

**Incorporating Artificial Intelligence and Gamification in EFL Education: Strategies for
Enhancing Teaching and Learning Outcomes of EFL Teachers.**

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Abstract

English as a Foreign Language (EFL) instruction plays a crucial role in language acquisition, which has become an essential tool for global communication, education, and employment opportunities. The rising demand for EFL education, coupled with the challenge of delivering high-quality education to a large number of students necessitates exploring impactful practices within bilingual learning environments. This project proposes a vision where educators leverage teaching strategies complemented by Artificial Intelligence (AI) applications and gamification, enabling students to forge a meaningful learning experience. The type of study proposed is an exploratory case study with a qualitative approach in which data is collected through surveys, online training sessions, and class observation from EFL teachers who belong to different educational contexts and levels, and who can be considered as proper representation of English teachers in Colombia. The analysis of the data collected shows the different opinions and insights teachers in Colombia have about the integration of AI-gamified tools in BLEs, the opportunities and limitations the application of these technologies signify, the big influence these apps pose on students' motivation and engagement, and finally a leverage in teachers' professional development and their pedagogical practices. Technologies curriculum alignment and evaluation updating are some recommendations.

Keywords: artificial Intelligence, bilingual learning environments, case study, English as a Foreign Language instruction, gamification, pedagogical strategies.

Resumen

La enseñanza del inglés como lengua extranjera juega un papel crucial, se ha convertido en una herramienta esencial para la comunicación global, educación y oportunidades laborales. La creciente demanda de educación en EFL, junto con el desafío de brindar una educación de alta calidad, hace necesario explorar enfoques impactantes en entornos de aprendizaje bilingüe. Se propone una visión en la cual los educadores aprovechen estrategias de enseñanza complementadas por aplicaciones de Inteligencia Artificial (IA) y gamificación, permitiendo a los estudiantes forjar una experiencia de aprendizaje significativa. El tipo de estudio es de caso exploratorio con un enfoque cualitativo en el que se recopilan datos a través de encuestas, sesiones de capacitación en línea y observación de clases de profesores de EFL pertenecientes a diferentes contextos educativos y niveles. El análisis de los datos recopilados muestra las diferentes opiniones e ideas que los profesores tienen sobre la integración de herramientas IA-gamificadas en entornos de aprendizaje bilingüe, oportunidades y limitaciones que estas tecnologías presentan; su influencia en la motivación, compromiso de estudiantes, desarrollo profesional de profesores e impulso en prácticas pedagógicas. La alineación del plan de estudios de tecnologías y la actualización de la evaluación son algunas recomendaciones.

Palabras clave: ambientes bilingües de aprendizaje, enseñanza del inglés como lengua extranjera, estrategias pedagógicas, gamificación, inteligencia Artificial.



Introduction

English as a Foreign Language (EFL) classes play an important role in facilitating language acquisition, which has become an essential component for effective communication, education, and employment opportunities worldwide as Wong, et al. (2021) explain. With the increasing demand for EFL education and facing the challenge of delivering high-quality education to numerous students with limited resources; we can propose to impact a bilingual learning environment. In this setting, teachers would focus on a vision in which teaching strategies are complemented by the application of AI and gamification, allowing students to forge a meaningful connection between their community and technology. Most educators across various institutions may not yet recognize the importance of integrating English and AI-gamified tools into our globalized world.

Interest in using AI to support language learning has grown in recent years, with several studies examining the effectiveness of AI-powered tools in EFL teaching in institutions and public settings, and here it is aimed to gain a deeper understanding of the interactions through AI.

Artificial intelligence (AI) has the potential to revolutionize language teaching by providing students with personalized and adaptive learning experiences. In bilingual (EFL) classrooms, AI can be used in a variety of ways to improve language acquisition and student achievement of their language skills as Guolan (2020) explained, the application of artificial intelligence technology in English teaching can give full play to its advantages and make up for the shortcomings of traditional classroom teaching.

Some examples of AI applications that can enhance the learning and teaching process in EFL contexts are ‘ChatGPT’ and ‘Curipod’ as well as others that allow students to create



different realities and interact through them. Gamification is another protagonist in today's teaching strategies. AI-powered gamification tools can increase student engagement by incorporating game-like elements into learning materials. Through these apps and games, language abilities such as writing and speaking can be improved while at the same time, the learners' creativity is boosted. Therefore, it is crucial to examine the pedagogical implications and practical challenges of integrating AI and gamification in EFL learning environments.

The purpose of this study is to investigate how AI-gamified apps can be effectively integrated into classes by EFL teachers within bilingual learning environments to enhance language acquisition and instructional efficiency. In addition, we aim to identify potential challenges and opportunities for future research and practice. This study aims to offer valuable insights for educators looking to leverage AI to improve EFL instruction and to design a pedagogical strategy for implementation in a teacher training program. Our research will explore the current state of AI in EFL, shedding light on best practices and strategies for smoothly integrating AI-gamified tools into EFL pedagogy.

After the consideration of the previous aspects, the following research question can be addressed: How does the incorporation of Artificial Intelligence and gamification techniques in EFL education influence the teaching strategies and learning outcomes for EFL teachers?



General Objective

To establish how the incorporation of educational strategies influences the teaching of English as a Foreign Language (EFL) in incorporating cutting-edge technologies like Artificial Intelligence (AI) and gamification with current trends that shape teacher's daily lives.

Specific Objectives

To identify aspects in the application of educational strategies employing AI and gamification as an option for EFL learning environments, training teachers from various backgrounds so they can dynamize their teaching strategies.

To analyze the potential benefits and limitations of integrating AI and gamification technologies into EFL teaching.

To determine the contribution AI and gamification technologies pose in the EFL teaching process of both EFL teachers and learners.

Literature Review

Artificial intelligence (AI) in education is developing quickly and has the potential to completely change how we teach and learn. It is possible to enhance educational outcomes and develop individualized learning experiences using AI techniques including machine learning, natural language processing, and data analytics (Guerra, 2023).

The integration of AI in education aims to improve teachers' capabilities rather than replace them, automating routine tasks, personalizing learning experiences, and offering valuable insights for instructional decision-making. The use of AI in education is outlined in this introduction, along with its potential advantages, ethical implications, impacts on innovation, and knowledge transfers.

Artificial Intelligence in Education

The field of AI in education is one that is quickly developing. Artificial intelligence (AI) tools can be used to improve English instruction. To increase students' engagement and academic results, teachers can use AI to create personalized learning experiences, real-time feedback, and intelligent tutoring systems.

According to Murphy (2019), the potential of AI to support and enhance K-12 teaching practices is explored through various applications of AI that can assist teachers in their instructional tasks, providing promising opportunities for improved educational outcomes. The focus is on how AI can be utilized to augment teachers' capabilities, rather than replacing them, by automating routine tasks, personalizing learning experiences, and providing valuable insights and recommendations for instructional decision-making.

Chiu et al. (2023) emphasize the potential of AI to enhance personalized learning, assessment, feedback, and data-driven decision-making in education, teacher professional



development, and collaboration to maximize the benefits of AI in educational settings. AI can be utilized to provide personalized learning experiences tailored to individual students' needs, preferences, and learning styles.

According to Kim et al. (2022), it is explored the perspective of leading teachers regarding the learning design that supports collaboration between students and AI in education. The key concept revolves around the idea of leveraging AI as a collaborative tool to enhance student learning experiences and promote their active involvement in the learning process.

According to Holmes et al. (2019), AI has the potential to revolutionize education by optimizing learning experiences, promoting individualized instruction, and empowering both teachers and learners. It has the potential to enhance student engagement, facilitate personalized feedback, and support the development of critical thinking and problem-solving skills. AI integration in education can revolutionize practices of instruction and learning by delivering individualized experiences, enhanced results, and new methods. Future research should concentrate on strategies and interventions that maximize the benefits of AI in various educational situations. Governments, politicians, and other stakeholders should establish child-centered policies that give children's rights priority and take into account the special dangers and opportunities connected to implementing AI in education (UNICEF, 2021).

AI in EFL Learning Environments

The field of teaching English as a foreign language has suffered many changes throughout the decades subjected to the needs that arise from the different contexts, the socio-cultural dynamics within communities, the political agendas that are subtly boosted by educational stakeholders, and the progressive integration of technology in learning environments.



The revolution of Artificial Intelligence in language teaching, though relatively new, has contributed to the academic reflection on pedagogical practices, the goals when teaching a new language, the role and use of technology, and so on.

The development of basic skills such as reading, listening, writing, and speaking can be leveraged through AI. Guolan (2020), says that "the application of artificial intelligence technology in English teaching can give full play to its advantages and make up for the shortcomings of traditional classroom teaching." (p.78) meaning that educators have been provided by AI with a catalog of applications and functions that allow classes to be creative, functional, permitting to focus on students interests while at the same time they are exposed to building soft skills needed for today's world, changing the way content is presented, keeping students motivated with a diverse type of activities, evaluations, and assessments.

Now teachers are able to create interactive tasks to improve learners' interaction in the new language (Zhai, 2023) since students are not subjected to a limited time in a class but they have a wide range of scenarios to practice what they learned and in multiple ways like using AI avatars to have conversations with, practice the writing skill with immediate feedback, watching content through videos or readings they are interested in, creating instant-messaging scenarios to interact with others, etc. AI opens the limited world that traditional education treasures.

Another advantage is that personalized teaching-learning is possible with AI. One of the most important elements in education is understanding the context every student comes from but standardized practices of teaching and assessing have created holes in the learning process. With AI, task design can be aligned with learning goals and consider learners' backgrounds and proficiency levels (Zhai, 2023). This is a reality in most environments that use this type of



technology coming from the fact that AI responds to the interaction it has with its user, collecting data provided by him/her and creating experiences for them.

AI's Effects on Innovation, Quality, and Knowledge Transfer in Education

Castellanos Galindo et al. (2021) address the significance of AI in building a culture of educational innovation that encourages lifelong learning in the setting of education. By raising educational standards and enabling knowledge transfer to educational institutions, AI can help democratize knowledge. Educators can improve pedagogical practices, accommodate different learning preferences, and advance inclusive education by utilizing AI tools and resources.

The world AI is opening in education permits advances in practices such as designing virtual tutors that can grade different types of questionnaires and activities (Colombia Aprende, 2022); make recommendations about courses, majors at universities and career paths that are normally given by counselors (Zeide, 2019); also “providing anywhere anytime machine supported queries and immediate feedback” is possible (Chiu et al., 2023, p. 1); in the field of language acquisition, Artificial Intelligence has developed interactive tasks for enhancing various aspects of a language learner’s interactional competence which outstandingly complements the learning process of languages and increases motivation; and finally, Wong & Cheng (2021) say that “the injection of AI-related elements in school-based ICT/STEM activities, exploration of applying AI in assessment, and the identification of AI-powered Apps, support student subject knowledge learning” (p. 1). Currently, virtual or hybrid learning environments can be fed with several resources coming from different kinds of technology that not only facilitate educators’ strategies but also, can magnify the learning process and outcomes.



Learners' Competencies in AI Education

Sanusi et al. (2022) stress the significance of students' competencies in AI education, especially in high school and technological settings. It is essential for students to acquire AI-related skills, such as critical thinking, problem-solving, and teamwork, in order to successfully traverse the opportunities and problems that AI presents. A good AI education can enable students to become digitally literate and adapt to a society that is increasingly driven by AI.

Ethical Issues in AI Education

The use of AI in education also brings up ethical issues. According to Burton et al. (2017), it's critical for AI education courses to address ethical issues such as AI ethics, hazards, and case studies. The use of AI technology responsibly and objectively must be encouraged, and educators must promote conversations on the ethical aspects of AI. Educators may assist students in navigating the intricacies of AI and making informed judgments by providing them with ethical frameworks.

The ethical use of Artificial Intelligence has concerned governments and scholars around the world because of its reach in people's lives. UNICEF (2021) says that because of its impact in many fields humans develop in, such as social, cultural, or economic, it is important to follow guidelines that regulate its implementation. Also, UNICEF (2021) adds that “the first step is to recognize the unique opportunities and risks that AI systems represent for children and then to act to leverage and mitigate them, respectively, in ways that recognize the different contexts of children” (p.7).

These last generations have been exposed to technology from a very young age, and it is normalized by society the access kids have to technological platforms, unprotected, giving them the power and responsibility over their actions while at the same time demanding them to be



careful. It is the adults, and in this case, the ones who must care for the children, identifying the multiple risks they are exposed to like their personal information being stolen, or the possible damage their emotional world can suffer from standards the society imposes that are subtly suggested through these AI systems, but educators have the platforms to educate learners on these matters. Burton et al (2017) explain it well when they say:

“Part of the goal of an AI ethics class should be to teach students to consider each problem from multiple angles, to reach a considered judgment about which theory (...) are best suited to describe and address a particular problem, and to consider the effects of possible solutions.” (p. 25).

Policy for Implementation of AI

According to the policy guidance on AI for children published by the United Nations Children's Fund (UNICEF) in November 2021, there are practical recommendations and guidelines for governments, policymakers, and stakeholders to shape their national policies and regulatory frameworks regarding AI for children. The document emphasizes the need for proactive and inclusive policies that address the unique risks and opportunities associated with AI, with a focus on promoting children's best interests and protecting their rights.

