morón, 1994). This is very useful for the learning process because, in addition to being complete and more effective in the transmission of information, they can be more responsive to different learning styles, lead to the development of higher levels of autonomy in the learner, and make them more accessible to learners with special abilities. Based on this, it can be stated that an educational video, an electronic textbook, or an interactive presentation are multimedia to the extent that they combine formats to develop the content.

However, nowadays, these resources are not limited to being a characteristic of some but have already come to be categorized as a typology. This is thanks to the advances in educational resources as a field of study due to the inclusion of technologies and the application of new methodological precepts in teaching. Rodríguez Ponce et al. (2018) indicate that multimedia refers to the multiple use of resources for a better presentation, segmenting audiovisual content, so we can understand that it is an educational environment composed of several resources that jointly enable learning and the development of skills regarding a specific field of knowledge.

Based on this and the established theoretical framework, we set ourselves the goal of identifying those resources in the WCCs that went beyond individuality and constituted a harmonious whole that facilitates learning. Thus, we identified interactive presentations (in 4 centers), virtual information objects (in 5 centers), and virtual learning objects (in 4 centers) as those on which the centers focus their interest.

Interactive presentations are the most popular resource in this category as they are easy to create thanks to the large number of platforms available on the web for this purpose, which offer pre-designed templates and easy-to-use elements. These presentations include, in addition to text and images, resources and interactive elements to achieve a greater connection with the user and to make the resource more eye-catching. This can include responsive areas, pop-up boxes, multiple-choice activities, and matching. This makes the learner's experience more enriching as there is a higher degree of motivation and engagement (Kustyarini et al., 2020). These presentations are usually presented in HTML, as they are created online so that anyone can access them freely. The topics covered here generally relate to literary topics and academic writing.

In the second place, we find the virtual information objects (VIOs), which are made up of digital content such as documents, images, photographs,

videos, etc., cataloged according to a standard metadata system (Pérez-Hernández & Delgado-Dapena, 2013). The nature of the VIOs is explanatory since their purpose is to explain a theory, concept, or problem. They are basically composed of learning objectives, content or context (explanation of the topic), and credits (people who contributed to the construction of the resource). They may also contain an evaluation section or activity aimed at measuring the degree of knowledge acquisition by the student, although this activity is not interactive. Educational videos are the main type of VIOs, and, as we have already discussed in the audiovisual section, the main topics addressed in these resources are learning issues, the types of academic texts, and the literary genres.

Finally, within the multimedia resources, we have the so-called virtual learning objects (VLOs), a digital unit of content or subject matter for specific learning purposes with objectives, activities, and assessment (Feria-Marrugo & López, 2016). Unlike the VIOs, the VLOs contain interactive material and learning activities, which benefit the learning process. This resource type is uncommon in the WCCs since we found them in just 4 centers. The Centro Virtual de Escritura, Lenguaje y Expresión of UNAD and the Programa de Lectura y Escritura Académicas of Universidad Nacional de Colombia, both in Colombia, are the centers that offer the most VLOs for free on their webpages.

7. Virtual Learning Environments

The last type of educational resource placed in the list is related to one of the most complex resources to design since it is not an individual resource to present detailed but limited content, but rather a whole educational digital system, composed of several learning resources and didactic strategies to develop knowledge on a whole subject. Affouneh et al. (2020), Harding (2018), Mikropoulos & Natsis (2011), and Reisoğlu et al. (2017), among others, agree that Virtual Learning Environments (VLEs) provide various multimedia materials and learning tools that arouse interest and help to understand complex information. In addition, they have interactive tools that facilitate communication between students and teachers, such as email, messaging, and online meeting and chat rooms. Similarly, these e-learning platforms provide more information through web links and create a safe environment for students to discuss, share information, transfer new knowledge, and express their opinions in an open environment. VLEs are based on social constructivism, so they effectively promote active student interaction and facilitate individual contributions that benefit the group while allowing for the development of autonomous learning.

Based on this, we understand that these spaces have materialized into a didactic and pedagogical structure, epistemologically grounded, that allows for the development of contents, the practice and application of knowledge for the development of cognition, interaction for collaborative learning, and autonomy, among other skills.

Given these grounds, the WCCs have adopted these environments to impart virtual education through academic courses offered to their academic community, which means they do not have free access to anyone. Around 42% of the centers (39) offer at least one virtual course. These are the findings regarding these virtual courses:

- They are framed within the major themes of the centers but address specific topics such as a particular type of competence, a particular type of writing or communicative expression, etc.

- The tendency is that the courses offered by the centers can be taken as electives by students throughout the university; however, some manage courses that are mandatory in the curricula of some or all of the institutions' academic programs. The most common subjects in these courses are communicative skills and academic writing.

- Several centers offer courses tailored to the populations they serve, including undergraduate students, graduate students, teachers, and researchers.

- The courses that are part of the mandatory or even elective component of the academic programs have a duration equal to all regular courses. However, short courses also last a certain number of hours or weeks.

- The VLEs designed for these courses have a standardized techno-pedagogical structure based on the specialized literature regarding these environments. The main didactic elements that constitute the VLEs are learning guides, discussion forums, automatic quizzes, learning activities, submission spaces, multimedia resources, and other aspects that facilitate content management, learner engagement, formative assessment, communication, and collaboration, among other educational goals.

Some WCCs that offer online courses (through VLEs) are the Centro Virtual Cervantes in España: "Vygotsky's Sociocultural Psychology. Mediation, creativity and digital stories" and "How to prepare Spanish as a foreign language classes". The course "Reading and Writing Across the Curriculum at the Higher Education Level" by the Centro

de Excelencia para la Investigación y Difusión de la Lectura y la Escritura de la Pontificia Universidad Católica Madre y Maestra, in the Dominican Republic. The Centro Virtual de Escritura, Lenguaje y Expresión from UNAD Colombia with the virtual courses in Citizenship Competencies, Written Communication, Critical Reading, and Quantitative Reasoning.

Discussions

From the established theoretical framework and the identification of all the resources reported in this paper, we see that DERs are a large universe of tools with great epistemological support that undoubtedly contribute to the educational processes of human beings. In agreement, Tomlinson (2011) states that materials development is a field of study and a practical task in charge of studying the principles and procedures of teaching materials' design, implementation, and evaluation.

This vision and how resources are dynamized in the centers show that these are living agents capable of reforming themselves according to the new educational needs that arise as the educational sciences advance (Londoño-Alape, 2024a). These advances, highlighting the fundamental role played by educational technologies, have made resources evolve to adapt and respond to what educational communities require them to do. This includes the simple objective of informing pedagogical mediation, which has meant that teaching responsibilities have also been attributed to these didactic resources. This is why when designing them, their high quality must be guaranteed in terms of creativity, interactivity, accessibility, and reusability, among other aspects that should characterize these resources today (Cabero-Almenara & Ruiz-Palmero, 2018; De la Torre Navarro & Domínguez Gómez, 2012; Pinto et al., 2012).

Taking into account all these developments, talking about types of resources or teaching and learning material is complex insofar as there is no consensus in the specialized literature regarding the definitions of the various classifications that have been made about this material (Churchill, 2017; Colomé, 2019; Pinto et al., 2012; Sánchez Medina, 2014; Vidal Ledo et al., 2013). When referring to these materials, there are several aspects to consider: their characteristics, the way they are visualized and accessed, their purposes and functions, their structures, and their forms of storage, among others. All this has led to the proposal of classifications, typologies, definitions, and others in order to achieve an organization of this essential component in education.

As we can see, there are several conceptions about digital teaching materials thanks to the endless possibilities offered by ICT to innovate in teaching. We cannot affirm that a particular typology is better than another or that specific resources are the best since everything depends on the context where they are used (rural, university, ethno-educational...), the type of population that accesses them (children, doctoral students, people with disabilities...) and the purposes for which they are designed and used (dissemination of knowledge, reinforcement of knowledge, entertainment...). We can affirm, without a doubt, that educational resources have reached a certain point of evolution, that they currently represent a solution to the needs for access to knowledge, learning, and skills development, which are often unmet due to factors such as the centralization of education, lack of connectivity, learning difficulties, and even negligence on the part of educators.

With all this in mind, in this study, we wanted to establish a comprehensive categorization of resources that would take into account both conventional resources and those that have emerged thanks to technologies and the designers' creativity. This categorization, which was strategically used to analyze the centers' DERs, allowed us to find that all typologies are addressed in the dynamics of these centers, although not to the same extent: some are more popular than others, some are preferred for the development of particular topics, some stand out for their originality and others for their authenticity, among other cases.

We have described in this paper how the sample of centers responds to this universe of educational resources by designing and publishing all kinds of high-quality materials to support the training of professionals. However, as we pointed out in some sections, while some centers stand out for their innovation in this regard, others fall short in several of the categories presented, as their offer is limited in quantity, variety, and even quality when designing digital resources. It is common, and even natural, for some centers to be interested in and stand out for some types of resources. However, it should also be taken into account that, within the framework of innovation, effectiveness, and educational quality, a center of the nature of the centers addressed in this study should strive to stand out in all of them.

Because of this, it is strongly recommended that these educational communities expand their resource offerings to reach more users and meet their educational needs based on their interests, learning styles, connection and communication difficulties, and the various skills they need to develop within the framework of their curricula. This means including resources of all kinds (didactic, authentic, informative, formative, interactive, etc.), of diverse typologies (audiovisual, textual, graphic, multimedia, etc.), for diverse purposes (inform, describe, argue, criticize, etc.), and develop all kinds of skills (cognitive, critical, socio-affective, autonomous, etc.).

Conclusions

This chapter sought to present the current state of digital educational resources in a representative sample of WCCs worldwide to learn about their dynamics, purposes, and characteristics. These findings allowed us to highlight those trends related to these resources in terms of design and use to be made visible. Secondly, we identified and described gaps, limitations, and other problems related to these resources and made observations and suggestions to be taken into account for relevant solutions. Thirdly, this work allowed us to establish a comparative evaluation framework in relation to the state of the art of DERs worldwide so that each center can self-evaluate and know how it is doing concerning the trends presented.

In this way, this chapter contributed to one of the general objectives of the study, which was to analyze how the WCCs dynamize knowledge. In this case, it was from the resources they use to address content, create knowledge, and develop students' skills in writing, reading, orality, and other communicative forms, as well as in educational processes of teaching and learning. Regarding these latter fields, this chapter extends their usefulness for the benefit of teaching practice since the information presented here shares organizations, definitions, and discussions that can help education professionals understand more about this field of DERs. In the same way, in this chapter, a didactic framework was constituted, which is useful not only for the dynamics of WCCs but also for teaching in face-to-face and virtual classrooms, since educators can use this information to know what resources can be used, how to take advantage of them, how they can be designed, among other purposes.

Digital educational resources are, without a doubt, elements that contribute significantly to the educational act since they complement teaching, are a source of knowledge, measure learning, and encourage learner autonomy. It is impossible to think of education without them, much less virtual and distance education. WCCs as educational communities belonging to higher education institutions are called to promote the design and use of these resources to materialize their training purposes; therefore, in this study, we wanted to inquire about them: typologies, characteristics, uses, topics, and other issues related to resources.

Thus, similarities and differences were established, as well as suggestions for the centers to consider with a view to improvement. This last aspect is one of the main contributions of this study to the WCCs. Likewise, this chapter provides typologies, descriptions, and examples of educational resources that positively impact learning.

As educators, it is essential that we know what kind of textual, auditory, audiovisual, graphic, illustrative, and multimedia resources we can use and how to do it, so in this chapter we offer this knowledge in order to contribute not only to the dynamics of the centers in their actions, but also that the educators themselves use all this knowledge to innovate their classroom practices. Likewise, the learners can use this information to develop their awareness of how they can learn about the resources they can use in their learning. Reflection on them will lead them to enhance their metacognitive skills regarding the use of materials and didactic strategies.

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Chapter 3

Harnessing Artificial Intelligence for English Language Learning in the Post-Pandemic Era: A Systematic Literature Review

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Introduction

Traditional, standardized education systems have faced increasing criticism in recent years due to their inability to accommodate individual student needs (Huang et al., 2023). Educational models worldwide are shifting toward more personalized, technology-enhanced, and student-centered curricula. Among the latest technological advancements driving this transformation, artificial intelligence (AI) has gained significant attention from educators. AI-powered applications offer

the potential to provide deeper insights into students' learning paths through data-driven analysis, ultimately enhancing the effectiveness of instructional strategies and academic systems. The integration of AI into education has already led to significant transformations, from personalized study materials and adaptive learning experiences to automated grading and AI-driven tutoring systems (Hwang et al., 2023)

The term artificial intelligence was first introduced by John McCarthy in 1956. However, a universally accepted definition of AI remains elusive as its scope continues to evolve alongside interdisciplinary research. Some scholars define AI as computer systems designed to replicate human cognitive functions, while others conceptualize it as a set of computational processes specifically designed for learning and problem-solving (Wu et al., 2023).

In education, AI-driven technologies surpass human instructors' ability to process vast amounts of data on student performance, allowing for adaptive content delivery and individualized learning pathways (Baskara, 2023). Moreover, AI facilitates learning by providing instant feedback, fostering engagement, and supporting self-paced study. AI operates on two core principles: autonomy and adaptability. Autonomy refers to the ability to complete tasks in complex environments with minimal human intervention, while adaptability involves learning from experience to improve task performance (Edmett et al., 2023). These principles form the foundation for AI-driven educational innovations, offering scalable and data-informed instructional models (Bin-Hady et al., 2023).

While AI has been explored in education for decades, its role in supporting students throughout the learning process remains an emerging area of research. AI applications offer several advantages in language learning, including personalized feedback, adaptive learning pathways, intelligent tutoring systems, and advanced natural language processing tools (Jeon, 2024). However, these technologies also raise ethical, social, cultural, and linguistic concerns, along with questions about the reliability and transparency of AI-generated content. Given these complexities, further research is necessary to examine the best practices for the responsible and effective integration of AI in language instruction (Son et al., 2023).

The rapid advancement of AI and growing interest from educators and researchers highlight the need for a comprehensive review of its applications in English as a Foreign Language (EFL) learning. This article aims to systematically analyze current AI-driven tools in EFL education, assess their impact, and identify potential research directions. By examining the intersection of AI and language learning, this study contributes to the ongoing discourse on AI's opportunities, challenges, and future developments in EFL education.

Theoretical Framework

Humanity has reached a point where technology is the cornerstone of evolution, relying mostly in the use of AI in particular for the sake of finding solutions to problems, becoming a more inclusive society, giving opportunities to all people on improving their welfare and looking for new alternatives to develop knowledge and adapt faster to the changes for the future (Abdullah Sharadgah & Abdulatif Sa'di, 2022). Hence, it is crucial to understand how the interaction between these emerging technologies and humans can be sustained (British University, Vietnam & Perkins, 2023).

The applications of AI in education are limitless. For instance, Artificial intelligence can help people with disabilities and special educational needs to access new knowledge by providing different means and tools for communication and interaction with the learning object, providing them with more autonomy to develop their competencies, and minimizing their dependence on others (Song et al., 2024). Learning personalization is another key aspect gained with the use of AI. This means individuals can achieve their goals at the desired pace, using AI to adapt to their own learning strategies and rhythms. This also means that it is possible now to contextualize education to specific living conditions, allowing the interaction with the surroundings to be more meaningful and profound (Hwang et al., 2023).

The constant support of AI can give students more effective feedback on assessment processes to monitor their evolution (Yesilyurt, 2023). It is also possible to use AI for a wider educational coverage. Students in remote areas without access to an educational institution or tutoring can access education by implementing intelligent tutoring systems, helping students understand difficult concepts and theories, and accompanying them constantly (Chen et al., 2020). AI can also analyze data to predict outcomes in any educational process. It could be an analysis of a whole educational model or the analysis of specific contexts. Knowing students' likelihood to drop out, succeed, or fail in the learning process could help implement strategies for preventing them from these negative outcomes (González-Calatayud et al., 2021). It could also help adopt the evaluation process on the learning strategies used in the classrooms and the virtual environments to boost motivation and engagement based on students' backgrounds, previous knowledge, and experiences (Rincon-Flores et al., 2020).

Strictly speaking, about language learning, AI can revolutionize the manner of learning a new language by providing support through different types of interactions. Natural language processing can assist students by offering possibilities of practicing their pronunciation, grammar, writing, listening, and speaking skills in real time (Rusmiyanto et al., 2023). NLP provides a meaningful

experience for students to practice their target language by interacting as if they were talking to someone in a real-life scenario. These virtual assistants are available all the time. Students can use them to ask questions or for recommendations, or they could even develop their critical thinking and high thinking skills in general if these tools are utilized properly (Van Den Berg & Du Plessis, 2023) by offering the possibility of using virtual reality, augmented reality, and gamification as tools to facilitate contextual learning. AI becomes the perfect companion for creating realistic situations for students to practice a second or foreign language (Kumar, 2022).

While AI has several advantages for language learning, it also has some drawbacks to consider. Students could feel more isolated and lose the capacity to interact with peers due to the lack of human interaction. This could lead to demotivation and a constant feeling of loneliness. AI could also lead to an extreme reliance on them, preventing students from being capable of identifying their own mistakes and developing a more conscious thinking process (Dimitriadou & Lanitis, 2023). There are also linguistic biases since AI models have access to existing datasets. The main risk is stereotyping or discriminating against without noticing it because AI is implanting ideas about other cultures. There are also ethical concerns due to the lack of training and preparation in the ethical use of AI. While advances in AI are outstanding, there are limitations and difficulties in speech recognition, for example (Belda-Medina & Calvo-Ferrer, 2022). Feedback is also an aspect that can be biased, and students do not have the ability to recognize the richness and accuracy of autogenerated feedback. All these drawbacks highlight the importance of researching how to balance AI with human interaction and how to implement AI effectively in any educational context (Wang, 2024).

Educational paradigms have been profoundly transformed, with technology playing a pivotal role (British University, Vietnam & Perkins, 2023). Rahman et al. (2024) argue that artificial intelligence (AI) has significantly impacted various fields, including English language learning (ELL). This literature review, conducted at a crucial juncture in global education reform (Yeh, 2024), delves into the multifaceted influence of AI on ELL post-pandemic. It scrutinizes how AI technologies have enhanced traditional learning objectives and introduced innovative practices into language education (Xu & Margevica-Grinberga, 2021).

Methodology

This review examines studies from 2020 to 2024 on the impact of AI on English language learning post-pandemic. It includes global, peer-reviewed empirical studies, theoretical papers, case studies, and systematic reviews. Key aspects include personalization, automated

feedback, intelligent tutoring, natural language processing, gamification, and data analysis.

Drawing from 221 meticulously selected studies, the review identifies key thematic clusters, such as AI's role in personalized learning experiences and its impact on language assessment outcomes (Rugaiyah, 2023). These clusters represent strategic applications of AI within ELL. By synthesizing insights from these clusters, the review provides a comprehensive understanding of current practices, outcomes, and the broader implications of AI on learners' engagement and proficiency in English language acquisition. The findings aim to guide educators, curriculum developers, policymakers, and technology innovators in shaping the future direction of AI-powered educational tools.

The integration of artificial intelligence (AI) in English language learning (ELL) has gained significance due to the capabilities of this technology regarding the adaptability of the learning experience to individual needs, the possibility of using intelligent tutoring systems, the giving of immediate and meaningful feedback to learners, the promotion of autonomous learning, and the integration of contextualized content depending on everyone's background.

This review employed a dual search strategy to ensure a selection of relevant literature. Firstly, Boolean operators with keywords within the Scopus database were used. This method allowed for a precise inclusion of studies by combining terms such as "artificial intelligence," "English language learning," and "post-pandemic" with Boolean operators to filter relevant research within a vast repository of scholarly articles.

In contrast, the second approach leveraged semantic search capabilities provided by Elicit. Semantic search differs notably from Boolean search as it interprets the searcher's intent and the contextual meaning of the query rather than relying strictly on exact keyword matches. Using advanced natural language processing algorithms, Elicit could scan a broader spectrum of academic content, unravel synonyms and related concepts, and offer a more nuanced retrieval of documents that keyword-centric Boolean search methods may have inadvertently omitted. With the rapid evolution of AI technology and its increasing application in language education, scholars face the challenge of navigating through several innovations to identify the most suitable and efficient tools for EFL instruction. By conducting a systematic review, researchers can systematically analyze the latest literature to explore how AI is being incorporated into EFL teaching, its impact on core English skills enhancement, and the potential pedagogical implications (Almehmadi, 2024)

This dual search strategy was designed to balance the comprehensive, systematic nature of Boolean search with the contextually aware, interpretative power of semantic

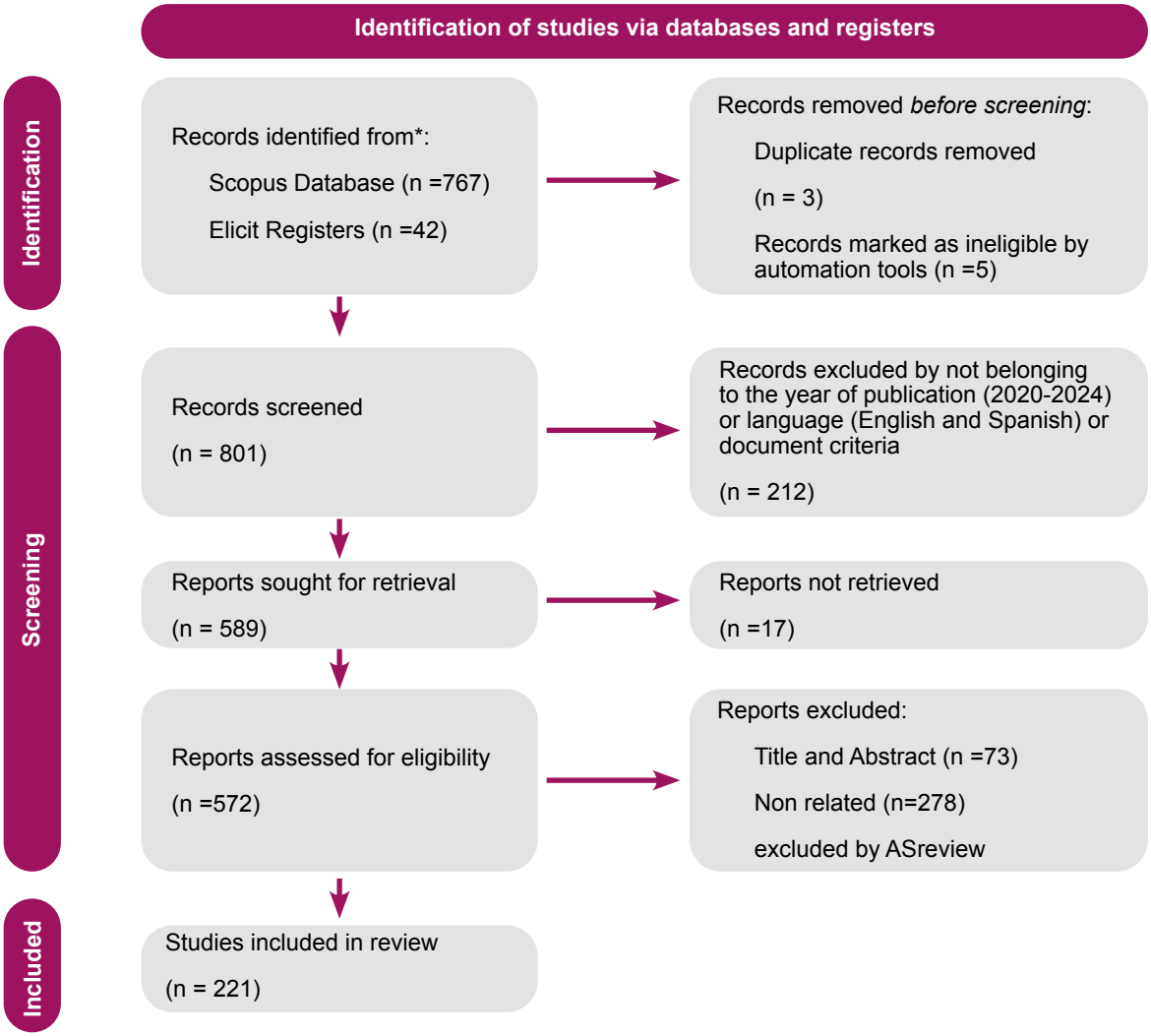
search, thereby maximizing coverage and minimizing the risk of overlooking pertinent literature on the application of AI in English language learning, post-pandemic.

This systematic literature review was guided by PRISMA protocols to ensure thoroughness and transparency in evaluating artificial intelligence applications in post-pandemic English language learning.

Search Strategy: The review commenced with an initial search on Scopus, using a combination of keywords:

TITLE-ABS-KEY ("artificial intelligence" OR "AI" OR "machine learning" OR "deep learning") AND TITLE-ABS-KEY ("English learning" OR "English language learning" OR "ELL" OR "second language acquisition" OR "language proficiency").

Figure 1. PRISMA 2020 flow diagram for new systematic reviews, which included searches of databases and registers only



Concurrently, Elicit AI search tools were employed to augment the identification process. This dual-source strategy identified an initial account of 767 Scopus entries and 42 Elicit AI papers.

Selection Criteria: Rigorous exclusion criteria were applied to refine the search results. Only English and Spanish language papers from the year 2020 onward were considered. The combinatory results yielded a reduced set of 589 papers.

Document Type: The review was further delimited to specific academic contributions, including 304 journal articles, 222 conference papers, 20 book chapters, 19 conference reviews, and 6 reviews.

Relevance Screening: The initial screening of titles and abstracts was performed using the ASReview machine learning software, facilitating an efficient and systematic selection process. Employing this tool leveraged AI's capabilities to predict each document's relevance, resulting in a refined list of 221 potentially relevant papers.

Using these methodical steps, the review aspires to offer a robust synthesis of current literature, providing educators and technologists with actionable insights into AI's transformative potential in English language education.

This revised method section now accurately reflects the specific search and selection criteria you used to gather and filter your sources, including your use of keywords, databases, document types, and the process of narrowing down to the final 221 papers.

Results

From the robust selection process, 221 studies were analyzed, revealing diverse applications and implications of artificial intelligence in the realm of English language learning post-pandemic. The results can be categorized into six thematic clusters, each reflecting a unique dimension of AI-driven ELL solutions:

Cluster 1—Machine learning techniques in adaptive Learning Systems:

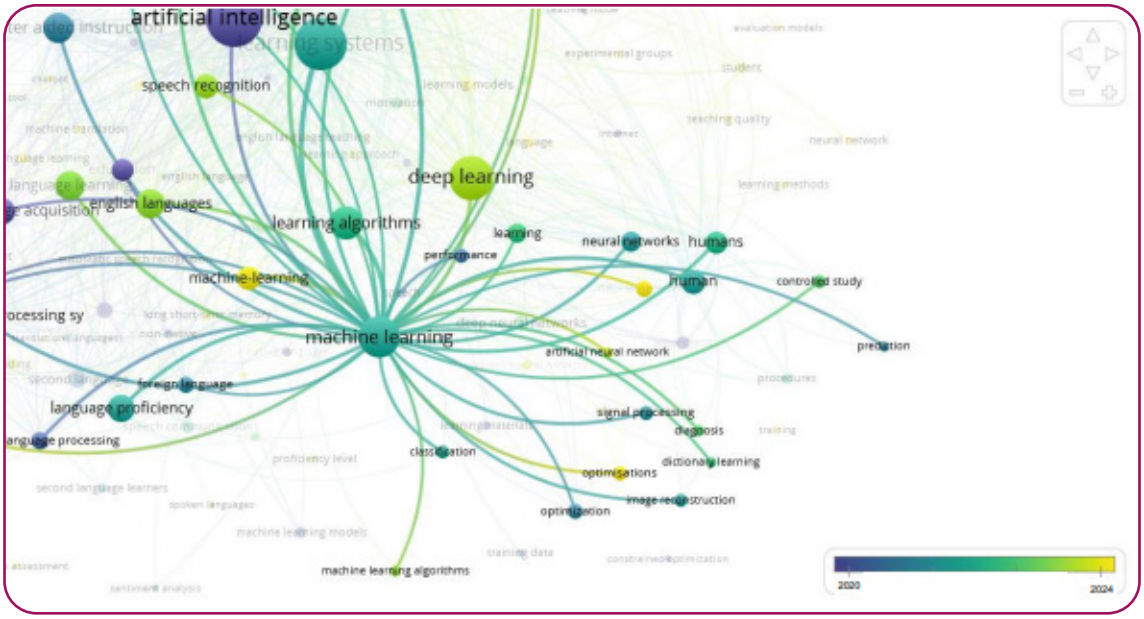
This session highlighted the effectiveness of AI in customizing the learning experience to individual student needs, showcasing improvements in engagement and personalized feedback mechanisms.

