Benemérita Universidad Autónoma de Puebla

Facultad de Lenguas

Maestría en la Enseñanza del Inglés

The Impact Of Using Digital Resources To Gamify EFL Lessons

A thesis submitted to obtain the master's degree

By Andrés Alberto Mendoza González

Thesis Supervisor: Dr. Norma Flores González

Puebla, México

November, 2023

The Impact Of Using Digital Resources To Gamify EFL Lessons

This thesis has been read by the members of the Thesis Committee of

Andrés Alberto Mendoza González

And is considered worthy of approval in partial fulfillment of the requirements for the degree of

Maestría en la Enseñanza del Inglés

Thesis Director	Committee Member
_____	_____
Dr. Norma Flores González	Dr.
Committee Member	Committee Member
_____	_____
Dr.	Dr.

Benemérita Universidad Autónoma de Puebla

Puebla, México

November, 2023

Dedication

To my whole family: Maribel, Andrés, and Carlos, who taught me to love, belong, and enjoy the grace of life. All of my work and efforts are intended to give back and share everything I have received from you.

To Charly and Betty, for giving me a piece of their hearts and minds and being there whenever I needed them. All of my gratitude and love will be forever yours.

To my friends, Arturo and Erick, who helped me throughout this process and supported me in emotions, joy, and energy.

To Zarelli, thank you for being part of this process and letting me share and learn with you. Your love encouraged me in many senses and helped me find strength.

To Norma Flores, Pamela Olmos, Veronica Sánchez, and Marisol Guzmán, the professors who expanded my horizons and gave me a different look at what I can reach with my professional efforts.

To my MEI classmates who also learned and sympathized with me during this process.

Acknowledgments

This thesis research and my professional development would not have been possible without the support of Conacyt's scholarship. I am aware that this opportunity will also help my country by providing it with a person who is now more committed, prepared, and willing to face the challenges that surround education, not only in terms of EFL learning but as an integrative, humanistic process that serves to forms citizens and encourages humans to build together a better society.

The CELEX administrative staff, Juan Manuel, Elizabeth, and Liz, were vital for implementing this thesis research. Thanks for sharing your knowledge and experiences and supporting in setting the conditions for this pedagogical experiment. Your efforts to perform your duties have been crucial to inspiring others. There is still work to do, but with your willingness and inspiring work, CELEX at ESCA will improve and stand out.

Of course, thanks to Dr. Norma Flores and her class on Technology Implementation in ELT. That lecture spread the seeds of this thesis research, and her guidance led them to culminate in this project. Your effort, dedication, and support are a reflection of the great human being that you are. I hope we can continue collaborating and give back to society what our universities have given us.

Abstract

This thesis research intends to analyze how the implementation of a techno-pedagogical design that uses digital resources such as Wordwall, Kahoot!, Canva, Padlet, Nearpod, Seesaw, Voki, and Coggle affects the learning process of EFL students of IPN's CELEX, concerning their proficiency level and what their perceptions are about the implementation of these digital resources. IPN's CELEX is currently implementing its Programa General Institucional de Inglés, an institutional EFL teaching policy highlighting the use of technology to teach foreign languages. With this in mind, this thesis research adopted a quantitative approach, intending to produce research regarding OERs, gamification, and their implementation with CELEX's population. Four instruments were used to gather the data: a pre-test, a post-test, the implementation of a techno-pedagogical design as a treatment, and a Likert-scale questionnaire to identify the students' perception of using digital resources and gamification in their EFL learning process. The test instruments were applied to a control group and an experimental group. The results demonstrated that the experimental group students increased their EFL proficiency level, showed a positive perception concerning the implementation of technology in their EFL classes, and fostered different skills related to speaking, vocabulary and grammar practice, reading, collaboration, and digital literacy. Thus, it can be concluded that the gamification of digital resources can improve the quality of CELEX's EFL lessons. The limitations of this study include a bias in using this similar methodology in different teaching contexts, which is, at the same time, an area of opportunity to conduct further research.

Table of contents

Chapter 1: Introduction

1.1 Introduction to The Problem

In 2019, the Programa General Institucional de Inglés (PGII) was presented, and its implementation plans began at the Instituto Politécnico Nacional (IPN). This updated version of their English Language Teaching Institutional Program was substantiated by the idea of facing the 4th Industrial Revolution (4IR) and the necessity of implementing Education 4.0 (E4), which is not exactly a new educational model but one that is thought to incorporate digital technologies to facilitate learning. Among its primary objectives, the idea of promoting an integral, high-quality education can be found via the pursuit of flexible programs that allow the possibility of conveyance between modalities, levels, and academic units, as well as diversifying the learning spaces, using new methodologies which prioritize innovation, creativity, and the intensive use of ICTs (Gil et al., 2019).

This program was created by the Dirección de Formación en Lenguas Extranjeras (DFLE) to be applied in their Cursos Extracurriculares de Lenguas Extranjeras (CELEX). The PGII had just been presented, and teachers from different CELEXs were told about its objectives and intentions when the COVID-19 pandemic struck. Lessons needed to be implemented online, and not all teachers and students were prepared to face them properly due to the lack of technological resources, whether in terms of what they owned as given hardware and software or due to constrains in their digital literacy skills. However, dynamic and student-centered lessons were uncommon in CELEX before or after the COVID-19 lockdowns. Many teachers and students struggled to have lessons with these characteristics. Within this context, this thesis research took place in the CELEX of Escuela Superior de Comercio y Administración (ESCA),

Tepepan, with the idea of evaluating how the use of gamification and digital resources can impact English as a Foreign Language lessons.

1.2 Significance of the Study

The PGII and modern education are configured around creating students who have been fostering their 21st-century skills. Among the goals this educational model wants to achieve, the most relevant are related to developing creativity, critical thinking, collaborative skills, self-direction, digital literacy, and cross-cultural skills (Fandiño, 2013). Technology is essential to achieving this goal, and adequately applying it involves innovating as an EFL teacher using gamification and techno-pedagogical designs.

According to Lee & Harmer (2011), if someone is to conduct any research related to gamification, first it is crucial to work towards a definition of it, as well as point their benefits and drawbacks while exploring how its implementation can influence the future possibilities of the proper understanding and theoretical rationale behind this set of strategies.

The idea of gamifying lessons has been a significant trend in education and other crucial everyday life areas. Its main idea is to use game mechanics such as scores, rewards, statistics, visual aids, and challenges; thus, the users —or learners, in the case of language teaching— can become immersed in the given topics and motivated to work on them (Jagoda, 2020).

Nonetheless, many teachers still insist on teaching traditionally, which means holding teacher-centered lectures or lessons with no other help apart from a board and the textbook (Zimmermann, 2018). Such is the case for most of the EFL classes at ESCA, regardless of the experiences accumulated throughout the pandemic, as the lessons took place in a virtual, online modality for two years after it. In addition, teachers at ESCA counted on a few technological resources when the lessons eventually continued in the face-to-face modality. There was access

to projectors, and it was mandatory to implement a Learning Management System (LMS) and a reading project whose texts could be found online. However, these two digital tasks have just been extra assignments for the students, and there is no nurturing or fostering of their digital literacy skills. A techno-pedagogical design that strengthens the students' communicative skills could be a differential factor in achieving a better proficiency level towards the end of their training.

The teachers' lack of action in implementing technology in the classroom can be due to generational gaps. Millennials— 1980 and on— and Generation Z —1995 up to date— students and teachers are familiar with technology as they employ it or even live immersed in it, while Gen-Xers— 1965-1980 born— enjoy technology but sometimes struggle with its usage (Mohr & Morh, 2017); thus, they ignore what sites or apps can be helpful to apply different activities, assessing students, or having the possibility of organizing course contents and materials, or even the benefits of taking the role of a content curator (Anders, 2017).

In this context, this research intends to provide ESCA's EFL teachers and students with examples of tools and possible strategies to use online resources to gamify their lessons and make the students' learning processes more meaningful.

Considering the PGII intentions, gamifying lessons in ESCA's CELEX seems mandatory. This research study is relevant because when gamifying, a digital pedagogical solution is applied to the problems of students' engagement and motivation; additionally, another benefit of gamification is that when dealing with more meaningful content, dropouts are also reduced (Acosta-Medina et al., 2021). Thurston (2018, p. 25) has also mentioned how beneficial gamification can be for digital natives, "those born after 1980, [who] have access to digital

technology, and possess digital literacy skills", as it has been suggested that the use of problem-solving skills in game-like environments appeals them.

One of the drawbacks of gamification is related to its implementation because, if it is not well-planned in terms of including pedagogical reasons and keeping the activities focused on their learning purposes, it can generate frustration and boredom in the students (Reyes-Cabrera, 2022). However, according to Briceño (2022), the main advantages of properly gamified lessons are that learning the target language more meaningfully optimizes the learning process while making it more dynamic and effective.

Thus, this study becomes relevant as it intends to propose and evaluate the impact of a techno-pedagogical design with appropriate strategies and activities to gamify different aspects of the English language in face-to-face CELEX lessons. The expected contributions include the theoretical, practical, and methodological fields since little research is in Mexican public institutions. Then, this thesis research could innovate the EFL teaching practices at CELEX with more dynamic classes that can catch the students' attention; thus, this study can also provide social contributions. Finally, this thesis research was possible due to government funding, and it can impact students' motivation via new appealing ways of facing the contents, as well as changing the perception of EFL teaching, which is a demand of modern education.

1.3 Context of the Research

Since 1966, CELEX has been helping students with their foreign language learning processes. Many languages have been taught, from English to Russian, Chinese, Italian, French, Portuguese, and German. From 2005 on, CELEX's policies were set by DFLE, which is in charge of establishing the teacher profiles and, therefore, assisting with the quality of the language courses offered; they created the EFL teaching policy currently being applied at

CELEX, the PGII. Every year, CELEXs serve around 76,000 users, intending to strengthen the competencies of the learners in terms of foreign language use to facilitate their insertion into an international environment (IPN, 2019).

One of those language centers is the one of ESCA, Tepepan. This CELEX holds foreign language classes every day. Currently, three languages are being taught: English, French, and German. Most of the students and teachers focus on the English language. 50 EFL teachers are working with classes given on three different schedules: Monday to Friday (*cursos ordinarios*), Saturday or Sunday (*cursos intensivos*), and on Weekends (*cursos super intensivos*). Most of the student population is also part of the university and are studying as part of a degree requirement.

Generally speaking, the environment is friendly and relaxing. Each course lasts 40 hours, divided into twenty 2-hour-a-day sessions for *ordinario* courses or eight 5-hour-a-day sessions for *intensivo* and *super intensivo* courses. The academic supervision is sensible and supports teachers. There are three crucial administrative positions: 1) the chief of the language center (the coordinator). 2) the academic supervisor (in charge of the pedagogical issues), and 3) the head of systems (in charge of all of the administrative data related to the student's enrollment and grades).

As mentioned, CELEX courses needed to be online after the COVID-19 pandemic struck, and currently, they are being held in a face-to-face modality. Courses are divided into 17 levels (Introductorio, Básico 1-5, Intermedio 1-5, Avanzado 1-6) following the suggested contents and proficiency intended levels of the Common European Framework of Reference (CEFR). These contents work as the base topics, and their presentation is given based on the coursebook material *Life* (Huges et al., 2020) by National Geographic.

The average CELEX group comprises between 12 and 30 students, with the basic levels being the most demanded. Most of the CELEX population consists of students from the different degrees offered in ESCA, including Accountancy, International Business, and Trade Affairs. The average age, therefore, is similar to that of university students, between 18 and 30 years old, with a few students from the general public over 30.

This research will focus on the *básico 2* level students, the third level offered at CELEX courses, and what is used as a filter level to demonstrate the transition from A1 to A2 level according to the CEFR. The proficiency level of the users, following the Council of Europe (2020), refers to the basic users, and they are expected to perform the following:

Chart 1

Basic user competencies according to the CEFR.

BASIC USER	A1	They can understand and use familiar everyday expressions and very basic phrases, aiming at the satisfaction of the needs of a concrete type. They can introduce themselves and others and ask and answer questions about personal details such as where someone lives, people they know, and things they have.
	A2	They can understand sentences and frequently used expressions related to areas of immediate relevance (very basic personal and family information, shopping, local geography, employment). They also communicate simple routine tasks, requiring a direct exchange of information on familiar and routine matters, describing backgrounds, immediate environments, and issues.

Source: Council of Europe, 2020.

When half of the course is covered at CELEX, students present a mid-term exam where their productive and receptive skills are measured with their target language features. Students at CELEX are also asked to create a Project Task, an integrative assignment intended to be

developed and presented in class. Communication is prioritized in terms of organization, a written plan, and the oral presentation of the final product.

Hence, CELEX's *Básico 2* course in the *Ordinario* modality was selected for this research study. Two groups were chosen, a control and an experimental group, using a quantitative approach to measure their proficiency entry-and-exit levels and the perceptions regarding implementing a techno-pedagogical design for the experimental group. Their experiences and perceptions were captured via a questionnaire using a Likert scale. Thus, this thesis research took into account these elements.

1.4 Research Questions

Three main questions guided this thesis research:

1) How is the student's language proficiency influenced by using a techno-pedagogical design with gamified digital resources?
2) What are the implications of applying this techno-pedagogical design in a CELEX course?
3) What are the students' perceptions regarding implementing the given digital resources?

The general objective of these questions was to determine the effect of using gamified digital resources in CELEX's courses. The specific objectives of these questions include the main benefits and drawbacks for the students who experienced using the suggested materials to serve as evidence for further implementation of the given techno-pedagogical design.

1.5 Justification

A quantitative approach was considered to conduct this thesis research. This approach was chosen because, as Creswell & Creswell (2018) stated, this research method is drawn from a correlational or causal hypothesis, which works as assumptions to be confirmed or sustained with

careful data analysis. The assumption that encourages this thesis research is that using gamified resources can be genuinely beneficial for CELEX's students. Examining the variables involved and adopting an experimental design is necessary to validate this conjecture.

That is the justification regarding methodology, but socially speaking, the implications of doing such research can be very positive for CELEX's students and teachers as it proposes an innovative way of teaching English that has not been applied in this context. Through gamification, teamwork is improved in terms of coordination, alignment, engagement, and motivation (Patricio et al., 2022).Therefore, if a well-established plan is followed, gamifying lessons can enhance the learning environment. Additionally, the students can foster their 21st-century skills and achieve lifelong learning.

Besides, in terms of practice, this research provides a techno-pedagogical design that helps both teachers and students to approach studying in a dynamic and innovative way based on ludic, where learning is different and the teacher's role, too.

1.6 Content and Organization

The first chapter of this thesis is an introduction to the study, explaining the problem statement, the significance of the study, the context of the research, the research questions, and the justification of the methodology and central theme selected.

The second chapter is divided into different sections that reflect on the theoretical framework used, reviewing the learning and teaching English in Mexico and its constraints; the principal components to innovate the English teaching process; the different approaches of technology such as ICTs, LKTs, and ETs; the implementation of technology in the EFL classroom; the different modalities of education that are taking place these years. For instance, virtual, hybrid, and onsite modalities. Besides, it also includes the teacher's requirements to

implement technology; the role of traditional education and the one of content curator; the students' requirements to implement technology in their learning processes; the differences between the digital natives and the digital immigrants; the open educational resources, how digital resources can be used for classroom management; the impact of gamification in the EFL classroom; how the teaching-learning tools used in the techno-pedagogical design of this thesis research have been used for educational purposes, namely Wordwall, Kahoot!, Canva, Padlet, Nearpod, Voki, Seesaw, and Coggle; the impact of gamification for EFL learning and a conclusion relating this theoretical framework with the intended research.