When formulating policies for the implementation of AI with regard to children, it is essential to incorporate the following key principles: (UNICEF, 2021).

- *Child-centered approach*: Prioritize the best interests of children, considering their specific needs and rights.
- *Non-discrimination and equity*: Address biases and ensure fair treatment for all children, regardless of their background or characteristics.



- *Participation and transparency:* Involve children and relevant stakeholders in decision-making processes and promote transparency in AI development and deployment.
- *Privacy and data protection:* Safeguard children's privacy rights and ensure responsible handling of their personal data.
- *Safety and well-being:* Prioritize the safety of children, both online and offline, and address risks such as harmful content and exploitation.
- *Education and digital literacy:* Promote digital literacy programs to empower children to understand and engage with AI technologies responsibly.

Epistemological Study of AI in Education

According to Scott (2021), the study of AI in education seems to emphasize the transformative potential of AI technologies in terms of the following aspects:

Replicating and enhancing human capacities and processes, often making them more functionally efficient. This suggests that AI can emulate or enhance specific aspects of human learning and cognition.

Shifting learners' roles, from passive recipients of knowledge to more active and engaged participants in the learning process. This implies that AI technologies may enable learners to take more control, explore diverse learning resources, and engage in personalized learning experiences.

Improving learning efficiency in various AI-based systems, such as distance learning programs, MOOCs, hybrid learning models, and blended pedagogic learning accessories. These systems aim to enhance learning efficiency by providing accessibility, flexibility, hypertextuality, learner control, and equal relations between teachers and learners.



Gamification and Education

The great impact of technology on education and educational practices has given rise to deep changes in the way content is presented, how learning environments and experiences are designed, and how the learning process is perceived. Traditional education needs to step back and educators have to widen their horizons to new possibilities that gamification has to offer. Gamification is defined by Deterding et al. (2011) as “the use of game design elements in non-game contexts” (p. 4) and as paradoxical as it can be to think of education as a non-game context (considering the importance and benefits of such in the teaching-learning process), existing pedagogical practices, very well ingrained, require refreshment and adaptation to the needs the 21st-century demands. Gamification has allowed the promotion of learning being fun as a whole (Fischer & Barabasch, 2020).

Video games and virtual reality had been seen as something completely alien to education in the past, but the technological revolution and its presence in one’s life, has had educators thinking about how to include them to improve learning outcomes and improve the learning process per se. Fischer & Barabasch (2020) explain some alternatives that have been useful in the education field:

“Teachers can convert individual learning activities into gamified teamwork quests, tasks, in order to evoke communication and cooperation between players. Since gamification often involves digital technology and connectivity, learners can also enlarge their 21st-century information, media, and technology literacy skills” (p. 89).

This idea leads to understanding the wide spectrum of the impact gamification can have on the motivation and learning of students. Different types of abilities and skills are targeted while using virtual-reality games in learning environments: social skills, technological skills, and



thinking skills. Besides, the needs and interests of the students are the priority when designing activities and experiences. Fischer & Barabach (2020) add that “gamification can be a vessel to convey 21st-century skills such as communication, cooperation, creativity, and critical thinking at all places of learning” (p. 89).

Methodological Design

Approach, Type of Study, and Instrument Design

It is emphasized the use of methodological qualitative design research as the foundation of our work on improving English as a Foreign Language (EFL) instruction in bilingual learning contexts. This qualitative approach allows us to dig more deeply into the perspectives and experiences of educators and students, resulting in a more comprehensive understanding of the challenges and opportunities associated with the integration of cutting-edge technologies such as artificial intelligence (AI) and gamification. (Johansson & Herranen, 2019).

Ideally, our project would fully align with action research. This approach resonates with our goals as it positions us directly within the educators' contexts. However, due to limitations in time and resources of the MABA program, we opted for an exploratory multiple case study design. Through this exploration, we can gain valuable insights into how educators integrate newly acquired knowledge into their practices. Hatch (2002) states that “case studies are a special kind of qualitative work that investigates a contextualized contemporary (...) phenomenon within specified boundaries” (p. 43). In this case, we focused our attention on a current trend inside BLEs that is the use of AI and gamification as a pedagogical alternative inside teaching practices and proposed ways of integrating them in the classes to dynamize the teaching and learning process. This case study followed a path proposed by Yin (2003) in which it was identified 3 questions to deal with: “How to define the case being studied (...) “How to



determine the relevant data to be collected (...) “What should be done with the data once collected” (p.2). The scope of this exploratory research involves the data gathered through the surveys applied to EFL teachers. Therefore, based on the findings of this study, it was designed a training program for these teachers to be implemented in their learning environments, offering options to integrate these new technologies in their ELT practices, and as a possible solution; and later on, the researchers observed the implementation of the program by different teachers in different educational contexts and levels.

The methodological design is structured to provide a holistic insight into the approach we plan to implement during the teacher training sessions. It includes a set of defined learning objectives we intend to accomplish with the educators.

This exploratory multiple case study provided important and relevant insights into the collection of data due to the fact that the instruments took a comprehensive strategy, including surveys, comments from training sessions, and an observation monitoring phase. This comprehensive strategy enabled a full evaluation on the project’s impact on educators and their learning environments. In terms of the analysis the study’s approach demonstrates a purposeful emphasis on methodological qualitative design research to influence English as a foreign language (EFL) training in bilingual learning situations. Notably, this exploratory multiple case study strategy contributed to a better understanding of how educators incorporate technology as artificial intelligence (AI) and gamification into their teaching practices and the influence of collaborative teacher training programmes and the development of comprehensive monitoring instruments on classroom implementation.

The exploratory and implementation phases were the two key stages of this study's execution. To develop hypotheses and produce insights that can direct future research and



educational practices, exploratory studies are particularly well suited when scientists want to get a thorough grasp of phenomena that have not been extensively studied (Denzin & Lincoln, 2018).

Qualitative Data Gathering

Surveys

Understanding teachers' attitudes and perspectives is crucial in today's dynamic educational environment for applying efficient and cutting-edge teaching techniques. Techniques for collecting quantitative and qualitative data have shown to be essential to reach this thorough knowledge. Researchers may dig deeply into the complex web of human experiences, attitudes, and cultural contexts using both research methodologies, which yields important insights that quantitative data alone cannot capture (Denzin & Lincoln, 2018).

To collect qualitative data from EFL instructors, a systematic survey was created with a mixed-question model. Their opinions of existing teaching techniques, the possibilities of AI and gamification, and their preferences for instructional strategies were all evaluated through the survey. By starting this qualitative research project, we hope to provide insightful commentary to the conversation on utilizing cutting-edge educational tools in language instruction. We hope to gather important lessons from EFL teachers' perspectives that will guide educational practices and help create a more stimulating and effective learning environment for students.

In this line, the goal of our study is to examine the complex emotions and beliefs that English as a Foreign Language (EFL) teachers have about incorporating gamification and artificial intelligence (AI) into their lessons. According to Deterding et al. (2011) & Johnson et al., (2013), gamification, the use of game elements in non-game contexts, and AI integration are



transformative educational strategies that have the potential to improve learning outcomes in terms of motivation, engagement, and outcomes. (See Appendix B).

Observation

Qualitative techniques were used in the second phase. To evaluate the real effects of incorporating AI and gamification technology in EFL instruction, classroom observations were also conducted. According to Hernández-Maldonado, et. al. (2019), observation is understood as a process to obtain information directly from the context where actions are happening. Observations of the classes of the teachers selected were carried out to evaluate their application of the AI and gamification tools in their learning environments. The observation included the evaluation of components such as class moments and technological tools used in their pedagogical practices. There were evaluation rubrics for the observation sessions. (See Appendix D).

Instructional Design

Pedagogical Theory Foundation

The training sessions' pedagogical basis is the “Experiential Learning Model”. The purpose of the training sessions is to equip teachers with some knowledge about artificial intelligence and AI-gamified apps to be used as a booster in their pedagogical techniques inside their bilingual learning environments. Coming from the fact that knowledge is not a fixated idea but immutable in its core, teachers are encouraged to experience themselves the use of these apps so that an epistemological and empirical reflection comes along to create new concepts and ideas that feed the teaching and learning process and EFL education is re-signified.

Kolb (2015) discusses the experiential learning model and explains that “the emphasis is often on direct sense experience and in-context action as the primary source of learning.” (p.18).



After comparing authors like Piaget and Dewey, Kolb considers that ideas are formed through experience, reflective observation and active participation in concrete experiences and this is the key for the formation of knowledge (Kold, D, 2015). In this way, teachers must put aside the traditional view of education and experiment with the new and current ideas and resources provided by technology that can amplify the learning outcomes of learners and create a life-long learning.

Training Sessions Learning Objectives

- To implement Artificial Intelligence (AI) and gamification-based strategies to enhance teaching practices in EFL education.
- To provide an educational methodological approach to nurture pedagogical practices in bilingual learning environments.

AI and Gamified Tools

Table 1

AI and gamified apps used in the training sessions.

CURIPOD	QUIZIFY	CHAT GPT	ARTFLOW
			
CURIPOD is a robust platform that promotes learning and collaboration in educational environments. It provides a variety of features to help	This learning platform offers interactive quizzes designed to enhance knowledge and engagement. Its personalized learning approach optimizes	One of the most popular Artificial intelligence tools around the world, and whose platform is user-friendly, means an advantage	This potential AI-gamified tool enriches the teaching - learning process by boosting class engagement and students learning motivation. The



educators and students, such as customizable course development tools, interactive multimedia content, real-time communication channels, and evaluation, all of it using AI. The platform is intended to be user-friendly and accessible to students, encouraging interaction and participation while providing teachers with vital data into student development and performance. Overall, CURIPOD seeks to improve the teaching and learning experience with an intuitive interface and a broad feature set.	knowledge retention. This user-friendly interface provides tools for creating quizzes, tracking progress, and identifying areas for improvement. The extensive range of subjects, personalized learning, and engaging gamification are characteristics that make it an effective tool for both individuals and educators.	in the educational field. Developed by OpenAI, Chat GPT can nurture the classes dynamics and impact the learning process in two (2) ways: a) the learner, as a tool helping the self-learning competence development when learning a second or foreign language; b) the educator, as a way for leveraging teaching practices, such as monitoring learning processes; didactic ideas provider; students personalized assistant, etc.	variety of options that can be used in EFL education offered by Artflow goes from storytelling to visually attractive presentations designed by educators or the students themselves. Utilizing Artflow's image generation, develops interactive games that reinforce language concepts and grammar rules. Incorporating adaptive challenges: Implementing AI-driven challenges that adjust to students' progress, providing a continuous learning challenge.
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Note: the authors of the research made it.



Implementation of Training Sessions

The training sessions were delivered asynchronously via YouTube, utilizing the platform's built-in features to facilitate interaction and communication among participants, who were provided with a link to access the sessions at their convenience. This format allows flexibility, enabling teachers to engage with the material at a time that suits their schedules. Our training methodology for introducing AI platforms to instructors via two YouTube talks was carefully designed to maximize engagement and comprehension. We invited individuals to share their experiences, ask questions, and provide feedback via YouTube comments. (See Appendix C). Below, it is explained in detail the content of those training sessions.

- **Training session 1**

In the first session, two (2) AI-gamified tools were presented: Curipod and Quizify. Curipod is a game-changer app that can be used to dynamize a class experience using artificial intelligence with the purpose of achieving meaningful learning. The app possesses a bank of interactive resources such as AI-driven language exercises or immersive virtual scenarios, and the elements of the app can easily adjust to the needs of the students integrating gamification principles. The pedagogical strategy suggested to integrate Curipod in EFL learning environments was the functionality of “full lesson” using vocabulary that comes from topics that are interesting to the eyes of the learners, asking them from basic to advanced questions through the platform so that they can participate giving their opinions or just competing to select the correct answer to win an specific prize; the activities can be digitally written, oral, or even drawings (an opportunity to stimulate creativity in students). The second AI-gamified tool presented was Quizify, whose interface is user-friendly and very intuitive, which can be of great



help for teachers to brainstorm for class projects, innovate in the way content is presented, and it provides sets of cultural, functional, and idiomatic vocabulary for students. The pedagogical strategies proposed to be included in a EFL learning environment were: the “course” option in which, using any topic that is engaging for the students, the app will create complete lessons experiences; another strategy presented was the possibility to create an specific lesson that is customized by the educator including content generated by the intelligence or the teachers themselves and with content-based activities produced by the app or the teacher as well; the final suggestion was the use of “only quiz” option in which students can be the protagonists by evaluating their classmates about any topic presented by the educator and challenge themselves.