Significance: This cluster signifies the growing importance of adaptive learning systems in personalizing education and their effectiveness in addressing individual students' needs.

Findings: Studies have found that adaptive systems can significantly increase student engagement and offer tailored feedback, which enhances the learning experience. For instance, Krange et al. (2023) found that the integration of AI-based automated essay assessment tools (EAT) can significantly enhance eighth-grade students' writing skills and assessment literacy in English as a foreign language (EFL). Their study collected data through a design-based research initiative where the EAT was developed and tested in naturalistic school settings.

Implications for Practice: Incorporating such systems into the ELL curriculum could lead to a more individualized learning path, improving mastery over language components for diverse learner profiles (Krange et al., 2023).

Figure 2. Machine learning techniques in adaptive Learning Systems



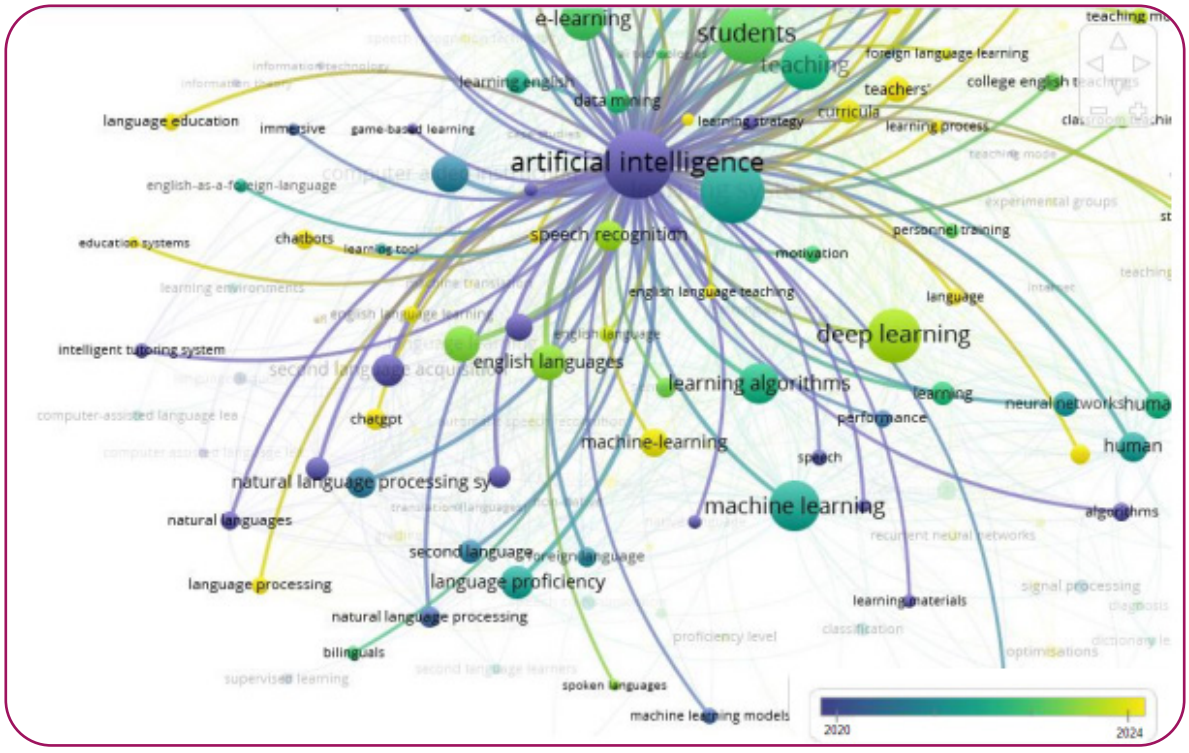
Cluster 2-Natural Language Processing Tools:

23 papers focused on the role of NLP in enhancing language proficiency, demonstrating AI's ability to assess and assist with grammar, pronunciation, and vocabulary acquisition. In one of the papers analyzed, Divekar et al. (2022) introduced the Cognitive Immersive Language Learning Environment (CILLE), which integrates artificial intelligence (AI) and extended

reality (XR) to enhance foreign language education by providing immersive and interactive learning experiences. Unlike traditional methods that often focus on solo interactions and emphasize vocabulary and grammar, CILLE supports multi-party, multimodal conversations that mimic naturalistic interactions.

Shi et al. (2022) highlight the significance of natural language processing (NLP) tools, noting their substantial impact on the evolution of language learning technologies by aiding in grammar, pronunciation, and vocabulary acquisition. The findings underscore AI's robust capacity to assess learners' language use and provide constructive assistance, thereby enriching the proficiency-building process. The implications for practice suggest that leveraging NLP tools in language education can facilitate a more nuanced understanding of language intricacies, aiding educators in implementing more effective teaching strategies (Guo, 2021).

Figure 3. Natural Language Processing Tools:

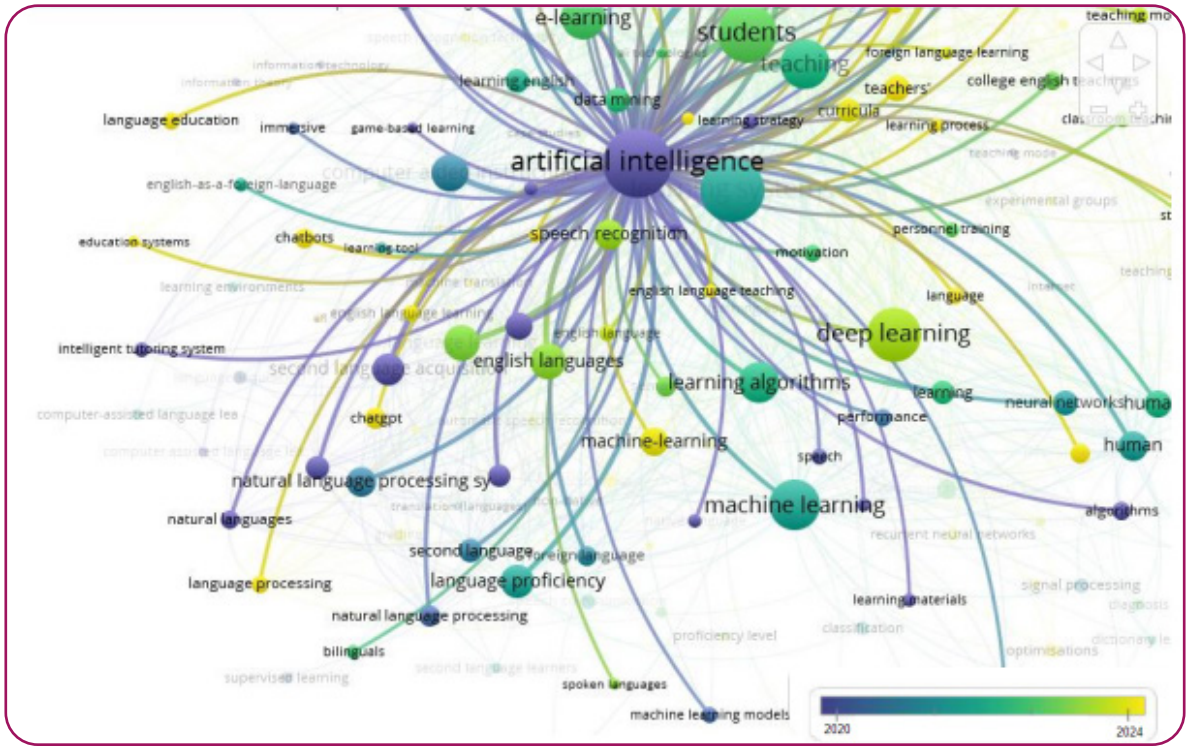


Cluster 3-Intelligent Tutoring Systems:

ITSs were frequently noted for their ability to provide instant feedback and support as supplementary aid alongside human instruction. Paladines and Ramirez (2020) highlighted the significance of Intelligent Tutoring Systems (ITSs) in

offering immediate feedback and support, complementing traditional educational environments. Their findings suggest that ITSs can be a valuable supplement to human teaching, enabling continuous learning and practice. The implications for practice indicate that the integration of ITS into English language learning (ELL) could maximize teaching efficiency, allowing learners consistent access to personalized educational support (Wang et al., 2022).

Figure 4. Cluster 3-Intelligent tutoring systems



Cluster 4: Educational Practices and Outcomes in Tertiary English Instruction

Main Theme or Trend: This cluster reflects a focus on English language education within colleges and universities, including the methodologies and technologies used to deliver education, develop curricula, and evaluate teaching and learning outcomes. Cluster 4's examination of tertiary English instruction reveals a shift toward integrating autonomous, student-driven learning with traditional classroom dynamics (Alharbi, 2023). This blended approach benefits from the evolving curricula that reflect current global trends and communication needs (Hsu et al., 2022). A significant focus is placed on thorough assessment and evaluation to enhance teaching quality and learning efficiency (González-Calatayud et al., 2021). There is also a clear emphasis

on the quality and effectiveness of teaching methods, particularly tailored to the intricacies of teaching English as a second language. The cluster reflects a modern educational landscape that seeks to harmonize traditional methods with innovative practices for improved language education outcomes.

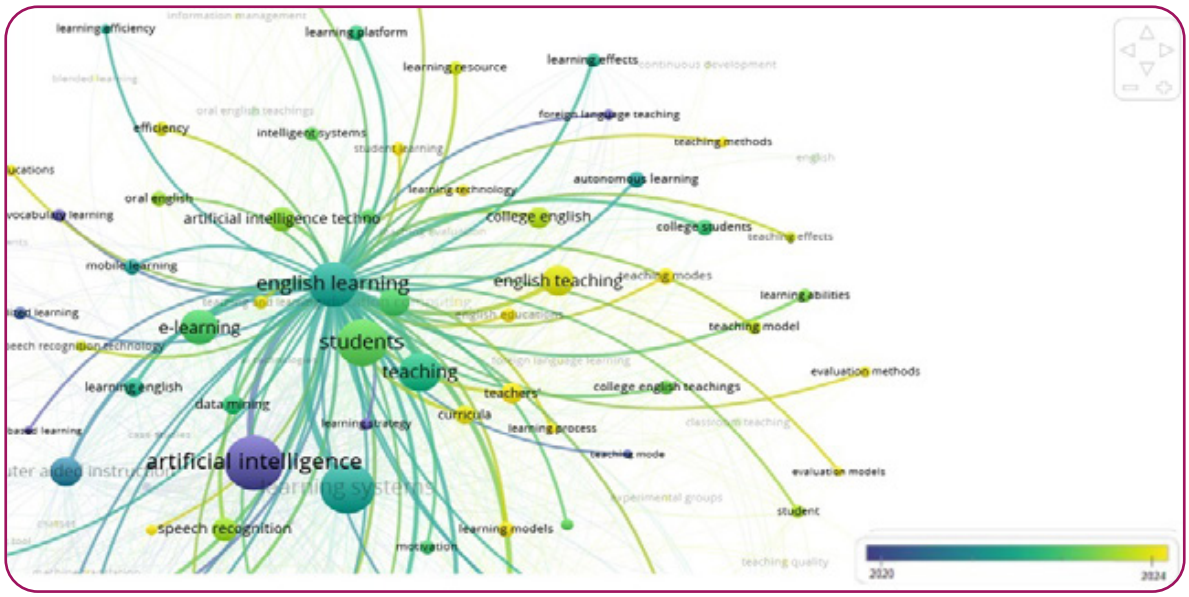
Figure 5. Educational Practices and Outcomes in Tertiary English Instruction

Cluster 5: Integration of AI Technologies in Language Learning and Teaching

Wang (2021) demonstrated that insights from educational data mining offered a foundation for predicting learning outcomes and tailoring curriculum design, considering the nuances of language acquisition. The significance of this approach lies in its novel method of deciphering patterns that aid in prediction and curriculum customization. The findings indicate that data mining techniques supports forecasting learning outcomes and adapting educational content to better serve language acquisition needs. The implications for practice suggest that data-driven strategies can inform differentiated instruction and curriculum design to enhance efficiency in language learning pathways (Lin & Van Brummelen, 2021).

The integration of AI technologies in language learning and teaching represents a significant advancement in educational methodologies. AI's capabilities offer a promising future for language education, enhancing adaptability, personalization, and engagement. They have the potential to dramatically improve learning outcomes for students across various linguistic backgrounds (Tai & Chen, 2023).

Figure 6. Integration of AI Technologies in Language Learning and Teaching



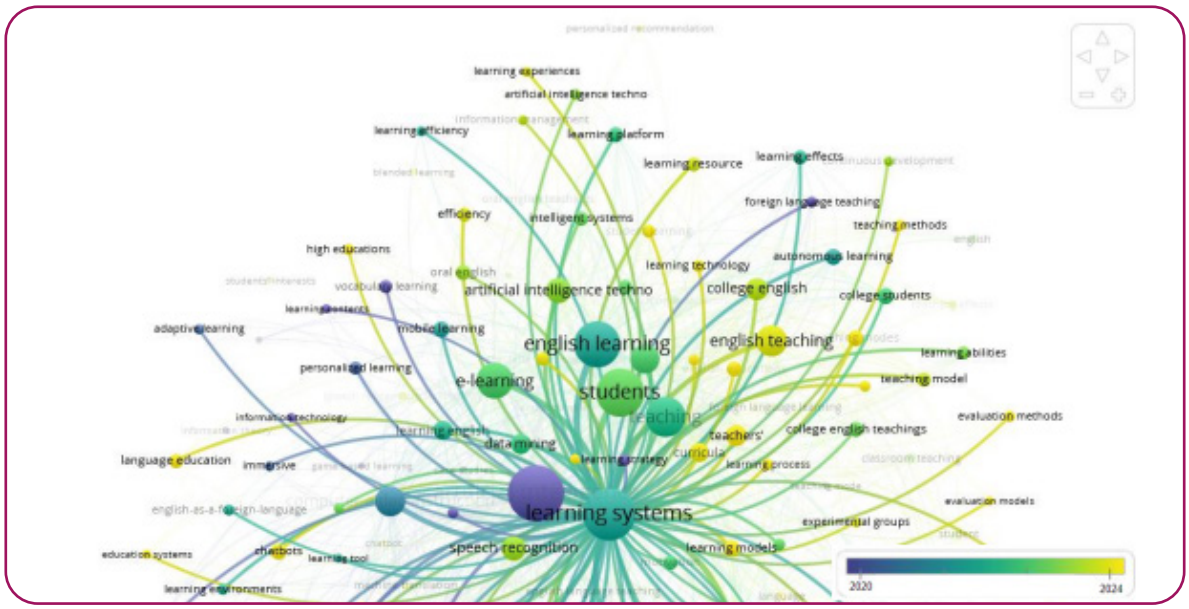
Cluster 6 Advancing E-Learning Efficiency with Adaptive and Personalized Technologies

Main Theme or Trend: Cluster 6 spotlights the synergy between e-learning environments and AI-driven adaptive and personalized technologies, which aim to enhance the efficiency and effectiveness of online education.

Cluster 6 emphasizes the role of artificial intelligence in revolutionizing language education within e-learning platforms. AI's adaptability creates individualized learning pathways, reshaping how students engage with language acquisition by providing real-time feedback, personalizing content, and fostering interactive learning experiences (Dogan et al., 2023). The conclusion underlines the transformative impact of these technologies on language learning, suggesting that as AI continues to grow more sophisticated, it will likely become an integral part of educational best practices, potentially leading to higher levels of proficiency and more efficient language learning processes (Jia et al., 2022).

In summary, the findings suggest a generally positive influence of AI on English language learning, emphasizing the growing importance of such technologies in future educational strategies.

Figure 7. Advancing E-Learning Efficiency with Adaptive and Personalized Technologies



Discussion

The synthesized results from the 221 analyzed studies offer substantial evidence of AI's promising role in enhancing English language learning post-pandemic. This section discusses the implications of the findings, compares them with existing literature, and addresses potential guidelines for future research.

Integrating AI into language learning is a pivotal step in the evolution of modern education (Oluwafemi Ayotunde et al., 2023). The evidence gathered through this systematic review strongly supports the notion that AI offers a rich, individualized learning experience that adapts to individual learners, provides timely and precise feedback, and facilitates unrestricted access to diverse language learning resources (Lee et al., 2023). These AI-driven innovations empower language learners to navigate the intricacies of language acquisition more effectively than traditional methods (Almelhes, 2023). As posited in this paper, AI is not just a supplementary tool but an invaluable asset that is reshaping the landscape of language education, enhancing learners' experiences and outcomes considerably. The challenge lies in harnessing these benefits, ensuring their equitable distribution, and mitigating potential drawbacks identified through the review (Dakakni & Safa, 2023).

The results highlight the efficacy of adaptive learning systems in personalizing education, aligning with previous research that emphasizes the importance of individualized learning pathways for language acquisition (Rusmiyanto et al., 2023). AI's capacity to tailor instructional content to the learner's pace and proficiency can significantly improve engagement and outcomes.

The discussion on Natural Language Processing (NLP) tools in language learning highlights several key points:

- **Assessment of Language Proficiency**: NLP tools analyze learners' textual input to assess grammar, vocabulary, and overall language proficiency, providing immediate feedback (Zuo & Zhang, 2022).
- **Grammar Assistance**: These tools detect grammatical errors in real time, offering corrections and explanations to help learners internalize grammatical rules and improve writing skills (He, 2021).
- **Pronunciation Training:** With speech recognition, NLP tools analyze spoken language to provide feedback on pronunciation accuracy and fluency, enhancing speaking skills (Yang & Yue, 2020).
- **Vocabulary Expansion:** NLP tools identify unfamiliar words and provide definitions, usage examples, and synonyms, aiding vocabulary acquisition and reading comprehension (Longjiang, 2021).
- **Personalized Learning:** AI-driven NLP tools adapt to individual learners' needs, tailoring exercises to target specific weaknesses for a more personalized learning experience (Hwang et al., 2023).
- **Interactive Learning:** Some NLP tools, such as chatbots, offer interactive platforms for language practice, making learning more engaging and contextually relevant (Chen et al., 2022).

In summary, NLP tools represent a significant advancement in language education, providing comprehensive support for various aspects of language acquisition. By incorporating AI and NLP into language learning platforms, educators and learners can benefit from these technologies' sophisticated capabilities in enhancing language proficiency (Wei, 2023).

The systematic review underscored the potential of artificial intelligence in facilitating and dynamizing English language learning. This technology is crucial for personalizing learning environments and making them more immersive through intelligent tutoring systems, personalized and adaptive feedback, and data-driven instruction, as stated by Kumar (2022). One of AI's key characteristics relies on enhancing and engaging students more meaningfully, allowing Institutions to align instructional content with students' proficiency levels and competencies. By doing these adaptations, education will

have more features of inclusion and equity for all students, especially for students with learning disabilities or educational needs. Nevertheless, some challenges concern scholars. Abdullah Sharadgah and Abdulatif Sa'di (2022) stated that one is related to ethical considerations, data privacy, and discrimination due to the lack of access to AI technologies in different educational contexts. copyright infringement and issues regarding originality are also significant concerns due to the lack of regulations and emerging technologies designed to infringe laws and regulations regarding these aspects. It is necessary for policymakers, educators, and administrators to consider how to deal with the use of AI tools to protect their communities and the scientific society from misleading or biased information.

AI tools that work with natural language processing systems arising as a fundamental tool for learning languages due to the flexibility for real time feedback on different aspects of the language such as grammar, vocabulary, pronunciation patterns, and other skills that are necessary for learners to communicate efficiently in any context (Jiang, 2022). On the other hand, these could lead to excessive dependence on AI that could prevent students from interacting with real people, an essential aspect of any human interaction. The role of teachers has become fundamental in the interaction with these AI technologies , so that there is a balance that can ensure holistic language development.

As Kumar (2022) concluded, AI plays a fundamental role in the integration of virtual reality and gamification, offering a unique and top notch immersive environments for the sake of assuring experiential learning; Nevertheless, it is necessary monitoring the effects of such tools in the foreseeable future in order to compare and conclude about the effectiveness to see if these technologies are sustainable in a long term and what changes should be included for a constant and regulated use.

Understanding how to maximize the benefits while minimizing the drawbacks is necessary to ensure ethical and responsible use by all the actors involved in the learning process. Moreover, developing frameworks for best practices in AI use within language education could guide educators, institutions, and policymakers as they navigate this rapidly evolving technological landscape.

Emerging trends in machine learning for assessment and educational data mining showcase AI›s analytical strengths. They provide educators with advanced diagnostic tools to better understand learning trajectories and produce data-driven pedagogical strategies (Orsi Koch Delgado et al., 2020).

Additionally, including AI-driven games and virtual reality introduces an immersive aspect to language learning, resonating with studies that advocate for experiential learning environments to reinforce language skills more naturally and engagingly (Citraningtyas & Cendana, 2024).

Despite positive results, concerns about equitable access to AI technologies and their implementation in diverse educational settings persist. Ethical issues, such as data privacy and algorithmic bias, require continuous attention as the ELL landscape evolves (Crompton et al., 2024). Longitudinal research is needed to assess AI's sustained impact on language proficiency and its real-world classroom integration effects (Zhao & Cai, 2021). The review highlights AI's transformative influence on ELL. It encourages educators, policymakers, and developers to integrate these technologies into future language learning curricula while critically engaging with AI's role in education (Jia et al., 2022).

Conclusion

In conclusion, the benefits of AI depicted in this systematic review are wide and meaningful for today's learning settings. Educational institutions have a crucial role in adopting all these AI-driven tools in their curricula in different learning levels, allowing learners of all ages and backgrounds to use them for their own welfare. It is undoubtedly an important tool these days and age since it allows students to have more possibilities to engage with the learning object by using adaptive learning systems, gamification, virtual reality, and personalized learning paths. It also offers benefits such as instant and effective feedback, increased accessibility, and the possibility to interact in immersive environments that could reflect today's societies where students can engage in real-world communicational activities.

It is also important to consider the significance of human beings in this adaptation to the use of AI tools in education. AI is a tool for achieving learning goals and developing student competencies. Teachers and educators, in general, are fundamental in the role of mediators and tutors, aiding students in understanding how to make the most of these technologies, preventing them from merely being users seeking answers and not developing their high thinking skills. By considering the challenges and opportunities presented by AI, educators and institutions can create more inclusive, adaptive, and effective language learning environments that meet the evolving needs of learners in a post-pandemic world.

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PART

2

DIGITAL TOOLS AND STRATEGIES IN LANGUAGE LEARNING

Chapter 4

The Influence of Students´ Technology Appropriation on Their Digital Literacy Development in an EFL Class

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Introduction

The dual role of technology in enhancing language learning and preparing university students for a world where digital literacy is as important as the development of traditional academic skills. Technology integration in EFL classrooms has been empirically validated as beneficial, improving student engagement and language acquisition (Surani et al., 2023). By incorporating technology into language learning, teachers prepare students for real-world challenges, particularly those related to higher education and the job market, where digital skills are increasingly essential (Mardiah, 2022). The emphasis on teaching digital literacy reflects the need for students to be proficient in navigating the digital world. This includes finding, evaluating and using information from various digital sources, which is a critical skill in both academic settings and the workplace.

To obtain a comprehensive perspective on integrating technology in EFL classrooms within higher education, a detailed literature review was initially conducted to establish a solid reference point. The gathered information was systematically analyzed and organized into three primary categories to enhance clarity and facilitate understanding for the reader. These categories are presented in the following order: *digital literacy in the EFL classroom, digital literacy in higher education, and the intersection of digital literacy and language learning.*

Digital literacy in the EFL classroom, this first category shows significant research over the past seven years, focusing on its integration into EFL instruction (Furqan & Rosa, 2023; Surani, Umalihayati, Septiyani, & Holilah, 2023; Cahya, 2023; Alfia, Sumardi, & Kristina, 2021; Eryansyah, Erlina, Fiftinova, & Nurweni, 2019; Son, Park, & Park, 2017). These studies collectively demonstrate that technology can significantly enhance communication and collaboration between teachers and students. They illustrate how digital tools can effectively enrich traditional language activities, ultimately fostering the development of communicative competencies in EFL settings. Alfia et al. (2021) specifically examined the factors influencing teachers' decisions to integrate digital literacy in their EFL classrooms, shedding light on the interplay between institutional support, teacher readiness, and perceived benefits. Similarly, Cahya (2023) and Surani et al. (2023) delved into the practical strategies that can be employed to incorporate digital literacy into EFL instruction, offering insights into methods that can optimize student engagement and learning outcomes. On the other hand, studies by Eryansyah et al. (2019) and Furqan & Rosa (2023) explored the current needs and digital literacy skill levels of EFL students, highlighting the gaps and potential areas for intervention.

These findings are critical in tailoring instructional approaches that meet students where they are and guide them toward higher levels of digital proficiency. Furthermore, Rahmah et al. (2021) identified the barriers that impede the development of digital literacy in EFL contexts, including issues related to access, motivation, and pedagogical challenges. In contrast, Son et al. (2017) provided a comparative analysis of digital literacy skills across different language learning environments, offering a broader perspective on how varying contexts can influence the effectiveness of digital literacy initiatives.

Another critical area of interest identified was *digital literacy in higher education*, where research highlights its essential role in students' academic success (Gutiérrez-Ángel et al., 2022; Pertiwi & Musthaf, 2021; Santos & Serpa, 2017). This body of work explores the multifaceted benefits of cultivating digital literacy skills among students and examines strategies for effectively embedding these competencies into university curricula. Gutiérrez-Ángel et al. (2022) conducted an extensive literature review on digital literacy within university settings, synthesizing relevant studies from 2010 to 2021. Their work provides a broad overview of the evolving understanding of digital literacy in higher education, emphasizing how these skills have become increasingly integral to academic achievement and professional readiness. In a more focused exploration, Pertiwi and Musthaf (2021) present a case study examining how universities can pull Learning Management Systems (LMS) to enhance students' digital literacy.

Their findings highlight the practical applications of LMS as a tool for fostering digital competence, demonstrating how technology can be harnessed to create more interactive and engaging learning environments. Moreover, Santos and Serpa (2017) advocate for the importance of integrating digital literacy skills into higher education curricula. They argue that such integration is essential to prepare students for the demands of the modern digital world, where proficiency in digital tools and platforms is increasingly synonymous with academic and professional success.

The final area of research identified was the intersection of *digital literacy and language learning*. This category addressed the broader relationship between these two domains, focusing on the potential of emerging technologies and the assessment of students' digital literacy skills in the context of language acquisition (Hubbard, 2023; Mansour, 2022; Menggo, Midun, & Pandor, 2021). In essence, this category is concerned with understanding how digital literacy and language learning interact, the role of new technologies in this interaction, and how students' digital skills are measured within the context of acquiring language proficiency. Hubbard (2023) adopts a forward-looking perspective, exploring how emerging technologies might transform language learning. By reflecting on past developments in the field, Hubbard provides a nuanced understanding of how digital tools can be harnessed to enhance language education, predicting future trends and challenges that educators and learners may encounter.

Mansour (2022) offers a detailed examination of methodologies for assessing students' digital literacy skills, contributing valuable insights for both researchers and educators. This work emphasizes the importance of accurate and comprehensive assessment techniques, which are crucial for understanding students' digital competencies and tailoring language instruction to meet their needs. Mengo et al. (2021) also investigate the link between students' digital literacy competencies and their English language study habits. Their study reveals a significant relationship between digital proficiency and effective language learning practices, stressing the importance of integrating digital literacy into language education to support students' overall academic success.

Okoye et al. (2022) state that Latin America presents a mixed picture regarding digital technologies in higher education. While internet user bases in countries like Brazil and Mexico are growing, a significant barrier lies in the lack of digital literacy skills and training among educators. This has limited the effectiveness of e-learning initiatives. Despite this, the introduction of Massive Open Online Courses a decade ago has stimulated innovation, and the region has seen a rise in companies developing educational technology. However, uneven access to technology and a persistent

digital divide leave some regions, like Perú, lagging behind.