The third chapter is related to the methodology used to measure the impact of the gamified materials and how the students perceived them. As mentioned, the methodological framework was the experimental design, which means systematically manipulating variants— in this case, the teaching implementation through gamified resources— to impact a specific outcome— the learners' proficiency level and their perception of the class. The data collection process is also described, as well as the instruments that were used.

The fourth chapter concerns the results of this study, what the real impact of implementing gamification in CELEX's courses was with each of the given apps, as well as what the anticipated problems and possible solutions can be when dealing in the future with gamification in the classroom. An overview of the students' experiences and perspectives is also presented in this chapter.

Finally, the fifth chapter displays the conclusions of the research, considering all of the stages covered and the explicit proposal to improve CELEX's lessons at the *básico 2* level by using gamification in its contents.

1.7 Summary

All in all, this thesis research is intended to promote different gamification strategies to satisfy the PGII needs and intentions in terms of providing an integral education of English as a foreign language, with an extensive literature review of the stated problem regarding the proper usage of technology in the classroom and the results of its implementation in two EFL *básico 2* level courses at CELEX, ESCA, Tepepan, with a focus on the development of the students' proficiency skills in the context of 21st-century education. This thesis also sets a precedent for research related to the impact of gamification in the EFL education of young adults in Mexican Public Education Institutions.

Chapter 2: Literature Review

2.1 English Learning and Teaching in Mexico

Education is one of the biggest challenges Mexico faces. Despite the efforts to provide the Mexicans with general good-quality education, the system is considered weak and presents many constraints. Primary education focuses on three large domains: Literacy, Numeracy, and Science/Technology. However, the results on public education have shown to be a repeated failure mainly due to two reasons: 1) The Mexican government has not been able to implement meaningful and sustainable system-wide reforms, and 2) All discussions about education in the country are politicized, what makes them lack in significance (Scott et al., 2018).

In the case of the education of English as a Foreign Language (EFL), similar problems can be found. Language policies and National Programs have intended to develop English Language proficiency from the basic educational levels to higher education, but they seem to remain as a political promise whose continuity depends on the political party that is holding power; so, whenever there is a new party in the government, the ongoing programs are neglected, presented as useless or inadequate, and new proposals emerge but they remain valid until there is another political change (Ramírez-Romero & Vargas-Gil, 2019). It is at the meso and the macro levels of Language Policies and Politics implementation and design that the Education System in Mexico finds its main limitations. In the words of Basurto-Santos & Gregory:

> We conclude that no matter what EFL teachers try to do to improve their students' learning experience if they are not provided with the working conditions deemed necessary to enhance the teaching and learning of EFL in the public sector the unsuccessful situation will prevail. (2016, p.81)

Davies (2020) explored the facts and general assumptions that can be made when considering EFL in Mexico. He sustained that a small percentage of the Mexican population,

around 10 to 12%, is competent in the use of the English language. He also noticed a correlation between this number and the number of people receiving private education in the country, 10 to 13.5%. Regarding EFL acquisition in schooling, the institutions that produce the best results are bilingual private schools and American and British bi-national centers, such as The Anglo, which handles around 70,000 candidates for Cambridge's language certifications yearly. Then, there are public university language centers (Balan, 2011) like CELEX, from IPN's ESCA, Tepepan, which are intended to instruct university students but are also open to the public and rely on professional language teachers.

It was also identified that there is a shameful need to restart the students on the basic levels of EFL three or four times along their experience in the public educational system—from elementary school to the bachelor's degree— a way of resuming the current situation of EFL in Mexico is:

> In short, over 50 years after English became a curricular subject in lower and upper secondary schools, over 30 years after most universities established something on the lines of a common core English programme, and over 10 years after the launch of PRONI, the national English programme that starts curricular English courses in last year of preschool, most ELT in Mexico seems to be failing badly. (Davies, 2020, p. 9)

All in all, despite the fact of including EFL as an axial subject for education, urgent measures are to be taken if teachers want to succeed and improve in the process of foreign language acquisition, particularly in the context of a globalized and digitalized reality for modern societies where new approaches have been considered regarding education, and the foremost may be the so-called 21st-century skills, in which the development of creativity, critical thinking, collaborative skills, self-direction, digital literacy, and cross-cultural skills should be prioritized

(Fandiño, 2013). With this in mind, promoting gamification and using different technological approaches to teaching EFL seems more necessary than a trend.

2.1.1 Teaching During the Pandemic

The COVID-19 emergency that culminated in a pandemic impacted the modern world as an unprecedented phenomenon. While around 2% of the world's population had been infected and only 2% of that number died due to COVID-19, the rest of the world needed to adapt to the constrictions that the lockdowns involved. Education and work turned into a remote modality. Still, it implied alienation and marginalization, as not everyone had the opportunity to embrace the virtual solution that was presented, whether for the diminishment of the family income or the sequels it provoked in terms of the challenge it meant to meet the basic needs such as food and shelter, the increased domestic violence that the confinements triggered, or simply because of the lack of technological resources and skills to operate the digital devices and means needed to hold the remote teaching and working platforms (Reimers, 2022).

The nature of learning, the learning environments, the teachers' and learners' roles, the approaches, responsibilities, structures, and organization at the classroom level, all of these educational factors suffered a dramatic change; suddenly and in a short span, education's continuity turned into an emergency response. Synchronous online platforms such as Google Meet and Zoom were the most popular, but once the classes started and kept on pace, creativity, and innovation emerged as teachers began looking for asynchronous materials and tools to supplement their videoconferences, especially in terms of higher education (Kiddle et al., 2020).

In Mexico, most higher education students used a laptop or a computer to hold their online lessons; primary education students relied on mobile devices such as tablets and smartphones, as they mainly worked with assignments rather than videoconferences. They were

assigned tasks that needed guidance from the parents, and then they were evaluated at the end of the week. Among the main disadvantages and complaints about this emergency response were that around 58% of students felt they only had limited learning or even claimed they were not learning at all; about 27% mentioned teachers were not providing assessment and feedback on their tasks or their performance; and around 24% expressed their teachers or parents were not able to transmit knowledge due to pedagogical and technological deficiencies (INEGI, 2021).

Hodges et al. (2020, p.3) have pointed out that Emergency Remote Teaching (ERT) is not conceptually the same as Online Learning, considering that "effective online learning results from careful instructional design and planning, using a systematic model for design and development". Even though Mexican schools needed to plan and design strategies to translate the experience of teaching and learning into a remote environment, in public schools, this happened as an emergency response; most schools were unprepared. The INEGI results showed that this remote learning experience was often unsuccessful. As mentioned in the previous section, public education in Mexico has already presented many challenges and inefficiencies, so the pandemic and lockdowns have increased the existing gap.

Connectivity, students' attitude, and their attendance were the main limitations experienced while using synchronous resources; however, there were also benefits due to the ERT; a crucial one is that it bonded the different actors involved in education as a community, making them more aware of the importance of their roles and the roles of the others. As Zamora-Antuñano et al. (2021, p.2) stated "Education often requires a change, and a change in perspective must be an alliance between those who lead the student body, the teachers, families, communities, and administrators". Thus, experiencing ERT helped these actors have a rapid depiction of the work needed in other areas, especially parents who became aware of the

planning and effort behind teaching their sons, teachers, and administrators realized the heavy load each other had to respond to the community and students' demands. As a result of this, one of the main benefits of the COVID-19 lockdowns and the ERT was:

> In a crisis, education is key. Education can prepare people to seize their own liberation, to build better worlds in their own communities even as the wider world seeks their ending, and to make connections between struggles that can be the basis of future solidarities. (Battel, 2021, p.227)

In summary, teaching during the pandemic had mixed results and various outcomes, presenting different positive and negative implications. Among the main advantages, many students and teachers experienced online teaching for the first time, even if it came as ERT, so the perception of online education as something that can work and be disruptive increased as it was implemented at all educational levels, what made it socially accepted (Reyes-Cabrera, 2022).

However, the results of COVID-19's ERT relied heavily on the socioeconomic status of teachers and students. Indeed, the digital gap was because of the access to adequate resources because of previous remote teaching training and experience in virtual learning environments, which translated into dynamic multiple-tasks and varied interactions provided by skilled teachers while students needed to build up or reinforce their autonomous learning skills.

2.2 Principal Components to Innovate the English Teaching Process

Teaching English is part of the core curricula in most countries. Implementing innovation in education is making changes and applying something new or different in input, interaction, and outcomes. With the continuous expansion of English as the world's lingua franca, new approaches, perspectives, materials, technological developments, and assessment methods have blossomed. To mention a few examples, consider task-based learning, extensive reading, and listening, the use of portfolios, cultural competence development, gamification of materials, the

use of digital resources to ease classroom management such as assigning, feedback, and marking, and to provide dynamism to everyday lessons in collaborative tasks (Becerra et al., 2019).

The main reason to innovate in education is connected to globalization's technological and economic effects and the need to provide learners with professional development tools (Wedell & Grassick, 2019). Remember what has been mentioned about 21st-century skills and the plethora of new areas to consider apart from the traditional role of education as content instruction. Students need to develop their proficiency in EFL, but other skills related to their social roles and how they will interact in this modern society are also highlighted. Learners need to know about multimedia, technology, and culture. By practicing peer learning, they scaffold skills such as communication, interaction, and negotiation; if these activities are context-based, students can foster their critical thinking and problem-solving abilities, and the innovation in this aspect will be given by stimulating creativity (Han & Aybirdi, 2016).

Following Masuhara (2019, p. 9), most commercial materials keep using traditional formats and contents, despite having “trendy disguises”. The author suggests that the coursebooks recycle mechanical aspects of the language, and the quality and effectiveness of these materials do not meet the diverse needs of present-day learners. The utopian nature of creating one-size-fits-all pedagogical resources is not arguably but the learners’ expectations concerning accountability and employability based on their language provision. One of the main issues arises from the lack of exposition to the target language; therefore, “teachers of English need to be constantly seeking for new techniques and approaches to language teaching, not only based on the students’ linguistic needs and the teaching conditions but also on the fast-paced development of society and technology” (Díaz et al., 2019, p. 11).

Paradoxically, the principal components of innovation in the process of English teaching are not in critical areas such as syllabi, curricula, materials, or assessment because constant changes have permeated them; it seems like innovation and change have been the rules for language learning theory. Besides, students get acquainted with these elements, and they can feel comfortable working with fixed objectives and familiar materials. As Arias (2020, p. 154) indicated, "It is important to keep a balance between the use of the guidebook and the adoption of a variety of resources in the English classes, including technological tools".

Moreover, innovation in language teaching comes from three main areas: the diversification of learners, as nowadays most of them belong to the Millennials and Generation Z generations (Herrero, 2019); the different and new learning and teaching contexts (like what happened with ERT on account of COVID-19 pandemic); and the different modes of education delivery, from traditional face-to-face lessons to hybrid and blended learning, to fully remote education. In this sense, Masuhara (2019, p. 12) claimed that "EU countries are preparing for a future open learning environment…[involving] higher education institutions and community-based learning environments. [But also envisaging] purely digital autonomous learning with or without guidance".

Before enrolling in futuristic discussions regarding the advances and impact of technology, it would also be nurturing going back to the brainstorming question of why to learn a language; keeping aside the practical reasons that gather teachers and learners in school classrooms, language teachers should empower their learners by transmitting the idea of how:

> a language is a compendium of history, geography, material and spiritual life, the vices and virtues, not only of those who speak it, but also of those who have spoken it through the centuries. The words, the grammar, the syntax are a chisel that shapes our thought. (Ferrante, 2018, as cited in Masuhara, 2019, p. 15)

In Ferrante's quote, an approach to philology can be disclosed. Language teachers, in their multiple roles, play one of the philologists, probably not fully aware of what it concerns, but it can be explained going to the root of the term: "Its earliest known form is the Greek compound *φιλολογία*, which consists of *φιλο-* ('love') and *λόγος* ('word'). The word *φιλολογία*, therefore, pertains to a love of words taken as a collective whole (logos) rather than individual entities (onoma)" (Momma, 2012, p. 2). EFL teachers are philologists because, ideally, they should love the language they have acquired and even their L1; if this is not the case, effective EFL teachers should possess a high level of intrinsic motivation so that they can transmit the language in all of its complexity to the learners, besides getting involved deeply in the language when studying grammar, phonetics, even literature, and different text genres, registers, meaning, interpretation, linguistic differences, and to explain some words sometimes that are sometimes needed to refer to historical reasons and point out linguistic changes. Through language, we understand the culture and experience the most profound problems of human experience. When teaching and learning to communicate, humans share their true selves.

Thereupon, knowing how to build a strong group rapport and implement technology in the classroom to encourage students, as well as exploring the different teacher roles, are priorities in terms of components to innovate in the EFL classroom. Of course, these are not new topics considering their theoretical framework, but our societies are constantly transforming, and several changes occur in the interaction patterns and the school communities' expectations, so the teacher roles and ways of building rapport have also adjusted. An innovative teacher must have excellent social competencies. As Yuan (2022, p. 2) described:

> the teacher-student relationship generates the emotive bond of the student, and this connection pays off in language teaching, where teachers and students are in constant communication,

creating friendlier associations and participating in social communication to improve the development of the student's language skills.

The fundamental teacher roles include facilitating the learning process, stimulating critical thinking, promoting reflection, developing curricula, conducting research, and contacting relevant persons inside and outside their work institutions (Lunenberg et al., 2014). Teachers need to satisfy these different roles holistically to help learning take place. They need to support students, encourage them, praise them, guide them, and provide them with tools to develop their autonomy; this is within an amiable environment that can be mainly promoted through flexibility. Cassidy et al. (2016) conceived Flexible Learning as a pedagogical approach that is intended to increase students' engagement by creating learning environments that rely strongly on the use of technologies but vary in terms of the implementation, the interaction, the assessment, the media instruction, and also in logistical respects such as time, place and pace of learning to resemble the contexts that students can find once they graduate. Hence, providing learners with flexible learning environments is another component of the innovation of the English teaching process.

Moreover, technology literacy is fundamental as part of a schoolteacher's knowledge; the students were by that time already regarded as being mostly digital natives or as part of the screen generation. Moreover, the need to include web-based resources in the syllabus was also expressed; the author even stated that some educators fear "the possibility that teachers could be replaced by instructional technology or at least only the digitally competent ones could survive the forthcoming replacement" (Ezza, 2012, p. 33).