- **Training session 2**

In the final session. Other two (2) AI-gamified tools were presented to EFL teachers: ChatGPT and Artflow. ChatGPT was selected because it is one of the most popular AI apps in the world and its use in the educational field goes beyond asking questions to a chatbot or “plagiarism”. The researchers investigated what pedagogical use could be integrated in a bilingual learning environment and these are the propositions: practice the writing skill using the chatbot that adjusts to the level of the user or learner; practice some speaking by interacting with dialogues that are generated by the intelligence with someone else in the classroom; learners can research about any type of information they need or want for specific assigned tasks; the teachers can ask the chatbot to correct grammatical or spelling mistakes made by the learners as a result of written activities in class and receive instant feedback; create from basic to advanced content, ranging from vocabulary to information about any engaging and attractive topic to do worksheets or paper-based exercises in the classroom; ChatGPT is a great help to produce texts that meet the



teacher's criteria or with grammatical specifications to evaluate the structure of the language or perform reading comprehension activities or discussions in class; this tool provides many compelling ideas to be implemented in EFL learning environments such as didactic and meaningful task for the students. The second AI-gamified tool was Artflow, a powerful and attractive platform to create audiovisual content that impacts the learning experience of students. The first pedagogical suggestion to integrate this app in a bilingual class is “creative storytelling”. Here, users can create any type of stories to later transform them into an audiovisual narration generated by the platform. The stories can be created by the learners or ask the app to do so. Thus, the listening and reading skills are practiced. The last idea presented to teachers was to make funny “themed presentations” in which the students can create from scratch a visual presentation about a topic they are interested in and use avatars with standardized voices to present them using information provided previously, or pictures of the students themselves and their own voices while the app animates the personal images uploaded and mix them with the audio uploaded as well. The experience will be as fun and meaningful as it can be.

Gamification Principles as the Basis for the Pedagogical Strategy Applied

Being gamification one of the main elements of this project, it was important to apply the different principles that conform it into the pedagogical proposal designed for the training sessions. Such principles are mechanics, components, and dynamics, which are found in the technological tools presented in the sessions.

- **Dynamics**

Dynamic elements in a gamified experience refer to principles that facilitate how game mechanics are implemented for the pedagogical strategy applied, and how they influence player's behavior and emotions like excitement and challenge. For instance, into the project the



tool Artflow allows storytelling, This “narrative” plays a role in shaping immersive experiences that engage students' imaginations, while constraints like time limits in Curipod and Quizify can be designed to push players to strategize and problem-solve. Additionally, a sense of progression through levels, badges, or leaderboards evident in the AI apps used in the training sessions, foster evolution and development of players. Lastly, ChatGPT, when used for group projects or discussions, it can encourage social relationships like teamwork and collaborative learning.

- **Components**

This refers to the resources that are part of the gamified experience such as avatars, teams, time limits, levels, gifts, graphs, the interface per se, etc. All these elements are carefully designed for the participants to enjoy and engage in the experience. This being translated into the project, means that AI-gamified tools provided the learners with multiple options and experiences that fulfill the learning process. For example, Artflow or Curipod are apps whose platforms allow the students to play with diverse components like avatars, collections of pictures, tutorials to understand the application, the competition with other teams, levels of difficulty or progression inside the activity to name a few. In the end, it is the learner's motivation that benefits from these types of resources.

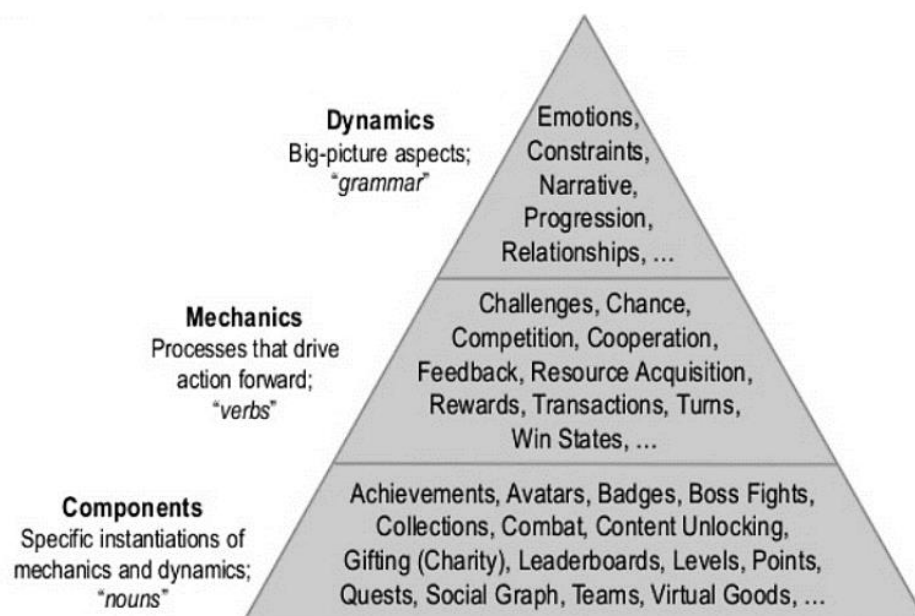
- **Mechanics**

The term “Mechanical Categories” refers to the game’s core components, which include the rules, engine, and operation. When using Gamification in education, it is critical to grasp the benefits of this practice as well as examine the learning environment and the proper level to incorporate the various game aspects and techniques into the teaching-learning process. Werbach and Hunter (2012) propose categorizing gamification aspects into three types: dynamics, mechanics, and components. Mechanics, in particular, are the key game components that drive

player involvement and shape the game experience. These may include point systems, levels, challenges, and prizes, among other things. Understanding these mechanical categories is critical for making educated judgements about how to incorporate them into instructional activities aimed to facilitate learning.

Figure 1

Gamification elements pyramid.



Source: Werbach y Hunter (2012; cited by Bastidas & Surmay, 2022, p.27).

YouTube Comments for Interaction and Data Gathering

To enhance participants' engagement, they could share insights, and answer and ask questions related to the training content directly within the comments of each video. This functionality allows for real-time communication, fostering a sense of community among the participants. We thought this method would not only familiarize teachers with AI platforms but also spark continuing discussions and community-driven learning. By actively collecting



feedback, we hoped to establish a dynamic feedback loop in which participant insights may guide future sessions and content creation. (See Appendix C).

Participants

The target population included teachers from different educational contexts teaching EFL programs. These contexts can vary from high school institutions (public or private), universities, and VET institutions in different cities of Colombia. Data was collected from a representative sample of EFL teachers. There were 45 teachers in total. Furthermore, it is important to note the contrast that is found between the contexts since some institutions are equipped with technological infrastructure (private ones) while others, especially public high schools, lack those tools. Therefore, teachers' multiple experiences have a valuable contribution and will enrich the project as Creswell (2013) explains “select individuals and sites for study because they can purposefully inform an understanding of the research problem and central phenomenon in the study”. Some demographic information is presented in Appendix E.

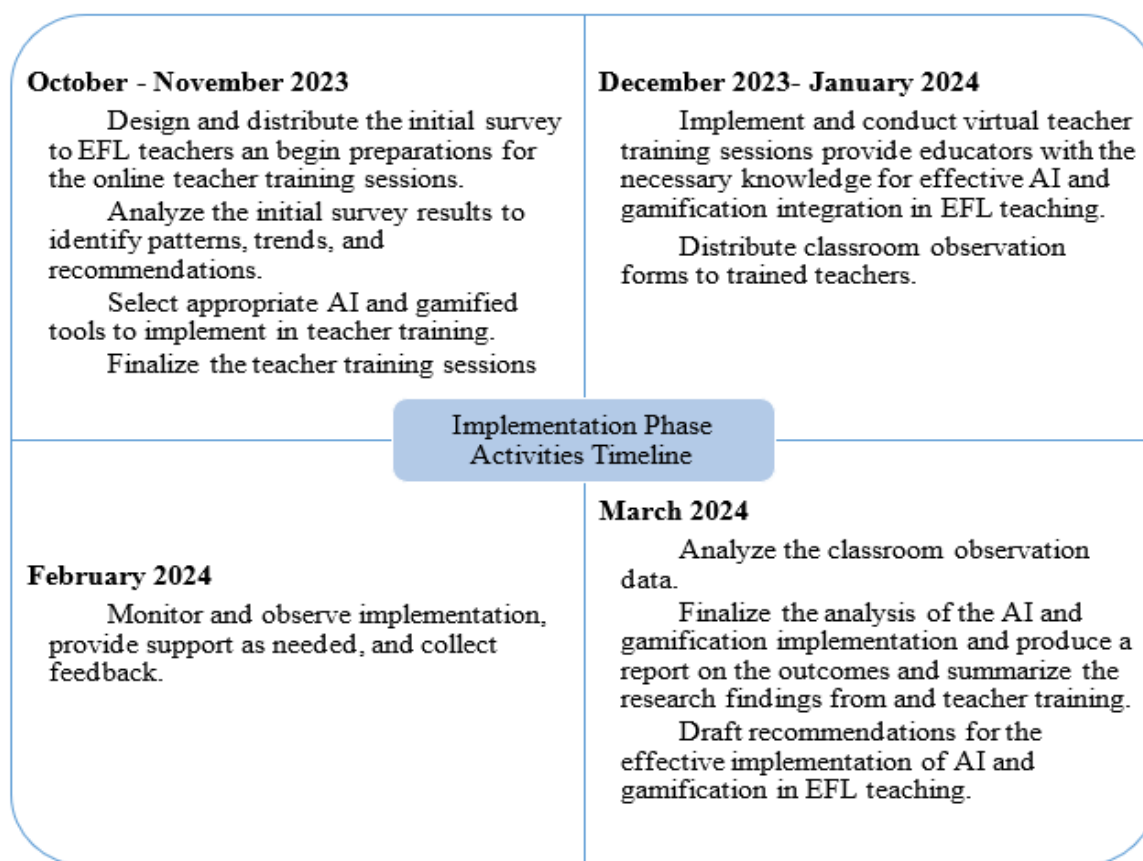
The participants were divided according to the different instruments and phases of the project. In the first phase, 31 teachers participated in the survey; in the second phase, 27 teachers participated in the online training feedback; and finally, 5 teachers participated in the observation process. As a matter of identification in our study for referencing and to respect the privacy the participants deserve, they were referenced depending on the research instrument they participated into. In the survey, they were identified as “survey” and a number was assigned according to the order of participation; in the YouTube training sessions, they were referenced as “training session” and the number of the session; and in the observations, they were referenced according to the number was assigned to the class observed (from 1 to 5) “observation”.

Phase of Implementation: Activities

In the implementation phase, qualitative techniques were employed. The following figure explains it.

Figure 2

The different phases in the project's implementation.



Note: the authors of the research made it.

Research Ethics

Informed consent was obtained from all participants. Confidentiality and anonymity of the data collected were guaranteed. The research was conducted in accordance with ethical standards and institutional regulations. This includes following any specific guidelines or policies set by the research institution or collaborating organizations. Researchers stayed updated



on any changes or updates to these regulations throughout the study's duration and promptly address any compliance issues that may arise. For instance, identifying information, such as names and contact details, will be replaced with unique identifiers in transcripts and the project analysis.

Table 2*Method used in research.*

Research aim	Data recollection technique	Data recollection instrument	Aim	Source, date, and link the instrument is located in.
To establish the way to incorporate educational strategies so that teachers improve the teaching-learning of English as a Foreign Language (EFL) while incorporating cutting-edge technologies like Artificial Intelligence (AI)	Survey	Teachers' online surveys	Teachers are the target audience. Goal: Compile information on current EFL teaching practices, knowledge of AI and gamification, and preferences for educational philosophies. Include inquiries about gamification and artificial intelligence (AI)	Appendix B: October 2023: Online survey



and gamification
with current
trends that shape
students' daily
lives.

knowledge,
perspectives on
integrating
technology, and
preferences for
learning styles.
The purpose of
the observation
is to evaluate the
use of AI and
gamification
tools presented
in the training
sessions.

The purpose of
the lesson plan
is to provide
teachers with a
model they can
use in their
educational
contexts that is
simple to follow
and focused on
using AI and
gamification
tools.

The purpose of
the comment
section on

Observation.

Observation
rubric

YouTube
lessons and

Comment
section feedback

Appendix D
February 2024:
[Observation
rubric](#)

Appendix c:
December 2023,
January,



comment section

feedback

YouTube

February 2024:

lessons is to
gather feedback [YouTube](#)
from teachers in [lessons feedback](#)
which they
present their
perspective and
opinion of the
artificial
intelligence and
gamified tools
presented in the
lesson and their
integration in
EFL education
in general.

Researchers' Role

The three (3) researchers, who are EFL teachers in regular schools, VET institutions and universities (both private and public), had shared contributions to the design of the research including instruments creation and application, the role of observers and the analysis of the results from the different instruments in the two (2) phases of the project. Lastly, our role was to visit classrooms, observe EFL teachers implementing AI and gamification tools, and document the observations using a standardized format. Classroom observations provided valuable insights.



Analysis and Findings

Method and Approach

The project's main objective is to analyze and determine what educational strategies enhance the incorporation of artificial intelligence and AI-gamified tools into EFL learning environments, while at the same time improving learning outcomes for learners. For this matter, it was necessary to conduct a qualitative type of study that helped us understand the challenges and find creative solutions to improve teaching and learning for both teachers and students. The method used was the thematic analysis guided by Creswell's (2013), which is essential to discover patterns from the plethora of data at our disposal.

We hope to not only critique the existing status of EFL education but also to pave the way for novel approaches that have the potential to transform the landscape of EFL education.

Leedy & Ormrod (2001) define thematic analysis as "a detailed and systematic examination of the contents of a particular body of materials to identify patterns, themes, or biases" (p. 155). Thematic analysis, in line with Creswell's (2013) methodological guidance, will be the cornerstone for scrutinizing EFL teachers' responses to the introduction of AI and gamification. This method, renowned for its proficiency in unraveling patterns in qualitative data, ensures a comprehensive examination of educators' reactions to these cutting-edge practices.