Digital literacy rates across countries vary considerably. Argentina leads the region with a 66% literacy rate, while others like Brazil hover around 46% (Softtek, 2013). This disparity highlights the uneven progress in digital inclusion across the region. Research focused on digital literacy integration within Latin American EFL classrooms is relatively scarce. In Colombia, integrating technology in EFL classrooms has become increasingly crucial for student engagement, language skill development, and preparation for a digital world. Nevertheless, gauging the precise level of digital literacy within Colombian EFL contexts presents a challenge due to the lack of comprehensive national data specific to this educational setting. According to the Digital Readiness Index (2021), the country ranked 35th globally, scoring 52.6 out of 100. This indicates a growing national comfort with technology. However, it is essential to acknowledge disparities within this data, as digital literacy levels vary across regions and demographics, with urban areas generally enjoying better access and skills than rural populations.

In Colombia, according to a 2019 study by the Organization for Economic Cooperation in Latin American Countries, 62% of the population has a computer at home, and 67% has internet access. However, these figures drop dramatically to between 10% and 20% in rural and indigenous communities. This digital divide means that just over half of the population can fully participate in higher education and the modern digital environment. The disparity in access to computers and the internet creates a significant gap between urban and rural students, with those in rural and Indigenous areas having limited access to digital educational resources. This lack of access hinders their ability to conduct research, access online educational materials, and engage in academic activities that rely on technology, further exacerbating educational inequalities. Even among those with access, the effective use of technology for learning is not guaranteed, as inadequate training in digital skills can limit students' ability to maximize the potential of these tools. The challenge is further compounded by the need for teachers to be trained in effectively integrating technology into the classroom, particularly in communities with insufficient technological infrastructure.

These access and usage challenges reduce online educational opportunities and limit participation in learning communities, the development of a digital identity, and the ability to benefit from access to information and knowledge. According to a DANE report (2021), in 2019, the most common ICT skills among Colombians aged 25 to 64 who use computers were basic tasks such as copying or moving files or folders (93.9%), sending emails with attachments (92.7%), and using copy-and-paste functions (91.9%).

However, more advanced skills such as using a specialized programming language (15.9%), downloading or installing software (49.0%), and creating presentations with software like PowerPoint or Prezi (69.1%) were less prevalent. While these figures suggest an improving digital literacy landscape in Colombia, the research specifically focused on EFL classrooms remains limited, reflecting a broader trend across Latin America. This lack of specific data makes it difficult to assess accurately the integration of digital literacy in Colombian EFL classrooms. However, existing studies indicate that EFL teachers may need further training and support to incorporate technology into their teaching practices effectively.

Despite Colombia's progress in improving digital literacy, as evidenced by a significant proportion of the population possessing basic ICT skills (DANE, 2021), there remains a notable gap in more advanced digital skills, such as using specialized software or programming. This gap is particularly pronounced in rural and indigenous communities, where access to digital tools and resources is significantly limited, exacerbating educational inequalities. These disparities highlight the urgent need to explore how technology appropriation (students' ability to adopt and integrate digital tools effectively) can influence the development of digital literacy, especially in EFL classrooms.

Moreover, while digital literacy is recognized as a critical component of academic success, research focusing on its integration within Colombian EFL classrooms is limited. This lack of targeted data stresses the importance of investigating how students' engagement with technology influences their digital literacy development in language learning contexts. Understanding this relationship is vital for informing teaching practices and ensuring that EFL students are prepared with the essential digital skills to succeed academically and professionally.

Given these considerations, the proposed study aims to describe the influence of students' technology appropriation on their digital literacy development in the EFL classroom in higher education. By examining this relationship, the study intends to contribute valuable insights into how digital tools can effectively enhance language learning and promote social equity in educational opportunities across different socio-economic and geographical contexts.

Theoretical Framework

The conceptual framework for this study draws upon three interrelated theories: social influence, technology appropriation, and digital literacy to explore how external and internal factors shape students' engagement with digital tools in educational settings. Social influence theory, rooted in the works of Kelman (1958), Cialdini and Goldstein (2004), and expanded by scholars like Spears (2021) and Weng Marc Lim (2022), provides insight into how peer interactions, authority figures, and group dynamics affect students' digital behaviors and technology use. Technology appropriation theory, as outlined by DeSanctis and Poole (1994) and Orlikowski (1992), focuses on how students actively adapt and transform technology to meet their educational and social needs. Finally, the concept of digital literacy, emphasized by scholars like Gilster (1997) and Bawden (2008), underlines the critical skills required for navigating digital environments. Together, these frameworks provide a comprehensive understanding of the social, cognitive, and technological processes that influence students' digital literacy development in the context of English as a Foreign Language (EFL) education.

Social Influence Theory

Social influence theory offers a crucial lens for understanding how individuals' behaviors are shaped by the social environments in which they operate. This theory, rooted in the works of early social psychologists like Kelman (1958) and later expanded by scholars such as Cialdini and Goldstein (2004), postulates that individuals are often motivated to conform to social norms, comply with requests from others, or obey authority figures in order to maintain social harmony, gain approval, or avoid negative consequences.

Kelman (1958) identified three primary processes through which social influence occurs: compliance, identification, and internalization. Compliance involves behavior change due to the desire to gain rewards or avoid punishments. Identification occurs when individuals adopt behaviors to align with the expectations of a valued group or individual. At the same time, internalization represents the deepest form of social influence, where the adopted behavior or belief becomes integrated into the individual's value system.

In the context of this study, social influence theory can be applied to examine how students' interactions with peers, teachers, and the broader community shape their technology use, understanding of digital information, and overall digital literacy skills. For instance, peer pressure may encourage students to adopt certain technologies or engage in specific online

behaviors, reflecting the concept of normative social influence (Deutsch & Gerard, 1955). Additionally, the expectations of teachers or parents can shape students' attitudes toward digital literacy, influencing their willingness to engage with digital tools for learning (Bandura, 1986). These dynamics stress the importance of considering social context when analyzing technology use and digital literacy development in educational settings.

Spears (2021) has expanded upon these concepts, examining how group identity shapes social influence. Individuals are more likely to conform to the norms, values, and behaviors of groups with which they strongly identify. This perspective highlights the role of social identity theory in understanding how individuals align their behaviors with perceived group norms. Weng Marc Lim (2022) has argued that the "new normal" has led to significant shifts in social influence dynamics. The increased reliance on digital communication, changes in social interactions, and adaptations to new societal norms have all contributed to these changes. Lim (2022) emphasizes that adaptation and aging populations experience social influence differently in the post-pandemic era, requiring new theoretical frameworks to understand these shifts. Davlembayeva & Papagiannidis (2024) comprehensively review social influence theory, tracing its evolution and application in various contexts, including digital environments. They discuss how online communities and social media have transformed traditional models of social influence, introducing new mechanisms such as algorithmic influence and viral marketing.

Technology Appropriation

Technology appropriation refers to the process by which individuals actively engage with and shape technology to meet their own needs and goals (Sandoval, 2019). This concept emphasizes the agency that individuals possess in appropriating technology, using it in meaningful and transformative ways, and redefining the technology itself through their interactions with it (DeSanctis & Poole, 1994; Orlikowski, 1992).

Scholars like DeSanctis and Poole (1994) have contributed to understanding technology appropriation through the lens of adaptive structuration theory. This theory posits that individuals do not passively accept technology but rather actively reinterpret and modify it based on their needs and contexts. Orlikowski (1992) further argues that technology is both shaped by and shapes human action, creating a recursive relationship that continuously evolves.

This study uses technology appropriation to explore how students actively engage with digital tools and platforms to achieve their educational, social, or personal objectives. By examining how students use technology

to connect with others, access information, and express themselves, we can gain a deeper understanding of technology´s role in their lives and how it influences their development as digital citizens. Moreover, considering the work of scholars like Bødker (1991) and Akrich (1992), it becomes evident that the appropriation of technology is not merely about usage but involves a creative and often critical engagement with the tools at hand, transforming both the user and the technology in the process.

Digital Literacy

Digital literacy is a multifaceted concept encompassing the ability to effectively and critically navigate, evaluate, and create information using various digital technologies (Bawden, 2008; Gilster, 1997). This broad definition includes various competencies, such as accessing and analyzing digital content, using digital tools for communication and collaboration, and understanding ethical and safety issues related to digital environments. The evolution of digital literacy reflects a shift from merely functional skills to a more holistic understanding that includes critical literacy, cultural literacy, and participatory practices (Jenkins, 2009; Martin, 2006).

Bawden (2008) describes digital literacy as an overarching framework that integrates multiple literacies, including information media and computer literacy. These literacies are essential for individuals to navigate the complexities of the digital world, where the ability to discern credible information, engage in meaningful communication, and participate in digital culture is increasingly important. Gilster (1997) initially coined the term "digital literacy," emphasizing the need for a critical perspective on digital content and the importance of adaptability in the face of rapidly changing technology.

In educational contexts, digital literacy is about accessing digital tools and developing the critical skills necessary to engage with digital content responsibly and effectively. As Buckingham (2007) argues, digital literacy involves technical skills and the ability to understand and critically evaluate digital media, making it a vital component of contemporary education. By examining how students develop their digital literacy skills, we can better understand their capacity to engage with and benefit from technology´s opportunities and challenges, particularly in EFL classrooms where digital tools can enhance language acquisition and intercultural communication.

Methodology

Design

This study is framed within the socio-critical paradigm, deeply rooted in critical theory. This paradigm is committed to criticizing and challenging societal structures and power dynamics, particularly emphasizing social justice. By addressing issues such as inequality, oppression, and injustice, action research seeks to empower marginalized groups through reflective and participatory inquiry. Reflective inquiry is not merely a methodological choice but a transformative process that involves participants in understanding and reshaping their social realities. This approach ensures that the research transcends traditional data collection, fostering critical awareness and promoting action among participants.

Classroom Action Research

The methodological design of this study employs a dynamic and collaborative classroom action research framework. This approach integrates perspectives from key scholars in the field, such as Anne Burns (1999, 2010, 2011), Craig Mertler (2006), and Andrew Johnson (2005).

Johnson (2005) conceptualizes action research as an interactive and cyclical inquiry, where collaboration between researchers and participants is significant. This interactive inquiry is designed to address real-world problems through a reflective and iterative process, allowing for continuous refinement of practices based on the evolving understanding of participants. Burns (1999, 2010, 2011) expands on this by highlighting the practitioner-focused nature of action research. She emphasizes that this approach is inherently participatory, aiming to improve educational practices through systematic inquiry. Burns (2010) outlines a practical guide for English language teachers, demonstrating how action research can be implemented effectively in classroom settings. She stresses the importance of collaboration among teachers, students, and researchers in identifying problems, implementing solutions, and reflecting on the findings. Burns (2011) further elaborates on the role of action research in second language teaching, advocating for its use as a means to bridge the gap between theory and practice, thus enhancing the effectiveness of language instruction.

Mertler (2006) contributes to this discourse by framing action research as a method that empowers teachers to become researchers within their own classrooms. He argues that by engaging in action research, teachers can systematically investigate and improve their own teaching practices. Mertler's approach aligns with the socio-critical paradigm by emphasizing the role of educators as agents of change who actively engage in

reflective practice to address issues of equity and justice in education.

By combining these perspectives, this study adopts a dual focus: it is both participatory and practical. The research actively engages participants—both teachers and students—in the process, encouraging them to collaborate in identifying challenges, devising interventions, and reflecting on the outcomes. This participatory nature ensures that the research is grounded in the participants' lived experiences, while the practical focus aims to bring about tangible improvements in educational practices.

Through this methodological approach, the study not only seeks to generate knowledge but also to empower participants by fostering a deeper understanding of their own social realities and preparing them with the tools to enact change. This aligns with the socio-critical paradigm´s emphasis on social justice, as the research endeavors to create a space where marginalized voices can be heard and where participants can take an active role in transforming their educational contexts.

Participants

This study involved 22 students (14 female, 8 male) aged 18 to 27, all native Spanish speakers enrolled in a B1-level English course in Colombia, South America. They were from various undergraduate fields such as psychology, law, and engineering, and had basic English and technology skills, including owning smartphones. The participants were chosen using maximum variation sampling, a purposive technique in qualitative research aimed at capturing a wide range of perspectives and experiences. This method helps identify common themes and patterns by including participants with diverse backgrounds, offering a comprehensive understanding of the studied phenomenon. The strength of maximum variation sampling lies in its ability to highlight both unique and shared experiences, enhancing the understanding of the issue's complexity (Patton, 2015; Miles, Huberman, & Saldaña, 2014).

Data Collection Techniques

This study employs a multifaceted approach to data collection, integrating qualitative and quantitative methods to gather a comprehensive understanding of students' digital skills and technology appropriation. This approach aligns with the socio-critical paradigm and the principles of action research as outlined by Burns (1999, 2010, 2011), Mertler (2006), and Johnson (2005). The techniques employed are designed to capture both the subjective experiences and objective outcomes of students' interactions with technology in the context of English language learning.

Reflective Journal

Reflective journaling is a central technique in this study, allowing students to

document their ongoing experiences with digital literacy and technology use. As Burns (2010) emphasizes, journals are a powerful tool for reflective practice, enabling participants to engage in continuous self-assessment and critical reflection. In this study, students maintain journals throughout the research period, recording their daily encounters with technology, their challenges, and the strategies they employ to overcome them. This qualitative data provides deep insights into the students' thought processes, self-perceptions, and evolving digital competencies. The journals also serve as a dialogic space where students can express their personal narratives, contributing to a richer understanding of their technological appropriation.

Surveys

To complement the qualitative data from the journals, two surveys were administered to collect quantitative data on students' self-perception of their technological appropriation and their development in English digital literacy. According to Mertler (2006), surveys are effective tools in action research for gathering large-scale data that can be systematically analyzed to identify patterns and trends. The first survey focuses on students' attitudes towards technology, assessing their comfort levels, perceived usefulness, and the extent to which they integrate digital tools into their language learning practices. The second survey evaluates students' self-assessed digital literacy skills, measuring their proficiency in tasks such as navigating online resources, using educational apps, and participating in digital communication. These surveys provide a broad overview of the students' perceived competencies, which can be cross-referenced with other data sources to triangulate findings.

Proficiency Tests and Project Reports

The study incorporates two proficiency tests and the submission of project reports to assess the relationship between students' language proficiency and their digital literacy development. Proficiency tests measured students' language skills, while project reports were practical demonstrations of their ability to apply these skills in a digital context. Johnson (2005) notes the importance of such assessments in action research, as they offer tangible evidence of participants' progress and the effectiveness of interventions. The tests evaluated key language skills—reading, writing, listening, and speaking—while the project reports require students to integrate these skills with digital tools, such as creating multimedia presentations or conducting online research. These assessments measured language proficiency and provided insights into students' ability to utilize digital resources effectively, offering a holistic view of their digital literacy.

Action Plan: Inquiry Class Project

One way to see students´ technology appropriation is by having them use technology for specific and meaningful purposes. That is why this action plan

revolves around an inquiry-based class project, structured using the KWHL chart, a graphic organizer that facilitates students' learning through inquiry and reflection. This inquiry class project was based on Short, Harstie, and Burke's (1996) perspective on this kind of learning, which proposes that inquiry-based learning is a student-centered approach where learners engage in exploring questions, problems, and scenarios. Students construct their understanding and knowledge of the world through experiences and interactions. Besides, it emphasizes active participation and collaboration among students, allowing them to take ownership of their learning process. So, students were asked to get together in groups of three or four to develop their own inquiry project during the course. As they chose their topic of interest and posed an enduring question and set of sub-questions, they were to use the chart to frame their inquiry process.

Data analysis process

This process blended the systematic coding rigor of Saldaña with the reflective and action-oriented approaches of Burns, Mertler, and Johnson, ensuring a comprehensive and practical data analysis process.

Data Condensation and Initial Coding

The analysis begins with Miles, Huberman and Saldaña's coding cycles, where raw data (reflective journals, surveys, proficiency tests, and project reports) was condensed. First, initial coding captures key themes like digital literacy, technology appropriation, and language development. As Burns emphasizes in action research, this phase involved collaboration, so that participants (teachers and students) engage in preliminary reflections, suggesting codes that resonate with their experiences.

Pattern Coding and Collaborative Reflection

Following Miles, Huberman, and Saldaña's method, pattern coding is applied to group the initial codes into broader categories, such as challenges with technology or shifts in learning strategies. Mertler's cyclical approach to action research is integrated here: participants collaboratively reflect on the emerging patterns after the first coding cycle. This iterative feedback loop allows for the refinement of categories and continuous data re-evaluation, ensuring that findings are deeply connected to the participants' lived experiences.

Data Display and Action Insights

At this stage, data display techniques (matrices, charts) are used to visualize the relationships among themes, as Miles, Huberman, and Saldaña advocated. Johnson's emphasis on classroom-based, practical solutions is merged with this step: the data displays served academic purposes and guide real-time adjustments in classroom practices. Burns' focus on the practitioner-researcher is incorporated

by using the data displays to inform action plans, ensuring that teachers and students can make informed decisions to improve learning outcomes.

Verification Method

In the final stage, conclusions are drawn from the displayed data, following Mertler's and Johnson's models of applying research insights directly to practice. Miles, Huberman, and Saldaña's verification methods (e.g., triangulation and member checking) ensure the accuracy and credibility of the conclusions. These conclusions then inform actionable changes implemented in the classroom, completing the action research cycle.

Results

The findings from this study on students' appropriation of digital literacy development revealed a complex relationship between students, teachers, and contextual factors. These factors were further analyzed through the lens of theoretical frameworks, including Social Influence Theory (Kelman, 1958), Technology Appropriation (Sandoval, 2019), and Digital Literacy (Bawden, 2008). The examples below illustrate how these factors manifested in the observed data, drawing from journal observations, interviews, and self-perception surveys.

Student Factors

Positive Influences

Students' Prior Knowledge: Evidence from journal observations showed that students with substantial prior knowledge and digital competence often seamlessly navigate digital tools during class activities. For instance, "a student was observed efficiently using a search engine to gather information and then integrating it into a collaborative platform like Google Docs" (journal excerpt, April, 2024). This behavior aligns with the concept of *internalization* from social influence theory, indicating that these students have deeply embedded the value of technology in their learning processes.

Digital Competence: Interviews revealed that students often complied with the expectations set by teachers and peers regarding using digital tools. Student (B) expressed, "At first, I struggled with the digital tools we had to use for the course, but over time, I got the hang of them and was able to adapt." It means that despite initial challenges, they adapted to the digital tools emphasized by the course, reflecting the concept of *compliance* within Social Influence Theory. From technology appropriation, this observation suggests that students actively engage with and adapt these tools to enhance their learning.

Students' Interest: Self-perception surveys highlighted how students' interest in digital tools drove their engagement and learning outcomes. For example, Student (D) manifested: "I suddenly became so excited about trying out new apps and platforms". This enthusiasm helped them get on the same page as their classmates regarding using technology. This reflects *identification* as described in social influence theory and is reinforced by the *Digital Literacy* framework, highlighting the role of interest in enhancing learning.

Negative Influences

Reliance on Translators: Journal observations documented instances where students excessively relied on translation tools during language learning tasks. " I have observed that students often rely heavily on translation tools when completing their language tasks, which concerns me, and I am unsure how to address it". This behavior indicates a failure in *internalization,* where students have not fully integrated language learning strategies and instead depend on external aids. From the technology appropriation perspective, this suggests that these students engage with digital tools superficially, without deeper interaction that would support their learning needs.

Students' Attitudes: Interviews uncovered negative attitudes toward digital tools among some students, which hindered their ability to comply with or identify with the educational rules promoted by their teachers. Student (C) said: "I prefer reading on paper than reading on screens. I get tired of screens very quickly". This made it hard for them to keep up with the teacher´s expectations and fit in with the classroom norms. These attitudes reflect resistance to the social influences supporting technology appropriation and digital literacy development.

Language Proficiency: Self-perception surveys indicated that students with limited language proficiency struggled to use digital tools to bridge gaps in their skills effectively. For example, student (E) manifested: "It has been difficult for me to learn English because I am not a very self-taught person with the language". This lack of proficiency reflects insufficient *internalization* of language learning strategies and a weak technology appropriation process, delaying their full engagement in the learning process. Clearly, students who were not very confident in their language skills had difficulty using digital tools to fill in those gaps.

Teacher Factors

Positive Influences

Pedagogical Knowledge: Journal observations showed that teachers with strong pedagogical knowledge effectively shaped social norms within the classroom, influencing students' identification with and internalization of digital literacy practices. For instance, "Today's class

showed how important structured guidance is for using digital tools. When the teacher provided clear instructions, students were more engaged and actively participated in the lesson" (Journal excerpt, March 27, 2024). This highlights the role of practical guidance as outlined from the technology appropriation perspective. A teacher's structured guidance in using digital tools led to more meaningful student engagement, reflecting the critical role.

Negative Influences

Limited Teacher's Technology Appropriation: Interviews with students revealed that teachers with limited technology appropriation struggled to model and encourage the *internalization* of digital tools among students. As student (F) mentioned: "Besides that, when teachers were not very familiar with digital tools, it was hard for us to use them properly. This made it difficult for us to get used to using them ourselves". This limitation often led to a lack of authority in promoting digital literacy, weakening the teacher's influence on student behavior.

Lack of Experience: Journal observations highlighted that inexperienced teachers faced challenges in establishing themselves as credible sources of social influence. "I found myself really behind and insecure to guide my students to use digital tools properly" (Journal excerpt, March 3rd, 2024). It is clear that as a teacher of new generations. I have had a tough time establishing myself as a credible role model. This made it hard for me to effectively *influence* my students in using digital tools and following class rules. This lack of credibility resulted in weaker students' compliance and identification, undermining digital literacy and adequate technology appropriation.

Contextual Factors

University Technology Appropriation: Journal observations and interviews revealed that inadequate institutional infrastructure and support systems significantly limited teachers' and students' ability to comply with or internalize digital literacy norms. For instance, " I surprisingly found that students and teachers, both reported frequent technical problems that disrupted our learning" (Journal excerpt, April 26, 2024). This seems to point to a more significant issue with how the institution supports digital literacy." Students and teachers reported frequent technical issues that disrupted learning, reflecting a broader institutional shortcoming in supporting digital literacy.

Lack of Training: Surveys indicated that the absence of ongoing training programs for students and teachers hindered their ability to comply with or identify with digital literacy goals. According to the self-perception surveys, many of us felt that not having regular training for both students and teachers made it hard to meet the digital literacy goals and

get on board with them. This systemic failure impacted the effectiveness of technology appropriation and the development of digital literacy skills.

Imposition of English in the Curriculum: Interviews highlighted resistance to the compulsory nature of English language learning, which negatively impacted student engagement and motivation. Student (D) expressed, "Learning English at the university can be challenging, as it requires a significant amount of time devoted to something many students do not find enjoyable. With 4 to 8 English classes a week, students often feel their focus should be on courses directly related to their undergraduate programs, which they consider more relevant to their academic and professional goals" This resistance, driven by a reluctance to comply with institutional rules, stifles the potential benefits of inquiry-based learning and technology integration.

Proficiency Test Results

Pre-test Results:

The overall average score was 2.92, indicating below-passing proficiency. Female students had a higher average score of 3.09 compared to 2.76 for males. Females performed better in Listening and Reading, while males scored lower, particularly in Grammar and Writing.

Post-test Results:

The general average score improved to 3.64, reflecting fair-passing proficiency. Both genders made progress, with females scoring 3.58 and males 3.56. Females excelled in Listening, Grammar, and Reading, whereas males had a slight edge in Writing and Speaking. This indicates that females significantly improved auditory comprehension and grammatical skills, while males improved slightly in verbal expression. In general, both genders showed advancement, with females maintaining a slight lead but males narrowing the gap in proficiency.

Based on the general scores from test #1 and comparing them to CEFR expectations, the group appears to be nearing the B1 level in listening and reading. However, their grammar, writing, and speaking skills still need more improvement to achieve B1 standards. There was a noticeable gender difference, with females outperforming males in most areas. By test #2, female and male students demonstrated considerable progress, meeting or surpassing B1 expectations across all skills. The gender gap has decreased, indicating more balanced outcomes between the genders.

Given the results, it can be inferred that the influence of technology appropriation on digital literacy development in the English class had a slightly significant impact. The

general improvement in proficiency from the pre-test to the post-test, with both genders advancing and closing the gap, suggests that integrating technology is likely contributed to enhancing language skills. The notable progress in listening and reading, where technology might have played a role, aligns with the expectation of improved digital literacy. Although the specific impact of technology on each skill was not isolated, the general advancement and narrowing gender gap support the notion that technology appropriation positively influenced language development.

Discussion

The findings from this study revealed a complex relationship of factors influencing students' digital literacy development in an EFL classroom, shaped by student, teacher, and contextual elements. These findings are compared with previous research, particularly regarding how students' appropriate digital tools and the extent to which digital literacy skills are embedded into their language learning experience.

Student Factors

The study uncovered both positive and negative influences on students' engagement with digital tools. The positive influence of students' prior knowledge and digital competence is consistent with previous literature on digital literacy in EFL settings. For example, Alfia et al. (2021) highlighted that prior digital competence allows students to seamlessly engage with technology-enhanced tasks, much like the students in this study who effortlessly used search engines and collaborative platforms. This mirrors the internalization process discussed in Kalman's Social Influence Theory (1958), where technology becomes integral to students' learning processes.

However, as seen in journal observations, the reliance on translation tools contradicts the ideal of deep interaction with digital tools. This superficial engagement reflects the findings of Rahmah et al. (2021), who noted that students often lack the motivation to fully integrate digital literacy into their learning. The reliance on translation tools also signals a failure to internalize effective language learning strategies, similar to the barriers to digital literacy development described by Eryansyah et al. (2019), who emphasized motivational and pedagogical challenges as critical roadblocks in EFL contexts.

As noted in the self-perception surveys, students´ interest in digital tools also plays a pivotal role in driving engagement and learning outcomes. This aligns with the concept of identification from Kelman's

theory and with findings from Cahya (2023), who demonstrated that students' intrinsic interest in technology can significantly enhance their engagement in language learning. However, as expressed by some students in this study, negative attitudes towards screens hinder their compliance with digital learning practices. This resistance echoes findings from Menggo, Midun, and Pandor (2021), who observed that students' attitudes toward technology significantly impact their language study habits.

Teacher Factors

Teachers' pedagogical knowledge emerged as a critical factor in shaping students' digital literacy. The study's finding that structured guidance from teachers improves student engagement aligns with the broader literature on effective technology integration. Santos and Serpa (2017) argue that teachers' pedagogical strategies play a crucial role in fostering digital literacy among students. Similarly, the observation that clear instructions resulted in higher engagement reflects Gutiérrez-Ángel et al. (2022), who emphasized the importance of embedding digital literacy into curricula through effective teacher facilitation.

On the contrary, the study highlighted the negative impact of teachers' limited technology appropriation. Students reported struggling to adapt when teachers were unfamiliar with the digital tool. This supports the findings of Pertiwi and Musthaf (2021), who pointed out that teachers' lack of digital competence can hinder students' ability to comply with technological requirements. This limitation weakens the teacher's authority as a social influence, diminishing students' ability to internalize digital literacy norms.

Contextual Factors

Regarding contextual factors, inadequate institutional infrastructure and lack of training programs were significant barriers to effective digital literacy development. This is consistent with previous studies on digital literacy in higher education, such as those by Rahmah et al. (2021), who emphasized that technical issues and insufficient training are systemic barriers to successful technology integration. Furthermore, the resistance to the imposition of English in the curriculum reflects the broader institutional challenge of aligning digital literacy goals with student motivation, as discussed by Hubbard (2023), who noted that external pressures can hinder student engagement with digital tools.

However, unlike some findings in the literature that emphasize the potential of digital literacy to foster collaboration and communication (Son et al., 2017), this study found that technical difficulties and a lack of institutional support disrupted these processes. This contrast suggests that while digital literacy holds significant potential, its successful integration requires robust

institutional backing and teacher training, as Gutierrez-Angel et al. (2022) highlighted.

From a socio-critical perspective, the discussion of Social Influence Theory in the context of digital literacy and technology use can be understood as a reflection of the power dynamics and social structures that shape individuals' behaviors and attitudes. This perspective emphasizes how social influence is not just a neutral or natural process but is embedded within broader systems of control, inequality, and resistance.

Kalman's (1958) compliance, identification, and internalization can be critically examined to reveal how educational institutions, through teachers, peers, and the community, perpetuate certain norms and expectations around technology use. These norms often align with dominant social and cultural values, potentially marginalizing those who do not conform or who resist these pressures. For instance, students may comply with digital literacy practices not because they see intrinsic value in them, but to avoid punishment or gain approval, thereby reinforcing institutional power structures.