Ten years later, while this thesis project is being written, instructional technology has not replaced teachers yet—it seems there should always be a human approach and contact in learning to make it meaningful or a human guide to facilitate the educational process— however, during

the ERT experience because of COVID-19, there was a clear difference between technology-literate teachers and those who did not know how to implement online lessons properly with the use of various digital resources. Following the ideas of Malik & Hooda (2022, p.45), there should be:

> a methodological shift in the role of [the] teacher from [the] highly traditional to [a] modern one. [Now, a teacher is expected] to be a facilitator of education and [a] manager of resources [which are necessary to enrich the] learning experiences … [more than ever, a teacher is required to] be an expert of technology and pedagogy and [to know about] their deliberate integration. [A] teacher is no longer required to teach alone rather [they need] to constantly supervise and [to] guide [their] learners on the path of learning. [A teacher] is expected to remove barriers from the path of learning… There is high need to propagate and establish the concept of mentor and mentee. It is truly said that a teacher is a philosopher, [a] friend and [a] guide of [their] students.

To guide the students, teachers should develop their technology literacy. By building on their expertise in the use of Information and Communication Technology (ICT), Learning and Knowledge Technology (LKT), and Empowerment Technology (ET), teachers can innovate the learning experiences of the students. Furthermore, deepening the teachers' understanding of technology is not enough; and it is also essential to acquire knowledge about the possible strategies to be applied in a properly didactic way. Indeed, teachers must develop their techno-pedagogical skills. According to Flores-González (2020, p. 24):

> the innovation factor is decisive to make the difference between a passive and mechanical or active class with meaningful learning to achieve the purposes established in an English class since this does not depend solely on the technological resource used in it, but rather the techno-pedagogical design carried out by the teacher because he is responsible for directing the digital tools.

Recapitulating, there must be improvements in the different competencies for a teacher to innovate in the English teaching process; on the one hand, developing social competencies and interacting with the students with varying roles of teacher within a flexible environment that encourages students to participate actively is a priority. On the other hand, using different technologies (which will be explained in more detail further) while applying appropriate strategies is a demand of education 4.0 and the present challenges learners face as 21st-century citizens.

2.2.1 ICTs

Information and Communication Technologies (ICTs) have permeated human life to a great extent in this modern era. Following Haddon & Silverstone (2000, p. 251), ICTs "are socially shaped"; take, for instance, the invention of the telephone and its massive adoption; at first, telephones were mainly used in workspaces, but eventually, they became regular in households and furtherly it was uncommon finding a house that did not have telephones. Something similar happened with cell phones and, later, smartphones. This technology was initially restricted to working purposes, but it reached a more significant part of the population and now has many entertainment and fundamental communication purposes. Indeed, modern ICTs have had an exponential rise since the 1980s. That is why, researchers claimed that ICTs can be conceived as machines (hardware) and multimedia (software). In this sense, users can choose and discriminate the contents they interact with even when employed passively. ICTs can stand for purely aesthetic reasons rather than for their usage and can even claim social status or membership in a group or subculture, such as the case of Apple products (Cardoso et al., 2021).

We can trace the origin of ICTs to the invention of printing in the 15th century. Various important techs sprang up in the 19th century, such as the Morse Code, the Telegraph, and the

Telephone. In the 20th century, multimodal technologies such as the radio, TV, mass media, and the internet arose. Currently, the Internet permeates every aspect of human life regarding work, business, education, entertainment, and even health issues; many home appliances and consumer electronics are now connected to the Internet to operate remotely. It is worth pointing out the importance of avoiding utopic or dystopic perspectives when referring to the complex nature of ICTs. Technology will not solve all human problems nor doom humanity; nonetheless, 22 years ago, the researchers were already warning: "ICTs provide new opportunities for citizenship and for surveillance, new opportunities for networking but also increased isolation" (Haddon & Silverstone, 2000, p. 252).

That may be one of the most significant challenges of using ICTs. Communication and interaction are enhanced through them, and collaborative work is strengthened; however, when the interaction happens individually, users can become self-centered and exclude themselves from different social contexts such as the classroom, home, or public areas. For that reason, it is highly recommendable, based on Yunus et al. (2013, p. 127) to apply "stricter ground rules before bringing students to the computer laboratories [or before starting using ICTs in the classroom collectively, so that] students might not get to visit other irrelevant websites that could distract them from completing the tasks given". The authors also identified plagiarism as one of the main problems when working or assigning written tasks through the use of ICTs, and this may be one of the most critical areas of opportunities to solve. When working with young learners, teachers should guide students so that instead of copy-pasting, they can scaffold skills such as paraphrasing, summarizing, and synthesizing.

The main advantage of ICTs is that they provide opportunities for teachers and students to access materials that suit their individual learning needs because they have been conceived "as

catalysts for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information" Ratheeswari (2018, p. 45). Nevertheless, the technological change in education and the adoption of digital resources in teaching environments also has some disadvantages; for instance, some teachers can feel overwhelmed because they do not have developed computer literacy skills; the burden of keeping updated and in constant training can be stressful for the educators as they somehow become apprentices (Cañete, 2015). Additionally, if schools and classrooms are not appropriately equipped, implementing ICTs can result in catastrophic; therefore, language instructors and teachers, in general, should become aware of their limitations and give the students a balanced input (Cansigno-Gutiérrez, 2020).

As Alvarado-Martínez (2020) asserted, ICTs are used to explore data and knowledge, but they were not created to solve educational issues. In-service and pre-service language teachers should develop techno-pedagogical skills because audiovisual materials cannot speak for themselves. The author also stresses that appropriate strategies should be followed; when using accurate ICTs, the curricula are enhanced by incorporating new contents, students practice their problem-solving abilities and there is room for reflection and feedback, new communities and learning spaces are constructed, teachers expand their professional development, and students can mainly scaffold their autonomous learning skills as they become responsible for their learning.

In short, ICTs are the technological advances in hardware and software that allow users to exchange information synchronously (in real-time) or asynchronously (updating or posting the information and allowing the receiver to check it at their own pace). Nowadays, most ICTs are associated with the Internet. If teachers want to apply ICTs in their classes successfully, they

need to prepare in advance with the resources and suitable strategies to implement them pedagogically; equally important is to prepare their students by guiding them and facilitating interaction with the given digital tools.

2.2.2 LKTs

As it may be inferred so far, ICTs and LKTs are two concepts that share similarities to the point of becoming exchangeable in everyday administrative and classroom conversations or peer-to-peer corridor discussions (Lozano, 2011). The vast majority —if not all— of LKTs are part of the ICTs; however, through their carefully planned, pedagogical implementation, ICTs can be considered LKTs due to a simple reason: LKTs are fully intended to promote meaningful metacognition within a virtual environment that encourages the collaboration and interaction of its participants. LKTs focus on learning how to learn and collaborative learning (Díaz-Guecha & Márquez-Delgado, 2020).

To begin with, learning to learn can be seen from two perspectives: the cognitive psychology paradigm and the social/cultural paradigm (Hoskins & Fredriksson, 2008). The first scrutinizes how humans process information to construct and internalize knowledge further. The learning outcomes can be identified and measured according to the cognitive process performed and the acceptance and motivation while performing the given tasks. So, when addressing LKTs as meaningful metacognition, a clear definition of this concept can be found in Papaleontiou-Louca (2003, p. 9):

> Metacognition essentially means cognition about cognition. It refers to both people's awareness and control, not only of their cognitive processes, but of their emotions and motivations as well… the monitoring and regulation of their own cognitive enterprises… self-awareness and self-monitoring include the development of independent learners who control their own learning and learn how to learn for life.

Meanwhile, the second perspective— the socio/cultural paradigm— explores the construction of knowledge, skills, and attitudes concerning social dynamics and interactions rather than the internal cognitive processes. This stance affirms that learning is embedded within different social contexts that produce various competencies fostered by a facilitator who can be a teacher, another student, or anyone taking the role of a mentor. The affective dimension of learning takes broader importance as it is given in a scale of values and attitudes because learning takes place due to social relationships. The learning outcomes can be identified and measured according to the social competencies which the students have developed. To clarify the concept of social competence, Orpinas (2010, p. 1623) offers the following definition:

> Social competence is defined as the ability to handle social interactions effectively. [It] refers to getting along well with others, being able to form and maintain close relationships, and responding in adaptive ways in social settings. [It] is the product of a wide range of cognitive abilities, emotional processes, behavioral skills, social awareness, and personal and cultural values related to interpersonal relationships… social competence is dependent on developmental characteristics (i.e., expectations of social competence vary by age of person), the specific social situation (i.e., people may be socially competent in one situation but not in another, or a child may appear more competent when interacting with a socially skilled partner than with a shy person), and cultural characteristics (i.e., specific acts of social competence are bound by cultural expectations).

To sum up, learning to learn can be understood as the strategies a person follows and develops to reach an autonomous result in terms of knowledge acquisition as well as the adaptability to the different social processes one can find along its vital experience. In other words, it refers to the ability to learn from others how to perform well in different social contexts.

Regarding collaborative learning, Laal & Laal (2012, p. 491) maintained that it "is an educational approach to teaching and learning that involves groups of learners working together to solve a problem, complete a task, or create a product". The researchers highlighted many features of collaborative learning. One is that students can develop critical thinking as they often compare proposals and listen to other ideas. It allows them to question the input they are receiving and permits them to affirm their stances on whether they agree or disagree with their classmates' and teachers' opinions, or the information they are receiving from the class materials. Other highlights of collaborative learning are that it promotes positive interdependence (as the students rely one on another); there is room for peer-to-peer feedback, which allows the students to encourage each other to learn and prove their understanding as well as gather and share knowledge; and, it motivates socio-cultural practices (Flores-González et al., 2022) such as interpersonal relationships, leadership, decision-making, communication, and promotion of positive attitudes towards work. Nonetheless, if a teacher wants to succeed in implementing collaborative learning, they should follow adequate strategies. According to Laal & Laal (2012, p. 493), collaborative learning:

> is sometimes misunderstood. It is not having students talk to each other, either face-to-face or in a computer conference, while they do their individual assignments. It is not having them do the task individually and then having those who finish first help those who have not yet finished. And it is certainly not having one or a few students do all the work, while the others append their names to the report.

Lagat & Concepcion (2022, p. 24) concluded that if teachers are trained on how to design and facilitate using social interaction— "when instructors adopt strategies to promote interpersonal encouragement and social integration"— there is a higher level of satisfaction in the students' perceptions of their learning. Especially in online courses, the authors found that

promoting collaborative learning while using different tools such as Google Classroom, Moodle-based LMS, online forums, and Facebook helped students engage with the class contents when they had problems understanding something they relied upon peer-to-peer learning to foster critical thinking.

For instance, the impact of a Facebook group— a stereotypical modern ICT— was proved to have motivated the students in an EFL course and promoted their autonomy. The authors (Araya & Espinoza, 2015, p. 260) concluded that "Incredibly over 90% of the students have liked the idea of using Facebook as a way to review the course contents", and the same students even suggested further strategies to exploit this ICT and turn it into an LKT by posting more activities, promoting interaction among the classmates, uploading homework assignments, including more vocabulary practices and texts and fewer video explanations, adding games and reading practices, telling the students to share valuable materials and, finally, telling other teachers how useful Facebook is.

Thus, LKTs are a natural result of today's expectations of the modern world, as they follow 21st-century skills, mainly because they cultivate social and digital skills. Through carefully planned implementation, LKTs guarantee a process of autonomous, meaningful, and metacognitive learning for teachers and students. As Perlaza et al. (2021, p. 565) identified:

> The articulation of these tools contributes significantly to the teaching and learning processes of English because teachers can enrich their experiences and the students as builders of knowledge can use the language, they learn to develop their personality and build their cultural identity in order to transform their realities and contribute to the social fabric.

2.2.3 ET

Empowerment is a process that involves critical reflection and active participation of individuals and communities that lack valuable access to and control over different social

structures (Perkins, 2010). A clear example of how technology empowered communities in education was seen during the ERT implemented because of COVID-19 lockdowns. As mentioned, all of the social dimensions involved in the educational processes needed to take action to continue with the lessons within an online modality. ICTs and LKTs allowed the academic curricula to continue. Because of their "borderless and boundless accessibility to resources and people, and reaching a population in remote areas to satisfy their basic right to education" (Fitri & Rifa'at, 2022, p. 798), they can be conceived as Empowerment Technologies (ETs). When these technologies are used to bridge the existing gaps in education— such as those between public and private institutions, urban and rural schools, and between developed and developing countries— they empower the learners and the teachers. Thus, digital empowerment can be defined as:

> the process of developing communication skills by using creative tools/media techniques, focused on peoples' own lives, through story-telling, photography, music, video and narrative. Digital empowerment places the learner at the centre of the teaching method, and draws upon personal experiences to engage them… [It also] refers to a process through which an individual is making fit to the digital technology and harvesting the maximum potentials of technology. (Kirti et al, 2015, p. 35)

The first approach to ETs is to consider them the result of the formative process through the proper fostering of LKTs because the students are empowered when they develop their autonomy and no longer need a teacher to access input or learning resources, providing the possibility of effectively choosing what they want to learn, when, and how, therefore they will be applying self-directed learning (Hung & Din, 2020).

The idea of ETs goes beyond classroom or academic pursuits. As they look for access to and control over different social structures, their implications are to change the learners' lives

and strengthen their profiles once they graduate, whether they intend to position themselves in technically demanding jobs or create the opportunity for self-employment. This factor is especially relevant for developing economies, as graduates struggle with unemployment because of the labor's high demand and little existent offer (Akpan & Etor, 2013).

However, as LKTs ensued ETs, they are also beneficial for teachers' professional development. Fitri & Rifa'at (2015) also mentioned this vital aspect in their paper, identifying professional development as the continuous improvement of skills, knowledge, and expertise. These three features are scaffolded by technology because of the in-classroom experience, peer training, and international conferences. Teachers' empowerment because of technology can be seen in their self-efficacy, which is how they perceive themselves as successful educators. It supposes pre-service language teachers receive technological instruction for their lessons using a range of multimodal materials. In that case, they can impact the learners' digital literacy competence and improve how their homework and projects are presented (Sarýçoban, 2013).

ETs rely largely upon multimodality. This concept has been conceived as the meaning generation through various modes of communication within a single text. These vary from sounds, images, graphs, videos, written texts, transcriptions, and transitions, but the multiple formats are constantly changing and expanding. Multimodality, hence, is the interaction of these modes or components to create a single text. This field has been researched for a while due to the modern technological implications of the society. However, it is still an educational trend because there is a "need to conduct theoretical research on both the multimodal text structure and on the possible ways to adapt and integrate these multimodal texts into the design of pedagogical material" (Campoy & Ruiz, 2010, p. iii).

Young— and not-so-young— learners are embedded in self-crafted digital identities that interact with one another in social networks. They shape reality based on multimodal texts predominantly created by text and images (Uimonen, 2016). For instance, TikTok, the gigantic Chinese social network, was the second most downloaded app in 2020. Recent research has shown that it has great potential for education because it counts the participation of experts in many fields, such as medicine, social sciences, law, engineering, biology, social relationships, and more. Many short videos on the platform allow its young and global audience to concisely and effectively disseminate knowledge (Fiallos et al., 2022).

Therefore, technology has the capability of empowering every 21st-century citizen around the globe. Educators should question how to teach their students and to what extent they can infer positive things in their lives by giving them the correct guidance to make them an active part of today's societies. In the words of Lim & Tan-Chia (2022, p. 2): "The affordances of these semiotic technologies offer new ways for children [and students] to explore and express ideas, harnessing not only their imagination but also their creativity, criticality, and an adept orchestration of multimodal resources".