The instruments applied that conform this qualitative research were semi-structured surveys through an online platform; feedback from the YouTube training sessions in the comment section; and class observations. The collection of data allows us to analyze the materials, noting the frequency of each identified characteristic or quality. We delve into the complex details of the topic under consideration in order to obtain a better understanding of its



underlying themes, meanings, and ramifications. Our focus remains on qualitative findings and interpretations.

After the data was collected, and to continue seeking themes to analyze, a qualitative data analysis software was used called NVivo. NVivo helps researchers manage and analyze large amounts of qualitative data, like interview transcripts or observation notes. Studies have shown that NVivo can improve research quality by enhancing analysis procedures (Weitzman, 2000), increasing transparency (Flick, 2004), and facilitating collaboration (Cisneros, 2003). NVivo aided with:

- **Data Management:** Easily organizing and finding survey data and observation notes from YouTube sessions.
- **Idea Exploration:** Keeping track of emerging themes and insights as we analyze the data.
- **Reporting Results:** Presenting findings in clear reports, both visually and in text format.

Data collection involved six months, especially considering the mixed-methods approach (surveys, observations, and teacher training). It allows for capturing changes in teachers' perspectives and classroom practices after the training.

Data collection took place from October 2023 to February 2024. Online surveys in October in a span of two (2) weeks; the online training sessions had two stages of implementation: in December, the researchers prepared the content and AI-gamified apps to be presented, and at the end of December, and during January and February, the sessions were implemented through YouTube. Participant teachers could access the online classes via a link of the YouTube channel created for the project, watch the lessons, and participate in the comments.



Finally, class observation was conducted by the researchers to 5 selected teachers during the first two (2) weeks of February.

Categories Management and Analysis.

Following the thematic analysis method of the study and aligned with the research question and objectives, the analysis of the data gathered was focused on factors that influence EFL teaching decisions and experiences regarding AI and gamification integration. First, we uploaded the research instruments into NVivo, which helped us organize, categorize, and manage the data more efficiently.

After organizing the information in the software, the investigators started to look for words or “themes” with a high frequency of appearance to identify patterns. Words such as “AI” “tools” “students” and “use” were the most repetitive. The result was a “word cloud” generated by the software which can be seen in Appendix E.

That demonstrated what could be the main categories. This was the inductive approach of the software analysis. Hatch (2002) explains that in inductive analysis, “categories emerge from the analysis of the data set as a whole” (p. 152).

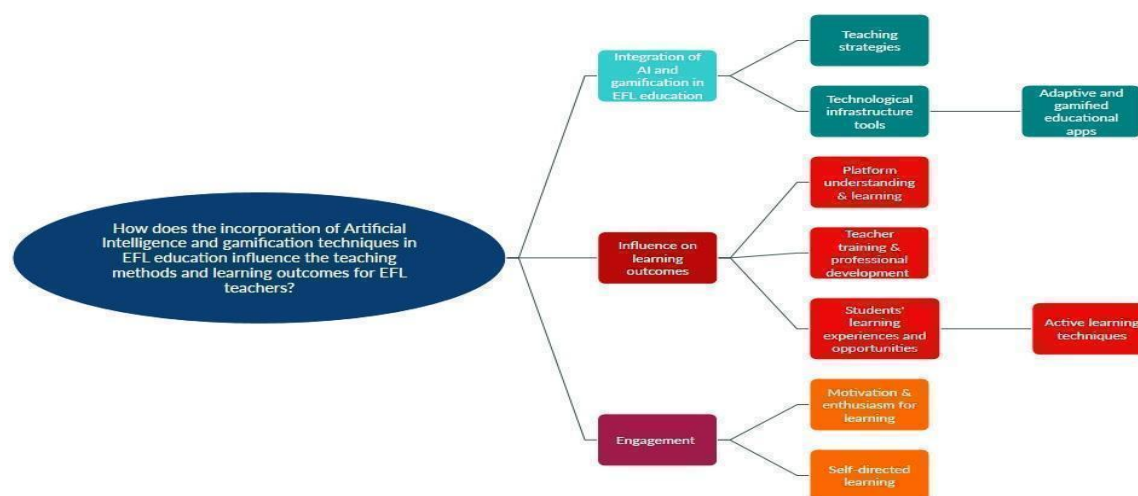
Next, the researchers created a mind map taking into account the found patterns but also some themes that had been discussed and analyzed from the responses of the online survey, the YouTube comment section, the observation stage, and the existing literature, finding a coincidence that validated the process. This was the deductive part of the software analysis. Hatch (2002) says that during deductive processes “patterns or relationships are discovered in the data, hypothetical categories are formed, and the data are then read deductively to determine if these categories are supported by the overall data set” (p. 10).

In the end, investigators determined “themes” and “sub-themes” that were called emerging “categories” and “sub-categories”, which derived in the codification of the information collected.

The researchers categorized every survey response, YouTube comment, and class observance into their corresponding “code” to finally have a big code scheme. The software helped investigators to delve into the multifaceted landscape of EFL educators' perspectives toward AI and gamification. NVivo included visualization tools such as Mind Map and Hierarchy Map, which were useful in demonstrating the relationships between categories and subcategories discovered during themes analysis. The mind map was created to demonstrate the interconnectivity of ideas and concepts drawn from data, emphasizing the hierarchical structure of various aspects of EFL educators' attitudes toward AI and gamification.

Figure 3

Mind Map: Research categories and subcategories (Themes & sub-themes)



Note: the authors of the research made it through the NVivo software.

Figure 4

Hierarchy chart: Description of the categories and subcategories for the data analysis



Note: NVivo analysis evidence.

The following table presents the organization of the codification of the “themes” or “categories” that were identified and later analyzed thoroughly.

Table 3

Relationship between themes and sub-themes (categories and sub-categories) with codes and excerpts taken from data collection.

Themes	Sub-themes	Codes	Sub-codes	Sample excerpts
How does the incorporation of Artificial intelligence and	Integration of AI and gamification on EFL education	Teaching strategies		“The virtual language tutor showcased here is amazing! It



gamification
techniques in
EFL education
influence the
teaching
strategies and
learning
outcomes for
EFL teachers?

creates an
immersive
environment,
fostering
language
acquisition in a
natural and
engaging way.”
“AI has changed
the way students
receive
information,
because they are
involved in the
technological
era. For English
classes, it has
changed how
students are
connected with
language
learning using
gamification too.
As a result,
students have
been very
motivated and
engaged.”
“The idea of
using IA is so

Technological
infrastructure
tools:

Adaptive and
gamified
educational apps



interesting but
schools do not
have enough
technology.”

“These
components may
have an essential
positive impact
in the classroom,
representing an
advance in
teaching results,
since they offer
lots of resources
to improve
teaching
planning and
class dynamics.”

“Both students
and teachers
found the
interaction with
the Curipod
gamified
platform during
activities
straightforward
and easy to use.”
“Both students
and teachers

Teacher training
& professional
development

Influence on
learning
outcomes

Platform
understanding &
learning



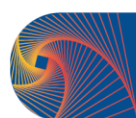
recognized the engagement with Curipod's platform to be easy to use, which promoted excellent communication and understanding.”

“Gamification is a very resourceful teaching tool which enhances the learning process and allows teachers to go beyond the use of isolated activities supported by technology and games into a pedagogical process.”

“It's a very practical way to bring language integration and

Students' learning experiences and opportunities.

Active learning techniques





motivation

taking into

account the

environment and

fear that students

usually have

about English.”

“The response

from students to

the gamified and

AI-enhanced

activity was

highly

satisfactory.

Their active

participation and

enthusiasm

indicated a

positive

reception.”

“AI has changed

the way students

receive the

information,

because they are

involved in the

technological

era. For English

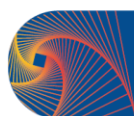
classes, it has

changed how

Motivation &
enthusiasm for
learning

Engagement

Self-directed
learning





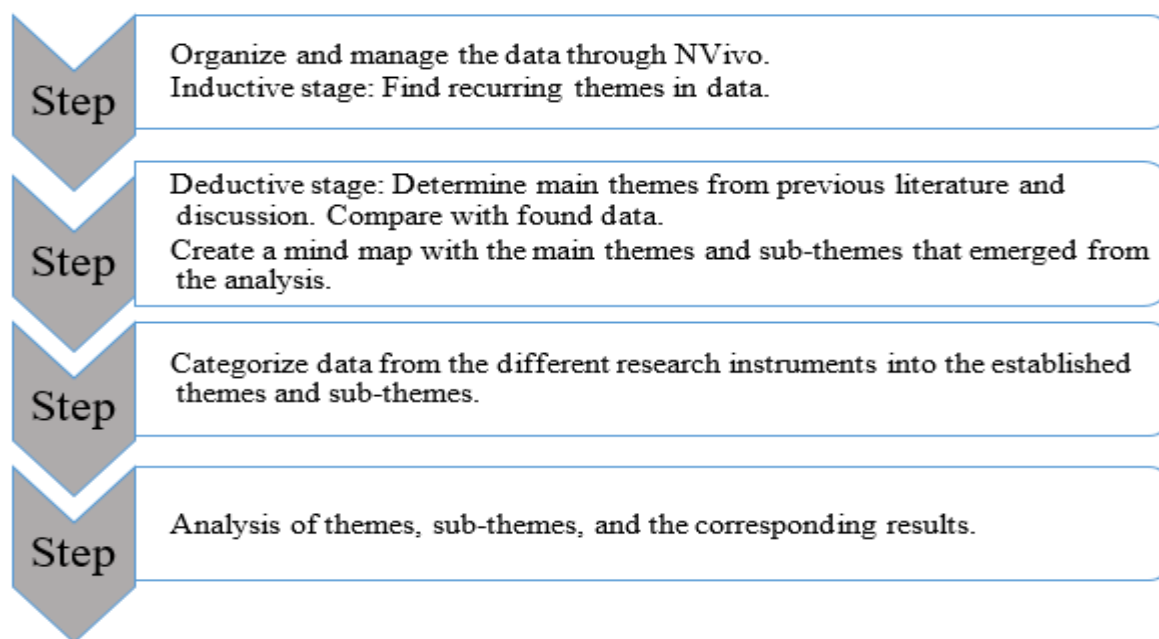
students are connected with the language learning using gamification too, as a result, students have been very motivated and engaged.”

Note. The figure is taken from the article in the Profile UNAL journal published by Kusuma, I. P. I. (2022).

The following figure sumps up the data analysis process done.

Figure 5

Data analysis from the different research instruments used in the project.



Note: the authors of the research made it



Categories Findings and Interpretation of Results.

Theme 1: Integration of AI and Gamification on EFL Education

In the field of EFL (English as a Foreign Language) education, the combination of AI (Artificial Intelligence) with gamification has emerged as a potential approach to improving learning outcomes. Through NVIVO, we rigorously classified this integration into two key subcategories: Teaching Strategies and Technological Infrastructure Tools, with a special emphasis on Adaptive and Gamified Educational Apps. In understanding effective teaching strategies, data analysis of educators' perspectives highlights the unanimity on numerous critical components, including presenting clarity, student interaction, and technological integration (Weitzman, 2000).

Furthermore, educators rated specific strategies, such as the flipped classroom model and project-based learning, as very beneficial. Furthermore, the evaluation of teaching practice efficacy, based on the collected responses, emphasizes the relevance of multidimensional assessments, such as student feedback, classroom observation, and assessment outcomes. These ideas, which are supported by statistical evidence and cited literature, give a solid foundation for comprehending the complicated dynamics of incorporating AI and gamification into EFL education.

1.1 Teaching Strategies

Analyzing the survey and the observations replies reveals that an effective teaching technique includes a variety of components, as emphasized by “survey 4” “AI has changed the way students receive information, because they are involved in the technological era. For English classes, it has changed how students are connected with language learning using gamification too. As a result, students have been very motivated and engaged.” To begin, everyone agrees



that clarity in presentation is essential for student understanding and engagement. Furthermore, strategies that encourage student participation are thought critically, coinciding with current pedagogical practices that emphasize active learning. Furthermore, the incorporation of technology emerges as a critical aspect, reflecting the changing educational context. These findings highlight the complex character of good teaching practices, which include presentation clarity, student engagement, and technological integration. The incorporation of AI and gamification in EFL (English as a Foreign Language) instruction has attracted attention as a possible path for improving learning results (UNICEF, 2021).

In line with these findings, it is clear that certain instructional strategies have received high ratings among respondents. Project-based learning stands up as a particularly effective technique, with many participants praising its capacity to generate deep involvement and knowledge application. Similarly, the flipped classroom concept has been recognized for its ability to personalize learning experiences and improve student comprehension through interactive activities. The approval of these practices emphasizes the need of active, student-centered approaches in improving learning outcomes. By aligning teaching techniques with these effective strategies, educators may create settings that promote student growth and achievement.

1.2 Technological Infrastructure Tools: Adaptive and Gamified Educational Apps

The observations and survey's respondents highlighted the critical importance of artificial intelligence (AI) in education, notably in providing adaptive assessments and improving personalized learning experiences. Participants are familiar with AI-based educational technologies and platforms, highlighting their usefulness in meeting individual learning needs and easing administrative work. Furthermore, the incorporation of gamification emerges as a



common concept, with respondents recognising its potential to improve student motivation and engagement in the classroom. As it was said by “survey 20”:

“The evolution of these components will be shaped by ongoing advancements in technology and a focus on preparing students for the demands of the future. As these elements continue to evolve, it will be essential for educators and educational institutions to stay informed and adapt their practices to best meet the needs of 21st-century learners”.