Moreover, Spears' (2021) emphasis on group identity and social influence highlights how conformity to group norms can serve as a mechanism for maintaining social cohesion and as a tool for social control. Students who align their behaviors with and group's expectations may do so out of a desire for acceptance. However, this alignment can also suppress individual agency and critical thinking, especially if the group's norms are unquestioned or unchallenged.

Weng Marc Lim's (2022) discussion of the "new normal" and the shifts in social influence dynamics in the post-pandemic era can illustrate how power structures adapt to changing social conditions. The increased reliance on digital communication and new societal norms can create new forms of social control, where algorithmic influence and viral marketing shape consumer behavior, educational practices, and norms.

From this socio-critical standpoint, the evolution of social influence theory, as traced by Davlembayeva and Papagiannidis (2024), can reflect how social power operates in digital environments. The transformation of traditional models of social influence in online communities and social media introduces new mechanisms of control that extend beyond the classroom and into the broader digital landscape. These mechanisms can perpetuate existing inequalities, as those who control digital platforms and algorithms exert significant influence over what is considered normative or acceptable behavior.

Conclusions

This study examined the complex relationship between students and teachers, and contextual factors in appropriating digital literacy development among EFL learners. The findings, interpreted through frameworks such as Social Influence Theory (Kelman, 1958), Technology Appropriation (Sandoval, 2019), and Digital Literacy (Bawden, 2008), revealed both positive and negative influences that shape students' engagement with digital tools.

Students with strong prior digital competence and a high interest in digital tools demonstrated effective technology appropriation, aligning with concepts of internalization and compliance from Social Influence Theory. However, negative factors, such as over-reliance on translation tools and limited language proficiency, highlighted gaps in integrating digital literacy and effective language learning strategies. Students struggling with technology and digital literacy fail to fully internalize the use of tools, leading to superficial engagement and delayed academic progress.

Teachers with solid pedagogical knowledge were key in fostering student identification with digital tools, positively influencing their digital literacy practices. However, those with limited technological competence or pedagogical experience failed to effectively model or encourage the internalization of digital tools, weakening their social influence on students. The study underscores the importance of teacher training and support in bridging these gaps and enhancing technology appropriation. Institutional shortcomings, including inadequate technical infrastructure and limited training for both teachers and students, further hindered the full appropriation of digital literacy. Students and teachers alike faced challenges in navigating these systemic issues, emphasizing the need for institutions to provide consistent technical support and structured professional development programs.

This study suggests that integrating digital literacy into EFL classrooms requires a holistic approach that addresses students' competencies, teacher preparation, and institutional infrastructure. Addressing the over-reliance on external tools like translators, providing ongoing teacher development, and ensuring institutional support are critical to fostering deeper engagement with digital literacy.

Further studies could explore interventions that enhance both teacher and student digital literacy skills, particularly focusing on reducing dependency on translation tools and encouraging deeper integration of language learning strategies. Additionally, future research might investigate the impact of institutional reforms, such as improved technical infrastructure and training programs, on the effectiveness of digital literacy appropriation.

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Chapter 5

Didactic Sequence Model for the Design of Gamified Digital Educational Resources to Improve English Oral Communication Skills

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Introduction

Language learning in the digital age faces unprecedented challenges and opportunities. English as a foreign language has become essential in academic and professional training, requiring the development of new strategies and tools for more effective teaching. In this context, the National English Program at the National Open and Distance University of Colombia (UNAD), through its mesocurricular outline, offers transversal English courses covering levels A1 to B2, taught through a virtual modality.

The main objective of the research presented in this chapter is the development of oral proficiency, a crucial skill for effective communication in both academic and professional contexts. Despite technological advances and pedagogical efforts, English A1 students at UNAD

continue to face significant challenges in oral communication, especially in virtual learning environments where opportunities for oral practice can be limited.

This chapter provides the research fundamentals by addressing the need to improve oral communication skills for English A1 students using Information and Communication Technologies (ICT). It proposes the didactic design of a Gamified Digital Educational Resource (GDER) that includes game elements to encourage student participation, commitment, and self-reliance while strengthening their English oral communication skills within the framework of the National English Program at UNAD. For this research, gamification was defined as including game elements in the learning process to provide an innovative way to address language learning difficulties. The research followed a mixed-method approach, combining qualitative and quantitative methods to evaluate the effectiveness of the Gamified Digital Educational Resource (GDER) in strengthening oral communication skills.

This paper begins by explaining how the design of gamified educational resources, through a didactic sequence model, can reshape English language instruction in line with current digital learning trends. The process of building the didactic sequence model, from conception to development, is further detailed, and its potential impact on improving students' oral communication skills is analyzed. By providing a practical and motivating approach, GDER offers an effective solution to overcome the barriers students face in developing English oral proficiency.

Furthermore, the chapter underscores the importance of integrating gamified content into educational resources as a tool to up-date pedagogical practices and leverage the opportunities provided by technology to enrich language learning. It also contributes to the broader discussion on innovations in English language teaching, highlighting the need to adapt resources and strategies to meet the demands of virtual learning environments in an increasingly globalized world.

Special emphasis is also placed on the concept and scope of the learning approach, distinctive to the university where the study was conducted. Autonomy and self-management are highlighted as key components that reinforce students' active role in meaningful and self-regulated learning, based on heutagogy, which is becoming increasingly important as part of the UNAD Pedagogical Model. Furthermore, the paper delves into motivation and its pivotal role in learning any discipline, with special attention to the specific case of foreign language learning. From this overview, gamification is conceptually addressed as a potentially transformative tool that, by integrating playful elements, can foster motivation and engagement in the learning

experience. According to Orihuela (2019), this learning strategy can enhance the motivation, attention, and responsibility needed in foreign language learning.

Finally, the chapter highlights the inclusion of Information and Communication Technologies (ICT) as an interactive resource for content and knowledge integration. Considering that traditional educational practices are losing relevance, new opportunities are emerging to apply pedagogical and didactic approaches that allow students to become more active and aware of their own learning process. Disruptive technologies, intensified and ever-changing due to the recent pandemic, effectively contribute to knowledge and skill building; thus, the scope of gamification is placed at the core of this research.

A careful descriptive research exercise was conducted to understand a reality that leads to further reflection on the current practice of English Language Programs and their role in developing oral skills, connecting the proposed goals to appropriate instruments. The research process is justified by the need for educators to engage in reflective processes that not only reevaluate existing pedagogical practices in greater depth but also identify viable opportunities to address issues where diagnostic analysis shows disciplinary failures. This reflection can generate clear pathways, such as the didactic sequence model proposed here, which can potentially be applied in undergraduate academic courses' certification and accreditation processes.

The research addressed goals focused on the viability of the methodology and allowed for a deeper exploration of each of the categories proposed for the process. Therefore, at a general level, the aim was to propose a didactic sequence model to design Gamified Digital Educational Resources to strengthen oral communication in A1 level learners of the National English Program (NEP) at the National Open and Distance University of Colombia.

Similarly, specific goals were proposed to provide a path to achieve the general goal. First, the focus was on identifying the level of development in speaking activities and their impact on the overall average in the NEP English A1 course. Second, the preference and relevance of the Gamified Digital Educational Resources (GDER) in the context of the NEP English A1 level were recognized. Finally, the technological and digital tools that promote improving and strengthening English oral communication specifically for the NEP English A1 level, were identified.

As a starting point, the research reviewed background information on related topics in "glocal" contexts, ranging from international, national, and even local levels, to provide a more detailed and precise basis for the research process as follows: At the international level, De

Mello et al. (2020) studied the impacts of gamification on English oral production in Brazil and found that educational games increase motivation and oral proficiency, as part of their research, "The Impacts of Gamification and the Use of Educational Games in English Language Classes: TOEFL iBT Oral Production." Similarly, Bicen and Kocakoyun (2018) analyzed the use of Kahoot as a gamification tool in English language teaching in Turkey, highlighting an increase in student interest and motivation. In Ecuador, Rodríguez et al. (2020) found that gamification with the Edutainment Mobbyt tool motivated students and improved their English learning process as an outcome of their research, "Partnering Learning and Games: Gamification as a Methodological Strategy to Promote English Learning."

In a more recent study, Molina et al. (2021), in their paper "Gamification as a Teaching Strategy for English Language Learning," reviewed gamification as a teaching strategy and concluded that it engages students' attention and makes English language learning easier. In Peru, Polo et al. (2022), in their paper "Transversal Competencies in the University Educational Context: Critical Thinking from the Principles of Gamification," identified that gamification fosters critical thinking and motivation in university students. Finally, in Spain, López et al. (2022) found that gamified tools increase the intrinsic motivation of university students.

Regarding national research conducted in the Department of Cundinamarca, Colombia, Cruz et al. (2021) highlighted that gamification improved oral production and involvement in sixth-grade students' learning English in the classroom. Moreover, Vergara et al. (2021), in the Municipality of Zipaquirá, Colombia, found that gamification improves oral production in early childhood students based on the research entitled "Gamification and the Strengthening of Oral Skills in English for Early Childhood Students." Similarly, Becerra et al. (2022), in the city of Sogamoso, Boyacá, in their study "Gamification as a Didactic Strategy for the Strengthening of English Language Skills for First Grade Students of the Liceo Colombo Andino School in the City of Sogamoso, Boyacá, Colombia," reported that gamification strengthens English language skills, especially oral proficiency. Lastly, regarding the local scope, Vargas et al. (2020), in Tunja, Colombia, concluded that gamification is essential for learning innovation and motivation because of their research, "Gamification in Learning and Training: An Approach to Classroom Adaptation and Integration".

Theoretical Framework & Key Concept

To understand and support the process of teaching and learning foreign languages, with a particular focus on the development of linguistic skills, which will later guide the research in the design of a didactic sequence model, the fundamental concepts and underlying theories that underpin the acquisition of language skills in academic and real-life contexts will be explored. The understanding of these principles proved essential to designing effective pedagogical strategies in the interest of competent and contextualized communication based on some clearly defined variables, such as:

Language Skills

Learning a language involves developing four essential language skills: listening comprehension, reading comprehension, speaking, and writing. These skills are closely interrelated, with the input skills (reading and listening) directly influencing the output skills (writing and speaking). Bachman (1995) emphasizes that, in addition to acquiring these skills separately, the learner must develop Communicative Linguistic Skills (CLS), which is the ability to use these skills in a contextualized manner. Increased exposure to input improves the acquisition of output, and good management of input skills can improve output skills.

Language learning must have a communicative purpose, allowing its use in academic, professional, and social contexts. According to Canales & Swain (1980), cited by Concepción & Amador (2006), when teaching a foreign language, the dimensions of communicative competence should be considered: grammatical, linguistic, sociolinguistic, discursive, and strategic. Including contextualized activities is vital for students to engage in authentic communicative situations (Cárdenas, 2018).

Historically, it has been emphasized that language skills must be developed. Chandía (2015) argues that it is necessary to unify the four skills, as grammar is often prioritized over communication. At the university level, developing these skills should prepare graduates for academic and professional demands.

For Chub (2012), quoted by Chén (2017), linguistic abilities are inherent to all human beings, although they develop at different levels depending on the individual, enabling communication through language. Garro (2019) defines these skills as "basic language skills, communicative abilities, or macro-skills" (p. 49).

Oral Skills in English

Despite the importance of all language skills, speaking and writing skills are essential for effective communication. Marín and Naranjo (2022) stress the need

to prioritize the development of these skills to face global communication challenges. This proposal considers oral skills the key to communicating messages in real contexts.

At the same time, Jiménez (2021) argues that oral expression and comprehension are fundamental to promoting interaction in different communication scenarios. Likewise, Marín and Naranjo (2022) define oral competence as a set of procedures that provide communication models, allowing learners to deliver their messages without difficulties.

Pronunciation

According to Iruela (2007), pronunciation is understood as the ability to produce and perceive phonetic elements in expression, interaction, and oral mediation activities. For effective communication, pronunciation is fundamental, and Morales (2021) points out that activities focused on comprehension and oral expression improve pronunciation, providing the student with confidence and a better phonetic awareness of the language. Correct pronunciation not only improves oral production but also learners' linguistic awareness.

Intonation

Intonation and pronunciation are essential for expressing communicative intentions and emotions. Zwirner (1932) states that intonation is also essential for speech creation and expression, enabling learners to enhance speech acts in formal and informal contexts.

Barbeito and Cardinali (2013) emphasize that intonation is an essential and intrinsic component of oral comprehension and production skills in a foreign language or culture since any oral communication that does not show adequate intonation lacks spontaneity and decreases its overall communicative effectiveness (p.1).

Fluency

Fluency includes the amount of information produced, but also spontaneous and natural communication, and adequate intonation and pronunciation. Chiriboga (2017) states that fluency is essential for comprehensible and effective communication. Encouraging activities that develop fluency will help to keep conversations coherent and dynamic. The same author also defines fluency in linguistic terms as the speaker's ability to use speech correctly and naturally, without resorting to translations, and to analyze and argue in the foreign language he or she is learning.

Strategies for the Development of Oral Proficiency in English

Teachers must guide the learner in developing receptive and guided production skills. Garro (2019) illustrates how to incorporate skills in everyday scenarios to solve daily tasks. Toalombo (2014) suggests that

group techniques, such as debates and dramatizations, make learning easier. Chiriboga (2017) also highlights that group strategies contribute to developing oral expression.

Finally, Zambrano et al. (2020) highlight using ICTs as a strategy that dynamizes learning, particularly in listening and speaking skills in English language learning for higher education students.

Gamification in Education

Different approaches have defined the concept of gamification; thus, Deterding et al. (2011) defines gamification as the integration of game elements in non-game-related contexts. Meanwhile, Hierro and Marín (2013) define it as a technique, method, or strategy that employs playful and dynamic elements with specific purposes, especially motivational ones.

Furthermore, gamification is an effective strategy to encourage students to learn foreign languages. Jiménez & Gómez (2019) highlight that gamification, through creative activities and interesting materials, stimulates oral production in English. Orihuela (2019) reinforces gamification as a tool that optimizes students' motivation and engagement, facilitating more spontaneous communication.

However, gamification should not be misunderstood as simply turning everything into a game. As Borrás (2015) clarifies, it is not about adding badges or rewards without purpose but about applying game elements and strategies in varied contexts to make learning more playful. Gamification can apply to various fields, including education, where Llorens et al. (2016) highlight its potential to innovate in e-learning and lifelong learning. To implement gamification effectively in education, it is pivotal to consider the profile of the students, the tools available, and the right time to apply it. Martínez & Supervia (2019) indicate that teachers must be constantly updated in these methodologies to achieve the proposed educational objectives.

In the educational field, gamification stands out as a key strategy for this research proposal's theoretical and practical development. Martínez and Supervia (2019) state that gamification in the classroom promotes more meaningful learning by offering playful activities that reinforce knowledge and strengthen the bond between students and content.

Gamification as a Tool for Teaching and Learning English

About second language learning, Molina et al. (2021) highlight that gamification is especially useful for developing speaking skills in English language learning, creating environments conducive for learners to improve their language competencies. Gamification can be effectively applied in EFL teaching. As Chaves (2019) points out, this methodology allows for creating a more enjoyable and motivating learning process, which is essential for mastering

English in various professional fields. In addition, Molina et al. (2021) emphasize that gamification requires teachers to innovate and adapt to new strategies, moving away from traditional teaching. This facilitates the development of meaningful language skills in students, preparing them for today's academic and work demands.

Gamification in Teaching Oral Proficiency in English

In EFL teaching, gamification is introduced as a valuable tool to improve production skills, especially oral expression. In this sense, Vergara (2021) points out that gamification helps students acquire knowledge and competencies that strengthen their cognitive development, particularly in oral skills. It is crucial to assess how students learn and what methodologies teachers use to enable effective communication.

In addition, gamified resources and tools should be tailored to current demands, promoting the development of digital skills and creativity. For Molina et al. (2021), teachers should explore activities that enhance oral and written expression and stimulate creative thinking in students. Although the task is challenging, using a structural model based on dynamics, mechanics, and components of Werbach & Hunter (2012) can guide the educational process and achieve effective results.

Gamification should not be seen as a series of isolated games but as a comprehensive and coordinated strategy, as described by Metzler (2005). Furthermore, in the development of oral English proficiency, gamification can lead to positive academic outcomes, improving language proficiency in vocabulary, pronunciation, intonation, and fluency, as stated by Chaves (2019).

Gamification and Autonomous Learning

At UNAD, autonomous learning is considered an educational modality in which students guide their own cognitive processes, adjust their learning pace, and define the scope of their academic performance. According to UNAD's Solidarity Academic Pedagogical Project (2013), autonomous learning is:

The process of critical appropriation of vital, intellectual and cultural experience, based on the recognition of personal and social reality, through the theoretical deepening of basic concepts, explanatory principles and fundamental values, generated in a methodical, systematic and self-regulated way, to transfer them comprehensively to different contexts and apply them creatively in the solution of everyday life problems, in the development of training processes and in the promotion of human development (p. 74-75).

Furthermore, UNAD recognizes Autonomous Learning as a fundamental process for higher education, highlighting the need for students to become self-taught and self-reflective. Caraballo (2017) stresses that autonomous learning should be an essential pillar,

allowing students to understand, inquire, and reflect on the knowledge acquired, with the teacher acting as a guide in this process. On his part, Solórzano (2017) indicates that autonomous learning arises when creativity and observation are stimulated, involving the entire educational and social community so that students actively take part in decision-making about their learning.

Medina and Nagamine (2019) define autonomous learning as a student's ability to generate learning based on intrinsic motivation and exploration. Martín (2011) describes it as an individual's ability to direct, monitor, adjust, and evaluate his or her own learning by means of thoughtful strategies. García et al. (2017) add that autonomous learning should be student-centered, with the teacher acting as a mediator through strategies that help students achieve academic goals. In e-learning and distance education, gamification is vital as it stimulates interest and autonomous learning by providing constant feedback and adapting learning strategies. Torres (2018) points out that gamification facilitates the development of autonomy in learners, allowing them to take responsibility for their own learning.

The connection between autonomous learning and foreign language teaching implies that students should learn useful techniques that are applicable in work contexts and transcend academic activities. Caraballo (2017) highlights that understanding one's own learning process prepares students to face constantly changing work environments. Bacca (2018) reinforces the importance of the virtual component in education, especially in foreign language learning. Technological advances provide resources and opportunities to strengthen autonomous learning. Thus, integrating education, autonomous learning, and gamification can enrich foreign language learning, benefiting both teachers and learners.

Gamification and Motivation

Gamification is understood as a methodology designed to increase student motivation through playful elements to achieve better learning outcomes. According to Martínez & Supervia (2019), one of the main purposes of gamification is to both motivate students and provide continuous feedback, which is essential for the educational process. Dicheva et al. (2015) further add that gamification acts as a motivational tool for the study and development of content and encourages classroom participation.

Moreover, Ryan and Deci (2019) classify motivation into two types: intrinsic, which comes from within the individual, and extrinsic, which arises from external factors that influence motivation. Madrid (1999) describes three stages in the motivational process in the school context: initial motivation before the activity, motivation during the activity or the teaching and learning process, and final motivation

related to students' emotions and reactions upon successfully achieving a goal.

Prieto (2020), for his part, emphasizes that gamification not only motivates but also improves the connection between the learner and the content, allowing a more positive perception of learning and achieving objectives, such as improving competencies. This approach helps teachers to incorporate innovative and meaningful methodologies in the classroom, such as gamification. Briceño de Osorio (2019) stresses that motivation is key to successfully applying gamification in foreign language learning. Motivation is closely linked to the stimulus environment in the classroom, which must be motivating to achieve effective oral production. Martinez & Supervia (2019) add that gamified activities should generate motivation to achieve individual and group goals beyond simply stimulating proficiency. Thus, a motivating and balanced environment favors better learning outcomes and personal /professional development.

Digital Educational Resources - DER

In Colombia, the official definition of a digital educational resource is based on government guidelines. According to the microsite "*Colombia Aprende*" by the Colombian Ministry of Education - MEN, since 2012, the creation of digital educational resources has been promoted following UNESCO standards. These resources are designed for educational purposes and present information in digital format accessible via public networks such as the Internet (MEN, 2012). Originating in open and distance education, these resources are classified as *closed* or *open* according to their use and application.

Along similar lines, Zapata (2012) defines digital educational resources as materials in digital format that assist in the advancement of learning tasks. A pedagogical material is considered suitable for educational purposes if it helps in the understanding of concepts, fosters the development of practical skills, and supports personal growth in terms of attitudes or values.

Methodology

Research Approach

The methodology that guided this research was based on a mixed approach, chosen for its capacity to capture the multifaceted nature of language learning in virtual environments. This approach integrates qualitative insights with quantitative measurements, offering a robust framework to explore the complexities of gamification's impact on oral proficiency in English A1 students. As Creswell (2021) states, mixed research allows for a broader understanding of the context studied by integrating both approaches. According to

Pereira (2011), this approach offers more comprehensive data collection and a better understanding of the events. Therefore, the proposal also emphasizes the importance of validity and reliability, addressing the accuracy of qualitative data and the quality of quantitative results. The quantitative data were processed using InfoStat and AtlasTi software that currently contemplates artificial intelligence support, allowing an effective information triangulation. This methodology provides a comprehensive view of the phenomenon studied, in this case, gamified resources and their influence on oral production in English.

In the first phase of the quantitative approach, historical data from four academic periods of the English A1 course were meticulously analyzed. This data included students' overall performance, participation in speaking activities, and final grades in these courses. The analysis helped identify baseline challenges in oral proficiency, which then informed the design of the subsequent research instruments, by the second phase the qualitative approach, this research identified the relevance of Gamification Digital Educational Resources in the English A1 course, analyzing the perceptions of the participants through surveys, literature review and a comparative matrix of resources.

The research design followed a 'QUAL-QUAN' approach, with a predominant emphasis on qualitative data to deeply understand the educational context and student experiences. It highlighted variables such as gamification, motivation, and autonomous learning to propose a didactic sequence model that, as an educational resource, would improve oral production in UNAD's English A1 students. Meanwhile, the quantitative data offered measurable outcomes that could be statistically analyzed to corroborate and expand upon the qualitative findings.

By combining qualitative and quantitative data, a comprehensive view of the teaching-learning process in English was achieved, focused on strengthening oral skills with gamified resources. Johnson & Onwuegbuzie (2008) point out that mixed designs allow for breadth and creativity, integrating qualitative and quantitative methods to achieve more complete and validated results, emphasizing multidisciplinary approaches to achieve the goals set.

Research Design

Recognizing that mixed research aims to achieve a more comprehensive and in-depth understanding of the subject and obtain a holistic view, this research project is framed within the realm of *descriptive research*. Its goal is to describe and interpret a reality, specifically within an educational context. Referring to the descriptive scope, Guevara et al. (2020) argue that 'The objective of descriptive research is to understand prevailing situations, customs, and attitudes by providing an accurate description of activities, objects, processes, and individuals' (p. 171)

Study Population

The research was conducted at the National Open and Distance University of Colombia (UNAD), specifically through the National English Program offered by the Virtual Institute of Languages (INVIL), which provides language training to students in various higher education programs. The study population included students between 18 and 35 years of age enrolled in English-level A1 of transversal courses.

Study Sample

To further validate the research problem, in the first phase, historical data from the A1 course were analyzed for the first four academic periods with a population of students enrolled at this level. In the second phase, a structured survey with Likert-type questions was used to collect quantitative data on students' attitudes and perceptions. The survey was administered to a population of 240 students of English level A1 in the academic period 2023-1, from which a sample of 132 was selected.

Instrument Validation

The instruments applied were directly linked to each objective proposed for the research as follows:

- **Instrument 1.** Validation of historical data in response to the goal of identifying the development level of the Speaking activity and its contribution to the overall average of the English A1 course. Historical data for the English A1 course at UNAD were collected from primary sources and analyzed over four academic terms, each lasting sixteen weeks. Information was extracted from the results matrices, known as "Moment 4," an institutionally recognized resource that provides a comprehensive view of student performance. These matrices, provided by the course director and the academic secretary, contain the results for each term of the course and detail performance by individual language skills, including oral skills, which is the focus of the study.

- **Instrument 2**. Student survey: to recognize Gamification Digital Educational Resources' preference and relevance in the English A1 course context, as stated in the second goal. The survey was designed with Likert-type questions to gather quantitative data on students' attitudes, opinions, or perceptions, which helped diagnose the research problem, using response scales ranging from "Strongly Disagree" to "Strongly Agree," allowing for more rigorous analysis and data comparison. In addition to the quantitative data, qualitative data were also collected to complement the quantitative results. This data was analyzed using Info Stat for Google Forms and ATLAS.ti software.

The survey was validated by a panel of three experts with research experience in

teaching English as a foreign language. A random sample of 132 students was selected. This instrument also included specific questions about the recognition, use, and perception of gamified educational resources in the A1 English course. Participants were asked about the impact of these resources on their oral skills development, especially during synchronous Speaking activities. The topics covered included the frequency of resource use, student experiences, perceived usefulness, and the effect on oral skill development.

- **Instrument 3.** As proposed in the third goal, a comparison matrix is used to determine the technological or digital tools that are adapted to strengthen oral production in a foreign language. For this research, the comparative matrix was designed as a table structured in columns and rows, which summarizes information about tools that can help create gamified resources to improve oral production skills. The tools assessed include eXelearning, H5P, and Genially. Each tool was rated based on criteria such as Features and Functionality, Accessibility and Compatibility with Moodle, Interactivity, Customization, Alignment with UNAD Institutional Requirements, and Support for Improving Oral Production in English.

Ethical Considerations

Ethical considerations were rigorously upheld in this research. As highlighted by González et al. (2012), "Ethical issues should not only be addressed by those involved in specific research processes but by the entire community of educators and by society in general" (p. 4). Informed consent was obtained from all participants, ensuring their voluntary participation and the confidentiality of their responses. The research also adhered to anonymity and data protection principles, with all collected data securely stored and accessible only to the research team. Participants were fully informed of the research objectives, and the potential benefits of the study were clearly communicated through a Google form for consent.

Furthermore, the research complied with the ethical criteria of UNAD's Bioethics Commission (2017), highlighting informed consent, which ensures the voluntary participation and autonomy of the participants, and maximization, which describes the direct benefits for the participants and the impact of findings. Confidentiality, privacy, and identity protection were also considered, ensuring that participants' information was confidential and accessible to them during and after the research process.

Final Approach – Didactic Sequence Model

All About Me

After analyzing each of the instruments applied, it is evident that Gamified Digital Educational Resources (GDER) guide students for academic purposes through game mechanics, increasing motivation, and capturing attention on specific topics. According to Zapata (2015), GDERs are instructional materials that support teaching and learning in virtual environments. This led to the proposal of a didactic sequence model for a gamified digital educational resource that strengthens A1 English oral proficiency, focusing on oral production. This model follows a logical sequence from concept introduction to practical applications and includes gamified elements to maintain student interest and motivation. The didactic sequence model provides goals and objectives aligned with the course training intentions and CEFR parameters, considering challenges and a sequence that structures the language exposure to develop self-confidence and communicative skills. Fernandez (2013) highlights the importance of providing sufficient input for comprehension. Gamified activities propose a simple narrative and a meaningful context, allowing the learner to practice autonomously and self-assess without fearing being judged.

Table. Description of the proposed didactic sequence model of the Gamified Digital Educational Resource - "All About Me".

Proposal of a didactic model for the Gamified Digital Educational Resource design. "All About Me"
Description of the Resource: Using a deductive and intuitive methodology, students can browse the resource, mixing game elements with educational activities, which will help them strengthen their speaking skills autonomously and stimulatingly.
General Objective: To provide gamified digital tools so that students can autonomously perform well in the speaking activity in the English A1 course and thus strengthen their oral skills.
Specific Objectives: - Strengthen self-confidence, self-motivation, and autonomy to learn to speak and communicate in English. - Expand vocabulary through repetition. - Improve listening comprehension by exposing students to different accents of the English language. - Improve speech delivery features such as pronunciation, intonation, and fluency through the gamified resource.

<table>
<tr><td colspan="2">Resource Creation Tool: H5P is a tool supported by UNAD's Moodle courses that allows students to make several attempts at different activities without experiencing any difficulty.</td></tr>
<tr><td colspan="2">Contents of the English A1 Course:
Unit 1: Introduce yourself
Unit 2: Daily Routines
Unit 3: Expressing likes and dislikes – Hobbies</td></tr>
<tr><td> 
Type of Gamification
Alejandre & García (2014)</td><td>Content: Used in specific activities and on an ad hoc basis - Speaking Activity English A1 Course</td></tr>
<tr><td> 
Gamification Game Elements and Techniques
Werbach & Hunter (2012)</td><td>Mechanics (Rules and basic components of the game) Dynamics (Implementation of the mechanics) Components (Tools to design gamified activities)</td></tr>
<tr><td> 
Game Mechanics</td><td>Within the resource interface and by selecting options of their choice, students will be guided autonomously through activities that allow them to work on three different aspects of oral English skills.