This bilateral nurturing dimension is beneficial for both teachers and students. Teachers can better facilitate all kinds of knowledge through technology and better understand what their students want, whereas learners can use digital tools to achieve better performance in their intrinsic and extrinsic goals. For instance, if they find a way of making themselves heard in class through technology, they are tailoring to speak their minds in democratic societies (Christensen, 2012).

To summarize, ICTs refer to any technology that allows the exchange of information; it's an umbrella term that refers to a broad set of digital devices and applications customarily

associated with screen-based technologies that afford communication, efficiency, and assistance (Dong & Mertala, 2019). LKTs are these technologies but applied in educational contexts— within a pedagogical approach— that intend to teach learners how to succeed in knowledge acquisition processes, developing their autonomy and giving them practice fostering the skills needed to succeed in socially situated contexts (Laplagne, 2020). Finally, ETs are seen from a more socio-political approach, as they help bridge the educational gap, so the role of traditional education vanishes as everybody should be able to reach a top-quality, meaningful education. With the empowerment encouraged through multimodal technologies, students develop critical interpersonal and intercultural competencies for lifelong performance, which allows them to create strong bonds that fulfill their needs and actively pursue their interests (Sarýçoban, 2013).

2.3 Implementation of Technology in the EFL Classroom

As it has been exposed, technology plays a fundamental social role nowadays, strengthening education from multiple dimensions. Concerning EFL, many apps and sites can help students in their language acquisition process. Teachers can foster students' lexis acquisition by using some essential tools such as Oxford's and Cambridge's prestigious dictionaries, as well as more specific dictionaries and translators such as the online Oxford collocation dictionary when students want to know if the words they are using fit each other, and Linguee.com to provide the translation of specific lexis that is presented through various written contexts that allow students to identify if the usage they are looking for is the one that best collocates with the given words.

Furthermore, electronic dictionaries have many advantages for the students: they are time-saving; learners can practice their lexical processing strategies (such as consulting and inferring); they help with memorization and term identification; they present adaptable

readability; and, whenever they are used in their monolingual formats, this allows the students to keep a constant language use (Barham, 2017).

Considering the importance of collaborative learning and social interaction, many digital tools encourage this type of participation. Many of them can work synchronously or asynchronously; for instance, Google Docs allows the students to collectively develop a text document and see the changes in real time so that it can be used in class or assigned as homework. Asih et al. (2022) determined that the students had a positive perspective on using Google Docs in the writing sections of the class. They highlighted the features of editing as its strongest point to encourage collaborative learning effectively. The authors stressed the significance of developing writing skills as it is through the organization, selection, coherence, and cohesion used in the language construction process that thoughts are formed into an understandable discourse.

Like Canva, this platform was created to make different designs with several text formats within colorful layouts and visual elements to decorate the outcomes. Learners can invite others to work together on the same design. Canva's most significant advantage is its user-friendly interface. It presents various text formats such as presentations, a CV, infographics, videos, posters, mind-maps, diagrams, flashcards, presentation cards, banners that adapt to specific social media formats, invitations, leaflets, and different formats you can find in their database. These are thought to be used in personal, business, and educational contexts, so they facilitate the setting of different social situations for the lessons and make them exceptionally meaningful to the students. This digital tool is quite beneficial for practicing foreign languages, but it can benefit students' digital literacy in general, as they can use the platform for other school subjects, for real-life situations such as advertising design, or to develop their CVs.

To illustrate the usefulness of Canva, Fitria (2022) examined its implications in a group of Informatics students in an English Working Course in Indonesia. The researcher concluded that the platform has great potential to stimulate how learners can present themselves in working environments as they enrich their professional profiles creatively, with simplicity and innovation. However, she underlined that teachers should demonstrate to their students how to use this platform by selecting a layout and then editing the text, images, and color sets to produce meaningful outcomes.

These two ways of implementing technology in the classroom are clear examples of how beneficial it can be for the learners. Nevertheless, it would be worth mentioning that the substance of their success relies on the techno-pedagogical instruction and practice possessed by the teachers working with these technologies. To complete the teacher's requirements to implement technology in the classroom, check section 2.4 of this thesis research.

To sum up, there has been an increasing concern for developing multi-literacy in students and teachers during the digital era. Policymakers have advocated immersing technologies to help reach the goals of all educative levels. In the case of EFL, these technologies can be used to exploit the development of the four basic language skills (reading, writing, speaking, and listening) and the nurturing of language aspects such as lexis, pronunciation, and spelling, to mention a few; as well as building the group's rapport. However, educators must remember the challenges when trying to implement technologies in their classrooms. According to Pratolo & Solikhati (2021), there should be early planning to deal with the constraints of lack of time, limited budget, and scanty learners' backgrounds dealing with digital literacy. In doing so, the effective implementation of technology in the classroom, "combined with professional learning, can promote and enhance collaboration in foreign language teaching" (Solano et al., 2017, p. 77).

2.3.1 Virtual modality

The virtual modality or distance education was boosted with the spring of the internet. It was designed to place the learners at the center of the learning process. Teachers were no longer seen as input providers but as facilitators and guides. Within the flexible environments that suppose the elimination of time and space constraints, learners can receive feedback and choose how to learn at their own pace, supporting the knowledge in technological platforms that considerably ease the design of the activities (Benítez-Saza et al., 2018).

As mentioned, after the COVID-19 pandemic struck, most of the lessons continued with videoconferences. The advantages of using this kind of software are: 1) It reduces the sense of isolation by allowing teacher-to-student and student-to-student interaction. 2) Participants with their cameras on can be perceived as active listeners. 3)Facial expressions allow the participants to identify if concepts are clear or if it is necessary to restate anything. 4) It helped with the transition from online to face-to-face learning when the sanitary emergency was over, as the class could feel they know each other as they have already interacted in a virtual learning environment (Day & Verbiest, 2021).

A research study evaluating the outset of COVID-19 and post-COVID-19, education concluded that the challenges were copped with effectively, and the advantages seem to outnumber them. Shafique et al. (2022) remarked that students' engagement improved as teachers knew better how to use different digital resources such as question banks and databases. Their results showed that after the virtual learning implementation because of COVID lockdowns, students were more familiarized with technology. Besides, they improved their communication skills and self-confidence in virtual environments. The advancements in teaching methodology benefited instruction methods, curricular designs, and language learning.

Furthermore, some students feel more comfortable with this way of learning. Indeed, they overcome the challenges of low-quality internet connection, software and hardware issues, and computer and digital incompetence.

Hence, virtual modality is not for everyone; those students who lean a priori towards autonomous learning and self-commitment have better chances of quickly adapting to virtual modalities and can productively benefit from them. In the words of Bilki et al. (2023, p. 3):

> not all language learners have equal symbolic and multimodal competence… some can express their identities, emotions, and thoughts effectively achieving their intended impact, others' voices may not be listened to. This can eventually lead to social inequalities by privileging some people (thus empowering them) while marginalising others.

There are two dimensions to consider if teachers want to successfully obtain advantages and benefits while applying instruction through the online modality that constitutes an appropriate space for knowledge's construction: first of all, the management of virtual learning environments; secondly, the articulation of the factors that contribute to the development of complex thinking skills, what triggers the students' talents and abilities (Castro-Zamudio et al., 2022).

2.3.2 Hybrid modality

Hybrid modality, as its name suggests, is a combination of both on-site lessons and online teaching. It is essential to highlight that hybrid and blended learning are not synonyms despite sometimes being interchangeably used when referring to a combination of technologically distance-mediated classes. Whereas hybrid modality focuses on an equivalent number for both face-to-face and online sessions, blended learning uses online sessions to supplement the curricula of what is taught on campus (O'Byrne & Pytash, 2015).

As well as the case of online modality, hybrid teaching implies a lot of careful planning; this intends to exploit the benefits of both teaching approaches. While the main advantages of on-site learning are immediate, real-time engagement, back-and-forth discussion, and the possibility of doing group work and presentations, they also help to build concepts as students can scrutinize them better. In contrast, during online lessons, students can develop better their autonomy, and work at their own pace as they can interact at will with the provided materials, which also helps them reinforce conceptual familiarity. Additionally, shy or introverted students can participate more actively in forums as they can feel more confident while writing their opinions instead of speaking out loud, and, finally, it provides the learners with opportunities to explore innovative collaboration using ICTs. The hybrid modality is effective since it supplements on-site and online lessons (College of DuPage, 2020).

Plailek et al. (2022) related the ability to implement innovation in the ELT classroom with the optimum application of the hybrid modality. The authors sustained that a paradigm change from teacher-centered to student-based education has already been experienced. Creativity and inventive-technology-mediated skills are essential to improve the students' experience during hybrid learning. The interaction between the students and the one they have with the teacher is reinforced through online contact. Advice, feedback, and reflection on each other allow peer coaching; therefore, through a high level of visual learning performance, students' collaborative ideas and talents are nurtured.

The New Normal— or the Post-Covid Era— provided an opportunity to reflect on how learners are expected to perform outside the classroom, not only during tests or exams; it also promoted critical thinking about who is in the process and where and how learning are. Finally, it set the ground to tackle inequalities inside and outside classrooms (Quilter-Pinner & Ambrose,

2020). Besides, Hybrid Learning was at the center of COVID-19 implications. At this point, Saavedra et al. (2022) pointed out the need to take advantage of the social influence that proposes digital tools to reinforce knowledge acquisition at all educational levels rather than imposing them. Thus, learners should see it as more than a comfortable and practical way of receiving education because it positively impacts on their learning processes.

2.3.3 Onsite modality

This traditional conception of the school emphasizes students' physical attendance at a learning center. There, they interact face-to-face with their classmates and are grouped according to the grade they are studying or the level they are coursing. It also involves the implementation of lectures or teacher-based instruction. The main benefits of on-site modality are the proximity of the students between them— to foster social skills and participate in various social dynamics— as well as that with the teachers: in terms of doubts clarification, students can raise their hands to ask for a reexplanation or further developing of conceptualization.

In the case of Mexican public education, the schools provide the presence of the State, whose intention is to construct citizenship. Parents can focus on their work activities and take their children to school; sometimes, schools even provide the students with food and other support such as scholarships and vaccinations. It is a common belief that some parents see schools as nurseries at any educational level. So, when the pandemic struck, many social dynamics that relied heavily on the importance of schools working ad hoc staggered and affected especially vulnerable groups. Many youngsters suffered from stress and anxiety as they lost these encounter spaces and saw their everyday routines suspended (Justo, 2021).

Frímannsdóttir (2015) has argued whether it is relevant to make distinctions between onsite and distance learning. The author highlights that the students expect to receive class

materials and information related to the class online so they can access it whenever and wherever needed; something similar happens with the written materials they are to deliver. Most of the time, it is emailed rather than handed in. She also maintained that distance learning arises from the need for education in rural areas; currently, students can live near the institution they are enrolled in and yet prefer to take a course online. To the researcher, education and technology have evolved to the point of merging.

Amin et al. (2021) also noted little difference in achievement between onsite and online lessons. If proper strategies are set, the learning outcomes seem to be optimum. However, the onsite modality fits better with sociable people and older generations. The teachers can better perceive the students' understanding because of their physical expressions and identify them quickly as they interact face to face regularly. Students know their classmates better in onsite learning, but this also biases them in providing peer evaluations. Finally, less planning is involved as materials development does not take the time needed for digital online resources. However, applying them in onsite classrooms is recommended as they are better structured and organized.

In this sense, the different modalities to receive and give education seem linked to the participants' personalities and possibilities and the various circumstances surrounding societies. Luckily, the COVID-19 pandemic accelerated the embrace of technology and resulted in changes related to many social procedures in the new normal. Many time-consuming activities were put apart, and mechanical processes were renovated and transformed into digital forms. Online education reached the mainstream and proved to many people to be substantial and reasonably practical. Many apps and sites related to education boosted, and others had a second wind to the

extent of perceiving blended learning and hybrid learning as the future for optimum education (Gallegos, 2021).

2.4 Teacher Requirements to Implement Technology in the EFL Teaching-Learning Process

The preponderance of evidence urging techno-pedagogical instruction for pre-service and in-service teachers has been shown in the different sections of this chapter. In the specific case of EFL teachers, the Technological Pedagogical Content Knowledge (TPACK) framework serves as a guide to emphasize the requirements for implementing technology in the teaching-learning process. Yuyun (2018) explored how a course for curriculum design based on TPACK could be implemented to empower prospective teachers. Her proposal adequately illustrates what is expected of an EFL teacher to succeed in implementing technology in their lessons.

To begin with, teachers should have sufficient content knowledge, which implies understanding concepts, theories, ideas, established practices, and everything related to suitable English proficiency and communicative skills. Such is the basis of the knowledge of an EFL teacher. Dincer & Yeşilyurt (2020) stipulated that "World Englishes" have influenced standardized and non-standardized English. The imperial success of this language, due to the heir of the economic and military forces of the USA of the UK, has remained as it is still the broadest used lingua franca. However, the plurilingual background of its speakers as a foreign language has changed the teaching pedagogies and pragmatic purposes to meet students' needs all over the world. A native-like pronunciation is not the ultimate goal of learning this language (and it should not be of any language unless the learner has it in mind for specific purposes) because it is to communicate with adequate accuracy and fluency.

The second central aspect to consider is the pedagogical knowledge of the EFL teachers. Yuyun (2018, p. 80) established it as the "teachers' deep knowledge about the processes and practices or methods of teaching and learning including overall educational purposes, values, and aims… how students learn, general classroom management skills, lesson planning, and student assessment". Regardless of the subject to teach, it is not the same to know about it and understand the means to transmit it.

The third element to consider is technological knowledge; this is to have an extensive grasp of information technology and know the strategies to design the materials to provide input and guide students to the expected outcomes. In other words, it is to apply technology productively in the classroom to achieve the course objectives and goals. Teachers should be willing to update constantly; to do so, they must practice with different apps and sites to find those they identify as more beneficial for them and the learners. It is necessary to interact with the technology to learn from it, as Anggeraini (2018, para. 14) stated: "Teaching without interaction is not effective. The interaction has been treated as one of the most important characteristics of education, training and more generally of learning".

To sum up, the TPACK framework consists on:

> the basis of effective teaching with technology. It requires an understanding [about] how to use technologies, pedagogical techniques, knowledge of specific concepts, the function of technology, knowledge of students' prior knowledge and theories, and knowledge of how technologies can be used to build on existing knowledge to develop new epistemologies or strengthen old ones. (Yuyun, 2018, p. 81)

In addition, a good EFL teacher should know how to promote a positive attitude. It is essential to identify the learners' motivation and scaffold it. Teachers are not merely knowledge

providers because they encourage their students to develop their character and sense of responsibility (Sakkir et al., 2021).

Technology implementation in the EFL classroom has to be constructed since the pre-service stage. It would undoubtedly result in a natural phenomenon because of modern societies. If teachers build up their techno-pedagogical skills, they can feel more confident while facing their lessons, and by mastering them, they can improve all learners' cognitive skills from the low to the high-order thinking skills (Belda-Medina, 2021).