It is important to remark that with these comments, given these observations, the combination of AI technology and gamification represents a promising prospect for educational innovation. Adaptive educational apps driven by AI can dynamically change learning paths to meet a wide range of student profiles, delivering personalized guidance and feedback.

This synthesis proposes a viable route for educational innovation in which adaptable educational apps powered by AI dynamically cater to individual student needs while gamified components promote motivation and enjoyment (Zhai & Santoso, 2023).

Theme 2: Engagement

After the codification of the data collected through the instruments, it was found that the third biggest theme or category was “engagement” as a major determinant in the integration of AI and gamification in EFL education. The online survey shone a light on the perspective educators have about the influence engagement possesses on the learning process. Most of the respondents (71,9%) considered that student’s motivation has an essential role in the efficacy of teaching practices and agreed on the fact that gamification integration benefits from motivation by enhancing and increasing engagement (see Appendix B: bar chart 10). Fischer and Barabach (2020) say that “Many studies in other educational contexts, e.g., in higher education and partly



also in lower secondary education, have shown that gamification can improve student performance and, thus, promote learning as well as increase motivation and engagement” (p.4) and in the rear of the results analysis, two (2) sub-themes or sub-categories emerged: a) Motivation and enthusiasm for learning, and b) self-directed learning. These categories are directly connected to engagement inside bilingual learning environments, specifically, English language teaching.

2.1 Motivation & Enthusiasm for Learning

The majority of educators that participated in the study acknowledge how important it is to have motivated learners in the classrooms. The integration of new technologies into bilingual learning environments has demonstrated the effect on the learning process since it changes the traditional view and techniques that are so widely used and allows the student more freedom, autonomy, and an easy connection with the class and the language taught. Chiu et al. (2023) state that many studies about AI and technology use in the class show that the biggest outcome is students’ motivation and engagement, and it is possible to find the same perspective in the results of the research. One teacher says that AI and gamified tools “can encourage and motivate students to keep learning in an innovative environment” (excerpt from training session 1) and others expressed an increase in participation during the class. The teacher, whose class was observed, manifested that “the gamified and AI activity was satisfactory (...) their active participation and enthusiasm indicated a positive reception.” (excerpt from observation 1).

Having the opportunity to integrate AI and gamified tools is crucial to improve teaching and class dynamics considering Colombia has struggled to boost the level in the educational



landscape for decades. There are still difficulties when teaching and learning the language, especially when that language is not seen as a crucial factor for upgrading people's lives by most of the population (particularly students who attend public schools and institutions of the periphery and the countryside) and resistance is found by teachers. In this scenario, changing the paradigm in EFL education and teaching practices is a must.

2.2 Self-directed Learning

One interesting subcategory or sub-theme that emerged from the collection of data through the multiple instruments used was the self-learning competence AI and gamified tools can develop on learners. Sanusi et al. (2022) explain that self-learning is when students learn on their own without others interfering and add that self-learning allows “students’ involvements to create and control their learning situation.” (p.4). AI and gamification are a great chance to permit students to participate actively in their EFL learning due to the diversity of options that adapt to the students’ interests and learning styles, or just acquiring the language, giving them the autonomy to decide what suits them and in what moment. Also, it is important to highlight the connection between new technologies integration and the development of 21st century skills that are demanded today. One participant teacher comment on an online training session that:

“These apps are so useful for language learners. They help to increase their digital literacy at the same time they are developing their language skills. They provide life-long learning and bring real world experiences into the classrooms. Students become creative too” (excerpt from training session 2).

Now, in the context of EFL education, another teacher said that these tools “create an immersive environment, fostering language acquisition in a natural and engaging way” (excerpt from training session 2). Zeide (2019) points out that one of the promises of integrating AI in the



learning environments is the “self-paced progress or personalized learning” (p.3) which is tied to the experiences students have with technology in the educational process. Including new technologies can widen the horizon in the implementation of current pedagogical strategies in bilingual learning environments that allow learners keep the pace when it comes to the necessities and demands of the new world.

Theme 3: Influence on Learning Outcomes

The collected comments, observations, and survey results suggest that AI-simulated environments can positively impact student learning outcomes in EFL education. The data analysis highlights the following:

3.1 Platform Understanding and Learning

Opinions and comments provided evidence that AI and gamification tools like Quizify can be effective in promoting student engagement. For example, teacher from observation 1 stated: "it seems to be a useful tool for assessing student knowledge." He examined its potential to assess student comprehension following lesson delivery. The aim is to facilitate quick and efficient formative assessment. Educators often face the challenge of rapidly evaluating student understanding after teaching sessions. Quizify addresses this by enabling teachers to generate randomized quizzes aligned with the covered material. This feature holds promise for formative assessment in the classroom. Observations also highlight the importance of teacher support in facilitating a smooth learning experience with these new technologies. This emphasizes the need for educators to stay informed and adapt their practices to integrate these new technologies, aligning with Kim et al. (2022) who state that "teachers mainly focus on developing students' understanding of AI, directing them in the procedural use of AI through step-by-step task execution and fostering a positive attitude toward AI" (p. 21).



3.2 Teacher Training and Professional Development

Comments from YouTube sessions suggest that training teachers on using new AI and gamification tools (like Chat GPT and Curipod) emphasize the role of these gamified tools in teacher training. They suggest that learning about these platforms can equip educators with the skills to leverage them for better teaching practices. One of the commenters expressed that "Explaining how these platforms work gives us a lot of insight into the future..." (excerpt from training session 1) This underscores how teacher training in AI equips educators with the skills to leverage these tools for improved teaching practices. Another comment "As teachers we must be updated..." (excerpt from training session 1) represents the importance of ongoing professional development.

Observations from participating teachers in classrooms where the training was implemented add another layer of support. These teachers emphasized the value of training that focuses on understanding the capabilities and limitations of specific tools, like ChatGPT, for language learning. An excerpt from observation 5 highlights this point: "This includes integrating AI activities into the curriculum." This suggests that effective training goes beyond just using the tool, but also equips teachers to design engaging learning experiences that use AI.

Aligning with Kim et al. (2022) "...it's necessary to plan training programs and continuous supports to develop teachers' AI knowledge that is rapidly evolving (...) to apply AI to their practice" (p.19), the participating teachers were leading their comments and classroom observations into a strong desire for professional updating. In conclusion, these findings strongly support the argument that training equips teachers with the skills to leverage AI assessment tools and design effective assessments with gamified elements.

3.2 Student's Learning Experiences and Opportunities



The use of AI facilitates group activities and interactive dialogues, promoting communication and teamwork among students. This includes exercises that allow students to participate in discussions, collaborate on projects, and improve their collaborative skills.

By engaging students in discussions that replicate genuine language interactions, AI tools can give targeted practice that supplements traditional teaching strategies, as a commenter in training session 2 noted, "AI tools like ChatGPT can personalize language practice by engaging students in natural language conversations, complementing traditional teaching strategies."

While some observations suggest incorporating traditional assessments, AI platforms like Curipod show promise for creating dynamic and engaging assessments that reinforce EFL skills. These platforms can offer evaluations that not only test students' knowledge but also help them improve their English as a Foreign Language (EFL) skills in a more dynamic and enjoyable way.

More research is needed to properly comprehend the potential of AI platforms and their continual integration. In observation 5, the teacher suggested "further investigation of the platform's potential, as well as continuous incorporation into the curriculum, may result in even larger advances in student engagement and accomplishment". This continual integration is viewed as critical for maximizing student achievement and realizing the full benefits of AI in educational contexts.

This emergent category aligns with Holmes et al. (2019) concept of learning experiences, emphasizing the development of meaningful and valuable understandings. This entails not only acquiring knowledge but doing it in a way that is meaningful and valuable to the learners.

Holmes et al. (2019) describe shared learning experiences as activities that promote coordination and cooperation among participants. This includes developing relationships,



offering guidance, providing feedback, cooperating, and co-creating. These characteristics are critical for fostering a helpful and participatory learning environment, which AI can assist with.

It is highlighted the potential of AI in transforming educational practices by promoting personalized learning, dynamic assessments, and collaborative environments also the importance of ongoing research and integration to fully leverage AI's capabilities in education. This approach aligns with educational theories that value meaningful and cooperative learning experiences.

3.2.1 Active Learning Techniques

Tools like Chat GPT can personalize learning by providing interactive dialogues tailored to individual student needs. According to the participants, integrating these technologies can lead to improved learning outcomes "by making the learning process more dynamic and interactive" (excerpt from observation 5). This aligns with Holmes et al. (2019) statement that "active learning shifts the focus from information transfer to student learning, and from 'knowing' to 'doing.' (p.34)"

On the other hand, the use of AI and gamification tools should be strategically integrated with the curriculum and learning objectives. Striking a balance between innovative technologies and traditional teaching strategies is crucial for optimizing the learning experience.

To conclude this chapter, the categories findings highlighted the synergy between AI, gamification tools and effective teaching strategies, offering personalized learning paths and gamified elements that can significantly enhance student motivation and engagement. AI tools can facilitate group activities, interactive dialogues, and personalized learning experiences, fostering meaningful understanding and collaboration. Hence, AI platforms can personalize language practice and complementing traditional teaching strategies. However, successful



implementation depends on equipping teachers with the necessary skills to leverage AI tools; training programs should focus on both tool functionality and pedagogical strategies for integrating AI into curriculum design. While further research is necessary to fully understand the long-term impact of AI and gamification on EFL learning outcomes, its potential for transformative change is undeniable.

Conclusions

The last decade has been decisive for the inclusion of technology in the educational field. Now educators have at hand plenty of options to improve the teaching practices and enhance the learning outcomes of students (Bastidas & Surmay, 2022). Artificial intelligence and gamification are great resources to maximize the educational experience for all of the actors that intervene in it and present an advantage for educators and learners to develop the necessary skills that respond to the demands of the new global society that is more and more connected (Chiu et al., 2023).

However, it is important to acknowledge the positive and negative side of these technologies integration and understand that multiple factors affect this process such as the human resources such as teacher knowledge on technology and teacher's training, or the political incidence like the management the government and the educational ministry give to the inclusion of these technologies in schools and other institutions (Kusuma, 2022). This configures concepts and views in the educational community, specifically teachers who face the reality every day and are forced to find solutions.

The data collected shows what are the teachers' perspectives towards the use of AI in EFL education. Most teachers see in AI and gamification a big help for bilingual learning environments and concede its use the possibility to dynamize the teaching and learning process,



giving educators new ways to present and manage content; attractive strategies to evaluate and assess the knowledge constructed; current topics that adapt to the interests and needs of the students; and in general, ease the teaching practice by allowing educators save time and energy in the everyday routine, focus on what matters, and learners, the flexibility and personalization in the learning process which is one of the main goals of education.

Another positive outcome of integrating AI and gamification in EFL education observed is definitively the overcoming of fear by students to orally participate in the classes, since they feel motivated and engaged, free and comfortable to express their ideas even if the level of proficiency could be categorized as low, but that creates an environment of trust and confidence so essential when a new language is learnt. Having students speaking so actively motivated educators all along to constantly find new ways to teach and thus, have an engaging class.

Nevertheless, the data demonstrated that teachers comprehend the complexity of the matter and manifest that there are several issues affecting the implementation of AI and AI-gamified apps as it is lack of training and the resources for the students to have a proper experience, especially in the majority of public institutions that conform the gross of the Colombian population educated. The study emphasizes the importance of clear communication, student participation, and technological integration in EFL instruction. Educators stress the positive influence of AI and gamification on student motivation and engagement, emphasizing its potential to improve learning outcomes. AI-powered adaptive educational apps and gamification are widely recognized as useful educational tools. They provide personalized learning experiences, cater to individual learning needs, and increase student motivation and engagement. The combination of AI and gamification offers a significant opportunity for educational innovation.



The findings underscore the importance of effective teaching strategies, highlighting the value of student engagement, and technology integration. AI and gamification offer a powerful mean for language teacher leverage. However, the importance of teacher training and professional development cannot be overstated. Equipping teachers with the skills to leverage AI tools and assessments is paramount for successful implementation. By strategically integrating these technologies with effective teaching strategies, educators can create dynamic and engaging learning environments that empower students and optimize learning outcomes.

Limitations.

Conducting classroom observations in bilingual environments within VET (Vocational Education and Training) or rural institutions presented a challenge in providing a fully comprehensive view of educators across diverse educational settings. We were unable to observe all potential environments, which hindered our ability to develop a complete perspective about AI application. On the other hand, it is noteworthy that the evaluation conducted by the participating teachers in the study was subjective in nature. Their opinions were based on their own perceptions and beliefs about the integration of artificial intelligence in education. This inherent subjectivity in the evaluation may have influenced the results obtained, which can be susceptible to bias and individual interpretations.

While the study identifies potential in integrating AI and gamification into teaching practices, further investigation is necessary. It is necessary to explore the implementation hurdles, scalability issues, and the effectiveness of these approaches for various learner demographics.