Careful listening Input: This input allows students to be exposed to listening to the foreign language in different functional linguistic scenarios and understanding it in context, which is an important step in the input process to facilitate oral production.</td></tr>
</table>

 **Game Mechanics**	Attentive repetition: In this step, students will be able to repeat a sentence or a paragraph in English using the shadowing technique over and over again. The text will contain basic and personal information typical of the A1 level. This exercise will allow them to improve their fluency, intonation, pronunciation, and confidence in communicating a message since the repetition is done autonomously and not exposed to the direct judgment of the tutor or their peers. Speaking correctly - Output: As part of the final and sequential process that begins with input and then guides the learner towards repetition, the production or output phase is reached. In this stage, the learner interacts with artificial intelligence - a bot through the *Eviebot* application - practicing formulating questions and answers. In this step, the elements of speech, such as pronunciation, intonation, and fluency, play an essential role in the production and comprehension of the message.

Source: Author's elaboration, 2023. Images of the tools were taken from Google Images.

For the design of the GDER, the characteristics of the resource were considered based on the research goal and the didactic sequence, with the activities and instructions that the student must follow. The purpose is that, by completing the three stages of the resource, students will improve their performance in the speaking activity of the English A1 course, especially during synchronous presentations with the tutor, and reinforce their overall speaking skills.

Table. Characteristics and description of the gamified digital educational resource 'All about me.'

Game Mechanics	Gamification Game Elements and Techniques	Gamified Tools
	Dynamics **Guess the Character!** In the first part of the GDER, students will find three videos under the category 'Guess the character,' where they will find well-known characters from each category: Sports Politics Entertainment	
 **Listening Carefully**	**Mechanics** **Learn about the Character!** Upon entering the category of their choice, students will find a video designed to be watched via Kahoot. In the video, students will observe content related to the character along with key images and audio. The videos will generate questions that must be answered as their listening comprehension becomes effective. Some of the questions are: *Who is the character? Where does she live? How old is she? What does she do? What is her routine?*	Kahoot!
	Components **What Do I Know Now about the Character?** As students watch the video, if the answer they choose is incorrect, they can go back a few seconds or minutes until they get the correct answer and go through a listening comprehension process. The student will get a Listening level points badge if the answer is correct.	

<table>
<tr>
<td rowspan="3"> 
Shadowing Attentively</td>
<td>Dynamics

Repeating in a Fun Way!

Students will advance to the second stage of the GDER. They will listen to the activity instructions through the Natural Readers tool, which helps to keep their attention and gives them a more engaging listening experience.

In this next level, students will be instructed to listen and repeat phrases related to the chosen character that they have heard in context in the previous video through the ‘shadowing’ technique.</td>
<td rowspan="2">Natural Reader

Natural Reader

Vocaroo

Vocaroo</td>
</tr>
<tr>
<td>Mechanics

Write about Me and Record!

Using the Natural Readers tool, which uses speech synthesis technology to convert written text into audible speech, students will write based on what they heard in the initial video, their own information regarding their personal data, likes and dislikes, and routine. This text will be inserted into Natural Readers, which offers a variety of language accents (American, British, Canadian, etc.) and customization options to suit individual preferences.

Once students listen, they will be asked to record themselves reading aloud using the Vocaroo tool. It is suggested that they make three recordings each time to improve their pronunciation, intonation, and fluency.</td>
</tr>
<tr>
<td>Components

What Do I Know Now about the Character?

With each audio recorded on Vocaroo, the learner will receive a badge to award a score. The more badges the learner accumulates, the more practice the learner will get in oral skills, and the more motivated the learner will be to make several recordings to receive more badges.</td>
<td>Vocaroo</td>
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<tr>
<td rowspan="3"> 
Speaking Correctly</td>
<td>Dynamics
Creating My Avatar
Through the Eviebot tool, the student can create an Avatar to start the interaction process in English through a chatbot. Likewise, they will be able to react, answer, ask questions, and strengthen communication by changing the facial expressions of their Avatar.</td>
<td>Eviebot
  </td>
</tr>
<tr>
<td>Mechanics
Interacting with My Avatar!
Students will interact with the chatbot, beginning by introducing themselves and listening to a response from the avatar.
Hi, my name is… What is your name?
My name is… Where do you live?
I live in … How old are you?
I am ... years old, and you?
I work as a...</td>
<td></td>
</tr>
<tr>
<td>Components
Talking about Diverse Topics and Assessing Myself!
As the conversation progresses, students will include topics related to the units, such as hobbies and routines, through the Eviebot tool. At the end of the interaction with the chatbot, the students will self-evaluate the number of correct phrases that the avatar understood, which ones they could have interacted more with, and which ones were not properly understood.
From this, the student is expected to have extensively practiced the topics in units 1, 2, and 3 to perform optimally in the Speaking task of the English A1 course, especially if presented synchronously with the tutor.</td>
<td> 
moodle</td>
</tr>
</table>

Source: Author's elaboration, 2023. Images of the tools taken from Google Images.

Results

The findings of this study are structured around the analysis and application of three key instruments. These instruments provide a comprehensive framework for assessing the proposed objectives and generating insights into the challenges and opportunities of teaching oral production skills in the English A1 course. The results of each instrument are presented individually to ensure clarity and depth in the discussion of their implications.

Instrument 1: Historical Data Analysis

From the importance of the research content for the educational field of foreign language teaching and learning, and the perspective of each proposed objective, the most relevant outcomes of the present study, after the analysis of the historical data, reveal a significant weakness in student performance on oral tasks in English. Despite the importance of these activities in the overall course grade, there is a notable concern about student dropout and reluctance to participate in oral production activities.

Students who attempt the oral tests often perform poorly, impacting the overall performance assessment at the national, regional, and local levels, where assessments reflect a consistent gap in oral skill development. These findings highlight the urgent need for tailored strategies that address these challenges, emphasizing interventions to foster participation, motivation, and skill acquisition in oral tasks.

Instrument 2: Student Survey

Regarding the second objective, the survey results reveal recognition of the preference and relevance of gamified digital educational resources in the context of the English A1 course, it is concluded that it is important to integrate gamified digital educational resources in the English A1 course to encourage autonomous learning and motivate students in the development of their speaking skills. The findings suggest that students prefer interactive and engaging formats for speaking activities, particularly those that align with digital environments. This highlights the need to design effective pedagogical strategies that foster the development of speaking skills in English in the context of distance learning. These ideas point to the necessity of creating dynamic pedagogical strategies that take advantage of gamified tools that promote students' autonomy and motivation in their learning process.

Instrument 3: Comparison Matrix Validation

Finally, and as a conclusion of the research part that addresses the third proposed objective, the evaluation of three technological or digital tools to strengthen oral production in the English language —eXelearning, H5P, and Genially - reveals

that H5P is the most suitable tool for this research proposal. It slightly outperforms the other tools regarding interactivity and flexibility, integrating seamlessly with Moodle and offering an interface suitable for mobile devices. Moreover, its mobile-friendly interface ensures accessibility for students, enabling them to engage with activities from various devices. H5P's ability to facilitate interactive learning will enhance learners' autonomous and motivating learning processes, especially in developing oral skills. This finding underscores the importance of identifying suitable technological tools that fit the needs of distance and virtual learning contexts.

Discussion and Recommendations

Based on the findings from the research conducted, the following discussions and recommendations are articulated.

For UNAD, it is crucial to enhance research initiatives that provide a deeper analysis of student behavior and academic performance. This implies considering a variety of formative and pedagogical approaches to better understand their impact on learning outcomes. Evaluating the effectiveness and relevance of activities designed to facilitate understanding and retention of course content is also necessary. To achieve this, it is suggested that UNAD actively foster, encourage, and promote ongoing research through existing research groups and explore the creation of new ones focused on these specific areas to provide valuable knowledge. This may include the creation of forums or workshops in which researchers can disseminate their findings and collaborate on new projects.

For the Virtual Language Institute and the National English Program: The practical and contextualized research for the INVIL indeed should be the cornerstone of pedagogical innovation. This approach can lead to the incorporation of innovative strategies that directly influence the curriculum of English and other language courses. This type of research has the potential to act as an early warning system to identify and address problems affecting student retention rates. It is recommended that the Virtual Language Institute and the National English Program collaborate in developing mechanisms to integrate these innovative strategies into their teaching practices and curricula to bridge the gap in student achievement and engagement.

The integration of game elements made learning more enjoyable and effective, particularly in a virtual learning context where student participation can be challenging.

For the National English Program and its performance in first enrolment courses: it is suggested to focus efforts on strengthening existing educational resources, especially those that focus on oral and written production skills, and to assess their impact on the mastery of oral skills, considering the items that the assessment rubrics contemplate for these production activities. It is important to remember that these resources must be dynamic and constantly adjust to changing social and technological conditions to stay effective. Course directors should coordinate multidisciplinary teams to support the design, implementation, and virtualization of existing and future educational resources to strengthen academic, pedagogical, and didactic processes.

The findings suggest that incorporating gamified digital resources into language courses can significantly enhance student learning outcomes. The chapter discusses the potential for broader application of this model in other language learning contexts.

For teacher researchers: It is encouraged to use this research as a foundational reference to develop and refine applied projects that validate the effectiveness of innovative strategies in supporting students' foreign language learning processes. Such projects can contribute to curricular policy changes and improvements in teaching English as a foreign language at higher education institutions. Based on the results of this research, future studies should investigate the long-term impact of gamified resources on student outcomes, fostering a deeper understanding of their role in educational innovation.

Conclusions

The findings of this research highlight the significance of addressing critical gaps in the oral production skills of English A1 students. In general, and with respect to each proposed objective, the following conclusions are noteworthy. First, an acute need to address and improve the level of development of the speaking activity in the English A1 course in terms of instructions and activities integrating innovative and student-centered strategies to strengthen their oral production.

It is also essential to establish didactic strategies to reduce drop-out and non-attendance, mainly in the speaking activity within the course, and to promote greater student participation to significantly improve their oral skills in the foreign language. This finding highlights the importance of selecting appropriate and personalized technological tools to enhance the development of oral skills in the current educational context. In addition, the qualitative analysis with AtlasTi provided greater depth in understanding

results, thus strengthening the theoretical and conceptual basis of this research.

These conclusions reinforce the general proposal of the current research by creating a structural model for the design of digital gamification educational resources. The model is centered on enhancing oral production using innovative and engaging digital tools, and it offers a pathway to transforming the learning experience involving the speaking activity in the English A1 course at UNAD.

This model's proposal integrates digital gamified tools and implements innovative didactic strategies that are fundamental for students to strengthen their oral skills. These strategies provide an enriching, motivating, and effective educational experience for learning the English language, which contributes to strengthening their academic performance in the English A1 course at UNAD. The structural model that has been proposed serves as a guideline for future efforts to innovate and enhance the teaching and learning of foreign languages in the UNAD context.

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PART

3

ASSESSMENT AND FEEDBACK IN DIGITAL LANGUAGE LEARNING

Chapter 6

Self-Authorship Mediated by a Visual Dialogue with AI: A Student's Story of Mental Wellbeing in Experiential Learning

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Introduction

Large Language Models (LLMs) came into being in the 1950s and 1960s, but personalized chatbots, such as ChatGPT, emerged, or rather came into being, in November 2022 (Sundar & Nass, 2000; Sundar & Liao, 2023). What makes it a being is its unique role as a "source of communication" that is interactive, uses natural language, and "fills roles previously held by humans to elicit social responses from users" (Sundar & Liao, 2023, p. 167). More than 180 million users worldwide turn to LLMs daily in both their professional and personal lives (Duarte, 2024). LLMs are widely utilized in post-secondary education as well by professors and students alike. Generally, most undergraduate and college students tend to have positive perceptions of LLMs, specifically ChatGPT (Albayati, 2024; Ngo, 2023; Zhang et al., 2024). Positive perceptions involve saving time, access to information, and writing support (Ngo, 2023). Negative perceptions are mainly concerned with authorship, plagiarism, and overall academic integrity (Ngo, 2023).

Despite the growing research body on the use and impact of LLMs, primarily ChatGPT, on education, learning, schooling, and human development, there is a lack of empirical findings on the transformative and creative potential and experiential engagement of text-to-image Dall-E. DALL-E and Bing Image Creator are specialized text-to-image AI tools designed to generate images from textual descriptions; DALL-E, created by OpenAI, was announced in

January 2021. This study explores the meaning of using DALL-E for students in the context of their struggles with fear. This exploration is particularly timely and relevant for educators because of its potential to co-create and create a learner-centered educational environment in which students can explore their sense of self in a psychologically safe and free space. There is also a growing recognition of the positive impacts of AI on students' mental health and emotional intelligence. However, these impacts need more data and investigation to advance our current knowledge, help students experience mental well-being, and author their education (Ajlouni et al., 2023).

Theoretical Framework

During students ' professional development sessions on emotional intelligence and public speaking, this experiment took place in a work-integrated learning (WIL) college classroom in a Canadian community college. Students were in their final semester of the Big Data program. Hence, they all have advanced AI skills. As the researcher who was their coordinator, I also had advanced AI skills as a researcher of AI's role in education. Technological resources for this session were access to a computer and a free Dall-E AI tool available on bing.com. As a part of the session, students shared their fears of public speaking and their doubts about their emotional intelligence. As their facilitator, I suggested that it may be helpful to experiment with AI, specifically Bing Dall-E, in trying to cope with and regulate fear through creative idea visualization and emotional externalization. Will (2018) found that visual techniques help students learn and develop a better comprehension of reading materials. Makarova et al. (2024) explained that guided imagery and imagination techniques of creative visualization help reduce students' anxiety (aged 17-22). Specifically, the authors wrote, "creative visualization is when a person visualizes a favorable resolution to a stressful situation. You need to imagine that the problem causing you stress has been completely resolved. It does not matter how..." (p. 6). This visualization method proves to be effective because the brain reacts to it as to a real event; it can be creative in helping achieve desired outcomes and even help people feel "transported to a different emotional state" (p. 7). Likewise, Aksu and Ayar (2023) found that visualization reduces anxiety, stress, and depression. Visualization should be strong to engage the senses; the stronger it is, the more effective it becomes (Makarova et al., 2024). Visualization is a powerful process of enhancing and developing emotional intelligence by helping students cope, adapt, and regulate their emotions of fear.

Creative visualization helps externalize negative (and positive) emotions and transform

them into the desired outcomes (Makarova et al., 2024). In fact, the very definition of externalization means creativity. Moran and John-Steiner (2003) state that "externalization is the construction and synthesis of emotion-based meaning and cognitive symbols. Once expressed, these meanings and symbols are embodied in cultural artifacts-creative products that endure over time to be used by future generations" (p. 63). This process helps individuals regain their control and meaning over problematic emotions by either externalizing these fears through images or by transforming these emotions into the desired images (Randolph, 2002).

I explained to students that this method of externalization as creativity exists and is usually helpful. However, they may try creating their own visualization of their emotional states that prevent them from speaking in front of their peers or larger groups. In doing so, they should focus on their internal dialogue and thought/feeling process to express their feelings and why. This narrative can then be typed into the Bing Dall-E image creator for a playful, creative visualization to enable an emotionally transformational learning experience, if possible or if any. I shared her hypothesis that the more articulate and conceptual one's emotions can become, the more transformational the experience may become. The transformational aspect is that the individual can feel more in charge of the visuals and imagery once these become externalized rather than embodied (Carter & Nicolaids, 2023). Hence, emotions can be explored and reframed better once an individual can see them expressed in a visual manner (Moran & John-Steiner, 2003).

When I explained this approach, I did not know the results of this experiment. I even said that I was not sure if it would be helpful with Dall-E as the medium, since no specific study exists to validate or invalidate this hypothesis. Students were invited to experiment on their own will. Two students decided to participate and experiment with their emotional states, such as the fear of public speaking, with the help of Dall-E.

My position was informed by dialogic pedagogy and self-determination theory (Bakhtin, 1986; Deci & Ryan, 2000; Matusov et al., 2016; Matusov, 2020; Matusov, ChatGPT4, Smith, & Shugurova, 2023; Shugurova, 2020). Specifically, dialogic pedagogy views students as the authors of their educational experiences in such a way that they should be able to define what learning means to them and how to design their own learning as well (Shugurova, 2020). Matusov et al. (2016) found that dialogic education focuses on "promoting the student's authorial agency in a critical dialogue as the main purpose of the teaching and learning practice" (p. A168). This means that the student is the ultimate meaning maker of their education, rather than the instructor or facilitator. In this view, visualization and its creative domains should be directed and guided by students themselves, the way they see fit, rather

than externally imposed as necessities or needs for emotional intelligence. Nothing should be ready-made or known in advance; education should be "opening opportunities for students" instead of providing answers or preset outcomes for achievement (Matusov et al., 2016, p. A169). Thus, LLMs and their creative tool, Dall-E, can be seen as one of the open opportunities to explore their authorial agency and possibilities of self-authorship in and through their educational becoming.

Furthermore, self-authorship enhances students' emotional regulation by enabling their "freedom to feel" (Benita, 2020). Self-determination theory is clear that this sense of autonomy as one's self-defined freedom helps individuals develop their emotional well-being (Ryan & Deci, 2017). Autonomy is the ability of self-regulation; more precisely, it is "self-governance, rule by the self" (Ryan & Deci, 2017, p. 1562). This emotional well-being, as the autonomous or self-directed emotional regulation, suggests that negative emotions should not be suppressed or controlled but explored since "all emotions foster psychological growth" (Benita, 2020, p. 2). According to Robinson and Persky (2020), self-directed learning is about «creating an experience that empowers learners to make decisions about the information they want to be proficient in» (p. 292). Creative visualization may be one of these processes of learning about the self and one's freedom to feel in a non-judgmental and safe space, such as the Dall-E Bing. Dall-E does not rule over the individual but provides alternative visualizations and imagery that may inspire them to feel more freedom of emotional expression and the self. This AI-infused creative element blurs the boundaries between positive and negative emotions, thus allowing for more freedom to be experienced rather than avoided or suppressed (Benita, 2020). As Yan (2024) wrote, Dall-E in ChatGPT4 can enhance one's freedom of emotional expression because he envisions it as a "site of unbridled imagination and creativity, offering unrestrained manifestation of desires that is neither revealing nor oppressive, but rather innovative" (p. 6). Likewise, Dall-E Bing can be perceived as an imaginative and visual site of creative self-directed explorations of personal emotions and their meanings.

Methodology

This experimental learning experience was not preplanned but emerged through the learning dialogues with students about their emotions, specifically their fear of public speaking. The technological resources available were students' personal computers and free access to Dall-E at bing.com. The broader teaching context was within the students' last term in the Work-Integrated Learning (WIL) department, focusing on

their professional development and project-based experiential learning. Many students expressed their fear of speaking. I decided to introduce a Dall-E Bing Image creator in the framework of exploratory self-authored and self-determined analysis of fear. In this context, self-authored means that students could author any of their emotions in any way they see fit. It was between them and their Dall-E. The self-determined part was about students' autonomy in creating, re-creating, making sense of meaning, or doing anything or nothing at all that they wanted with this activity without my intrusion or participation, only upon their request. Their expression and articulation of their emotions of fear were the focus of their activity through which they were trying to reduce their grip on their sense of self, skills, and abilities. I thought of Dall-E as a medium for creative visualization and a method for students' authorial learning.

I chose a narrative methodology to answer this research inquiry question because it allows me to explore students' experiences through their own stories and how they narrate them (Clandinin & Connelly, 2000). The goal of this inquiry is not to recreate the objective reality or truth but to understand the rich subjectivity of experience without trying to simplify or generalize it (Riessman, 2008). As Pinnegar and Haynes (2007) explain, «it is a movement away from a position of objectivity defined from the positivist, realist perspective toward a research perspective focused on interpretation and the understanding of meaning» (p. 9). In this view, narrative allows the participant to explain what their learning means to them and why it is important. Hence, narrative gives voice and enables a participant-led authorship (Clandinin & Connelly, 2000; Dillon, 2011).

For this research, I asked one of the students, Roger Mais, who participated in the experiment in our classroom. He agreed to be fully identified and become a co-creator of this research to reflect on his thoughts and feelings, and the overall learning experience. His story is presented below. He wrote 2 essays, which I slightly restructured to condense the length; I also gave them back to him for approval and feedback. This iterative process is important to ensure that the intended meaning is aligned with the expressed meaning without any distortion and confirmation bias (Clandinin & Connelly, 2000). Roger's narrative is presented below as the key finding of this research. Before going any further, it is important to explain the context and the process in which this learning experiment occurred.

Data Collection Context

Data collection emerged as a part of the learning session on Emotional Intelligence and the use of AI, Dall-E Bing, to explore students' fears of public speaking. I also asked students to practice their conceptual skills since Dall-E performs best through abstract conceptualization rather than specific instrumental-prompt engineering. In doing so, I suggested that it is important

for them to express their fears through text in any way they see fit, as per their internal states and experiences. Also, I introduced an additional prompting context to make their explorations more creative and artistic; I suggested adding «in expressionist impasto» to their own prompt. This idea to include an artistic style of expressionism and impasto was important to me because this style is strongly associated with the self-expression of emotions through images, brush strokes, and visionary imagination. Expressionism promotes a way of being in and through art that is spontaneous, immersive, and experiential (Shugurova, 2019). As Pollock wrote about his expressionist style, «When I am in my painting, I am not aware of what I am doing…I have no fear… because the painting has a life of its own» (1947-48).

Likewise, I suggested that students immerse themselves in the process and let the AI-generated images from their text come to life, letting fears dissolve or become external to them. Moreover, emotional prompts «significantly boost the performance of generative tasks» (Li et al., 2024). This LLM performance booster helps Dall-E become more emotionally responsive, aware, and sensitive to the unique needs of each student (Elyoseph et al., 2024). Doing so creates a more psychologically suitable and safe personalized learning environment. After this experiment, I wrote a brief article about each step we took and the images we created along the way (Shugurova, 2024). For example, the first prompts were based on subjective experiences and descriptions of one's fears, such as «sweaty palms, holding myself back from speaking, thinking about people and how much they judge me.» This textual description generated these images by Roger and Yugal (as citedin Shugurova, 2024, para. 8):

Dall-E Image generated by Roger

As students began their explorations of their internal stories and narratives of fears through text and image visualizations, Roger decided to let go of these grand narratives of fear and create more self-empowering stories and imageries by expressing their desired emotional and mental states of who they want to become (Shugurova, 2024). For example, they created the following image:

Dall-E image generated by Roger

Dall-E image generated by Roger

Dall-E image generated by Roger

The process became immersive and experiential as they engaged in self-authorship through visual self-awareness and emotional regulation.

Results

Roger's Narrative Mediated by AI

Using Dall-E encouraged me to think outside the box about how AI can address real-world challenges, particularly in mental health. This problem-solving process is key to self-authorship because it fosters a proactive and solution-oriented mindset. This image, in my reflection, effectively represents the concept of self-authorship. The two heads symbolize the diverse and sometimes conflicting perspectives individuals must

navigate as they form their beliefs and values. The stairs represent the ongoing personal and intellectual growth journey, with each step signifying a new learning experience or milestone. The man on the stairs embodies active participation in this process, highlighting the need for effort, reflection, and decision-making. As he climbs, he overcomes challenges and integrates external influences with his internal convictions, striving to balance past experiences with future goals. This visual metaphor encapsulates self-authorship's dynamic and proactive nature, where individuals take control of their development and continuously work towards becoming their true, authentic selves.

As the session veered more toward AI-generated images, my mind began to dwell on the potential applications beyond just aesthetic or entertainment purposes. It piqued my interest right from the start, and I felt excited. The idea of using AI images to support mental health struck a chord with me. Integrating technology like AI images could offer innovative solutions in a world where mental health is increasingly recognized as vital. The notion of crafting images tailored to boost confidence or provide comfort seems not only plausible but also profoundly impactful. Imagining scenarios where individuals could see themselves succeeding in daunting tasks or being transported to their happy place through tailored visuals was both inspiring and heartwarming. This learning activity broadened my understanding of AI technology and sparked a sense of hope and creativity in me. It highlighted the profound ways in which technology can be harnessed to enhance our mental health and overall quality of life. I felt a surge of positivity, thinking about the future possibilities of AI being supportive in mental health therapy. I am filled with a renewed sense of curiosity and optimism. It reminded me of the incredible potential we have to innovate and improve lives through the thoughtful application of technology. This learning activity has undoubtedly deepened my appreciation for AI and its capacity to contribute meaningfully to our well-being.

Discussion

The narrative approach helped Roger reflect and share his learning experience. His creative self-authored engagement with Dall-E initiated a meaningful shift from a mental state of fear towards an externalized, visualized emotion of fear and, consequently, to the overall «confidence» and «comfort». He described feeling «excited» and having «a sense of hope and creativity». The concept of self-authorship as a learning process involves making one's own decisions, reflecting, and putting in effort through active participation in life. emerged through the image created by Dall-E. It seems that prompting and expressing fears led to a more profound self-awareness, emphasizing the

importance of taking charge of one's learning journey through these imaginative steps of self-realization and goal achievement through experience. Self-authorship is a process that is intrinsic to oneself; it does not have any predefined meaning per se.

Furthermore, Roger's narrative demonstrates why self-determination and self-direction in this experience are important. Even though there are numerous instructions in the media and literature regarding prompt engineering in education, the instrumental rule-based approach of relying on external prompts does not lead to self-authorship and emotional regulation through the self-determination and self-direction of students (e.g., Ng, Tan, & Leung, 2024). This finding is supported by Marquardson (2024) that «AI tools can enhance self-directed learning» (p. 10). However, this self-direction would differ based on students' unique goals, learning desires, and ideas. AI-infused self-direction is unpredictable and improvisational; it creates a process of self-exploration. Self-determination as a practice of self-direction allowed the student to make/creative meaning and feel in charge of his own meaning about his fear, decisions, and choices about his desired mental state, rather than being overwhelmed or stopped by fear or any other external control. He could do so through his own prompts and a subjective sense of creative direction.

In this view, Roger could enact his "authorial agency" in dialogues with AI (Matusov et al., 2016); he could embrace his self-defining "freedom to feel" the full spectrum of emotions, reframing challenges as creative outlets for self-expression (Benita, 2020). The non-judgmental AI collaborator was an "opening opportunity" for Roger's technologically-infused self-authorship rather than promoting externally imposed learning or prompting outcomes (Matusov et al., 2016). Roger's authorial agency was actualized through this psychologically safe partnership with the AI collaborator.

Conclusions

The limitation of this study is its scope and short experimental, subjective, narrative-based methodology that does not promise any generalization or replication of the same findings in different personal and educational contexts. Also, the concept of fear and its emotional meanings remain underdeveloped in this current study due to the focus on novel AI applications. There were no reported harms associated with this activity. Future research may critically explore all the weaknesses and limitations of AI integration in exploring one's emotional and mental states as a form of experiential learning.

Roger's rich first-person, AI-mediated narrative demonstrates how an iterative dialogue with the Dall-E image generator allowed him to externalize his fears around public speaking and reframe the internal challenges into new learning opportunities for self-authorship through his creative sense of self-direction and self-determination.

Overall, this study recommends focusing on students' voices, agency, and self-authorship while integrating LLMs in educational contexts. Ultimately, Roger's story highlights the intrinsic value of co-creating transformative, technology-enriched learning experiences that are attuned to students' socio-emotional worlds, empowering them to create and co-create their own narratives of their education.

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Chapter 7

Systematization of an Assessment for Learning (AfL) Experience in a Virtual English Course

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Introduction

The Institutional English Program (PIFLE-I), implemented at Universidad de Antioquia, a public university in Colombia, comprises five two-credit courses designed to enhance students' English proficiency for general and academic purposes. The program aims to equip students with the language skills necessary to achieve a B1 level of proficiency according to the Common European Framework of Reference for Languages (CEFR). The virtual version of the program utilizes an asynchronous learning management system (LMS Moodle) and synchronous weekly two-hour Zoom sessions to support speaking practice. Resources on the Moodle platform include various digital

learning materials, virtual learning objects adhering to SCORM (Sharable Content Object Reference Model) standards, and forum discussion boards. Some of these resources assist with the program's evaluation system.