Thus, in a concise summary, to implement EFL properly with technology, teachers require proficient language skills, updated and proven methodology, expertise in the use of different technological resources such as apps and sites, as well as experience with other hardware that has fostered their digital literacies, practice, and knowledge in the development of techno-pedagogical design, and being willing to comprehend their students' needs to meet them satisfactorily and in a meaningful way.

2.4.1 Traditional interaction vs Content curator

As it was exposed in section 2.3.3, Onsite Modality, this traditional way of teaching does not necessarily have to lack technology implementation. Nonetheless, in conventional interaction, learners take the lessons in face-to-face environments, with linearly fixed sitting arrangements orientated towards the board or the teacher. According to Zimmermann et al. (2018) this standard-setting hinders students' engagement and immediacy. It also hampers collaboration between students by changing the interaction patterns to peer-to-peer or small groups, resulting in noisy activities, and some learners may have difficulties observing the board or the displayed materials properly. Additionally, teachers' monitoring processes are restricted to

the room's perimeter, or they can only wander back and forth to supervise students' performance because there is little space between the students' chairs and tables.

Yu et al. (2022) identified challenges regarding the traditional interaction in classrooms, emphasizing that students typically conceive teachers as indoctrinators, making them take a passive role. Besides, there is a rigid multi-media console, and it would be worth mentioning that, in some schools, not every classroom counts with technological devices. Finally, the interaction between students and teachers typically happens at a shallow level and around textbook-based knowledge.

Consequently, teachers must be content curators to improve this situation and overcome educational hardships. Many teachers, especially those experiencing the transition to the new normal, have already played this role without noticing. Being a content curator implies finding the best sources for digital resources, filtering the most relevant in terms of the teaching subject matter and the target audience, sharing it adequately in a common ground platform, and expanding its value through discussion, contextualization, and organization (Anders, 2017).

Suppose the teachers follow the given steps (finding, filtering, sharing, and expanding). In that case, they can enrich their lessons not only by providing better learning environments to the students but also by transmitting this role to them by nurturing "a productive learning activity that supports significant personalized, emotional, and cognitive learning experiences, enabling the curator to construct a personal subject ontology" (Tsybulsky, 2020, p. 429).

Most university students have a background in technology, and they are involved in multiple digital content as consumers because of their constant use of search engines and social networks. In addition, Zeng & Zhang (2020, p. 404) pointed out the impact and importance of cultural products that are consumed worldwide, emphasizing that:

> the main arena of second language (L2) learning is not confined to the language classroom… good language learners are found to engage in a wide range of learning activities [and] cultural products such as tv programmes, films and magazines [which help them to] intentionally or incidentally learn English.

Therefore, with the appropriate guidance of the EFL teachers, the students can boost their digital literacy skills and promote their critical thinking through collaborative learning in the exchange and sharing of information. Initially, it may be challenging because the Internet has an information overload. Still, if they prioritize quality over quantity and how to perform the processes of searching, filtering, editing, organizing, and finally disseminating information, they will succeed in their roles as content curators. Thus, they will have acquired a lifelong learning skill (Aguilar-Peña et al., 2022).

2.5 Students' Requirements to Implement Technology in Their Learning Process

As mentioned in the previous section, technology is part of students' lives, especially in entertainment and social interactions. Shaqour et al. (2021) identified four areas that influence learners' readiness to use mobile technologies in the classroom: the availability of the technology, their capability to use it, their attitudes towards these technologies, and the nature of the apps. The researchers emphasized that the students developed self-confidence regarding their capability of performing well with technology after implementing it during their lessons. It also impacted their attitudes towards technology in the classroom, positively resulting as they conceive mobile tools as communication enhancers and essential for their daily lives and their lives at university.

Momani (2020) discussed the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003, p. 2012). This theory focuses on different core

constructs applied to the techno-pedagogical field and outlines what aspects to consider necessary for the students to accept and use technology in the classroom.

The first construct is Performance Expectancy, which relates to usefulness, motivation, advantages, and users' expectations around the evaluated technology. Students need to see that the given tools can help them acquire a foreign language and make lessons more dynamic and appealing.

The second construct is Effort Expectancy. If students perceive digital resources as easy to use, they can become familiarized with them quickly. More digitally literate students may look for complex resources with higher benefits, for instance, looking for information in a Google search rather than a database. Two main ideas stand out from this construct: students must have at least some digital literacy skills but, more importantly, are expected to increase them.

The third construct is social influence, which involves the subjective norms, image, and social factors around the evaluated technology. This construct determines how others encourage students to use digital tools or stimulate them to keep using them. In the EFL classroom, the most influential social factor will be the teacher and the administrative corpus if they impose specific technological resources for the lessons. The other relevant factor is how students perceive digital tools. Collaborative work and competitions may also be considered; thus, if students are willing to cultivate these skills, technology implementation in the classroom can be smoother. Reluctance may be displayed if the negative undertones of technology implementation are considered: sometimes “technology doesn’t seem to work at the time you need it to work… it can cause distractions… [and there is] the need for more staff and students training on these devices” (Carstens et al., 2021, p. 110). If a student has had a negative experience with technology, it can affect others’ perceptions.

The fourth and last construct is Facilitating Conditions, which is related to the organizational and infrastructural levels that support the use of technology. Although this is intrinsically linked to the school where technology is implemented, “equity remains a pending task for the State since student access and learning are still determined by an individual’s socio-economic background and geographical origin” (Gómez-Merino et al., 2017, p. 117). This statement can be translated into differences in technological literacies and digital performance between the students. Those who belong to families with a higher income may have an edge over those without the possibility of building up their digital expertise. Therefore, students who have already interacted with different kinds of digital literacies need to tackle them as accurate resources that can widen their skills, and students who do not have considerable access to technological resources need to take advantage of what the school provides and rely upon peer-to-peer assessment and the techno-pedagogical nurturing that their teachers can contribute to them. As Francis (2017, p. 46) pointed out, “Technology allowed students who have strengths in other areas to rely on technology to bridge the gap from deficiency to success”.

2.5.1 Digital Natives vs Digital Immigrants

Creighton (2018) conducted a literature review concerning the terms Digital Natives and Digital Immigrants. He concluded that enough research has been done to prove there is not necessarily a correlation between age and digital literacy skills. It is instead a matter of the contextual background of the students, and it is complex because the use of technologies depend on the students' familiarity with them, the costs and affordance towards them, and their immediacy.

He suggested that this dichotomy may not be entirely beneficial as it can expand generational stereotypes because most studies are related to anecdotal opinions. However, he

highlighted an important issue: there is a need to focus on students as digital learners, and institutions can impact them if pedagogical teaching models that foster digital literacy skills through interaction and collaboration are applied. This results in better meta-cognition, communication, and interpersonal skills.

While the distinction between the concepts of Digital Natives and Digital Immigrants is more related to the contextual background rather than the age factor, they can still be favorable regarding technology implementation in the classroom. Riegel & Mete (2017) suggested ways related to how Digital Natives and Digital Immigrants can teach each other. Digital Natives can teach Digital Immigrants about valuable technological resources they commonly implement for data acquisition, material creation, or even classroom management tools. They can also guide their peers towards their digital literacy development. Moreover, digital Immigrants can teach Digital Natives how to carry on when technology fails— how to navigate and use books, journals, and newspapers— or how to simplify activities that rely too much on technology or analyze the credibility of media sources. Additionally, they can help Digital Natives by transmitting the importance of human contact in the educational process, especially in non-verbal communication involving body language, tone of voice, and facial expressions.

All in all, these distinctions in types of learners can help set appropriate strategies when teaching technology in the EFL classroom. They can be conceived as weak and robust digitally literate students. The final means of education, anyway, is to build up different skills and develop and scaffold those the students already possess, aiming to create an integrative approach that allows them to face the world outside the classroom. Each person is going to find different challenges and opportunities. Yet, these concepts can help to set up the first step to follow

regarding the areas of opportunities and strengths that can be exploited for the benefit of the learners as individuals and as a class.

2.6 Open-Education Resources

In the recent history of ELT, Open-Education Resources (OER) became relevant in 2002 with the Open Education Movement (Weller et al., 2016). They have been traditionally linked to universities and the programs they offer to supplement their curricula, as —following Hurley & Hallmark (2020, p. 5)— they provide "maximum opportunity for faculty and students to adapt and modify the content to best suit their course and learning goals… [with] free, nearly free, or very low cost". OER can be defined as learning, teaching, or research materials found "in any format and medium that reside in the public domain or are under copyright that have been released under an open license that permits no-cost access, use, adaptation, and redistribution by others" (Perifanou & Economides, 2022, p. 23). There has been some research in terms of OER in Latin America, whether in terms of implementation contexts (López et al., 2016; Mortera, 2010; Recio et al., 2021) or design (Mercado et al., 2018; Rodríguez, 2022).

OERs are particularly relevant to the context of this thesis research as the population of the CELEX, ESCA, Tepepan is mainly made by IPN students who receive a 50% discount when enrolling in these courses, and the rest of the population comes from the public, who find the price attractive in comparison to other language institutions.

Parra et al. (2019) indicated that OERs are helpful for EFL education because they satisfy the demands of learners from the digital era. Additionally, they assist the students in developing strategies for their learning autonomy while encouraging them. The researchers also remarked that webpages are helpful resources because they are one of the easiest ways for teachers to access OERs. It is essential to review the links, images, sounds, and animations in the OERs

before implementing them in the classroom. The following questions were pondered to evaluate the potential efficacy of OERs:

- Does the content of the webpage meet the class objectives?
- Are the class materials expanded and complemented by using these OERs?
- Is the content reliable, updated, and stimulating for the students?
- Do the OERs work properly? Are they easy to use?

These questions can help teachers identify if the intended resources benefit their lessons.

Finally, Ehlers (2011, para. 11) determined how to properly implement OERs inside the classroom to transform the learning experience. He maintained that the availability of OERs is no longer a concern because plenty of online tools can help learning take place. The author suggested a change of paradigm to increase the quality of education that students are receiving, and he suggested a pedagogical approach based on the educational practices implemented in the classroom since it is not enough to gather different resources and tell the students to use them because they have to be accompanied and guided in its usage.

A database or repository of open educational resources is not open educational practice. The pure usage of these OERs in a traditional closed and top-down, instructive, exam-focused learning environment is not open educational practice. However, if OERs are more learner-centered than the ones existing before, if learners are involved in the creation of content, if teachers are moving away from content-centered teaching to human-based resources, and if learning processes are productive processes and learning outcomes are seen as artifacts which are worth sharing and debating, improving and reusing; then, OER might improve the learning process, and thus, we talk about open educational practices.

Overall, OERs are an excellent tool for dynamism in the lessons as they allow gamification (see 2.8).

2.7 Classroom Management

This concept can be understood as what a teacher must do to achieve the class objectives properly. It involves planning and creating well-established rules in the classroom within an environment that promotes academic development and enhances students' emotions and behavior. Kopershoek et al. (2016) linked the concept of classroom management with the effectiveness of education. The authors highlighted that positive student-teacher relationships contribute to better performance and students' behavior. The researchers also emphasized the importance of modern education concepts that have already been mentioned throughout this thesis, such as cooperative learning, the development of learners' autonomy, and the exploitation of digital resources to achieve effective classroom learning. Moreover, Kopershoek et al. (2016, p. 644) also included in their definition of Classroom Management—"the actions teachers take to create a supportive environment for the academic and social-emotional learning of students"—the proper use of instructions to optimize students' access to learning, as well as on-time interventions with students presenting behavior or performance problems and the physical arrangements in the classroom.

Regarding the expertise in classroom management and the impact on students whose teachers hold it, Wolff et al. (2015, p. 70) explain it straightforwardly:

> experts tended to focus more on student work arrangements and often distinguished between typical and atypical events and situations in their assessment of the classroom… demonstrating proficiency in monitoring and providing feedback… influencing student learning outcomes… students of expert teachers show greater learning motivation and self-efficacy, hold deeper understandings of subject content, and exhibit higher levels of achievement Thus, expert teacher

> knowledge relies on representations of subject content, and includes knowledge about students as well as effective strategies for stimulating spontaneous classroom interactions and providing meaningful content-specific and student-specific feedback.

All of the above explains the importance of classroom management to achieve the best results in teaching. As mentioned at the beginning of this section, several concepts explained through this thesis research stand out. A case of classroom management and the use of technology was examined by Sánchez et al. (2016). They presented Classcraft as a gamified resource whose main aim is to transform the classroom into a role-playing game in which students participate in teams and help each other acquire powers that can be translated into real-life privileges such as eating in class, listening to music while working or even having extra time to deliver homework. This study case is an excellent example of how competition and teamwork can benefit students' motivation levels; however, this would not be possible without appropriate classroom management strategies (e.g., the involved planning to use the resource, its implementation, and its monitoring).

Another example of digital tools that enhance classroom management was given by Maharani (2022). The researcher explained how Google Classroom became a widely used tool after the ERT experiences implemented around the globe because of COVID-19 lockdowns. This platform is still highly used and was a discovery for many teachers after the pandemic. According to the author, it is exceptionally efficient regarding class assignments, assessment, and distribution of class material. These teaching aspects facilitate the process of classroom management. The effectiveness of their implementation can even benefit teachers' health and well-being. Dicke et al. (2015) found that the significant constraints teachers face are related to disturbances produced in class, which can be avoided with classroom management training —in their study, classroom management training resulted even more beneficial than stress

management training. Achievement and motivation are the key elements to be covered, and the researchers stated that building interpersonal relationships in the classroom is an essential step for classroom management success. Instead of harsh discipline and criticism, novice teachers worked on developing praise, consistency, and confidence; through this, students' and teachers' self-efficacy levels increased and allowed them to better meet their learning outcomes.

Hence, classroom management is fundamental when dealing with the educative experience, being fostered with the proper use of flexible learning, planning, rapport building, and the correct implementation of technology in the class.

2.8 Digital Tools to Gamify the English Learning Process

2.8.1 Wordwall

This digital resource is quite helpful for teachers of any subject; for instance, a study was carried out by Ordoñez & Medina (2022) to examine the impact of using Wordwall in primary education to teach maths in the context of the COVID-19 health emergency. The results showed a clear improvement between the pretest and posttest regarding the use and comprehension of fractions.

Through Wordwall, a series of games and quizzes can be easily created to be assigned as in-class work or as homework. The app is a fun, entertaining learning media game that "has a positive impact on students' learning outcomes and interests of learning" (Hidayaty et al., 2022, p. 11). This site reinforces the main ideas concerning gamification and its benefits as it has proved to impact the students' feelings, attitudes, and engagement, especially on a usually not appealing aspect of the language, such as grammar (Ilahi et al., 2022). Vocabulary can also be easily presented and reviewed as Wordwall offers a range of activities that include matching, questionnaires, missing words, rearranging, grouping, crosswords, and flashcards.

In addition, it promotes and boosts participation (Mazelin et al., 2022), an aspect that comes in handy for the sake of this thesis research, as one of the objectives of using this site in class was to encourage students to practice their speaking skills in group and peer-to-peer discussions.

To sum up, Wordwall is an effective OER that is very useful for creating digital materials. Besides, class results provide data regarding students' performance, and in general, this site is also user-friendly, covering many aspects of successfully implementing gamification in any learning classroom.