Recommendations

Further Exploration of Teaching Strategies



While the research emphasizes the importance of presentation clarity, student involvement, and technological integration in effective teaching strategies, it would be good to delve more into the specifics of each. Follow-up interviews or focus group discussions with educators may provide more detailed insights into how these components interact and influence one another in the classroom. Furthermore, investigating specific examples or case studies of successful implementation of these methods may provide practical direction for educators looking to improve their teaching skills.

Integration of Effective Strategies

Building on the identified effective teaching strategies, such as project-based learning and the flipped classroom model, educators should be encouraged to incorporate these strategies into their instructional practices. Providing professional development opportunities, tools, and support to teachers as they adopt and adapt these strategies to their individual contexts can result in more engaging and meaningful learning experiences for students. Furthermore, encouraging educators to collaborate and share knowledge might help to enable the interchange of best practices and new ideas in EFL education.

Exploration of Emerging Technologies

The findings show the importance of AI and gamification in improving EFL education. To fully realize the promise of these technologies, it is recommended to investigate developing tools and platforms that use AI for adaptive assessments and personalized learning experiences. Educators and educational institutions can work with technology developers to test and assess the effectiveness of these tools in real-world environments. Furthermore, continuous research and evaluation initiatives might assist identify best practices for incorporating AI and gamification into existing educational frameworks.



Promotion of Student-Centered Approaches

Given the popularity of student-centered approaches like project-based learning and the flipped classroom model, it is advised that student participation and empowerment be prioritized in EFL classrooms. Encouraging educators to create learning experiences that actively engage students in the learning process, build critical thinking and problem-solving abilities, and promote cooperation and communication can result in more meaningful learning outcomes. Providing professional development opportunities and resources on pedagogical practices that value student agency and autonomy can help instructors effectively adopt student-centered approaches.

Curriculum Alignment and New Technologies.

One of the areas that should be analyzed in the process of integrating artificial intelligence and gamification in EFL education is the restructuring of the curriculum. Traditionally, schools use a curriculum that does not respond to the interests, needs, and the immediate context learners live in. This shows a disconnection between the educational system and the reality because students find it hard to relate to the content that is taught to them. The world is evolving every day and technology is a key element in the life of every student around the world which makes it inconvenient not to include it or discuss it in the curriculum. It is necessary to reimagine the knowledges that are currently present not only in the curriculum of every school, but the ones suggested by the government. Thus, it will be possible to educate students that are competent enough to thrive and survive in the real world marked by the new technologies that emerge every day, especially the so popular artificial intelligence.

Continuous Evaluation and Improvement



Finally, it is critical to emphasize the significance of continuous review and reflection when incorporating AI and gamification into EFL instruction. Encouraging educators to frequently analyze the impact of their instructional practices, collect student feedback, and adapt their techniques based on evidence-based practices can help to guarantee that learning experiences are continuously improved and optimized. Furthermore, cultivating an innovative and experimental culture might motivate educators to investigate new technologies and strategies that improve teaching and learning in the digital age.



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Appendix List

- APPENDIX A: [Informed consents.](#)



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DECLARACIÓN DE CONSENTIMIENTO INFORMADO

Sr. Sra., de años de edad y con cedula n°

Cordial saludo.

Por medio de la presente, en su calidad de (instructora) me permito solicitarle autorización y consentimiento para participar activamente en el proyecto de investigación titulado:

"Incorporating Artificial Intelligence and Gamification in EFL Education: Strategies for Enhancing Teaching and Learning Outcomes of EFL Teachers."

El cual está a cargo de los investigadores

CARLOS DAVID DÍAZ

MARÍA FERNANDA CLARO

KRISTTY JULIETTE ROMAN

Este proyecto se lleva a cabo como requisito de grado para optar al título de (Magister en ambientes bilingües de aprendizaje) de los investigadores por parte de la universidad Santo Tomás.

Procedimiento de participación:

Prevía su autorización y el consentimiento de la institución, usted participara de acuerdo con la planificación del proyecto de la siguiente forma:

Como sujeto de estudio en sus clases dentro del _____, y con el propósito de mejorar nuestras prácticas docentes.

Valledupar, Cesar a los días del 2024.



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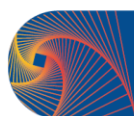




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SEDE PRINCIPAL**CONSENTIMIENTO INFORMADO PARA EL ESTUDIO:**

Yo, _____

Declaro que:

- He leído la hoja de información que me han facilitado.
- He podido formular las preguntas que he considerado necesarias acerca del estudio.
- He recibido información adecuada y suficiente por el investigador abajo indicado sobre:
 - Los objetivos del estudio y sus procedimientos.
 - Los beneficios e inconvenientes del proceso.
 - Que mi participación es voluntaria y altruista
 - El procedimiento y la finalidad con que se utilizarán mis datos personales y las garantías de cumplimiento de la legalidad vigente.
 - Que en cualquier momento puedo revocar mi consentimiento (sin necesidad de explicar el motivo) y solicitar la eliminación de mis datos personales.
 - Que tengo derecho de acceso y rectificación a mis datos personales.

CONSIENTO EN LA PARTICIPACIÓN EN EL PRESENTE ESTUDIO

SÍ NO (marcar lo que corresponda)

Para dejar constancia de todo ello, firmo a continuación:

Fecha

Firma.....

Nombre investigador

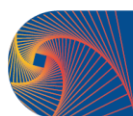
Firma del investigador.....

APARTADO PARA LA REVOCACIÓN DEL CONSENTIMIENTO

Yo, ...

revoco el consentimiento de participación en el proceso, arriba firmado.

Firma y Fecha de la revocación

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SEDE PRINCIPAL**CONSENTIMIENTO INFORMADO PARA EL ESTUDIO:**Yo, Jusstin Paola Murillo Acosta

Declaro que:

- He leído la hoja de información que me han facilitado.
- He podido formular las preguntas que he considerado necesarias acerca del estudio.
- He recibido información adecuada y suficiente por el investigador abajo indicado sobre:
 - Los objetivos del estudio y sus procedimientos.
 - Los beneficios e inconvenientes del proceso.
 - Que mi participación es voluntaria y altruista
 - El procedimiento y la finalidad con que se utilizarán mis datos personales y las garantías de cumplimiento de la legalidad vigente.
 - Que en cualquier momento puedo revocar mi consentimiento (sin necesidad de explicar el motivo) y solicitar la eliminación de mis datos personales.
 - Que tengo derecho de acceso y rectificación a mis datos personales.

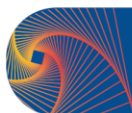
CONSIENTO EN LA PARTICIPACIÓN EN EL PRESENTE ESTUDIO**SÍ****NO****(marcar lo que corresponda)****Para dejar constancia de todo ello, firmo a continuación:**

Fecha 12/02/2024

Firma.....

Nombre investigador ... Maria Fernanda Claro Narváez.....

Firma del investigador.....

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- **APPENDIX B: Research instrument 1.**

Survey.

Data collection instrument

Survey: Online Survey

Semi-structured survey model

Introduction:

Thank you for participating in this semi-structured interview. The purpose of this interview is to learn more in-depth information about how to fit the curriculum to student interests, gamification in the classroom, and artificial intelligence (AI). Understanding how the educational landscape is changing requires your insights.

Participant details:

- Name:
- Role:
- Organization/Institution:
- Education level:
 - Some high school, no diploma
 - High school graduate
 - Some college, no degree
 - Associate degree
 - Bachelor's degree
 - Postgraduate degree (Master's, Doctorate, etc.)
- Teaching Experience (Years):
 - Less than 1 year
 - 1-3 years

Section 1: Effective Teaching Techniques

1. What, in your opinion, distinguishes a successful teaching strategy?

- a) Presentation clarity.
- b) Utilization of technology.
- c) Student involvement.
- d) All of the above.
- e) Other (Please describe): _____

2. Are there any particular teaching strategies or approaches that you have observed to be extremely effective in your educational setting?

- a) Lecture-based instruction.
- b) Flipped classroom.
- c) Project-based learning.
- d) Other (Please describe): _____

3. How do you evaluate a teaching strategy's efficacy?

- a) Student feedback.
- b) Assessment results.
- c) Classroom observation.

Section 2: Integrating Technology and AI

1. What role does artificial intelligence (AI) play in education, especially in your field of study?

- a) Enhancing personalized learning.
- b) Automating administrative tasks.
- c) Enabling adaptive assessments.
- d) Not significant.

2. Have you ever used AI-based educational tools or platforms? If so, would you mind expressing your thoughts on their effectiveness?

- a) Yes, and they were highly effective.
- b) Yes, but they were not very effective.
- c) No, I haven't used AI tools.
- d) No, I'm not sure.

3. What potential benefits and challenges do you foresee with integrating AI into education?

- a) Advantages: Personalization; Difficulties: Privacy concerns.
- b) Advantages: Automation; Difficulties: Lack of teacher control.
- c) Advantages: Cost savings; Difficulties: Limited adoption.
- d) I'm not sure.

d) All of the above.

e) Other (Please describe): _____

4. In your opinion, how has the use of technology—such as platforms powered by AI—affected conventional teaching techniques?

- a) Increased involvement of students.
- b) Better experiences with personalized learning.
- c) Simplified administrative procedures.
- d) Added fresh difficulties to classroom management.

5. How do you make sure your lesson plans are in line with the demands of the curriculum or the learning goals?

- a) Attend professional development courses on curriculum alignment.
- b) Regularly evaluate and update course materials.
- c) Collaborate with others to share best practices.
- d) Other (Please describe): _____

6. What part, in your view, does student motivation play in the efficacy of teaching methods?

- a) Essential: Students who are motivated learn more successfully.
- b) Important: Effective teaching techniques can make up for students who are not driven.
- c) Not a key element in determining how effective a teaching strategy is.

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4. What kind of educational assistance do you think instructors need to successfully integrate AI technologies into their classroom practices? Training in the following areas:

- a) Technical use of AI tools.
- b) Pedagogical integration of AI into the curriculum.
- c) AI usage ethics and privacy.
- d) Collaborative team-teaching using AI systems.
- e) Other (Please specify): _____

5. Do you believe that integrating AI into education has the potential to bridge educational gaps and provide every student the same opportunities?

- a) Yes, AI can tailor learning experiences to fit each person's needs.
- b) No, AI might make current disparities worse.
- c) Uncertain; additional research and monitoring are required.

6. What are the possible dangers of using artificial intelligence (AI) excessively in education, in your opinion?

- a) Lessening of mentorship and human interaction.
- b) Security flaws and data privacy violations.
- c) Widening of the digital gap among pupils.
- d) Loss of critical thinking owing to an over-reliance on AI.
- e) Other (Please specify): _____

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Section 3: Educational Gamification

1. How familiar in education are you with the idea of gamification?

- a) Very familiar.
- b) Somewhat familiar.
- c) Not familiar.
- d) I have used gamification in my teaching.

2. Have you used gamification tools or tactics in your classroom?

- a) Yes, and it was highly effective.
- b) Yes, but it had limited impact.
- c) No, I haven't used gamification.
- d) No, I'm not sure about the impact.

3. How do you think gamification could benefit the educational process, particularly for your students?

- a) Increased engagement.
- b) Enhanced motivation.
- c) Better retention of information.
- d) All of the above.

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Section 4: Curriculum Alignment with Student Interests

1. How can you be certain that the course material satisfies your students' needs and interests?

- a) Student surveys.
- b) Learning analytics.
- c) Regular feedback sessions.
- d) All of the above.

2. What difficulties, if any, do educators frequently face when attempting to fit the curriculum to the interests of the students?

- a) Inadequate resources and materials.
- b) Difficulty accurately measuring students' interests.
- c) Student resistance or pushback.
- d) All of the above.
- e) None of the above.

Section 5: Concluding Remarks

1. Do you have any further information or thoughts to share about curriculum alignment, AI integration, gamification, or successful classroom teaching? (Free-form response).

2. In your specific context, how do you see these components evolving as education progresses? (Free-form response).

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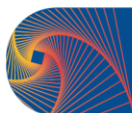
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Conclusion:

We appreciate your participation and insightful comments. Your suggestions will help to clarify these important facets of education and guide future study and practice. Please feel free to offer any further comments or recommendations you may have.

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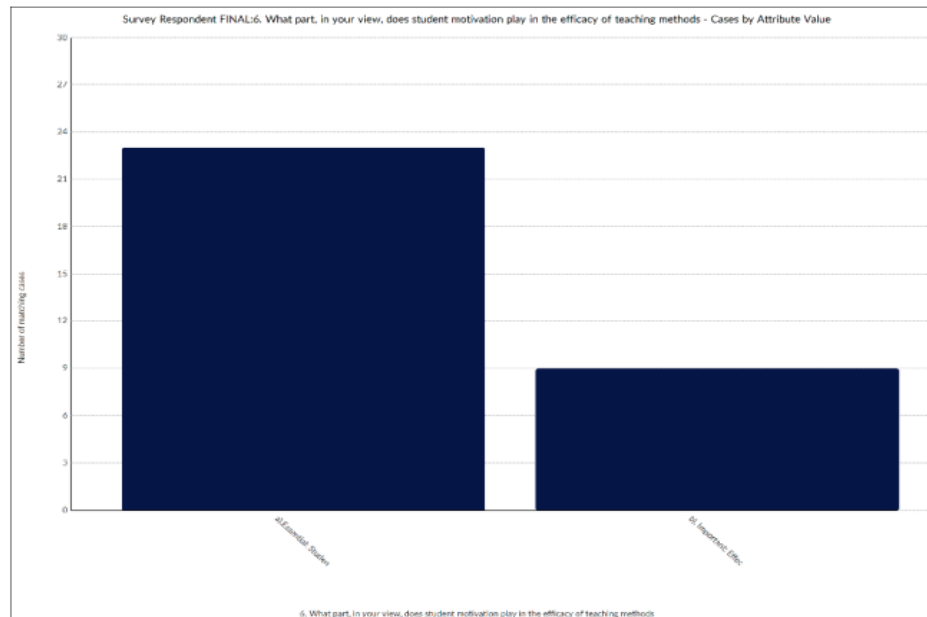
Survey excel results.