The implementation of the evaluation system of the PIFLE-I Program was explored in an instrumental case study that yielded achievements in terms of (1) a positive impact on the development of students' self-regulation, and (2) a movement within the faculty to embrace a culture of Assessment for Learning (AfL); however, the evidence also disclosed challenges regarding its practicality (Picón, 2021). Subsequent participatory action research (PAR) permitted exploring teachers´ appropriation of the assessment policy and observing their actions in practice to tackle the practicality issue (Montoya & Picón, 2024).

With the financial support of a research call from the Vice Rector's Office of Teaching of the University of Antioquia, a multidisciplinary team carefully designed a set of resources for the first course (A1 CEFR level) of the virtual version of the PIFLE-I program. During the latter study, suggestions from teachers' reflective praxis and pedagogical wisdom became instrumental in the modifications made. The adjustments and resources, discussed in this paper that targeted practicality responded to three key elements: (1) a reduction in the number of summative assessment events; (2) the creation of an e-portfolio space within the Learning Management System (LMS, Moodle); and (3) the adjustments of assessment rubrics. Our ultimate objective was to provide teachers with a more practical and efficient evaluation system.

During two academic semesters, we piloted the adjusted evaluation system to identify new achievements and challenges before final adjustments are replicated at all levels. The pilot, which somehow constitutes a final cycle in the PAR, also sought to stress the symbolic meanings that travel from the global north to the global south regarding the role of the teacher and "transcend the teaching-learning experience to the field of research and pedagogical innovation" (Cuieme & Castiblanco, 2023, p. 12, authors' translation), thus positioning the teachers in this study as researchers who own their practice.

This paper thus aims to share the process of implementing an educational innovation that focuses on creating digital learning resources to contribute to the practicality of an evaluation system that promotes student self-regulation in a virtual English course. The findings and discussion revolve around the following two main objectives:

Systematize and document the actions taken during an educational innovation experience and their impact on the evaluation system's practicality.

Identify the accomplishments and challenges arising from this educational innovation experience regarding the practicality of the evaluation process.

Theoretical Framework

The conceptual framework of this study consists of three main concepts: educational innovation, assessment for learning (AfL), and practicality. The following paragraphs expand on these concepts.

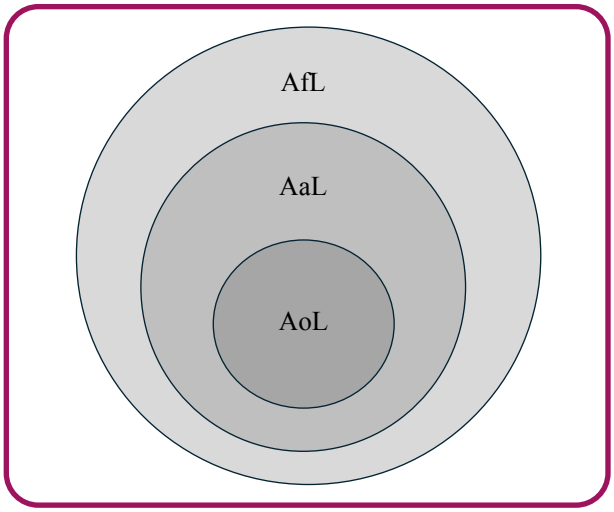
Educational Innovation

Educational innovation is a strategically planned action to promote changes that improve the quality of education (Macanchí et al., 2020). We embrace the concept of innovation as stated by Martínez and Rogero (2021): "the desire and action that move a group of teachers to try to make transformative improvements in teaching practices, to achieve changes towards the broadest and most emancipatory education of students but also changes related to the professional emancipation of the teacher" (p. 76, authors' translation). Consequently, we understand pedagogical innovation as a driving process to create and implement educational practices that respond to the needs identified from the situated problematization of our context, involving students and teachers. In this sense, through shared reflection, we innovate to build knowledge from our teaching practices.

Assessment for Learning

Assessment for learning (AfL) is an approach that transcends the simple measurement of knowledge and skills to become a comprehensive process focused on student learning. AfL is underpinned by the claim that formative assessment occurs when instructors adjust their teaching, based on feedback, to respond to students' needs (Wiliam, 2011). AfL recognizes that assessment should not be limited to the cognitive dimension of the student but should serve as a means to monitor what has been achieved, considering the proposed learning objectives (López, 2013). AfL plays a fundamental role in the development of student autonomy (Lamb, 2010), specifically in terms of fostering learners' skills to plan, self-monitor, and self-assess their learning process with the support of the teacher; in other words, in developing metacognitive strategies for self-regulation, which is referred to as Assessment as Learning, AaL (Earl, 2013). AfL is thus an umbrella term for assessment that integrates formative and summative assessment practices, referred to as Assessment of Learning (AoL) in this paper, instead of understanding them as separate constructs (Figure 1).

Figure 1. Assessment for learning



Relationship between AfL - AaL & AoL

Practicality

According to Bachman and Palmer (1996), practicality refers to the relationship between the available and the required resources determined to design, develop, and use a test (p. 36). Brown (2004) states that a test is feasible if it is not excessively costly, stays within appropriate time constraints, is relatively easy to apply, and has assessment and scoring procedures that are specific and time-efficient (p. 19). In general terms, practicality relies on the availability of material resources, human resources, and time. In the context in which this study takes place, Picón (2021) identified important practicality challenges in terms of the time the teachers require to give feedback and the need for teacher professional development in assessment and the integration of ICTs into their assessment practices (p. 226). This study is an effort to overcome those challenges.

Methodology

We adopted a systematization of experiences research framework to document the process (Jara, 2018). The systematization of social practices helps to problematize phenomena, relationships, and subjects, critically recognizing the problems of our time and making visible and reflecting on individual and collective practices (Fonseca & Frantz, 2015). Social practice becomes the object of study about which we think collectively from its singularity and its relationship with the outside to produce knowledge and learning that feed and improve the practice "in terms of its objectives, contents, and procedures" (Fonseca & Frantz, 2015, p. 29, authors' translation).

The systematization of experience allows organizing and reconstructing the data of educational practice or process to describe or explain the logic of the process experienced, the factors that have intervened, how those factors relate to each other, and why the researchers have done it that way. Table 1 displays the methodological stages of systematization conducted in this study, as proposed by Jara (2018).

Table 1. Methodological stages of our systematization

Methodological stages	Characteristics	Systematization of an Assessment for Learning (AfL) Experience in a Virtual English Course
Starting point: the experience	Participate in the experience and have records that document it.	We piloted the adjustments to the evaluation system during two academic semesters and documented the process in a shared logbook in Excel.
Systematization plan	Define the focus, purpose, and scope.	We focused on reconstructing the experience of improving the evaluation system's viability and student self-regulation in the virtual classroom.
Recovery of the process experienced	Order and information classification.	Data collection involved a survey, participants' reflective journal entries on evaluation practices, and the virtual course platform registers.
Deep reflections	Analysis, synthesis, and critical interpretation.	We conducted constant comparative analysis for coding and category development (Corbin & Strauss, 2018).
Arrival points	Conclusions and recommendations.	Findings inform about the challenges and opportunities to support AfL in virtual courses.

Educational Context

The Institutional English Program (PIFLE-I), designed and delivered by the School of Languages, is an integral part of the undergraduate curriculum at Universidad de Antioquia. Since its first implementation in 2016, it has impacted over 7,000 students. PIFLE-I requires all students to complete five two-credit English courses regardless of their major. The program aims to enhance students' language skills to communicate effectively in English in an increasingly globalized and multicultural academic and professional environment.

The virtual version of the PIFLE-I program provides students access to five courses on the Moodle platform. These courses incorporate digital resources, interactive exercises, multimedia content, and SCORM-compliant learning objects. Additionally, the program promotes real-time interaction and collaboration between students and teachers through the Zoom platform.

Approximately 300 instructors deliver lessons within PIFLE-I, with the majority teaching in the online delivery mode. The university actively promotes continuous professional development (CPD) for all teachers to enhance their pedagogical skills in online learning environments. In the School of Languages, the CPD strategy includes training sessions conducted by more experienced teachers who support novice teachers in technology-enhanced language learning contexts. These training sessions primarily focus on effective online course moderation, integrating digital tools and technologies, and developing online communication and facilitation skills.

Results

This study aimed to enhance the practicality of AfL practices in a virtual EFL course at a public university. With that intention in mind, a multidisciplinary team focused on creating digital learning resources and/or adjusting the existing ones to decrease teachers' time invested in implementing the assessment system. Findings inform two categories: achievements of the actions to enhance practicality and challenges faced during the implementation. Both are interwoven in this section, and the adjustments are discussed. Table 2 displays the adjustments to the digital learning resources and their intended actions to increase practicality.

Table 2. Adjustments to the digital learning resources and practicality targets

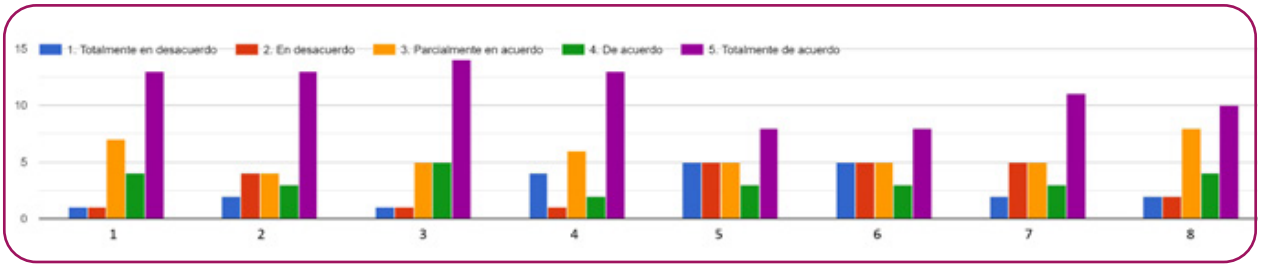
DL Resource	Adjustment	Practicality Target
An updated proposal for the AoL part of the system (PDF document).	A reduction from 8 to 5 summative assessment events.	Decreasing teacher-grading time.
e-Portfolio integrated into the LMS and activation of the progress tool.	Switching from uploading evidence into a Drive file to uploading it to a personal Database inside the LMS, plus easy access to a progress follow-up tool.	Decreasing teachers' time to keep track of students' evidence of activity completion and independent work.
Renewed portfolio rubric.	Switching from a holistic to an analytic scale to assess and grade portfolios, providing automatic formative feedback and grades, and reducing the number of scales in the rubric.	Gaining clarity and better articulation of observable actions and evidence of students' participation, decreasing grading time for teachers and students, and making selfassessment more practical and valid.
Reflection and action plan sections.	Articulation of prompts to support students' reflection and SMART goals to accompany their action plans.	Increasing clarity to support students' self-regulation and decreasing teachers' time to accompany students' reflection and action plans.
Renewed e-task scoring scales.	Switching from a five-dimensional scoring scale to a three-dimensional one with a more detailed descriptor per dimension.	Increasing evaluation transparency and decreasing teachers' grading time.

Reduction of AoL Events

The first adjustment made to increase the system's practicality was reducing the number of summative assessment events from eight to five. Figure 2 illustrates the participant teachers' perceptions regarding this adjustment[1]. The question included eight multiple-choice items and an open-ended question.

Both the graphic and the responses to the open-ended question in the survey showed that most teachers agreed that this action contributes to increasing the practicality of the evaluation system.

Figure 2. Teachers' perceptions on how reducing summative assessment contributes to enhancing practicality



1. The number of summative events is adequate.
2. The percentages proposed for each summative event are adequate.
3. The proposed summative events provide evidence of student achievement.
4. Not grading the Academic Focus Task and e-Task 3 favorably reduces the time spent on assessment.
5. Replacing the Academic Focus Task grading with student self-assessment does not affect reliability.
6. Replacing e-Task 3 grading with student self-assessment does not affect reliability.
7. Not grading e-Task 3 supports preparation for the speaking component of the Final e-Task.
8. The balance between teacher assessment and self-assessment is appropriate.

[1] At the time of this analysis, twenty-two teachers had responded to the survey.

In the following excerpts, responses to open-ended questions expand participants' perceptions.

> *Very good proposal! contributes to the viability of the evaluation system and establishes a good balance between formative and summative evaluation, which is directly aligned with the PIFLE-I assessment for learning. (TG, Survey).*[2]

> *The decrease in evaluation moments was an important achievement. I had more time to accompany the portfolio process, which was connected to the scaffolding of the task (TY, Survey).*

However, they had different opinions about the alternatives to evaluating the three activities left (items 5 & 6). For instance, many participants seemed to be worried that the third task would not have a grade and claimed that that grade would be important to keep evaluation results reliable and valid.

> *E-task 3 is necessary to develop [students'] English skills (TZ, survey). Preparing the Unit 3 e-task allows students to evidence their progress in oral proficiency and in developing their ability to interact with others. (TX, survey)*

Some others suggest that choosing what tasks to grade or not should be part of the teachers' autonomous decisions.

> *I suggest that the professor should be given the power to recognize as a summative grade the evaluative tasks that he/she considers, considering that he/she must evaluate tasks, portfolio, Academic Focus e-Task, and final exam. (TP, Survey).*

It seems that most teachers do not consider self-assessment reliable and propose either reducing its number or weight or eliminating it.

> *Decrease the self-evaluation percentage from 40% to 30% and increase each main e-Task percentage from 20% to 25% (TD, Survey). I think self-evaluation is very important, but I would give it a lower percentage (TN, Survey).*

Some teachers suggest reducing the portfolio's grade weight in the course's total score.

> *Portfolios should have less weight compared to the overall course weighting. Leave one, only one, final portfolio of 20% and change that grade [the first portfolio submission] to one for class work: participation, group work... (TC, Survey).*

Adjustments Done to the E-Portfolio

The former portfolio version included a self-assessment checklist, intended for the students to reflect upon their linguistic

[2] The original pieces of evidence were translated from Spanish to English with DeepL.com (free version)

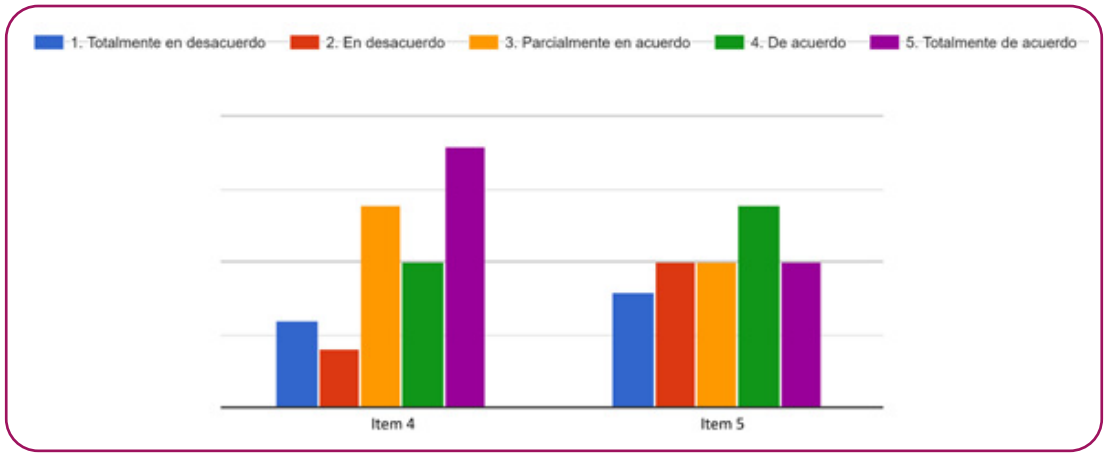
achievements in each unit, and a holistic scale, intended for the students to self-grade their commitment and responsibility during that period. The holistic scale accounted for the summative evaluation of the students' e-Portfolio submission and had to be supported by evidence of their work.

Students completed the checklists on the platform once they made each e-portfolio submission, gave themselves a grade against the holistic scale, and wrote a reflection and a proposal of actions to improve their weaknesses. Both teachers and students did the math manually, and the teachers had to search on other platforms for students' evidence of their work to validate their self-assessment grade, because the portfolio did not have any space for storing students' work evidence on the Moodle Platform. The holistic scale was criticized for being confusing.

The second important adjustment thus comprised three general innovations applied to the portfolio procedure: (1) the integration of the portfolio into the LMS accompanied by the activation of a tool that allowed to follow of the task completion progress, (2) the upgrading and renovation of the portfolio scales, and (3) the articulation of prompts to support students' reflection and SMART goals to accompany their action plans for improvement.

E-Portfolio Integrated into the LMS and Progress Tool. The e-Portfolio integration was fulfilled in two semesters due to an initial intent to integrate wikis to store students' evidence, which failed to meet our target of making the process more practical. Data collected through the teachers' survey and our journal evidenced the limitations of the wikis. Items four and five from question 10 yielded the most scattered perceptions and the ones in which negative comments surpassed the positive ones (Figure 3).

Figure 3. Practicality and interactivity of portfolio integration to LMS through wikis



The integration of the e-portfolio into the platform simplifies the process of portfolio creation

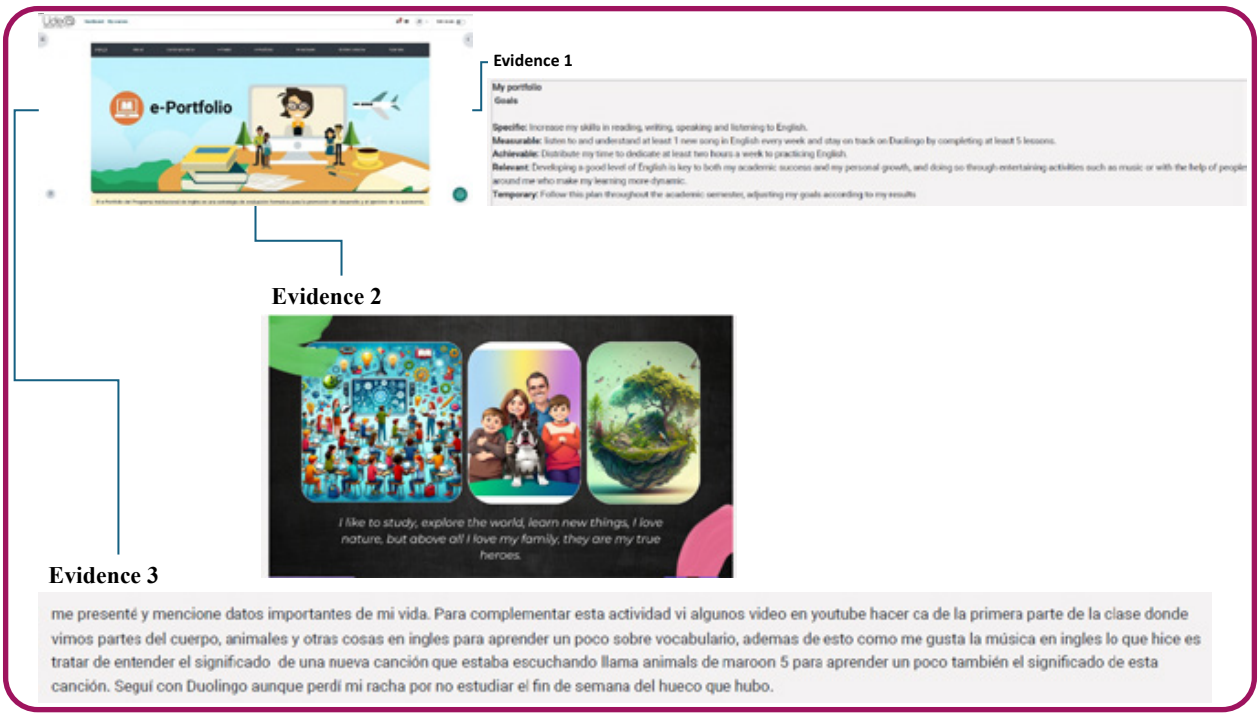
The Wiki tool allows the learner to include different types of evidence of his/her progress

The following excerpts from the survey explain participant teachers' perceptions.

> *My students had a lot of difficulty using Wikis (TY, Survey). The Wikis did not seem friendly to me, which is a pity because I expected more from that space (TB, Survey). Make the Wikis more user-friendly so that students can upload different types of evidence and customize them to their liking (TG, Survey).*

Before the pilot was conducted, the following semester, the ICT-expert team members adjusted a Moodle database tool that allowed students to upload different types of evidence and provided teachers with easy access to students' portfolios. This second tool was piloted during the second semester of implementation with good results (Figure 4).

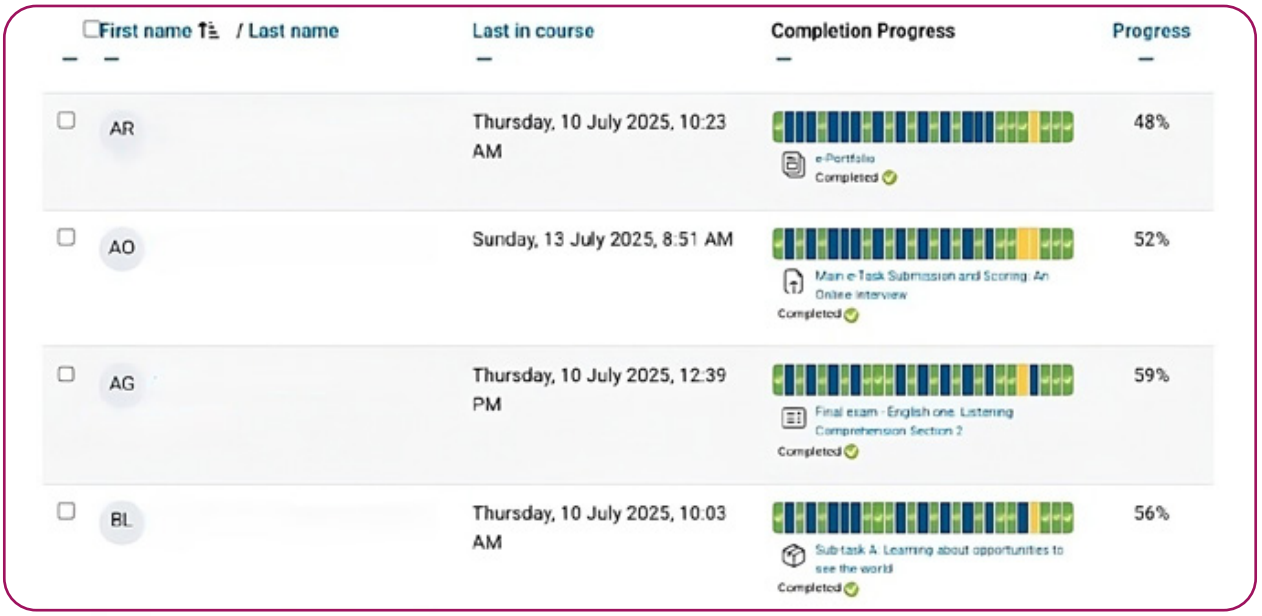
Figure 4. The portfolio space



Images taken from the portfolio space and students' products

Portfolio assessment feasibility was further enhanced by the fact that students' evidence of their participation was stored on the platform through the database tool, and a task-completion progress tool was activated (Figure 5). These devices considerably reduced the time teachers spent searching for students' evidence of their work on other platforms and/or manually following up on their activity completion.

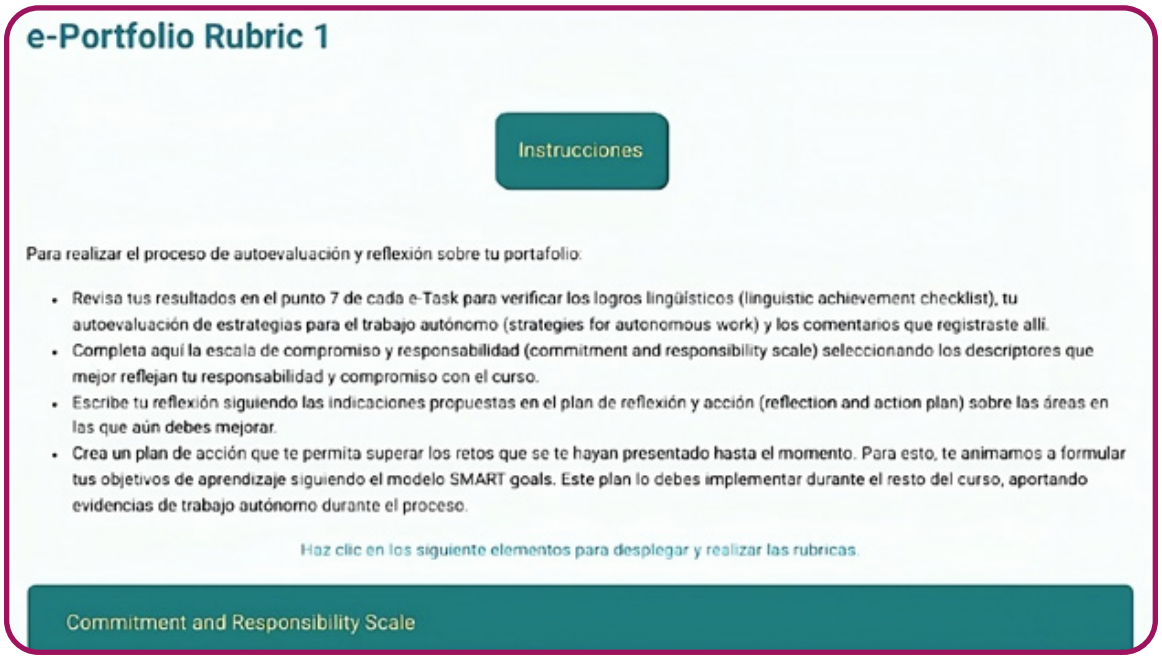
Figure 5. Students' Progress Tool



The little green boxes show activities that were completed by the students.

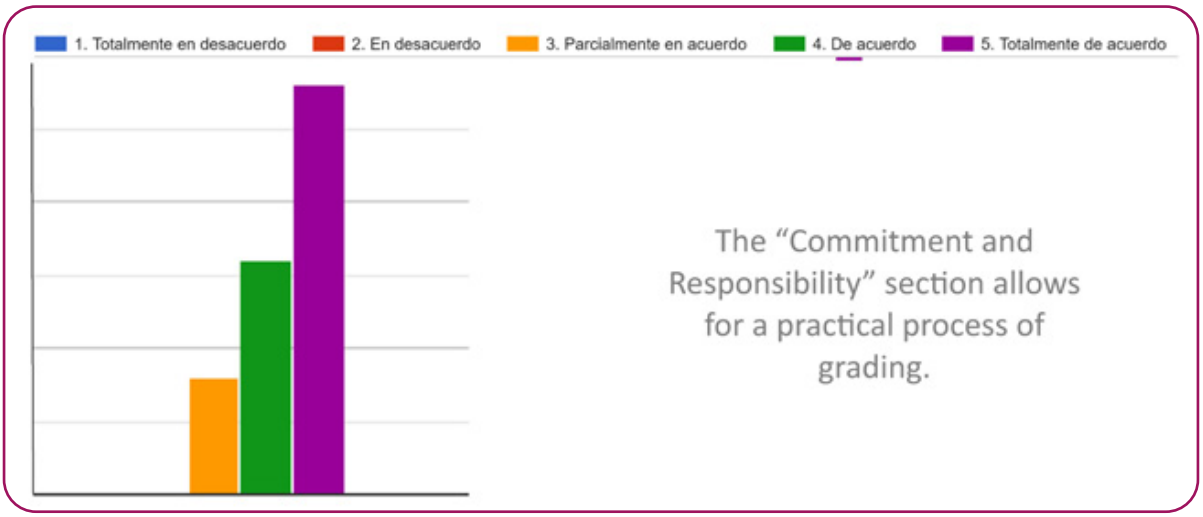
The New E-Portfolio Rubric. The new e-Portfolio rubric comprises two sections: (1) the new Commitment and Responsibility Scale and (2) a renewed space for student reflection and their planning of actions for improvement (Figure 6).

Figure 6. E-Portfolio Rubric



In section 1, students refer to an analytic scale of four descriptors, give themselves a grade, and receive automatic qualitative feedback on their *commitment and responsibility*. The analytic scale increased the practicality of teachers' evaluation because its descriptors are clearly connected to observable students' behavior. Figure 7 displays teachers' perceptions of the practicality of the new scoring scale.

Figure 7. Teachers' perceptions of the new commitment and responsibility scoring scale



Nineteen participants out of twenty-two were either totally in agreement or in agreement, compared to three who were partially in agreement, which corroborates their positive perceptions of the new scoring scale.