2.8.2 Kahoot!

This platform is one of the most popular concerning the integration of gamification in the classroom. The library makes it easy for teachers of any grade or subject to find valuable resources. However, the creating a quiz option based on the syllabus's specific content is fundamental, too. Regarding its implementation in EFL, the main areas of Kahoot develop users' skills concerning grammar knowledge, vocabulary learning, and reading comprehension (Ekinci, 2020).

Wang & Tahir (2020) conducted a literature review of over 90 studies that analyzed the impact of Kahoot! in education. By the time the research was conducted, Kahoot had 70 million active users per month, and it had been used by 50% of students in the US K-12. These numbers were pre-pandemic. We can assume that they were incredibly boosted when facing the emergency remote teaching situation that COVID-19 created. Furthermore, Kahoot affected areas of learning positively, including students' performance, dynamics in the classroom, emotional and psychological aspects (attitudes, perceptions, and anxiety). The main challenges when implementing this platform in the classroom involved technical problems that affected

internet connection, mistakes in quizzes' design that complicated reading and selection of questions and answers, or the emotional stress that the competitive nature of the game created as it displays a limited time for students to answer, and the lack of a self-correction option that allow the students to change their answers if their replies were just too fast.

Nonetheless, students find Kahoot user-friendly (Llerena & Rodríguez, 2017), which can be a considerable element for its success. Some other studies have also expressed that distractions are reduced when using it in class (Licorish et al., 2018). In conclusion, Kahoot! is a widely used digital resource that has enriched the classroom when appropriately implemented. Students like using it, and as they are involved in game mechanics, teachers can use it to reinforce any content.

2.8.3 Canva

It is another top-rated platform. It has a broader use beyond education, as it provides several layouts that can also be used for real-life purposes regarding marketing materials, business presentations, job applications, advertising, and even for personal purposes such as creating a photo collage. As is the case with Kahoot!, studies have highlighted it is a user-friendly platform (Wijayanti, 2022) used in EFL education to foster writing and reading skills with effective results (Fauziyah et al., 2022; Priyatna et al., 2023). Creativity is a parallel skill built when using this platform in the classroom, as the layouts include multiple ready-made formats with their own color patterns, drawings, animations, and fonts; however, these layouts can be edited to the taste and extent of the users.

Infographics are especially suitable for using this digital resource; they are a perfect way of complementing the integration of the four primary skills. Suppose students are requested to present in front of the class an infographic that meets the class syllabus needs. In that case, they

will improve and practice their productive and receptive skills, writing and speaking to present, and reading and listening when paying attention to others. Trabuco et al. (2022) suggested that Canva can disseminate scientific research through its mixed design, made of visuals and selected pieces of text.

Moreover, Canva can help teachers and students foster higher-order thinking skills, which can imply synthesizing, evaluating, and creating. It can also be used to present new content or review previous content. Besides, it can be a handy platform that definitely can impact the learners' lives outside the classroom or the intentions of the class if it is appropriately presented (Arcentales-Fajardo et al., 2020). It is important to recall that digital resources should be exploited with the proper guidance of an experienced user.

2.8.4 Padlet

This site is also a well-known digital resource for education. Among its main features, Sadry (2022, p. 10) highlighted that Padlet facilitates learning for students as the app promotes "working cooperatively, sharing viewpoints freely and participating equally, finding class material anytime anywhere, showcasing presentations easily, being academically in contact, learning from peers, and sharing resources". Therefore, Padlet can function effectively as a class repository, where students and teachers can easily interact and find and distribute class materials and assignments.

Alastal et al. (2022) affirmed that Padlet can build a digital community because this platform promotes speaking skills, by interacting even asynchronously.

These two features—working as a class repository and sharing spoken content between the class participants— easily fit the demands of the IPN's PGII as students are required to present an integrative task in which they should put into practice their productive and receptive

skills to create a product, whether it is collectively or individually. A similar observation was made by Halim & Shapii (2023), who declared that Padlet implementation in the EFL classroom allowed students to combine their productive and receptive skills, positively impacting their better understanding of L2 grammar.

Padlet's features embrace assessment. Puspita & Hasyim (2022) mentioned that Padlet was helpful for teachers during the pandemic, as there were no constraints of space or time to work on it, allowing peer-to-peer and teacher-to-student feedback fruitfully.

Ultimately, Padlet is an optimal digital resource to improve class management and encourage students' participation. It can be categorized as an OER as teachers who use it can create up to three different virtual walls to work with, whether three distinct groups or three other subjects or levels.

2.8.5 Nearpod

Nearpod is a website intended to hold complete courses or supplement lessons with various activities ranging from slideshows, memory games, interactive videos, polls, and competitions, among other functions. Students' participation is enhanced as they are invited to join each course or a single class with an invitation code generated by the platform. As with other digital resources such as Kahoot!, learners can download the app straight from the AppStore or PlayStore and enter the code, or they can use their browsers to access the course or class.

Nearpod has already been at the center of different research studies. Lestari & Sihombing (2022) analyzed how the platform could benefit the students' writing skills. Hakami (2020) highlighted its features to enhance teaching and learning, stating that this digital resource helped distance learning.

Fernández (2022) pointed out that one of the most appealing activities for students is time to climb; this game-like activity serves for gamification purposes, and it helps students to learn and reflect on their learning while creating an active environment that promotes students' participation even for the shiest.

To sum up, Nearpod has proved to be an essential digital resource that should be included if teachers are to motivate their students and develop their learning skills through interactive and gamified means.

2.8.6 Voki

This digital resource allows its users to create highly personalized avatars that can vary in voice, shape and colors, gender, age, and nationality and provide students with different accents to listen to. Besides, it even presents various voice effects such as echo or squirrel-like talking, recording their voice to make the avatar talk.

Although it may be first considered that this app will develop the students' listening and writing skills, it is advantageous to improve speaking. For instance, the research about the effects of Voki on the speaking performance of high school students demonstrated a positive impact on students' confidence, reducing their shyness and nervousness while speaking. It was due to the grammar range and lexical accuracy developed because of the self-practice of the students. Indeed, the authors stated that "grammar accuracy improved as the more they practiced with Voki, the more familiar they became with particular structures and the usage of tenses" (Nguyen & Nguyen, 2021, p. 46).

Yeşilbağ & Korkmaz (2021) reached a similar conclusion and found equivalent results in other studies, stating that it is recommended that English teachers include Voki in their activities

to improve their students' pronunciation and speaking skills within an effective and positive learning environment.

Finally, another benefit of implementing Voki in the EFL classroom is that students improve their digital literacy skills and participate more actively in their learning process (Bellés-Calvera & Bellés-Fortuño, 2018). Therefore, this platform is particularly suitable to meet the objectives of this thesis research, as it helps analyze and identify how the use of OERs and gamification can impact EFL students.

2.8.7 Seesaw

This platform is mainly conceived as a digital portfolio where students can keep a record of their tasks and receive feedback from their peers and teachers. Seesaw is an effective digital tool for young learners to develop their reading skills (Yi & Yunus, 2020). This platform features different interaction options. For instance, it is possible to draw, highlight, and underline. There is a text box generator where the user can type and a voice recording option. Photos, videos, links, and files can also be uploaded as material for the students to interact with. Regarding teachers' tools, a class journal presents the activities and answers from enrolled students. Additionally, tasks can be scheduled or recovered from a resource library to meet the class needs.

Chaljub (2019) researched the platform's impact in Santo Domingo, Dominican Republic. She concluded that despite being a very useful OER that potentially impacted class dynamics, a few teachers were not even aware of the platform, and those who used it tended to employ it as a class repository where assignments were shared as different files. Among the main benefits of integrating this app into the class is that it helps monitor the class progress, serves for self-assessment, and promotes learners' autonomy.

A crucial aspect that served effectively for this research was the option of the voice recording tool. Nur & Riadil (2019, p. 206) highlighted that when activities in language learning in Seesaw integrated speaking, "students understand certain aspects of spoken language but thus activities also raised grammatical and phonological awareness through frequent sentence drills in communicative interaction". Therefore, this tool has proved to be a suitable way of reinforcing what was presented in class, which could help to practice and improve speaking skills, especially in terms of accuracy and language awareness.

Overall, Seesaw offers several options to optimize the class dynamics, which can benefit students and teachers as it eases material display and helps classroom management.

2.8.8 Coggle

This site can be used to create mind maps. This form of visual representation has been said to foster meaningful learning and support the communication of complex ideas, as it involves conceptualization and its organization highlighting the relations between pieces of knowledge and their schematic structure (Wang et al., 2018).

Coggle has been said to promote collaboration and foster critical 21st-century skills such as creativity and active participation. The authors who made this statement also expressed that:

> It was evidenced that students were able to collaborate and brainstorm ideas clearly using Coggle. They sustained high level of attention, interest, active participation and engagement throughout the lessons. Observations revealed that students had the ability to expand the digital mind maps from pictures to words, phrases, sentences and paragraphs. It provided technology infused fun learning context which instilled and boosted students' self-confidence and kindle interest in using English Language communicatively through active knowledge construction. Hence, this innovation can be utilized effectively by educators […] due to its flexible features to enhance English Language learning and teaching. (Arulchelvan et al., 2019, p. 178)

As a result, Coggle has been proven to be effective in EFL educational contexts. As a digital tool that promotes 21st-century skills, it could be particularly beneficial for CELEX students as it is aligned with the fundamentals of the PGII.

Pre-service Science teachers experimented with the benefits and drawbacks of creating mind maps in their paper and digital versions. The results demonstrated that both visual representations helped reinforce and assess knowledge and made the lessons more engaging through brainstorming, meetings, and presentations. Among the main benefits of digital mind maps is the possibility of adding multimedia to complement the mind map ideas and the ease of editing it; regarding the paper version of mind mapping, there can be psychomotor development for the students (Debbag, Cukurbasi, & Fidan, 2020). So, the paper version of mind mapping is more suitable for young or arts learners. In contrast, the digital versions are more appealing and helpful for young adults and adults, which is the target population of CELEX.

2.9 The Impact of Gamification in the EFL Classroom

As mentioned in the main benefits of the intended digital resources, gamification counts on an extensive literature review and has been the center of many pieces of research. Still, due to the COVID-19 pandemic and the emergency remote teaching it generated, studies have recently been boosted because the COVID-19 pandemic has come to an end, at least as a sanitary emergency, and now many studies have blossomed analyzing the results of this experience. As it was stated at the beginning of this thesis chapter, the implementation of technology in the learning experiences is something that should remain, as it has proved to have many benefits, particularly for the learners, regarding their motivation, attitudes, emotions, affection and cognitive aspects (Céspedes, 2023). Nonetheless, the main limitations of its application rely on

the technical issues to be encountered, and the facilities of the teaching contexts, and the instructors' experience where it is expected to be implemented.

Gamification, as its name suggests, is to turn the learning process into a game, with scores, different types of interaction, competitions, rewards, and teamwork, and its principal purpose is to keep the students engaged and motivated while using the target language to solve specific problems by interacting in such a way that it looks like a game (Pujola, 2021).

Making learning meaningful has also been one of the essential trends we have experienced in ELT in the 21st century. Gamification merges this intention with the students' interest in technology. As the population taking language lessons is made of increasingly digital natives, these dynamic strategies to present, practice, and produce language are becoming mandatory in today's education.

There may be some situations where students and teachers who are digital immigrants struggle to interact with this kind of technology, as their skills with computers and interaction with software can be limited. A possible solution is to rely on digital natives to help them keep the class pace and succeed in the proposed tasks (Riegel & Mete, 2017). Therefore, it is crucial to work with user-friendly apps and sites so that the teachers can interact and plan their activities without any problem and the students can deal with the exercises efficiently.

Flores- González & Flores-González (2020) have already mentioned the urgent need to explore how technology-mediated learning takes place so that new strategies can be adopted to contribute to updated virtual teaching proposals. Moreover, the authors concluded that high school students demonstrated better assimilation and appropriation of knowledge through technology in the classroom. It was possible due to teaching strategies that included the implementation of different cognitive skills such as analysis, classification, distinction, and

synthesis, emphasizing the importance of the learners' active role and applying self-regulation to increase their autonomy. In conclusion, if students become aware of their organization and responsibilities, their learning outcomes improve in quality.

Thus, gamification empowers the teaching and learning processes in different senses, and it is an effective method of instruction that fosters behavioral learning outcomes and promotes collaboration (Sailer & Homner, 2020). It allows students to scaffold their 21st-century skills within flexible learning strategies, including implementing ICTs, LKTs, and ETs, which is translated into better classroom management, as the needs of digital native learners are met if the appropriate teacher roles and material curation standards are carried out. Within this framework, gamification is the permeating aspect that nurtures the core of the objectives of this thesis research and this literature review, as it is evident that it can play a crucial role and positively impact the EFL classroom, as in every other subject that effectively implements it.

2.10 Conclusion

EFL education in Mexico has faced different challenges before and after the COVID-19 pandemic, particularly in the context of public schools. Innovation in its implementation, whether inside the classroom or through virtual means, can be mainly given by technology and its multiple approaches. With the appropriate strategies and elements, such as content curation or the intention of meeting and fostering 21st-century skills, learners can benefit incredibly. OERs are, therefore, to be exploited, as in the case of the eight selected apps for this thesis research (Nearpod, Seesaw, Kahoot!, Wordwall, Canva, Voki, Coggle, and Padlet). Each of them can cover different aspects of the language and scaffold the learners' skills in terms of performance. This literature review exposed the concepts behind choosing and implementing these digital resources at IPN's CELEX. In the next chapter, the methodology followed will be presented, as

well as a description of the instruments to measure students' language proficiency and their perceptions regarding the use of gamification for their learning experience in the EFL classroom.

Chapter 3: Methodology

3.1 Introduction

In this chapter, the readers will find the considered approach for this research, the reasons behind choosing it, the treatment applied during the study, and the instruments used to collect the data. The description of the context and presentation of the participants of the study will also be mentioned, and finally, the process for data collection and its analysis will be reported.

This thesis was intended to demonstrate the impact of using gamified digital resources in EFL education. The research focused on three main research questions:

1)How is the student's language proficiency influenced by using a techno-pedagogical design with gamified digital resources?

2)What are the implications of applying this techno-pedagogical design in a CELEX course?

3)What are the students' perceptions regarding implementing the given digital resources?

A quantitative approach was taken to solve these questions, collect data, and have the most objective perspective about the implications of using digital resources in EFL lessons in CELEX.

3.2 Declaration of Epistemological and Ontological Stance

A quantitative approach was considered to conduct this thesis. This approach was chosen because, as Creswell & Creswell (2018) stated, this research method is drawn from a correlational or causal hypothesis, which works as an assumption to be confirmed or sustained with careful data analysis. The assumption or hypothesis that this study encouraged is that using digital resources can gamify EFL lessons at CELEX and improve students' proficiency levels. It

was necessary to examine the variables involved and to adopt an experimental design to validate this conjecture since it:

> systematically manipulates one or more variables in order to evaluate how this manipulation impacts an outcome (or outcomes) of interest. Importantly, an experiment isolates the effects of this manipulation by holding all other variables constant. When one group receives a treatment and the other group does not (which is a manipulated variable of interest), the experimenter can isolate whether the treatment and not other factors influence the outcome… [experimental design is done with the] goal of helping the researcher make inferences about relationships among variables, and how the sample results may generalize to a broader population of interest. (Creswell & Creswell, 2018, p. 207)

The treatment for this thesis research consisted of creating a techno-pedagogical design that used eight apps (Wordwall, Kahoot!, Canva, Padlet, Nearpod, Seesaw, Voki, and Coggle). This material was used with a *básico 2* group, which worked as the experimental group; in contrast, another group of the same level, *básico 2*, served as the control group as they held classes without using these digital resources.