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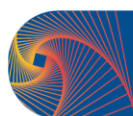
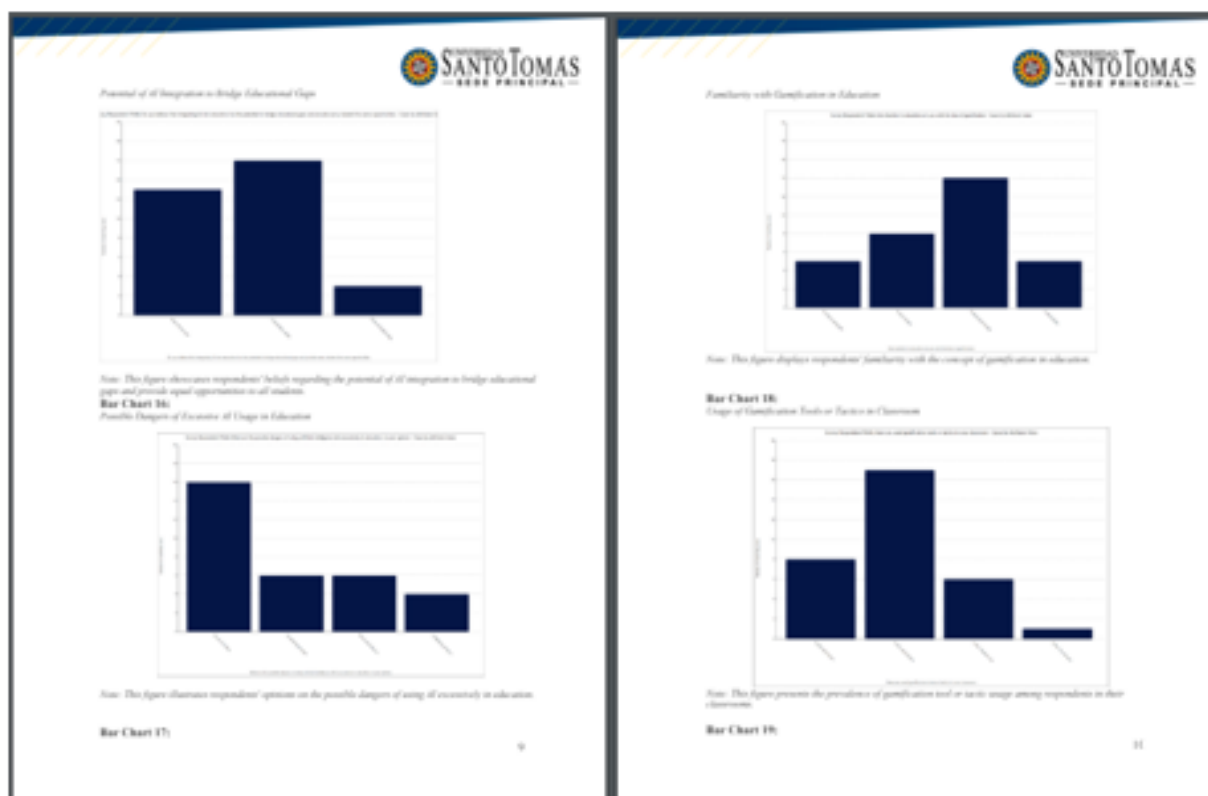
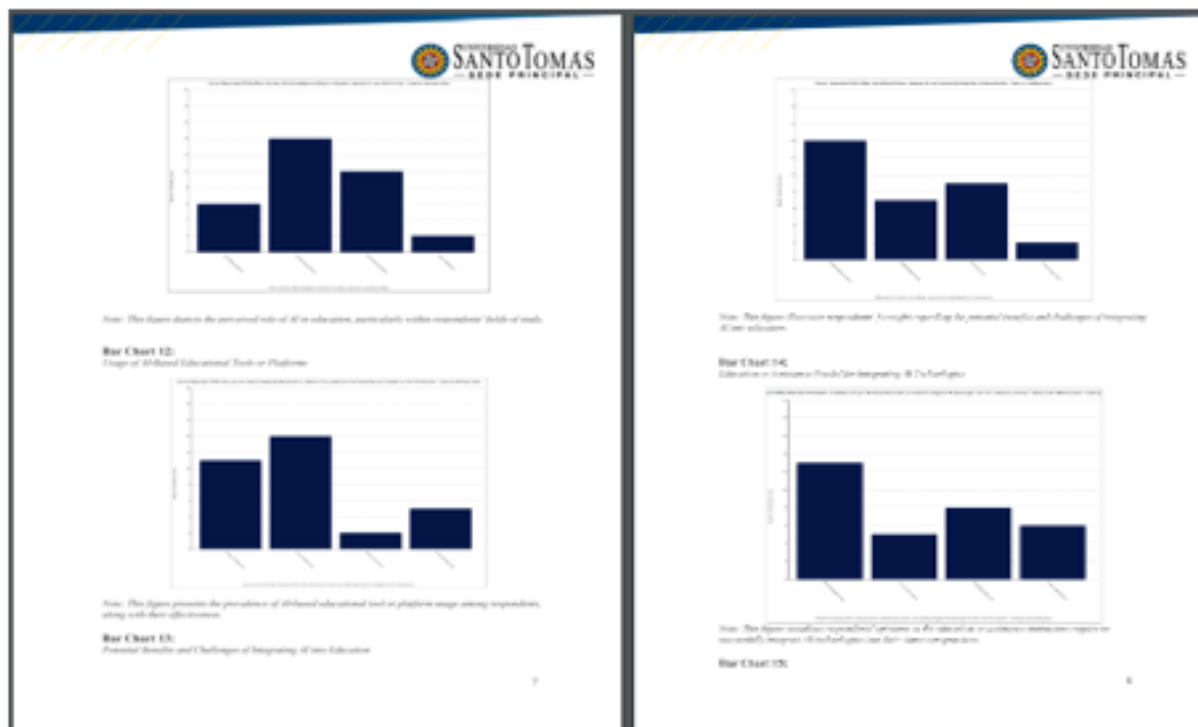
Survey Bar graphs.

Bar Chart 10:

Role of Student Motivation in Teaching Efficacy

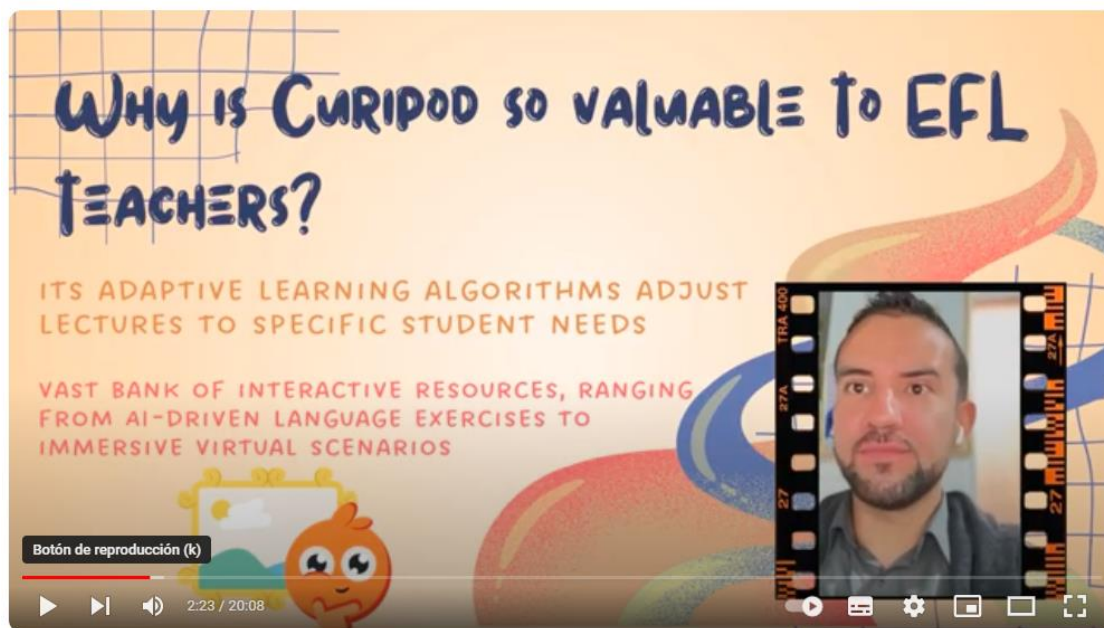


Note: This figure illustrates the perceived role of student motivation in the efficacy of teaching methods.

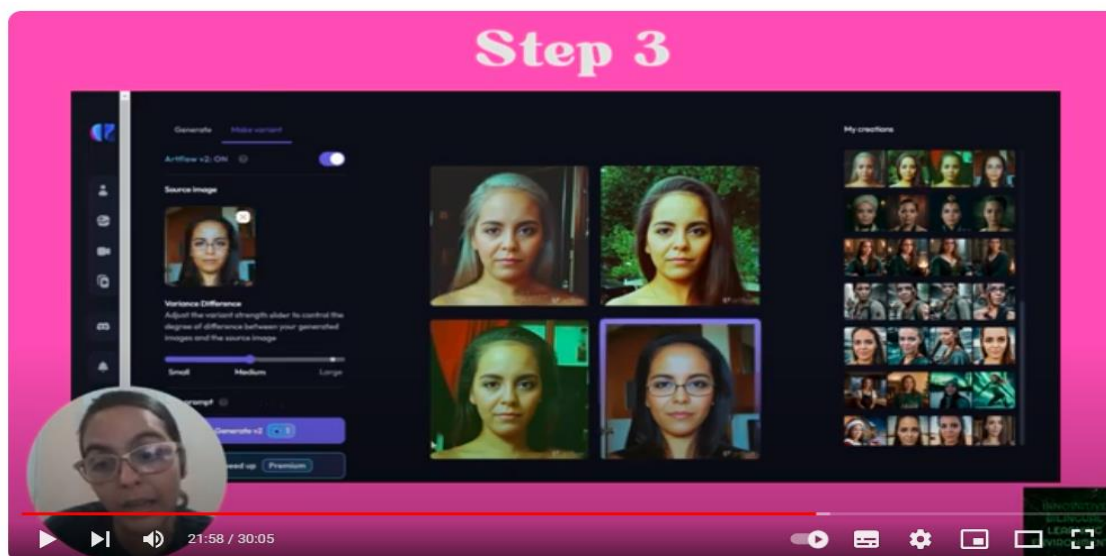


- **APPENDIX C: Research instrument 2.**

Training sessions 1 & 2.

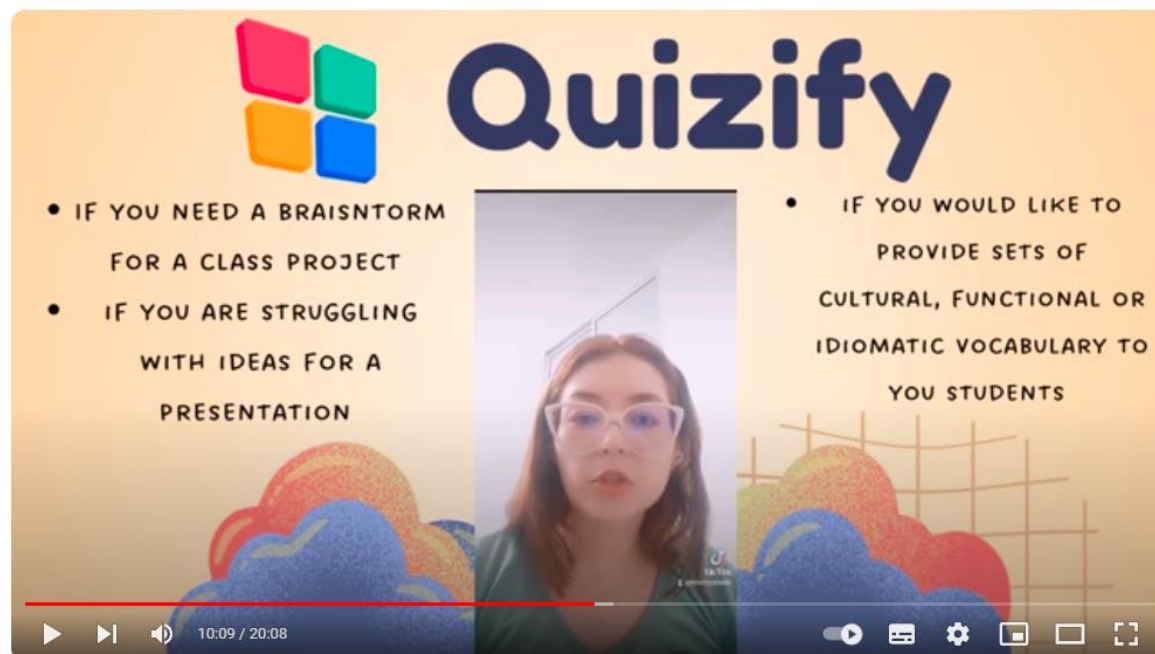


Artificial intelligence and EFL education: Gamification through AI: Curipod & Quizify.