Despite the achievements reported during the first pilot, the portfolio rubric was initially criticized because of its length and the fact that the formative self-assessment checklist and the commitment and responsibility scoring scale overlapped, which participants found confusing.

> *The rubrics are very long, and it is not transparent for the student which scale (TY, Survey) will generate their self-evaluation grade. The portfolio requires more time in levels 1 and 2. Students need to know the rubrics (TB, Journal).*

In response, before the second pilot (1), the formative self-assessment checklists with can-do statements were updated and shortened (Figure 8), and (2) they were moved to the didactic sequence where the students could self-assess for formative purposes and reflection right after they completed the activities of every unit. These actions reduced the length of the rubrics, solved the confusion, and made

the can-do statements easier to access, more practical, and timely.

The new reflection and action plan section. Finally, the reflection and action plan sections was improved by (1) articulating prompts to support students' reflection and (2) connecting students' plans to SMART goals. These two adjustments made this important process easier for the teacher to accompany and more meaningful and clearer for the students.

Figure 8. Example of new checklists with can-do statements

e-Task One: Personal Matters

In this e-Task you learned how to introduce yourself and describe your personal activities.

Check the column that best describes your achievement.

Skill	Descriptor	1	2	3	4	5
Reading	I can understand and report someone's personal information, from short narrative and descriptive texts written in simple language.	○	○	○	○	○
	I can understand and report information about someone's daily routine and activities, from short narrative and descriptive texts written in simple language.	○	○	○	○	○
Listening	I can understand when someone is introducing him/herself, if they speak slowly, with good articulation and sufficient pauses.	○	○	○	○	○
	I can understand when someone is talking about his/her routine, if they speak slowly, with good articulation and sufficient pauses.	○	○	○	○	○
Writing	I can write simple sentences to describe my personal profile, using appropriately the grammar structures studied in this unit.	○	○	○	○	○
	I can write simple sentences describing my daily routine and activities, using appropriately the grammar structures studied in this unit.	○	○	○	○	○
Speaking: Monologue	I can introduce myself orally, using short simple ideas and controlling the pronunciation of the vocabulary studied in this unit.	○	○	○	○	○
	I can talk about the routine I follow in a normal day in my life, using short simple ideas and controlling the pronunciation of the vocabulary studied in this unit.	○	○	○	○	○
Speaking: Dialogue	I can maintain simple short conversations, about me and my classmates' personal information, by using the right structure of the question.	○	○	○	○	○
	I can maintain simple short conversations, about me and my classmates' daily routines and activities, by using the right structure of the question.	○	○	○	○	○

Renewal of e-Task Rubrics

A final adjustment made to increase practicality was the renewal of e-Tasks rubrics. These rubrics contained an authentic-like situation and an analytic scale to assess students' performance. Their descriptors were intended to describe the passing level for all the dimensions assessed and relied on generic descriptors of achievement (poor, insufficient, fair, good job, and outstanding). Besides that, they contained seven to eight dimensions to assess, making them time-consuming.

The updated rubric proposes an analytic scale with only three dimensions, whose levels of achievement are fully

described. Specifically, pragmatic and linguistic competencies were merged and subsumed under a more comprehensive dimension named *fluency*, for the speaking tasks, and *text structure* for the writing tasks (Figure 9).

Figure 9. Example of an updated e-Task Rating Scale

Rating Scale

Dimension	Poor	Needs Improvement	Fair	Good Job	Excellent
	1-1.9	2-2.9	3-3.9	4-4.5	5
Fluency **40%**	Their discourse is telegraphic and incoherent, which evidences issues regarding linguistic competence that prevent them from conveying the message.	Their discourse is very affected by an evident lack of control of linguistic competence, which prevents them from efficiently conveying most of the message regarding the topics developed in this unit.	Despite hesitation and reformulation, and eventual grammar mistakes, can acceptably convey their message regarding the topics developed in this unit.	Despite occasional hesitation and a few grammar mistakes, can naturally produce accurate exchanges and make their meaning clear about the topics developed in this unit.	Excellent performance that evidences self-confidence to naturally produce very accurate and clear exchanges about the topics developed in this unit.
	0.6	0.9	1.3	1.7	2
Vocabulary control **30%**	There is very little or almost no control over the vocabulary needed to address the topics developed in the unit.	There is an evident lack of control of the vocabulary needed to acceptably address the topics developed in the unit.	Their control of vocabulary allows them to acceptably address the topics developed in the unit.	Their control of vocabulary allows them to efficiently address the topics developed in the unit.	Their control of vocabulary allows them to perfectly address the topics developed in the unit
	0.4	0.7	1	1.3	1.5
Pronunciation **30%**	Their pronunciation is completely unintelligible.	The interference of their mother tongue affects the clarity of their pronunciation, making the message difficult to understand.	Despite evident interference of their mother tongue, their pronunciation is intelligible enough to be understood.	Despite some interference of their mother tongue, their pronunciation is very intelligible.	Their pronunciation is completely intelligible.
	0.4	0.7	1	1.3	1.5

This type of scale increases reliability because the criteria are more transparent and decreases the time spent on grading because the number of descriptors is reduced. In the following section, these findings are further discussed.

Discussion

This study aimed at implementing an educational innovation process that focused on applying targeted adjustments to digital learning resources and assessment procedures within an AfL system of a virtual English course to increase their practicality. The analysis explored how integrating ICTs would contribute to reducing teachers' time on evaluation processes while maintaining or improving reliability, validity, and student engagement.

The implementation was piloted over two academic semesters. Challenges initially persisted in the LMS's affordances and limitations since integrating portfolios through wikis received mixed feedback due to their lack of user-friendliness. Both teachers and students encountered difficulties in uploading and organizing evidence, negatively impacting the tool's perceived practicality. After the first pilot, the ICT experts suggested utilizing a Database tool instead, which was the solution.

Another important challenge identified during this period related to the complexity of the e-Portfolio rubrics, which were often criticized for their length and the conflation of formative and summative components, creating confusion. During the first pilot, an important adjustment to overcome this challenge was changing the original holistic scoring scale used to grade students' commitment and responsibility in their e-Portfolios for an analytic one that contained clear observable criteria and provided actionable feedback. By the same token, checklists with can-do statements intended for the students to self-assess their linguistic achievements at the end of every unit were updated, simplified, and relocated within the didactic sequence instead of the e-Portfolio space.

Relating to the e-Tasks, which constituted the core of AoL events, their scoring scales were reduced in the number of criteria and updated to make the grading process more practical. In sum, the actions applied to reduce assessment time included a) separating scales intended to support formative assessment processes from the ones intended to score AoL events, b) simplifying rubrics in general terms, and c) accompanying the students' reflection and action plan section of the e-Portfolio rubric. The systematization of the experience provided insights into teachers' perceptions of the achievements and challenges of a renowned evaluation system. The findings indicate that the most important adjustments, namely reducing summative assessment events, integrating the e-Portfolio into the LMS, and adjusting and relocating scoring scales, supported a more practical assessment system integrated into the virtual learning environment. This finding underpins the potential of ICTs to boost the feasibility of formative evaluation

systems that foster self-regulation while keeping their reliability and validity in online EFL contexts.

The lessons learned throughout the process underscore the importance of aligning assessment tools with teacher and student needs. Valid and transparent evaluation practices reduce teacher workload and foster greater student engagement and self-regulation, essential components of AfL. These results are particularly relevant for virtual learning environments, where time efficiency and technological integration are critical. Likewise, they corroborate the potential of technology to increase the practicality of assessment in general terms; i.e., both in virtual environments and the traditional classroom setting.

A final challenge encountered in the analysis relates to teachers' perceptions of formative assessment being less reliable than summative. Participants' discourses revealed their tendency to prioritize summative, teacher-centered approaches over self-assessment and collaborative teacher-student assessment practices. This challenge corroborates the importance of continuous reflective teacher-professional development in the field of assessment to help teachers realize that formative assessment's feasibility depends greatly on students' involvement in the whole process. In other words, technological adjustments are not enough for AfL to be successful; a decided intentional effort, by both administrators and faculty, in terms of providing (the former) and participating in (the latter) language assessment literacy strategies that favor teachers' reflection and experience-sharing to overcome its challenges is paramount. Such effort would hopefully bear positive results in stakeholders' understanding of the benefits of a system that promotes students' self-regulation, and consequently, embracing and nurturing an assessment policy that supports AfL practices despite its practical limitations. Finally, in this experience, collaboration between experts in language assessment and technology-enhanced learning proved fruitful, which endorses the importance of disciplinary work in research.

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PART

4

GLOBAL CONNECTIONS AND CULTURAL INTEGRATION IN LANGUAGE EDUCATION

Chapter 8

Connecting Classrooms Globally: The Impact of COIL on Colombian High School Students

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Introduction

In recent years, online collaborative learning programs have garnered significant attention in educational research due to their potential to enhance students' learning experiences and outcomes. In this context, Collaborative Online International Learning (COIL) has emerged as a promising approach for fostering global connectivity and intercultural understanding among students. This chapter, part of the book *Pedagogical Mediation in the Digital Era: Research and Practices in Technology-enhanced Language Learning*, examines the application of COIL in the educational setting and analyzes its impact on developing English communication skills, collaboration, and cultural awareness.

COIL involves virtual collaboration between students from diverse cultural backgrounds, allowing them to engage in collaborative activities and discussions while bridging geographical boundaries. This learning modality promotes English language proficiency and facilitates the development of collaboration skills and intercultural understanding—key competencies in today's interconnected world.

The importance of these skills cannot be overstated. English communication skills are often deemed essential for academic and professional success in global contexts. As Canagarajah (2012) points out, English has become a lingua franca in many fields,

making proficiency in the language crucial for academic and professional mobility. Furthermore, collaboration skills are highly valued across various domains, including education and the workplace (Johnson & Johnson, 2009). Additionally, cultural awareness is vital for fostering mutual understanding and respect among individuals from different backgrounds (Deardorff, 2006). This chapter justifies the study's relevance by demonstrating how COIL can effectively develop these competencies in an educational setting, contributing to the formation of global citizens. By providing a detailed analysis of COIL's implementation in **a state-funded school in Florencia, Caquetá, in the Amazon region of Colombia**, this chapter contributes to the book's exploration of innovative pedagogical practices and their impact on language education, highlighting its significance for the field.

Theoretical Framework

Collaborative Online International Learning (COIL)

COIL represents an innovative educational approach that connects students from diverse cultural backgrounds through virtual collaborations, enhancing their intercultural competence and global awareness. Hackett et al. (2023) state that COIL effectively fosters intercultural understanding by providing students with opportunities to engage in meaningful interactions and collaborate across cultural divides. O'Dowd (2018) highlights that COIL builds on telecollaboration by advancing virtual exchange initiatives that allow students to collaborate on international projects and engage in cross-cultural dialogue. Additionally, Nava-Aguirre et al. (2019) point out that COIL provides an immersive learning experience, contributing to the internationalization of education by offering students virtual opportunities to develop global competencies. These perspectives collectively emphasize COIL's role in enhancing students' global engagement and collaborative skills through structured virtual interactions.

Several studies have examined the impact of online collaborative learning programs on student learning and attitudes. For example, Magen-Nagar and Shonfeld (2017) investigated the impact of an online collaborative learning program on students' attitudes toward technology, highlighting the potential benefits of such programs for enhancing students' technological literacy and engagement. Cooney and Darcy (2020) explored the pedagogical value of collaborative educational games, emphasizing the role of collaboration in promoting active learning and student engagement. Altınay (2016) evaluated

peer learning and assessment in online collaborative learning environments, shedding light on the effectiveness of peer interactions in enhancing students' learning experiences. Moreover, Capdeferro and Romero (2012) examined students' satisfaction with collaborative learning experiences in online settings, identifying factors that contribute to students' frustration and engagement. Furthermore, Freiermuth and Huang (2012) investigated the effect of an intercultural online synchronic chat task on students' motivation, highlighting the potential of such tasks to promote intercultural communication and understanding.

Additionally, several studies have examined COIL in different settings. Vahed and Rodriguez (2020) underscored how COIL projects enhance student engagement and learning by integrating international perspectives into the curriculum. Similarly, Asojo et al. (2019) highlighted the value of multicultural learning within the COIL framework, particularly in design education. Their study demonstrated that COIL facilitated a rich exchange of cultural perspectives, significantly enhancing students' design thinking and creativity. Furthermore, Zhang and Pearlman (2018) emphasized the role of technology in expanding access to international education through COIL courses. They found that technology-enhanced COIL broadened students' educational horizons and provided equitable access to international learning opportunities, particularly for those unable to participate in traditional study abroad programs. De la Garza and Maher (2022) explored the decolonization of the film curriculum through South–North COIL initiatives, revealing that such collaborations can challenge and expand traditional Western-centric educational paradigms. Their findings suggest that COIL can be critical in diversifying curriculum content and promoting a more inclusive and representative understanding of global cultures and perspectives.

During the COVID-19 pandemic, Zhu et al. (2023) conducted a participatory case study in China, demonstrating how COIL could cross boundaries and connect students globally despite physical restrictions. Their findings highlighted COIL's adaptability and effectiveness in maintaining international collaboration during unprecedented times. In addition, Borger (2022) discussed the core elements of successful COIL programs, emphasizing the importance of structured collaboration, mutual respect, and clear communication for achieving impactful educational outcomes. Lastly, Naicker et al. (2021) investigated the preparedness and experiences of South African students participating in COIL. They found that while students initially faced challenges in adapting to the collaborative online environment, the experience ultimately enhanced their digital literacy, intercultural competence, and collaborative skills.

Collectively, these studies underscore the transformative potential of COIL in promoting global connectivity, intercultural understanding, and comprehensive educational development. They provide robust evidence that COIL can effectively prepare students for the demands of a globalized world by enhancing critical 21st-century skills such as communication, collaboration, and cultural awareness. In light of the growing interest in online collaborative learning programs and their potential to enhance student learning outcomes, this chapter explores the impact of COIL on enhancing English communication skills, collaboration, and cultural awareness among high school students in Colombia. Drawing on insights from existing research, I describe the experiences and perceptions of students participating in COIL and investigate how this approach contributes to their overall learning and development.

Methodology

This study employed a case study methodology to explore the impact of COIL on enhancing English communication skills, collaboration, and cultural awareness among high school students in Colombia. According to Creswell (2012), a case study is an in-depth exploration of a bounded system, such as an event, activity, or group of individuals, allowing researchers to gather detailed insights into the phenomenon under investigation. By employing a case study approach, this research provided an in-depth understanding of the impact of COIL on high school students in Colombia, highlighting the benefits and challenges of multicultural virtual learning environments.

Participants

The participants of this study included 70 high school students from Jorge Eliécer Gaitán School, a state-funded urban institution located in Florencia, Caquetá, in the Amazon region of Colombia. These students were in 10th grade and came from low socioeconomic backgrounds. The school does not have internet access; however, the teacher coordinated with some colleagues to ensure connectivity by using mobile data from their personal cell phones. Additionally, 121 international students from the USA, India, Indonesia, Korea, and China participated in the study. Of the 70 students from Colombia, 15 took part in in-depth interviews, while 61 responded to the survey. Purposive sampling was employed to select the students for the interviews, ensuring that those chosen were available and willing to participate. Table 1 describes the participants involved in the study.

Table 1. Participants' information.

	Female participants	Male participants	Total
Colombia	39	31	70
USA	15	14	29
India	18	16	34
Indonesia	20	18	38
Korea	7	4	11
China	7	2	9

Procedure

Ten virtual interactive sessions, focusing on cultural topics and group activities, were conducted. These sessions were designed to promote intercultural communication, collaboration, and the exchange of cultural perspectives. They used online platforms to enable real-time interactions and collaborative tasks. Table 2 describes the sessions, their objectives, and the students involved.

Table 2. Description of the virtual interactive sessions.

Session #	Objective	Countries involved
Session 1	Identify and introduce themselves to each other.	USA and Colombia
Session 2	Propose and assess solutions to SDG Goal 1: No Poverty.	USA and Colombia
Session 3	Identify and introduce themselves to each other	India and Colombia
Session 4	Explain traditional dishes.	India and Colombia
Session 5	Describe traditional dances and cultural practices.	India and Colombia
Session 6	Discuss and analyze the impacts of Climate Change (SDG Goal 13 – Climate Action).	India and Colombia
Session 7	Identify and introduce themselves to each other.	Indonesia and Colombia
Session 8	Discuss different cultural topics: traditional food and festivals.	Indonesia and Colombia
Session 9	Describe countries, cities, and schools, focusing on cultural aspects.	Korea and Colombia
Session 10	Identify and introduce themselves to each other.	China and Colombia

Note. Own work.

These sessions ensured students could interact and collaborate with peers from different cultural backgrounds, enhancing their communication skills and cultural awareness while addressing important global issues.

Data Collection

Data collection was carried out through two primary methods: interviews and surveys. In-depth insights were gathered through semi-structured interviews with 15 Colombian students. These interviews aimed to explore the students' experiences and perceptions of the multicultural virtual classes. The interviews were recorded in Spanish and later transcribed for analysis. Additionally, 55 of the 70 Colombian students completed a survey to assess their perceptions of the COIL experience. The survey included questions about their improvements in English communication skills, collaboration, and cultural awareness. The survey was administered online, ensuring the participants' ease of access and completion. Before participation, all students had to sign informed consent forms for both the interviews and the survey. The informed consent process ensured that students were aware of the study's purpose, procedures, and their rights as participants, including the right to withdraw without any negative consequences.

Results

This section presents the study's findings, organized into three main categories: English communication skills, collaboration skills, and cultural awareness. The results are based on students' responses to interviews and surveys, highlighting the impact of COIL on their learning experiences and engagement throughout the project.

The Impact of COIL on Students' English Communication Skills

The survey results revealed a significant improvement in the English communication skills of the students who participated in the COIL project. Initially, 70.5% of the students rated their English communication skills moderate, while 21.3% considered them low. After participating in the virtual classes, 45.9% of the students found the sessions effective, and 4.9% rated them as very effective in enhancing their English communication abilities. This indicates that the interactive and immersive nature of the online sessions substantially contributed to the students' language development.

During the interviews, students reported significant advancements in English communication when asked about specific

areas of improvement. The majority highlighted improved oral comprehension and expression, with many noting better pronunciation, vocabulary acquisition, and listening skills. Additionally, some students observed progress in their written communication skills, including grammar and textual comprehension.

Furthermore, 95.1% of the students acknowledged the positive impact of the cultural exchange on their English learning experience. This exposure to diverse linguistic and cultural contexts facilitated a more holistic and practical approach to mastering the language.

The Impact of COIL on Students' Collaboration Skills

The survey and interviews indicate a substantial improvement in students' collaboration skills through their participation in the COIL project. Before participating in the online classes, 49.2% of the students rated their ability to collaborate as moderate, and 6.6% as low. After the COIL experience, 42.6% reported a moderate improvement, 37.7% noted a significant improvement, and 1.6% stated their collaboration skills had improved significantly. The structured activities and the need to communicate and collaborate with peers from different cultural backgrounds helped students develop essential teamwork and collaboration skills.

During the interviews, students highlighted the most effective activities in fostering collaboration. They emphasized the value of group activities, oral presentations, and interactive sessions such as video calls and games (see Figure 1). These activities required active participation and mutual cooperation, thereby strengthening their collaboration skills. Many students pointed out group projects, discussion forums, and cultural exchange activities as key elements facilitating effective teamwork.

Figure 1. Students working on SDG Goal 1: No Poverty with students from the USA.

Additionally, students reported that engaging with peers from the USA, India, Indonesia, and Korea through collaborative activities improved their collaboration skills and enhanced their understanding and appreciation of different cultures. Activities like cultural presentations, group discussions, and shared projects required them to explore cultural differences and work cohesively, fostering a sense of global citizenship and collaborative competence.

The Impact of COIL on Students' Cultural Awareness

The data gathered in my COIL project positively impacted students' cultural awareness and understanding of different perspectives. A notable 36.1% of students felt that these classes greatly contributed to their cultural awareness, 8.2% acknowledged a significant contribution, and 45.9% observed a moderate improvement. This indicates that most participants recognized some level of enhancement in their cultural awareness due to their engagement in the COIL project (see Figure 2).

Figure 2. Students learning about traditional clothing in India during a COIL session on cultural diversity.

Moreover, students highlighted their favorite aspects of the online classes, emphasizing their appreciation for the opportunity to interact, communicate, and share cultural experiences with peers from different countries. These interactions, which included discussions about each other's cultures, were facilitated through various online formats such as video calls, slide presentations, and cultural presentations. Such activities made the learning process engaging and enriched students' understanding and appreciation of global diversity.

The use of interactive tools also played a crucial role in student engagement. Tools like Padlet facilitated real-time interactions, enabling immediate exchange of ideas and feedback, which contributed significantly to cultural learning. Incorporating synchronous communication methods, such as live chats and collaborative activities, further encouraged participation and motivation in learning about different cultures.

Discussion

This section discusses the impact of COIL on students' English communication skills, collaboration skills, and cultural awareness. The following table (see Table 3) outlines the key findings in each category, which will be further analysed.

Table 3. Key findings on the impact of COIL on students.

Category	Key Findings
English Communication Skills	• Students engaged in discussions and presentations in English, improving their ability to express ideas. • Real-time interactions via video calls and online tools enhanced language use in authentic contexts.
Collaboration Skills	• Students actively participated in teamwork and knowledge-sharing through structured online activities. • Interactive tools such as Padlet facilitated engagement and real-time exchange of ideas.
Cultural Awareness	• Students reported an improvement in cultural awareness due to their participation in the COIL project. • Students appreciated learning about different cultures, particularly through discussions on traditions and daily life.

Note. Own work.

The Impact of COIL on Students' English Communication Skills

The findings align with previous research on the benefits of online collaborative learning environments, particularly in enhancing English communication skills. Vahed and Rodriguez (2020) highlighted that COIL projects significantly enrich students' engaged learning experiences by fostering intercultural communication and collaboration. This is evident in my study, where students improved their oral comprehension and expression and gained confidence in their ability to engage in conversations with peers from diverse cultural backgrounds.

Similarly, Asojo et al. (2019) found that multicultural learning through COIL frameworks enhances students' language skills and cultural awareness. My study supports this, as students mentioned their enhanced ability to understand spoken English and confidently engage in conversations. Zhang and Pearlman (2018) emphasized that technology-enhanced COIL courses expand access to international education, providing students with practical opportunities to improve their language proficiency. My findings align with this perspective, demonstrating that COIL fosters oral and written language development through real-world application.

Additionally, Zhu et al. (2023) highlighted the positive impact of COIL during the COVID-19 pandemic, demonstrating that such initiatives can effectively bridge

cultural and linguistic gaps. My study found similar outcomes, with students showing significant advancements in written communication skills, including grammar and textual comprehension.

Naicker et al. (2021) further emphasized that COIL initiatives significantly improve students' preparedness for global communication by immersing them in diverse linguistic environments, leading to better oral and written communication skills. My study supports this, where students demonstrated notable advancements in pronunciation, vocabulary, and grammar. Nava-Aguirre et al. (2019) also identified COIL as a powerful tool for experiential learning, enabling students to apply their language skills in real-world contexts through international collaboration.

Finally, O'Dowd (2018) discussed the evolution from traditional telecollaboration to COIL, noting that this shift has significantly enhanced the effectiveness of virtual exchanges in developing communication skills. My research findings align with this observation, as the structured and immersive nature of COIL activities led to marked improvements in students' English communication, both in speaking and writing.

The Impact of COIL on Students' Collaboration Skills

The findings align with Borger (2022), who discussed how COIL projects enhance collaborative learning by providing structured, intercultural interactions requiring students to work together towards common goals. Capdeferro and Romero (2012) also noted that while collaborative online learning can sometimes lead to frustration, structured and well-designed activities can mitigate these challenges and lead to positive outcomes. My findings support this, as students identified well-structured group activities as pivotal in enhancing their teamwork abilities.

Furthermore, Naicker et al. (2021) found that students' preparedness and prior experiences significantly impact their ability to engage in COIL activities. This was evident in my study, as students with prior teamwork experience adapted more quickly to the collaborative tasks. Zhang and Pearlman (2018) emphasized that technology-enhanced COIL courses expand access to international education and provide practical opportunities for students to work collaboratively across borders. The improvements in collaboration skills observed among Colombian students align with this perspective.

Zhu et al. (2023) demonstrated the effectiveness of COIL in bridging cultural and linguistic gaps, especially during the COVID-19 pandemic, by promoting a deeper understanding of global issues through collaborative efforts. My findings support this view, as students identified cultural exchange and collaborative

projects as essential for improving their teamwork skills. This reinforces that COIL projects are instrumental in developing critical 21st-century skills, including effective collaboration and intercultural communication.

Altınay (2016) emphasized that online collaborative environments, like those facilitated by COIL, provide an effective platform for peer learning and assessment, which are crucial in developing students' collaboration skills. My study aligns with this, as students reported an enhanced ability to work in teams and engage with peers from diverse cultural backgrounds. Additionally, Asojo et al. (2019) found that the multicultural learning experiences embedded in COIL frameworks improve collaborative competencies and deepen students' understanding of different perspectives. This was reflected in my study, where students engaged in cultural exchange activities that required them to navigate and appreciate cultural differences while working together.

Finally, Deardorff (2006) underscored the importance of intercultural competence as a key outcome of internationalization efforts, which is evident in how COIL projects help students develop the ability to collaborate across borders, bridging cultural gaps and fostering a global mindset. These findings collectively demonstrate that COIL is instrumental in equipping students with the necessary skills to collaborate effectively in increasingly diverse and globalized contexts.

The Impact of COIL on Students' Cultural Awareness

The results of this study align with existing research on COIL's role in decolonizing curricula and fostering multicultural learning. De la Garza and Maher (2022) and Asojo et al. (2019) emphasize that COIL initiatives help integrate diverse viewpoints into the educational process, encouraging students to appreciate global diversity through direct peer interaction.

Research also supports COIL's positive impact on student motivation and engagement. Asojo et al. (2019), Freiermuth and Huang (2012), and Cooney and Darcy (2020) highlight that real-time chats and collaborative activities enhance learning by making it more enjoyable and interactive. This was evident in my project, where synchronous communication tools played a major role in keeping students engaged and fostering cultural discussions.

Hackett et al. (2023) also argue that COIL contributes to developing intercultural competence by encouraging meaningful interactions across cultural boundaries. My study reflected this, where students credited their increased cultural awareness to the rich intercultural exchanges facilitated through COIL activities. Similarly, Magen-Nagar and Shonfeld (2017) stress that interactive

online tools promote collaborative learning, further deepening students' understanding of cultural perspectives.

Finally, Naicker et al. (2021) suggest that students' prior experiences and preparedness are key to successfully engaging in COIL activities. This reinforces the idea that structured interactions and collaborative tasks within COIL provide a platform for students to explore, appreciate, and critically analyze cultural diversity, thereby significantly contributing to their overall cultural competence.

Conclusions

This study revealed significant advantages in enhancing students' English communication skills, collaborative abilities, and cultural awareness through the implementation of COIL. COIL's structured and interactive nature, combined with its culturally diverse setting, provided students with opportunities to practice and refine their language skills in real-world contexts. This approach led to noticeable improvements in their English proficiency, as students were engaging in language exercises and applying their skills in meaningful interactions with peers from different parts of the world. The authenticity of these exchanges made the learning experience more impactful, fostering a deeper understanding and mastery of the language.

In addition to linguistic benefits, COIL played a crucial role in promoting a collaborative learning environment. By engaging students in joint tasks and projects that spanned across different time zones and cultural backgrounds, COIL sharpened their teamwork abilities and enhanced their capacity to work effectively with others. The need to understand different cultural perspectives and coordinate with peers in diverse locations required students to develop flexibility, communication strategies, and a strong sense of collaboration. These experiences not only improved their ability to work in teams but also prepared them for the increasingly interconnected and globalized workforce.

Most importantly, COIL significantly boosted students' cultural awareness, which is essential in today's multicultural world. Through direct interactions with peers from different cultural backgrounds, students gained valuable insights into different ways of thinking and living. This exposure equipped them with the knowledge and empathy needed to understand and appreciate global diversity, fostering a sense of global citizenship. The integration of COIL into educational curricula, therefore, not only broadens students' linguistic and collaborative capabilities but also deepens their intercultural understanding, preparing them to positively contribute to an increasingly diverse and interconnected world.