Among the main reasons behind the selection of a quantitative methodology with an experimental design approach, the following arguments were considered:

1. The gamification phenomena need to be measured statistically to determine if they are an essential component of the teaching-learning process of EFL. Therefore, it works as the independent variable of the study.

2. It is intended to generalize the results on similar samples. The sample consisted of 49 students for the control group and 36 for the experimental group, resulting in a total of 85 participants. That number could be increased by covering complete sections such as those that

divide learners between basic, intermediate, and advanced levels, or it could also be adapted to other language centers or schools.

3. This type of design allows researchers to prove the plausibility of didactic interventions. Didactic interventions have been said to play an essential role in developing students' attitudes, understood as the disposition, tendency, or inclination toward learning. While experimenting with strategies, the academic performance, students' thinking and acting, and their image of a subject or learning field improve (Aguilera & Perales-Palacios, 2020). Applying a techno-pedagogical design measured in terms of its impact on the EFL students could benefit CELEX's students. However, as mentioned in the previous argument, it could also be measured and applied in different teaching contexts.

To specify the design of the research, it is an experimental study. This type of design is intended to analyze if there is a causal relationship between independent and dependent variables. Regarding this thesis research, the study aims to identify a possible association between the use of digital resources for gamification and the participants' EFL learning process.

For the sake of this research, the independent variable is the use of digital resources for gamification in the classroom. In contrast, the dependent variable is the level of proficiency the students showed at the end of the course. The dependent variable was measured with a pre and post-test.

Roger & Révész (2019) also explained that what creates a natural experiment is the randomized assignment of the participants into the control and experimental groups. The experimental group receives the treatment, which is the implementation of the techno-pedagogical design, apart from the pre and post-testing, which are applied to both groups.

The treatment can be defined as the manipulation or stimulus applied in the experimental group, and the test scores were used to compare how the groups differed with and without the implementation of the techno-pedagogical design. This final stage is intended to confirm or refute the hypothesis or assumption (Rasinger, 2010).

3.3 Research Design

The starting point for this experiment was the pre-testing stage. This research had a standardized diagnostic exam to evaluate how learners performed regarding their language proficiency. This first stage was intended to demonstrate the entry levels of both the control and the experimental groups. This precedent will indicate how the treatment stage may have modified the outcome concerning the students' proficiency level, measured via the post-testing. The conjectures of such implementation will be analyzed in the next chapter.

The treatment phase involved applying the techno-pedagogical design throughout the *básico 2* course. This stage is the central part of the research as this didactic intervention serves as the independent variable, and therefore, it can establish a precedent for further research. The apps were used to foster different language aspects and facilitate interaction and participation in the EFL classroom.

The post-treatment involved applying a standardized exam for the control and experimental groups. At this stage, the CELEX coordination provided this exam and was used to measure the students' proficiency level.

Finally, a Likert-scale, 42-item questionnaire was applied to the experimental group to understand the students' perceptions about the techno-pedagogical design implementation throughout the course. This statistical proof evaluated to what extent the digital resources

achieved their intended means and how much the students praised their usage in their EFL lessons.

3.4 Description of the Context

As mentioned in Chapter 1, there is an urgent need to implement gamified dynamic resources at CELEXs, and as stated in Chapter 2, education in Mexico has suffered historically from different constraints that have led it to give (particularly in the case of the public sector) poor results. Within the context of the 4th Industrial Revolution and Education 4.0 asserted in the IPN's PGII, the extensive use of ICTs and the teaching of EFL are now mandatory to the core curricula in Mexico. The student population at CELEX, ESCA, Tepepan mainly consists of university students taking the different degrees offered by that Faculty. There are three options for a degree: Accountancy, Trade Affairs, and International Business. All the students enrolled in these majors are required to have a minimum level of English proficiency, up to Intermediate 5 in CELEX's program for Accountancy and Trade Affairs students, and up to Advanced 5 for International Business students who, by the way, are also required to study another foreign language, counting French and German as the most popular. The language courses, however, are open to the public in general.

In an average group, students' age ranges between 17 to their late twenties; of course, some older learners are enrolled, but there are only a few per group. Nonetheless, some of these older learners are very committed to their process of language learning, mainly because they count on high levels of intrinsic and extrinsic motivation.

In the case of this thesis research, the chosen level was *básico 2* because it intends to demonstrate students' progress from A1 to A2 according to CELEX's English program. The

preferred modality was the *ordinario* courses, held Monday to Friday, two hours a day per class, and last for four weeks.

The mid-term exam is administered in the 10th session, and the final exam is distributed in the 19th session, allowing educators to provide feedback in session 20. These exams served as quantitative indicators of the students' language proficiency performance. The topics covered during the course included vocabulary for clothes; present continuous in its affirmative, negative, and question forms; and past simple in its affirmative, negative, and question forms with an emphasis on the verb to be (was/were) and the use of some action verbs. That is in terms of grammar, but the contextual units included traveling, famous people, true stories, and the weekend as leading topics. The coursebook and base material used in CELEX is *Life* (2019) by National Geographic Learning.

The treatment took place with a group of 36 students. Most classes were held in the regular classroom, but two took place in the computer labs thanks to CELEX's coordination, who arranged the administrative paperwork to access this kind of classroom. An organizational constraint found was that CELEX should count on their own computer labs, but they have not been equipped while this research was conducted. However, when visiting the computer labs, students accessed the internet via a Wi-Fi modem in regular sessions and ethernet and with the school's computers.

The control group, in contrast, consisted of 49 students who held all of their sessions in the regular classroom and did not access the resources of the techno-pedagogical design for their lessons nor attended the computer labs. Their only digital interaction was about an LMS based on the coursebook's topics to practice vocabulary and grammar on isolated sentences. They were

also supposed to read the material for the reading project. Nonetheless, these digital interactions were assignments to accomplish without supervision.

3.5 Description of the Participants

The group profiles are the following: for the control group, there were 49 students, and for the experimental group, there were 36 students, respectively. All students were part of ESCA's degrees, so they enrolled at CELEX to advance their credits toward graduation requirements. The same syllabus was covered in both groups, with the experimental group using gamification for digital resources only. Additionally, the experimental group had access to computer labs to complement the sessions.

The control group did not know they were participating in an experiment as their contribution to the study was based on their pre and post-test results. The experimental group knew they were participating in a didactic intervention because their perceptions were gathered towards the end of the course. In both cases, none of their personal data were collected.

3.6 Description of Data Collection

As the approach of this research was quantitative, there were two main kinds of data obtained:

1) The language proficiency level of the students, which was collected with the entry-and-exit levels standardized tests to identify what students' proficiency levels were at the beginning of the experiment and how they changed at the end of the course due to the implementation of the techno-pedagogical design with the given digital resources and their gamification strategies. These tests help portray the participants' proficiency levels and quantitatively compare them. For practical results, the data collected was simplified

to students' proficiency level according to the CEFR, whether it remained on A1 or successfully reached an A2 descriptor.

2) The identification and evaluation of students' perceptions after applying the techno-pedagogical design were collected with a Likert-scale questionnaire. The questionnaire included 42 items related to the eight digital resources that took part in the techno-pedagogical design. Still, it also stated the implications of using technology in the EFL classroom, including benefits, drawbacks, feasibility, and anticipated problems to propose possible solutions for further implementation cases. The questionnaire was applied at the end of the course and only to the experimental group. Thus, it was possible to assess such implications. The results were gathered with a Google Forms questionnaire that turned the answers into graphics, shown in the next chapter.

3.7 Description of the instruments

The pre and post-tests were applied to measure entry-and-exit levels of language proficiency for both groups. The first evaluation worked as a diagnostic exam, and the latter gave a score to the students to measure their performance levels towards the end of the course. In the pre-tests, the students had their grammar and vocabulary usage, listening, writing, and speaking skills evaluated. These aspects were also considered for the post-test, adding reading skills and in-class participation to the assessment. CELEX provided this material as they used it to evaluate the students on their EFL courses. These tests are also based on the predesigned material of *Life* (2019) coursebooks. The main benefit of applying such tests was that the students were familiarized with their format and that their validity and reliability had been proved.

The treatment was applied within a time constraint of four weeks. Students held lessons Monday to Friday, for 2 hours a day. The techno-pedagogical design consisted of using the following apps with these intentions:

1) Wordwall for two activities: a) a multiple-choice exercise to review clothes' vocabulary and b) to promote the students' speaking skills with a wheel of fortune and random cards activity that displayed multiple questions to encourage participation.
2) Kahoot! is one of the most popular platforms used for gamification, as it allows students to enroll in a task that can be played in the classroom or assigned as homework. Students played in a competition where they had limited time to answer the questions, and feedback was provided after each one, in the case of the synchronous activity, while the same activity was provided as revision material.
3) Canva is also a well-known platform that can be used for multiple purposes regarding the design of slideshows, infographics, social media posts, and various text genres. Students used it to design material where they presented a touristic place they had already visited or wanted to visit.
4) Padlet was used as a repository where students could find all the links for the digital resources used throughout the course. In addition, students uploaded a short video where their speaking was assessed and feedback was provided.
5) Nearpod was used to apply a gamified multiple-choice exercise, a slideshow with images and grammar explanations, an interactive video, fill-in-the-gap exercises, and a memory game.

6) Voki focused on students' attention on pronunciation and mimicked the different types of endings in simple past regular verbs. Students could personalize the talking avatars with diverse options.
7) Seesaw served to correct a text. Therefore, students' pronunciation skills were assessed, and the participants received feedback about their performance in private comments.
8) Coggle was intended to organize the students' ideas on a mind map regarding two pieces of text. There were some guided questions to help them select the necessary information.

For the Likert-scale questionnaire to identify the perceptions of the students concerning the implications of using gamified digital resources to complement their syllabus and interaction, the survey design approach was also chosen because it "provides a quantitative description of trends, attitudes, and opinions of a population" (Creswell & Creswell, 2018, p. 207). Students were asked how they felt while using the given resources, about the digital resource implementation, and their experience usage. The questionnaire was verified with the SPSS software, obtaining a .987.

3.8 Description of Data Analysis

Concerning the students' language proficiency performance, the results will demonstrate if there is a correlation between the use of gamification for digital resources and the students' English proficiency level by comparing the results of both the experimental and control groups. The intention was to demonstrate the kind of impact that the use of digital resources and gamification will have on their performance. The results for the students' perceptions will be given in graphics with a scale that ranges from 1 to 5 with the correspondent values: 1) Totally in disagreement, 2) In disagreement, 3) Not in agreement, nor disagreement, 4) In agreement, 5)

Totally in agreement. It is relevant to mention that the items were written in Spanish to reduce bias in the comprehension of the questions.

This questionnaire will prove how the eight digital resources were perceived in their implementation and how the intended benefits of gamification and their possible constraints impacted the students throughout this didactic intervention.

3.9 Conclusion

In this chapter, the study's approach, which is a quantitative experimental design, was mentioned. The treatment was exposed, which consisted of applying eight digital resources (Wordwall, Canva, Kahoot!, Padlet, Nearpod, Voki, Seesaw, and Coggle) in gamified contexts to promote the language proficiency of the *básico 2*, IPN's CELEX students' taking an *ordinario* course. The context of the research and the participants were also stated. The study's relevance was mentioned again: the demands of the digital era and the 21st-century skills to be fostered in the students, as it was exposed in the IPN's PGII, which set the basis to improve the kind of EFL lessons they receive. With the gamification and use of digital resources, the learners find the contents more appealing and build up their digital literacy skills, which is beneficial for them regardless of their plans and objectives with the language.

The instruments used to measure the students' language proficiency, perceptions, and the implications of using technology in the classroom were also stated as a diagnostic (pre-test) and a post-test concerning the students' language proficiency and a Likert-scale questionnaire. All in all, these processes permitted the data collection presented as the results in the following chapter.

Chapter 4: Results

4.1 Introduction

This chapter shows the research results, with some observations based on them, and the data collection process for each stage and instrument is specified. The different phases of the research and the evidence they produced are analyzed.

In the concurrent sections, a description of the experimental process is given, including data, graphics, and pictures collected throughout the four weeks of the experiment. All of this could not have been done without the support of CELEX's staff — including the coordinator and the academic supervisor, who helped in setting the conditions to conduct this experiment— and CELEX's students, who participated and were willing to analyze their learning processes towards the end of the course, to eventually improve the way EFL education takes place on this IPN's language center.

4.2 Data Analysis

As stated in the previous chapter, the instruments to collect the data were divided into pre-treatment, treatment, and post-treatment phases. In these different stages, the instruments varied from a pre-test, a techno-pedagogical design with the eventual implementation of the given OERs, a post-test, and a final questionnaire that helped measure the students' perception regarding the use of these digital resources and their impact on their language learning processes.

The data was gathered from a quantitative approach to generalize the results for further implementation of the selected digital tools in different contexts and to have the most objective results.

Thus, the three phases for the conduction of this research are presented with a description of the activities performed during each step and how they led to the results generated by using the different instruments.

4.3 Pre-treatment Phase

In the first phase, the first instrument measured the students' proficiency level through a standardized test provided by the academic supervision of CELEX. This test set a starting point by evaluating the students' proficiency level at the entry stage of the experiment; this is, before applying the techno-pedagogical design. The following chart indicates the number of students for the control and experimental groups and their proficiency levels according to the CEFR descriptors.

Chart 2

Pre-treatment phase for control and experimental groups.

PRE-TREATMENT PHASE	Control Group	Experimental Group
# OF STUDENTS	38 **A1**	34 **A1**
	11 **A2**	2 **A2**
Sample size	49 students	36 students

Source. Own elaboration.

The sample size of the control group was slightly bigger. However, the number of A1-level students is similar. In this first stage, the exam was intended to evaluate students' performance on their productive and receptive skills and their use of grammar and lexis. As displayed, the number of outstanding students was 11 for the control group and 2 for the experimental group. Exceptional students already have an A2 level.

Both groups were enrolled in the course *básico 2*, the 3rd level from the basic-level courses offered in CELEX, and the last one to include and review A1 contents. With the coursebook, the final four units of *Life*: *Beginner* (2019) by National Geographic Learning were covered.

4.4 Treatment phase

A techno-pedagogical design was created for the treatment stage to apply the eight digital resources to gamify the EFL lessons. The digital resources were introduced in the following order: 1) Wordwall, 2) Kahoot!, 3) Canva, 4) Padlet, 5)Nearpod, 6) Voki, 7) Seesaw, and 8) Coggle.

The experiment's span was four weeks, which is the time a CELEX course takes to complete a level. Students attended 2 hours a day, Monday to Friday. Two sessions took place in the computer labs, facilitating the implementation of digital resources. Two sessions included the mid-term and final-term exams, giving the students average scores. Those exams are used in CELEX courses to allow students to enroll to the next level or to repeat the course if their grades are unsatisfactory.