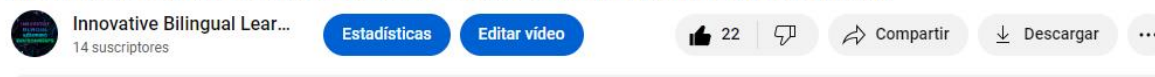


Artificial intelligence and EFL education: Gamification through AI: Chat GPT & Artflow.

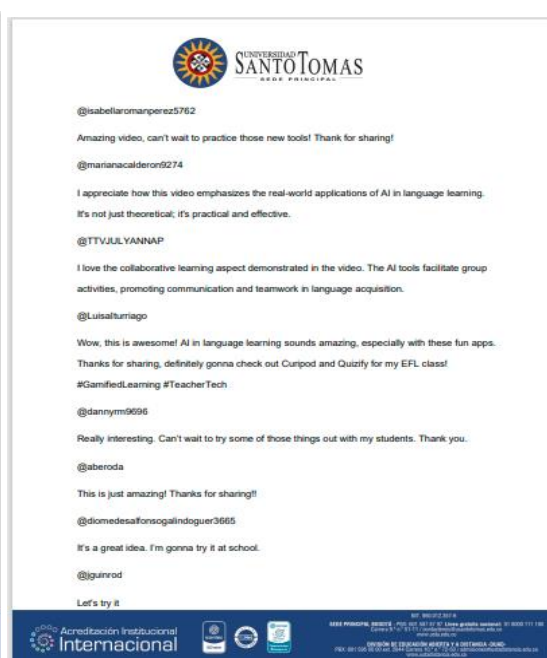
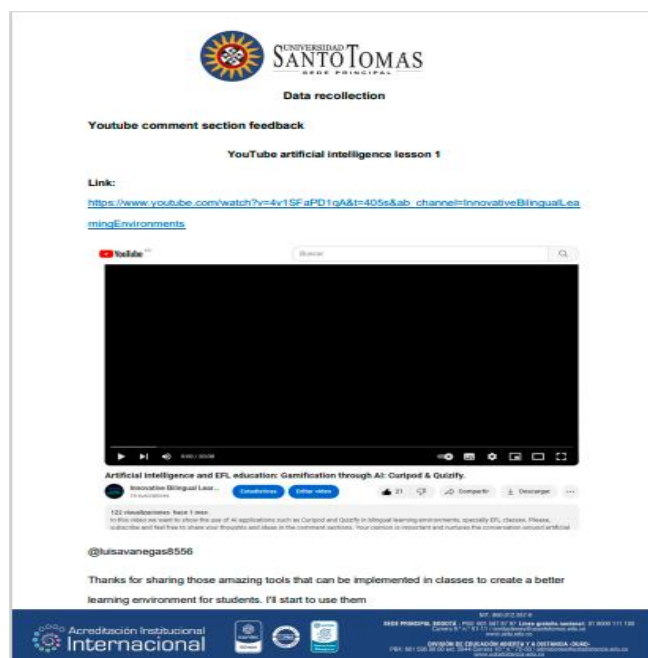




Artificial intelligence and EFL education: Gamification through AI: Curipod & Quizify.



YouTube comment section feedback.



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SEDE PRINCIPAL

This video has opened my eyes to the endless possibilities of AI in language education. It's not just about learning English; it's about embracing the future of education technology.

@dianaromero9269

It's great to know that there are plenty of tools to support teachers and students in the learning processes. How to take advantage of those and to use them responsibly, verifying all the information and respecting intellectual rights, it's a question that comes up now.

@luzmunevar6760

It is a theme that leads us to rethink what to offer our students in class, from changing their appearance to creating their own stories in them. Excellent quality to show us

@linamarin2229

Que interesante video, muy dinámico y útil para aquellos que estamos interesados en el tema

@LuisalTurriago

These are all amazing options, thanks for sharing them and the ideas ♥

@dannym9896

Great video. It's important to be aware of the advantages and risks of AI. We should not be afraid of incorporating it into our practice.

@aberoda

Very, very interesting!

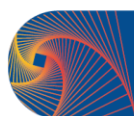
@diomedesalfonsogalindoguer3665

AI is really fantastic. I couldn't imagine that I could do that

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- APPENDIX D: Research instrument 3.

Observation rubric.



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Observer name: _____

Instructor name: _____

Course: _____

Date and Time of Observation: _____

CRITERIA	NOT MET	MET	OBSERVATIONS
1. There was an introductory activity using AI or gamification tools.	()	()	
2. Students reaction to the gamified / AI activity was satisfactory.	()	()	
3. The AI or gamification tools could help the teacher measure the students knowledge in the activity.	()	()	
4. All of the content, or part of it, was presented using an AI or gamification tool.	()	()	
5. The interaction with the AI or gamified platforms where the content was presented was easy and clear for students and teacher.	()	()	
6. The content presented was aligned with students interests and class objectives.	()	()	
7. The use of AI or gamified platforms helped in the integration of materials that allowed students be engaged.	()	()	
8. AI or gamification tools were used to design and present the activities or some of them.	()	()	
9. The interaction with the AI or gamified platforms where the activities were presented was easy and clear for students and teacher.	()	()	
10. The AI or gamified activities could help the teacher measure the students knowledge in the activities.	()	()	
11. AI or gamification tools were used to design assessment of the class.	()	()	
12. AI or gamification tools were used to measure the effectiveness of the assessment.	()	()	
13. EFL learning skills (or some of them) could be reinforced in the assessment using AI or gamified tools.	()	()	

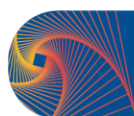


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Final observations:

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Date and Time of Observation: 12/02/2024: 7:00-8:20 am, 13/02/2024: 11:00 - 12:30 pm

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12. AI or gamification tools were used to measure the effectiveness of the assessment.	(x)	(x)	The app was not used to evaluate or measure effectiveness.
13. EFL learning skills (or some of them) could be reinforced in the assessment using AI or gamified tools.	()	()	Speaking reinforced through information provided by the app. Writing too. Teacher guided the process.
14. The teacher is satisfied with the use and help AI or gamified tools provided to the class.	()	(x)	Satisfactory class.

Final observations:

Parental permission not necessary.

Topic of the class: Human rights and human rights violations and importance.

Debate in class about human rights, their importance and violations.

CLIL approach: content and vocabulary about human rights.

During 1 social studies class, the teacher and students discussed human rights.

The teacher used chat Gpt to have students investigating about human rights (prior knowledge activation).

The teacher assigned to different groups different human rights and asked them to use chat Gpt to write information found on the notebook as the content of the class. Graphic organizers used to organize and present the information.

Debate in the 2 classes about the topic.

A lot of participation.

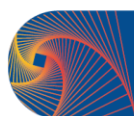
The teacher guided the process raising awareness about plagiarism and personal outcomes.

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Table: Sociodemographic data from participant teachers. (45 in total) *

Information	Participant teachers	Number
Sex	Women	27
	Men	18
Education level	Bachelor's degree	23*
	Postgraduate degree	22
Teaching experience	Less than 1 year	1
	1 to 3 years	7
	4 to 6 years	9
	7 to 10 years	11
	11 to 15 years	9
	More than 15 years	8

*Note: *Some teachers have Bachelor's degrees in different fields different from education*

Figure: Word cloud generated in NVivo from the inductive process: word frequency query.



Note: NVivo analysis evidence.

**Figure**

Coding summary by code from the coding scheme “How does the incorporation of Artificial Intelligence and gamification techniques in EFL education influence the teaching methods and learning outcomes for EFL teachers?”

5/04/2024 3:37 p. m.

Coding Summary by Code Thesis 5/04/2024 3:37 p. m.

Aggregate	Classification	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On
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Code

Codes_Incorporating Artificial Intelligence and Gamification in EFL Education_ Strategies for Enhancing Teaching and Learning Outcomes of EFL Teachers.” (respuestas) (1)\\Do you have any further information or thoughts to share about curriculum alignment, AI integration, gamification, or successful classroom teaching

Dataset

Files_Incorporating Artificial Intelligence and Gamification in EFL Education_ Strategies for Enhancing Teaching and Learning Outcomes of EFL Teachers.” (respuestas) (1)

No	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On
	0,5000	32	1	KR	9/03/2024 9:50 a. m.

Codes_Incorporating Artificial Intelligence and Gamification in EFL Education_ Strategies for Enhancing Teaching and Learning Outcomes of EFL Teachers.” (respuestas) (1)\\In your specific context, how do you see these components evolving as education progresses

Dataset

Files_Incorporating Artificial Intelligence and Gamification in EFL Education_ Strategies for Enhancing Teaching and Learning Outcomes of EFL Teachers.” (respuestas) (1)

No	Coverage	Number Of Coding References	Reference Number	Coded By Initials	Modified On
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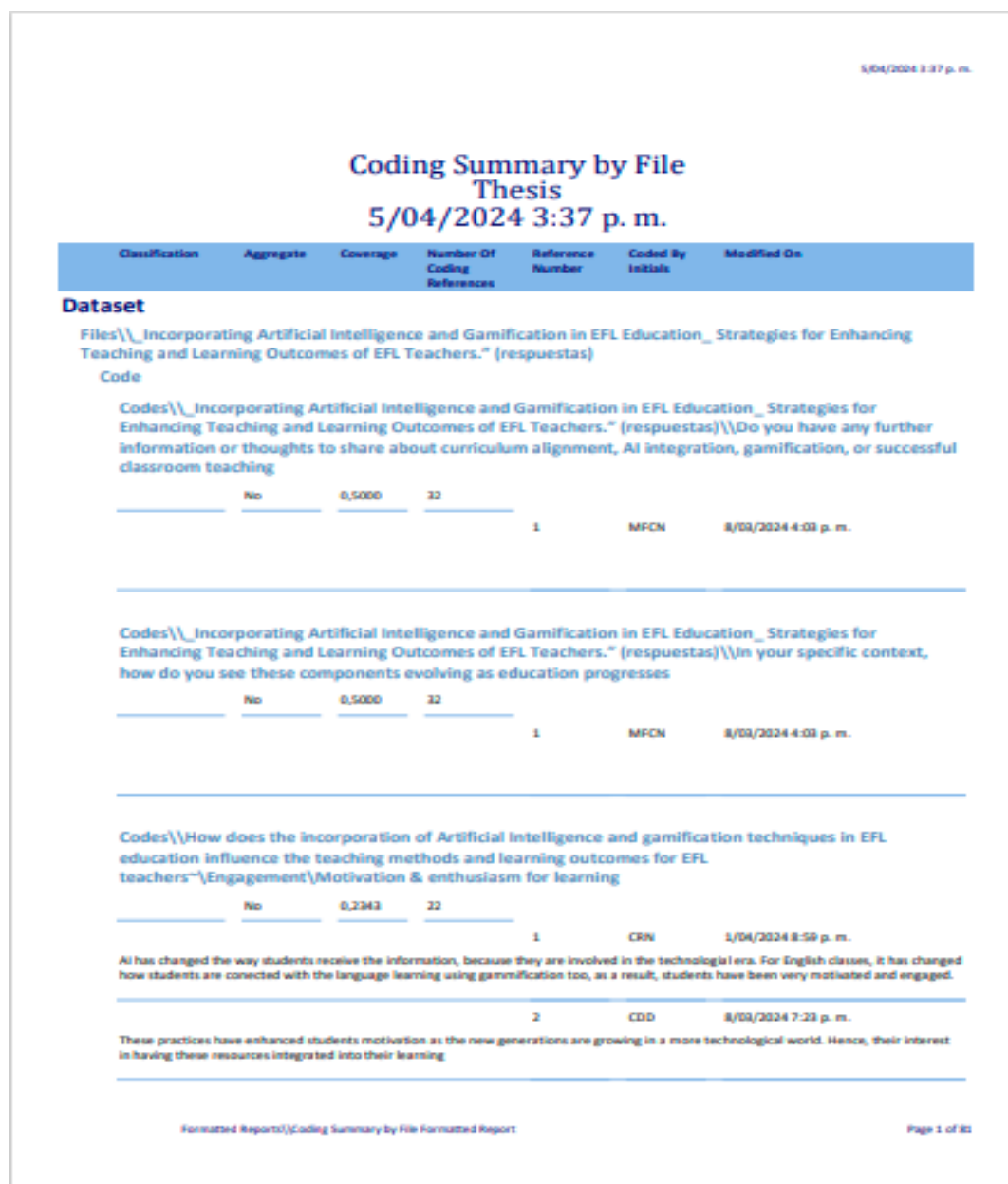
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Page 1 of 94

Note: NVivo analysis evidence.

**Figure**

Coding summary by file from the coding scheme “How does the incorporation of Artificial Intelligence and gamification techniques in EFL education influence the teaching methods and learning outcomes for EFL teachers?”



Note: NVivo analysis evidence.