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Chapter 9

Teaching English as a Foreign Language in Higher Education. Professor's Development: A Case Study on Theoretical Foundations, Metacognitive Processes, and Digital Culture Integration

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Introduction

The complex relationship between pedagogical practices and learning theories in English as a Foreign Language (EFL) teaching has been the subject of extensive research. This background explores the theoretical foundations, metacognitive processes, and integration of digital culture in English Language Teaching (ELT) within university professor training and qualification contexts. The exploration of linguistic theories and their implications for language acquisition is exemplified by Pearl & Sprouse's (2021) computational modeling study. Their investigation into the derivation of binding theories like UTAH and RUTAH from children's linguistic input

highlights qualitative differences in learning capacity for technological integration in cognition. This research underscores the importance of understanding theoretical underpinnings in language acquisition.

Authors such as Huerta et al. (2021) e İhtiyaryer & Altun (2023) delve into the realm of implicit theories and their influence on teaching practices. Their works emphasize that teachers possess implicit knowledge and beliefs about teaching and learning, which guide their pedagogical decisions. İhtiyaryer and Altun's phenomenological study reveals that a single learning theory does not dominate EFL learning perceptions but rather incorporates elements from multiple frameworks, including constructivism, behaviorism, and social learning theory. This eclectic approach reflects the complex nature of language learning and teaching.

On the other hand, other recent studies have focused on the role of metacognitive processes and self-efficacy in EFL teaching and learning. Rui & Liu (2023) examine the relationships between perceived teacher support, self-efficacy, and self-regulation in online English learning. Their structural equation modeling analysis demonstrates the positive influence of perceived teacher support on self-efficacy and self-regulation, highlighting the importance of teacher support in online EFL contexts. In the same way, Delcourt et al. (2024) study the impact of teachers' self-efficacy beliefs and instructional practices on teaching English Language Learners (ELLs). Their mixed-methods study reveals that teachers' use of academic performance feedback, efficacy beliefs in student engagement, and employment of student-directed and direct instructional practices predict teachers' self-perceptions of adapting instruction for ELL students. This research underscores the complex interaction between teacher self-efficacy, teaching strategies, and environmental factors in effective EFL instruction.

Integrating digital culture and technology in EFL teaching is a prominent theme in recent literature. Granados-Beltrán (2022) proposes a Web-Based Learning Didactic Design (WBLDD) for training English teachers to incorporate Information and Communication Technologies (ICT) into their teaching practice. This comprehensive approach aims to develop teachers' digital competence while enhancing their ability to create culturally and interculturally relevant learning experiences. On this same basis, Camacho-Vásquez et al. (2024) conducted a systematic literature review of pedagogical models for integrating technology in English teaching. Their analysis reveals a predominant focus on technological knowledge in existing models, often assuming teachers already possess content and pedagogical knowledge. The authors emphasize the need for models that comprehensively address the integration of technological, pedagogical, and content

knowledge while considering teachers' training and beliefs.

Other studies, such as Bali et al. (2024) who research factors influencing low-achieving students' behavioral intentions to use Mobile English Learning (MEL) by integrating three theoretical frameworks: Self-Determination Theory (SDT), Theory of Planned Behavior (TPB), and the Technology Acceptance Model (TAM). Their study provides insights into the complex interaction between motivation, social influences, and technology acceptance in language learning. Kohnke & Moorhouse (2024) explore the use of microlearning for the continuous professional development of EFL teachers, revealing its potential to enhance digital competence and pedagogical skills. This research highlights the importance of innovative approaches to teacher training in the digital age. The literature reveals a multifaceted EFL teaching and learning landscape intersecting theoretical foundations, metacognitive processes, and digital integration. The studies collectively emphasize the need for a holistic approach to EFL pedagogy that considers implicit theories, self-efficacy, technological integration, and ongoing professional development. Future research should continue to explore the synergies between these elements to enhance the effectiveness of EFL instruction in university teacher training and qualification programs.

This chapter presents a qualitative case study that examines the implementation of theoretical foundations, metacognitive processes, and digital culture integration in English as a Foreign Language (EFL) teaching within Colombian university teacher training. Set against Colombia's growing emphasis on English language education and digital literacy, observations of instructors' practices were analyzed using adapted instruments from Kuzborzka (2011) and Tai (2013). The study highlights the need for enhanced metacognitive strategy instruction and more comprehensive digital technology integration in Colombian EFL teacher training programs.

Theoretical Framework

Learning Theories in ELT

Behaviorism

Behaviorism remains an influential teaching paradigm in education and the English language, emphasizing observable behaviors, stimulus-response associations, and reinforcement. In second language acquisition, behaviorist principles manifest through practices like repetition, drill exercises, and positive reinforcement to shape language production (Estremera, 2023). However, recent scholarship suggests

behaviorism need not be viewed as mutually exclusive with constructivist approaches. Aylward & Cronjé (2022) propose an integrated model mapping behaviorist and constructivist elements onto four quadrants - injection, immersion, construction, and integration - allowing for a flexible blend of direct instruction and learner-centered methods based on knowledge domain and learner mastery level. This aligns with findings by Bali et al. (2024b). When combined thoughtfully with other pedagogical techniques, behaviorism's features, like rewards, habit formation, and stimulus-response processes, contribute meaningfully to successful second language acquisition. While behaviorism alone may be insufficient, its principles remain relevant within a broader, more holistic approach to language education that considers learner needs, knowledge type, and instructional context.

Socio-Cognitivism

Socio-cognitive approaches to education and English language teaching emphasize the interplay between social interaction, cognitive processes, and environmental factors in learning. This perspective challenges traditional behaviorist and purely cognitive views by recognizing language acquisition as a dynamic process embedded in social contexts (Chen et al., 2022). La teoría del aprendizaje social de Bandura, que postula que las personas aprenden a través de la observación, la imitación y el modelado, proporciona una base para comprender cómo los alumnos adquieren habilidades lingüísticas a través de las interacciones sociales (Manik et al., 2022).

In English language teaching, socio-cognitive approaches advocate for contextualized learning experiences that bridge learners' prior knowledge with new information (Teng, 2019), which is linked to the concept of Atkinson et al. (2023) on mind-body-world" integration, which views cognition as closely tied to the environment and social interactions. Practical applications of socio-cognitive theory in English language classrooms include restorative practices, social-emotional learning, culturally responsive education, and situated learning (Chen et al., 2022). These approaches foster a supportive learning environment that encourages student engagement, collaboration, and authentic language use. Additionally, Aylward & Cronjé (2022) propose integrating behaviorist and constructivist elements based on learners' mastery levels, recognizing that different pedagogical approaches may be appropriate at various stages of language acquisition. By considering social and cognitive factors, educators can create more effective and inclusive English language learning experiences that prepare students for real-world communication.

Cognitivism

Cognitivism has emerged as an influential paradigm in education and English

language teaching, emphasizing the role of mental processes in learning and language acquisition. This approach views learning as an active process of knowledge construction rather than a passive reception of information (Teng, 2019). In language teaching, cognitivism focuses on developing learners' mental representations and cognitive strategies for processing linguistic input and producing output. Peng (2024) highlights how cognitive approaches consider teachers' knowledge, beliefs, and thought processes crucial mediators in instructional decision-making. Teachers' cognition of pedagogical approaches like task-based language teaching is conceptualized as a dynamic, goal-directed negotiation process shaped by multiple contextual factors.

Cognitivist perspectives also recognize the importance of learners' existing knowledge structures and cognitive schemata in acquiring new language skills (Awinindia, 2023). Teaching strategies aligned with cognitivism aim to activate prior knowledge, promote deep language input processing, develop metacognitive awareness, and foster cognitive engagement through meaningful, contextualized language use. Overall, cognitivism provides a theoretical foundation for understanding the complex mental processes involved in second language development and informs pedagogical practices that optimize these cognitive mechanisms.

Constructivism

Constructivism offers a compelling theoretical framework for understanding learning processes and informing pedagogical approaches in education, including English language teaching. This perspective views knowledge as actively constructed by learners rather than passively received, emphasizing the importance of learners' prior knowledge, experiences, and social interactions in meaning-making (Cundar-Ruano, 2021). In language education, constructivist principles align well with communicative and task-based approaches, prioritizing authentic, contextualized language use and learner autonomy (Szabó & Csépes, 2022). Integrating multimedia technologies with constructivist pedagogy can create dynamic, learner-centered environments that enhance motivation and facilitate more meaningful language acquisition (Sasan & Rabillas, 2022; Vannak, 2020). However, effectively implementing constructivist approaches requires a shift in teacher roles towards facilitation and scaffolding of learning experiences, as well as careful consideration of how to assess learning outcomes authentically.

Metacognitive Processes and Self-Efficacy in ELT

Metacognition plays a crucial role in second language acquisition and English

language teaching by enabling learners to monitor and regulate their cognitive processes actively. As Anderson (2002) explains that metacognition involves key skills such as preparing and planning for learning, selecting appropriate strategies, monitoring strategy use, orchestrating various strategies, and evaluating learning outcomes. In the context of English language education, metacognitive strategies allow students to consciously reflect on and control their learning, leading to more effective comprehension and skill development (Awinindia, 2023b). For example, in academic listening courses, successful students employ metacognitive techniques like making study plans, focusing attentively on speakers, and learning from past mistakes.

Integration of Technology and Digital Culture in ELT

Digital culture has profoundly transformed language education, offering new opportunities for multimodal meaning-making, participatory learning, and the development of digital literacies. As Aslan (2024) demonstrates that social media platforms like Instagram enable language teachers to creatively curate bite-sized, interactive content that engages learners through various semiotic resources. Similarly, Kern et al. (2015) emphasize the connections between material, social, and individual dimensions in language and literacy practices. The integration of digital technologies in language teaching has led to the emergence of new pedagogical approaches, such as Education 4.0, which utilizes artificial intelligence, augmented reality, and other advanced technologies to create personalized and immersive learning experiences (Mukul & Büyüközkan, 2023). Furthermore, Abraham et al. (2022) highlight how ICT-assisted teaching training can significantly improve teachers' pedagogical knowledge and language proficiency, emphasizing the importance of professional development in the digital age. These developments underscore the need for language educators to critically engage with digital tools and cultivate their and their students' digital literacies to navigate the evolving language teaching and learning landscape.

Methodology

This qualitative study employs a descriptive case study approach (Stake, 1995) to examine the pedagogical practices in English as a Foreign Language (EFL) teaching. The research is situated within a professional development context for university instructors. It aims to analyze the integration of theoretical foundations, metacognitive strategies, and digital tools in EFL instruction, as identified through

classroom observations and instructors' self-reflections on their teaching practices. This research was conducted at the University of Córdoba, located in Montería, Colombia, with the participation of an English professor who facilitates the professional development of university faculty through an English course. The course is designed for adjunct professors of the institution to elevate their English proficiency to the B1 level following the Common European Framework of Reference for Languages (CEFR). The selection of this professor, whom we will refer to as Yeni, was based on a rigorous combination of criteria.

Yeni brings extensive teaching experience to the study, with 20 years in the field, providing plenty of opportunities to develop and refine her pedagogical practices. She has consistently demonstrated a capacity for innovation, implementing novel methods and integrating Information and Communication Technologies (ICT) in the classroom. This innovative approach is evidenced by her receipt of several grants for professional development in her field and numerous awards. These accolades include the Best Proposal in the English Area from "Fundación Compartir" (2014), Good Teaching Practices in the Individual category (2015), ETIC@ Experiences from "Computadores para Educar" (2016), Significant Experience with ICT Use at Virtual Educa (2017), and the Educa Digital Award in the hybrid category from the Ministry of ICT and "Computadores para Educar" (2022). These recognitions reflect her ability to bring new pedagogical perspectives to her practice.

Furthermore, Yeni's commitment to continuous learning is demonstrated by her advanced degrees, including a Master's in Teaching English as a Foreign Language and a Doctorate in Education. This academic background ensures she remains current with the latest educational trends and methodologies. Her willingness to participate voluntarily in the study further underscores her commitment to educational research and improvement.

Data collection was conducted through observational techniques, utilizing two instruments for data gathering and analysis. The first instrument incorporates the analytical structure from "A conceptual framework for a study of teachers' practices and theoretical thoughts" by Kuzborzka (2011), which was employed in her evaluative-interpretative study "Links between teachers' beliefs and practices and research on Reading." Kuzborzka's research investigated the relationship between the beliefs and practices of eight teachers in English for Academic Purposes instruction. This instrument was adapted to align with the objectives of the present study, maintaining its analytical structure and several elements related to metacognition. The adaptation process was informed by Brown's (2007) principles, which address behaviorist, cognitive, metacognitive,

and constructivist approaches, as well as Bandura's (1986) principles of social cognitivism as discussed in Ormrod (2005). In the context of this research, the instrument is utilized to explore the strategies the instructor employs in classroom practices related to the aforementioned approaches.

The second observational instrument, titled "TPACK-In-Action Observation Instruments" by Tai (2013), is one of the outcomes of her doctoral dissertation, "From TPACK-in-Action Workshops to Classrooms: CALL Competency Developed and Integrated." This research investigated the impact of an integration workshop with Computer Assisted Language Learning (CALL). The TPACK-in-Action model, designed to guide and evaluate the CALL workshops, was developed and implemented for this purpose. These workshops aimed to situate teachers within the TPACK framework, integrating content, pedagogy, and technology in CALL-based teaching. This approach is grounded in Mishra and Koehler's (2006) Technological Pedagogical Content Knowledge (TPACK) model, which integrates technological, pedagogical, and content knowledge for teaching. In the present study, this instrument was employed to explore the use of technologies in the classroom and the strategies for adapting the instructor's pedagogical practices with the incorporation of Information and Communication Technologies (ICT).

The definition of the category system was deductive (Useche, 2019), based on theoretical knowledge about the problem and aligned with the proposed objectives. Subsequently, a student used instruments to collect data, grouping the information according to categories related to the instructor's implementation of strategies, metacognitive strategies, and the integration of digital culture, as described in Table 1.

Table 1. Deductive categories for data analysis

Categories	Indicators and conceptualization
1. Teaching implementation strategies	Use of teaching strategies, formative evaluation, and feedback.
2. Metacognitive strategies	Self-management of learning. Functional planning.
3. Integration of digital culture	Integration of digital tools. Design of digital activities.

The qualitative analysis of data recorded in the observational instrument for studying the practices and theoretical principles of the English instructor facilitated a characterization of the theoretical foundations underlying the observed pedagogical practice. This analysis emphasizes the hybrid nature of the instructional approach, identifies strengths across various theoretical domains, and reveals potential areas for development within the three primary categories of investigation.

Results

Theoretical Foundations in EFL Teaching

Regarding the characterization of theoretical foundations in EFL teaching for the qualification of university educators, the results revealed that the English instructor's practice is grounded in multiple theoretical foundations, with a particularly strong emphasis on behaviorist and cognitive approaches, complemented by sociocognitive, metacognitive, and constructivist elements.

This multifaceted approach appears well-suited to the complex task of English language training for university professors. The high congruence between observed practices and expressed principles across most categories suggests that the instructor engages in reflective practice, consciously aligning their teaching approach with their pedagogical beliefs. This convergence is particularly significant in a teacher training context, as it models the type of reflective practice that university instructors might emulate in their teaching. Areas of potential development include the role of translation in the classroom, the use of advanced organizers, directed attention strategies, and the application of personalized learning approaches, as described in Table 2.

Table 2. Data analysis: teaching practices and theoretical principles in English language teaching.

Category	Subcategory	Observed Practice (O)	Expressed Principle (E)	Congruence
Behaviorism	Practice exercises	√	√	√
	Reward and praise	√	√	√
	Focus on imitation	√	√	√
	Limit errors	√	√	√
	Break down the information	√	√	√
	Overlearning opportunities	√	√	√
	Use of cues and stimuli	√	√	√
	Focus on informal language	√	√	√
	Frequent review	√	√	√
Socio-cognitivism	Observation	√	√	√
	Modeling	√	√	√
	Motivation	√	√	√
	Self-efficacy	√	√	√
	Self-regulation	√	√	√
Cognitivism	Repetition	√	√	√
	Translation	√	-	√
	Grouping	√	√	√
	Deduction	√	√	√
	Recombination	√	√	√
	Images	√	√	√
	Auditory representation	√	√	√
	Keywords	√	√	√
	Contextualization	√	√	√
	Elaboration	√	√	√
	Transfer	√	√	√
	Inference	√	√	√
Metacognition	Advance organizers	-	√	√
	Directed attention	-	√	√
	Selective attention	√	√	√
	Self-management	√	√	√
	Functional planning	√	√	√
	Self-monitoring	√	√	√
	Self-evaluation	√	√	√
Constructivism	Autonomy	√	√	√
	Personalization	-	-	√
	Collaboration	√	√	√
	Active engagement	√	√	√
	Meaning	√	√	√
	Feedback and reflection	-	√	√

Nota. √: Present, -: Absent, √: Incongruence between observed practice and expressed principle. Congruence (√) is indicated when both observed practice and expressed principle are present or absent.

A comparative analysis of the various theoretical foundations highlights the diverse and integrative nature of the observed pedagogical approach. The results clearly demonstrate a strong presence of behaviorist and cognitive approaches, coupled with a significant integration of sociocognitive, metacognitive, and constructivist elements. Areas of high congruence were identified in behaviorism and sociocognitivism, while certain aspects of metacognition and constructivism emerged as potential areas for development or further reflection. Table 3 compares the observed learning theories and the instructor's teaching practice.

Table 3. Comparison of theoretical foundations observed in ELT for University Teachers

Theoretical foundation	Prevalence	Congruence	Key Practices	Analysis
Behaviorism	High	Perfect (9/9 subcategories)	• Practice exercises • Reward and praise • Focus on imitation • Error limitations • Information breakdown • Overlearning opportunities	Strong focus on habit formation, repetition, and reinforcement. Beneficial for building foundational skills and automaticity in language use.
Socio-cognitivism	High	Perfect (5/5 subcategories)	• Observation • Modeling • Motivation • Self-efficacy • Self-regulation	Emphasis on social learning, motivation, and self-directed learning strategies. Fosters a supportive learning environment and encourages learner autonomy.

Theoretical foundation	Prevalence	Congruence	Key Practices	Analysis
Cognitivism	High	High (11/12 subcategories)	• Repetition • Grouping • Deduction • Recombination • Imagery • Auditory representation • Keywords • Contextualization	Focus on mental processes in language learning. Emphasis on various cognitive techniques to enhance memory, comprehension, and language production. A single incongruence in translation suggests a potential area for reflection.
Metacognition	Moderate to High	Moderate (5/7 subcategories)	• Selective attention • Self-management • Functional planning • Self-monitoring • Self-evaluation	Efforts to develop learners' ability to plan, monitor, and evaluate their own learning. Incongruences in advance organizers and directed attention suggest potential areas for development.
Constructivism	Moderate to High	Moderate (4/6 subcategories)	• Autonomy • Collaboration • Active engagement • Focus on meaning	Commitment to learner-centered, collaborative, and meaning-focused instruction. The absence of personalization in practice and principle might indicate an area for future development.

Note. This table summarizes the detailed analysis of each theoretical foundation observed in the EFL teaching practice**.** It includes the name of each theoretical foundation, its prevalence in the observed practice, the level of congruence between observed practices and expressed principles, the key practices associated with each foundation, and a brief analysis of the implications of each theoretical approach.

Metacognitive Processes in Teaching English as a Foreign Language

The analysis of metacognitive strategies in Teacher Yeni's practice is predicated on adaptations of the observational instrument "A Conceptual Framework for a Study of Teachers' Practices and Theoretical Thoughts" by Kuzborska, (2011), with a specific focus on the instrument's metacognition-related section. The educator exhibits a distinct approach in guiding students to identify and organize conditions conducive to their learning, a key aspect within the self-management category. This is manifested in practices that instruct students to recognize conditions that optimize their learning and to establish a favorable learning environment.

Furthermore, the instructor promotes strategic planning of activities, instructing students to anticipate the necessary steps for executing future linguistic tasks associated with the functional planning category. The significance of these practices is corroborated by studies such as Awinindia (2023), which underscores the importance of planning in English as a Foreign Language (EFL) learning. Additionally, Teng (2019) emphasizes educators' crucial role in guiding students and developing effective curricula that foster conscious learning. These findings highlight the relevance of the observed pedagogical approaches in enhancing metacognitive strategies within the EFL context.

Moreover, the instructor demonstrates an awareness of selective attention in learning by teaching students to focus on specific aspects of linguistic information and contextual details that facilitate information retention. This approach aligns with the findings of Manik et al. (2022), who highlight attention as an essential component of learning and emphasize the fundamental role of the student as the protagonist in constructing their own knowledge. The educator's methods reflect a conscious effort to cultivate metacognitive strategies that enhance students' ability to direct their attention effectively in the language learning process.

The metacognitive strategies employed by the instructor primarily focus on preparing students for learning; however, the observational instrument does not reveal an intentional use of the self-regulated learning process. The educator could benefit from deepening her knowledge of various metacognitive strategies, particularly with regard to self-assessment and self-regulation, to guide students toward more reflective and autonomous learning. In this context, Anderson (2002) asserts that using metacognitive strategies stimulates critical thinking and can lead to more profound learning and enhanced performance in the learning process. This suggests that a more comprehensive integration of metacognitive strategies, especially those promoting self-regulation, could potentially enhance the effectiveness of the instructor's pedagogical approach and, consequently, student outcomes.

Integration of Digital Culture in Teaching English as a Foreign Language

The analysis of digital culture integration in Teacher Yeni's practice, based on Tai's (2013) TPACK-In-Action Observation Instruments, reveals a limited utilization of Information and Communication Technologies (ICT). While the instructor demonstrates competence in managing Google Meet, employed for interactive virtual class delivery, there is no evidence of creating original digital resources or implementing virtual learning platforms such as Moodle or Edmodo. This limitation in her pedagogical practice is reflected in the observation of her planning: "The instructor utilizes resources from various learning platforms, which were not self-created but were relevant to the studied subject matter" (Observation record). This finding suggests a potential area for professional development in creating and integrating digital resources tailored to the specific needs of English as a Foreign Language (EFL) instruction.

This practice, relying on pre-existing resources, diminishes the potential for offering more comprehensive and personalized learning experiences, suggesting a superficial integration of the TPACK framework (Mishra & Koehler, 2006) in her educational practice. Despite demonstrating proficiency in utilizing technology and multimedia resources, the instructor confines herself to pre-existing tools and resources and synchronous teaching via Google Meet without exploring the transformative potential of ICT to create innovative learning environments and design activities. This limitation is evidenced in the following observation regarding her productivity:

> *The instructor utilizes the Google Meet platform for presentations, which includes audiovisual resources. For instance, during the explanation of the past perfect tense, she displayed the digital version of the textbook page, incorporating examples from the book and other resources such as images and videos from various platforms (Observation record).*
>
> *These practices underscore a disconnection between the instructor's theoretical knowledge of ICT and its effective application in the classroom. While the instructor is familiar with digital tools, she does not intentionally utilize them to transform her students' learning experience: "During synchronous sessions, she organized online open-ended questions, where students could share their ideas, ask questions, and respond to their peers' comments" (Observation record).*

Although this activity intends to foster student participation, it also highlights the limited appropriation of digital tools to enrich pedagogical practices. The research by Abraham et al. (2022) provides evidence of the importance of ICT teacher training

in improving education quality. This study emphasizes the need for educators to develop ICT skills and knowledge to integrate them into their teaching practices effectively. It reveals that ICT teacher training positively impacts teachers' pedagogical knowledge and linguistic competence. However, in the current educational context of digital culture, knowledge of and the use of technological tools and their integration into all aspects of the teaching-learning process are required. Consequently, it cannot be asserted that the instructor possesses a "digital culture" in the contemporary sense, where technology is deeply integrated into teaching, communication, and knowledge creation (Aslan, 2024; Mukul & Büyüközkan, 2023).

Exploring virtual learning platforms, designing more complex digital activities, and deepening knowledge of the TPACK framework to develop more innovative pedagogical strategies could significantly benefit the instructor's practices. This would allow her to integrate ICT more effectively, promoting more meaningful and enriching learning for her students.

Discussion

The present study aimed to examine the implementation of theoretical foundations, metacognitive processes, and digital culture integration in English as a Foreign Language (EFL) teaching within the context of university teacher training. The findings reveal a multifaceted approach to EFL instruction that combines various theoretical foundations, with a particular emphasis on behaviorist and cognitive approaches, complemented by sociocognitive, metacognitive, and constructivist elements.

The observed teaching practices demonstrate high congruence between the instructor's expressed principles and observed behaviors across multiple theoretical frameworks. This alignment suggests a reflective practice where the instructor consciously supports their teaching approach with their pedagogical beliefs. Such congruence is particularly significant in a teacher training context, as it models the type of reflective practice that university instructors could emulate in their teaching. Behaviorist and cognitive approaches in the instructor's practice align with traditional EFL teaching methodologies that emphasize habit formation, repetition, and cognitive strategies for language acquisition (Estremera, 2023). However, integrating sociocognitive elements, such as modeling and motivation, reflects a more contemporary understanding of language learning as a social process (Chen et al., 2022). This eclectic approach suggests an awareness of the complex nature of language

learning and teaching, echoing the findings of İhtiyaryer and Altun (2023), who noted that a single learning theory does not dominate EFL learning perceptions but incorporates elements from multiple frameworks.

Metacognitive Processes in EFL Instruction

The analysis of metacognitive strategies in the instructor's practice reveals a focus on guiding students in identifying and organizing conditions that facilitate their learning, aligning with the concept of self-management in metacognition. The instructor's emphasis on strategic planning for activities, teaching students to anticipate steps for future linguistic tasks, corresponds with the functional planning category of metacognitive strategies. These practices are supported by research highlighting the importance of planning in EFL learning and the crucial role of teachers in guiding students to develop effective study plans (Awinindia, 2023; Teng, 2019). However, the observed practices indicate a limitation in intentionally using self-regulated learning processes. The instructors could benefit from deepening their knowledge of various metacognitive strategies, particularly in self-evaluation and self-regulation, to guide students towards more reflective and autonomous learning. This aligns with recent research emphasizing the importance of metacognitive awareness in EFL learning (Rui & Liu, 2023).

Digital Culture Integration in EFL Teaching

The analysis of digital culture integration in the instructor's practice reveals a limited utilization of Information and Communication Technologies (ICT). While the instructor demonstrates competence in using virtual meeting platforms for interactive online classes, there is a notable absence of creating original digital resources or implementing virtual learning platforms. This practice suggests a superficial integration of the Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006) in the instructor's educational approach.

The reliance on pre-existing resources and synchronous teaching through virtual meeting platforms, without exploring the transformative potential of ICT to create innovative learning environments and design activities, indicates a disconnect between theoretical knowledge of ICT and its effective application in the classroom. This limitation aligns with Camacho Vásquez et al. (2024) findings, who identified a need for pedagogical models that comprehensively integrate technological, pedagogical, and content knowledge in teacher education.

Conclusions

This study highlights the complex nature of EFL instruction in university teacher training contexts. While the instructor demonstrates a strong foundation in traditional EFL teaching methodologies and an awareness of contemporary approaches, there are areas for potential growth, particularly in the deeper integration of metacognitive strategies and digital technologies. On the other hand, Abraham et al. (2022) provide evidence regarding the significance of teacher training in Information and Communication Technologies (ICT) for English as a Foreign Language (EFL) instruction. They emphasize the necessity of institutional support for the development of digital literacy. It is crucial to recognize that ICT training for educators alone is insufficient. Educational institutions must also furnish the requisite support for implementing innovative strategies and fostering a genuine "digital culture" within the educational sphere.

Future research could explore how to effectively bridge the gap between theoretical knowledge and practical application of digital technologies in EFL teaching. Additionally, investigating ways to enhance metacognitive strategy instruction within EFL teacher training programs could provide valuable insights for improving teaching practices.

The findings of this study underscore the need for continuous professional development for EFL instructors, particularly in the areas of metacognition and digital literacy. As suggested by Kohnke and Moorhouse (2024), exploring innovative approaches such as microlearning for continuous professional development could enhance EFL teachers' digital competence and pedagogical skills.

Finally, while the observed teaching practices demonstrate a solid foundation in EFL pedagogy, there is room for growth in fully embracing the potential of metacognitive strategies and digital technologies. By addressing these areas, EFL instruction in university teacher training programs can better prepare future educators for the evolving landscape of language teaching in the digital age.

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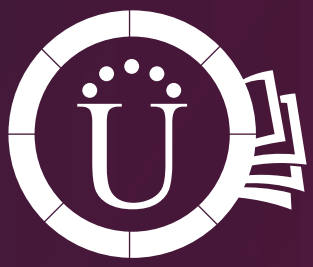

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