The control group received regular lessons based on the coursebook content, and gamification strategies were not implemented. The only interactions with digital resources they had were concerning a website they accessed for the reading project, in which they found a magazine-like text, and an LMS provided by National Graphic Learning, which works as what used to be a grammar book. Therefore, students could find on this LMS lexis, grammar, and exercises to reinforce their knowledge of the coursebook topics.

Regarding the techno-pedagogical design, the digital resources and the activities applied will be described next, as well as relevant information like students' perceptions concerning the

implementation of such applications or the intentions behind choosing the approach, the type of activities, or the skills they fostered.

4.4.1 Wordwall

It was the first OER with which the students interacted. A multiple-choice activity about vocabulary related to clothing items was created on this platform as a first task.

Image 1

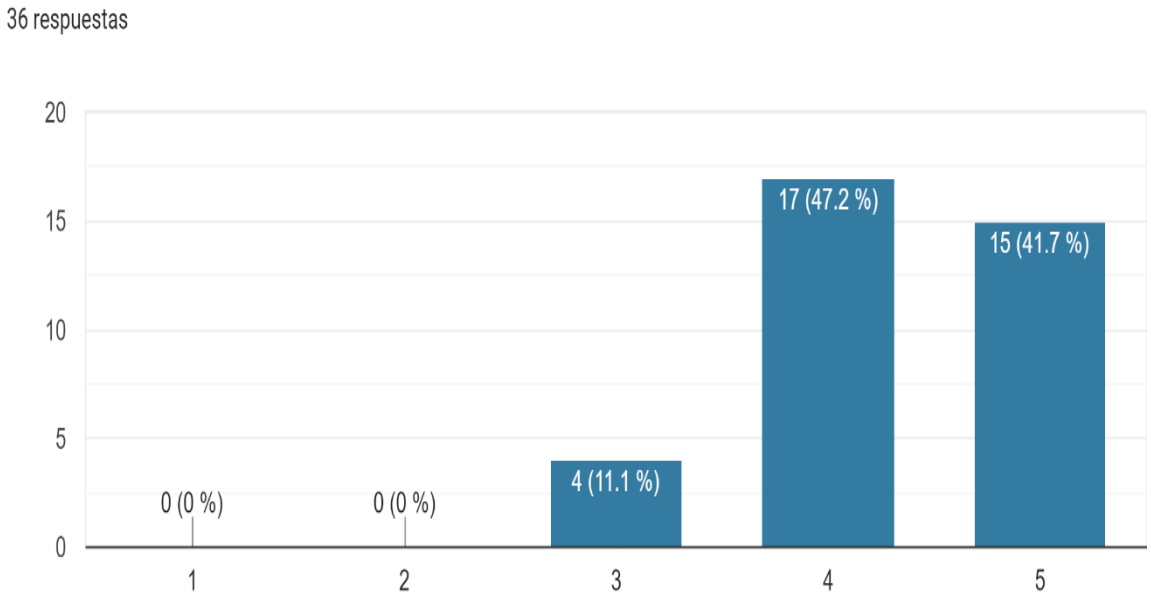
Wordwall vocabulary for clothes activity.

Source. Own elaboration.

With this assignment, students reviewed vocabulary that was presented in class. Its intention was to provide the students with elements to practice and study lexicon with images and phrases to reinforce meaning. Students could see a chronometer on the interface to check how much time they had used to answer the complete activity and to see the number of questions missing. Students' perception of the activity was predominantly beneficial. Considering the Likert scale questionnaire, most answers ranked between agree (47.2%) and totally agree (41.7%) regarding how useful the students found the resource to recognize vocabulary.

Graphic 1

Wordwall in the use of vocabulary.



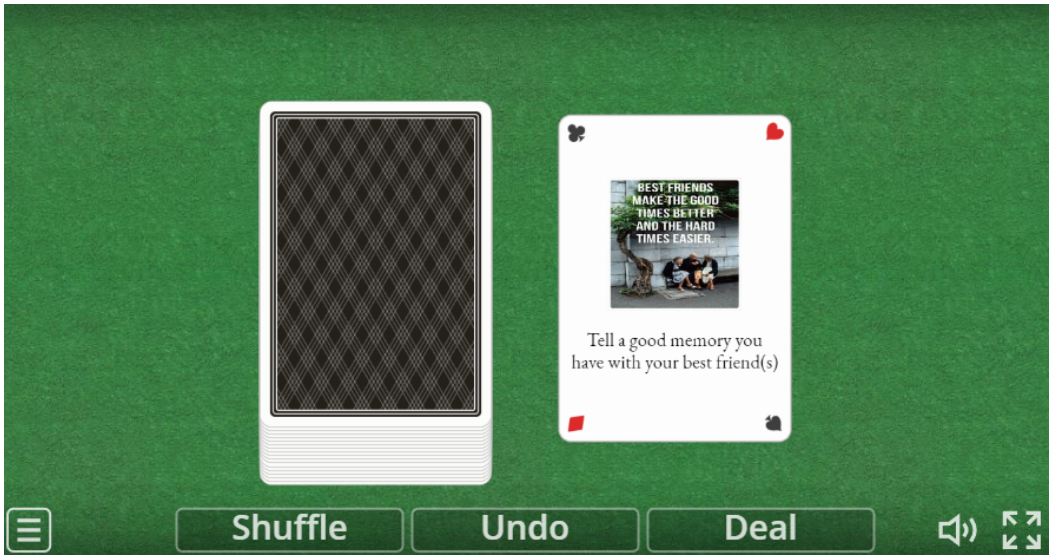
Source. Own elaboration.

Further uses of the platform included motivating students to speak with the assignment of randomized questions. Students gathered in small groups and answered a question, whereas the rest of the team should think of follow-up questions to learn more about the mentioned experience and expand their speaking practice.

This way, the class dynamics improved as students did not only play the role of passive listeners but also contributed to the conversation by looking for additional information. The already-answered questions remained displayed in the activity so students could choose new ones. Learners could interact with the task by drawing a random card or choosing between boxes that included the practice questions.

Image 2

Wordwall on speaking practice.



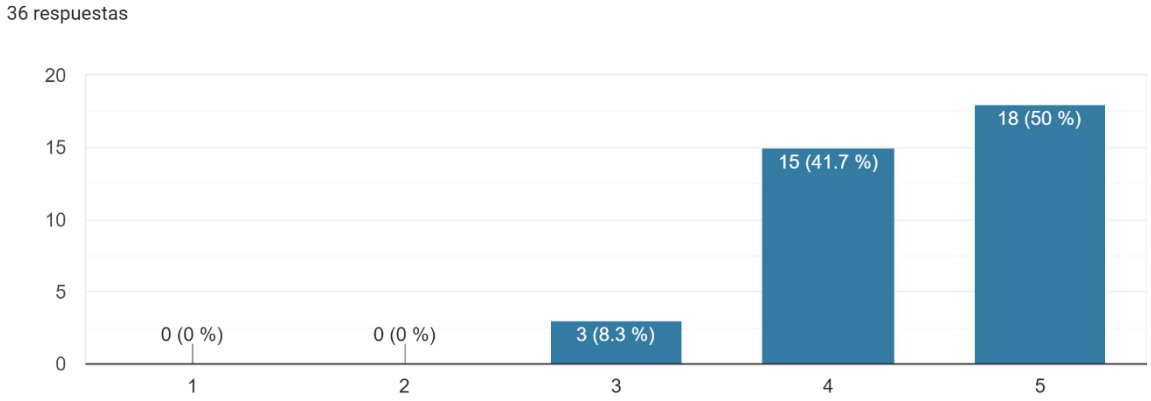
Source. Own elaboration.

The results concerning the speaking-practice activities showed that students found them even more useful than mere Lexis review. Indeed, 91.7% recognized it as fundamental for oral interactions. In this activity, the grammar topics reviewed included the use of was/were and the proper conjugation of regular and irregular verbs in the past. The following graphics indicate

how the students perceived the activities in terms of their benefits concerning their oral interaction and fluency development.

Graphic 2

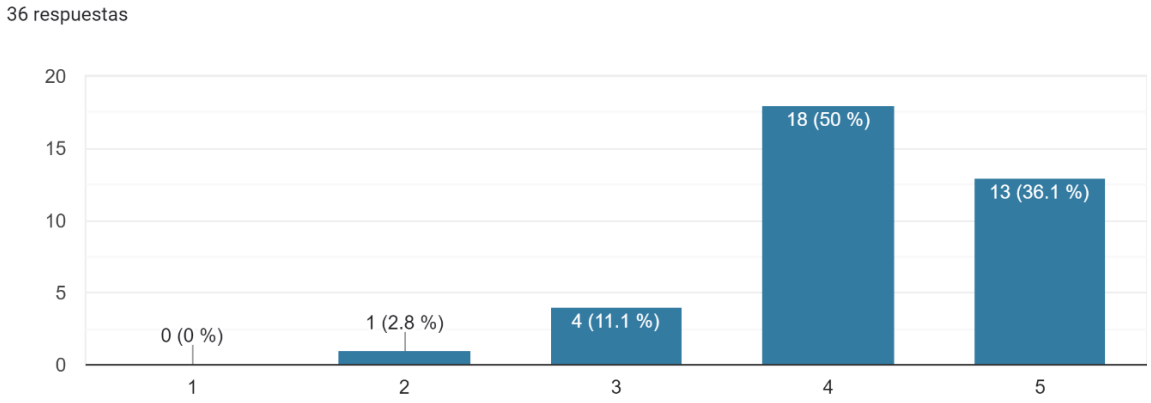
Wordwall on oral interaction promotion.



Source. Own elaboration.

Graphic 3

Wordwall on fluency development.



Source. Own elaboration.

Monitoring was an essential step during the implementation of this activity by exemplifying the students' words and eliciting the corrections becasuse error correction was on the spot and towards the end of the task. None of the students were pointed out, but there were grammatical improvements and speech fluency (86.1%). These were the activities that involved the use of Wordwall. In both cases, the students relied on their mobile devices to perform tasks.

Wordwall engages students in class discussions, helping them learn vocabulary and improve their writing skills (Ilahi et al., 2022). Additionally, there is a strong emotional response when Wordwall is applied in the classroom, increasing students' interest and the quality of their outcomes (Hidayaty et al., 2022). The results of its implementation in this thesis research reinforce these statements and show positive usage in the EFL classroom to foster speaking skills and collaboration.

4.4.2 Kahoot!

This site was used to review grammar and vocabulary in a class before the mid-term exam application. The content of the activity included lexis and examples similar to those in the coursebook to boost students' memory and provide an opportunity to solve any misunderstanding or doubts regarding grammar usage. As mentioned, Kahoot!'s positive results have been proven effective (Llerena & Rodríguez, 2017; Licorish et al., 2018; Ekinci, 2020; Wang & Tahir, 2020). The students have demonstrated that they like it, and this experiment's results were not different.

The implemented activity consisted of 20 multiple-choice questions that tested students' command of the simple past tense and vocabulary presented in class concerning occupations, adjectives, verb conjugation, furniture, and rooms. The digital material was developed to fit the needs of this course and syllabus. Still, it was made available for everyone as it was added to

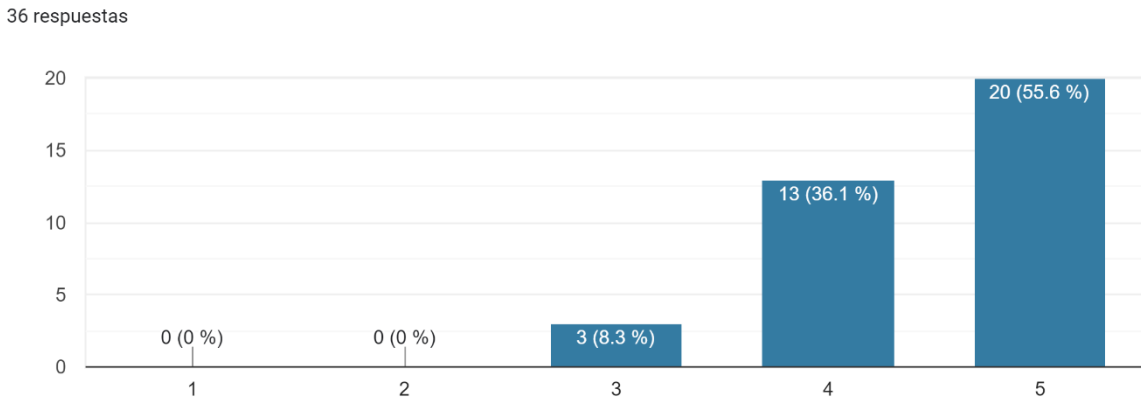
Kahoot!'s library, so its further implementation in other CELEX groups or courses that use *Life* (2019) by National Geographic Learning is possible by accessing this library.

GIF images were added from Kahoot!'s image library powered by Giphy, an online image library intended for non-commercial purposes, to make the exercise more visually appealing. This slight variation in the strategy can make the slideshows more attractive and boost students' interaction, as vocabulary from the content of the images can be elicited, making the students participate more actively. The same strategy of making the students expand the topics with follow-up questions used in Wordwall can also be used in this Kahoot! grammar and vocabulary review.

Likewise, immediate feedback was provided after each question, eliciting the reasons behind the correct and incorrect answers. This strategy kept students focused on the lesson content. The results of the Likert-Scale questionnaire were very positive, as shown in the following graphic.

Graphic 4

Students' perception regarding lexis and grammar with Kahoot!



Source. Own elaboration.

Thus, Kahoot! demonstrates once more that students enjoy using it for learning (91.7%). Regarding the gamification elements in this app, it is possible to point out a time constraint to answer, scores, character personalization, visual aids with a colorful interface, and music that moves with the time limit, which engages the students in the activity. Kahoot!'s reliability has remained over time.

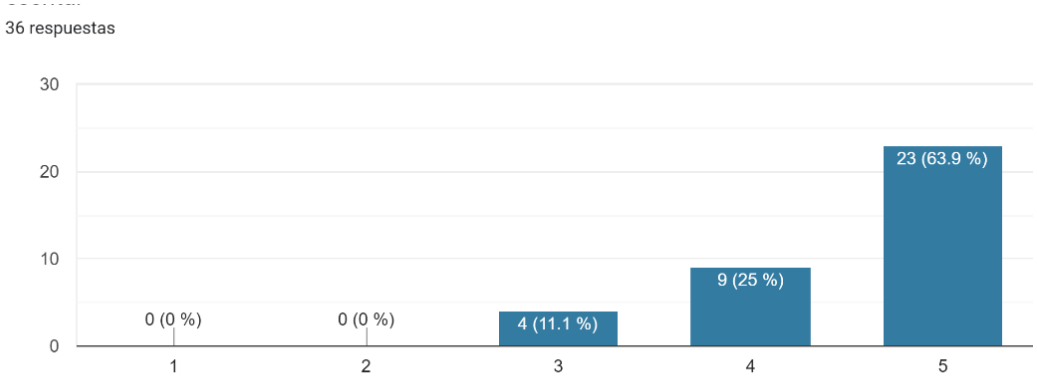
4.4.3 Canva

Canva is a similar case to Kahoot!. Research studies have proven it to be a practical and popular digital tool. It has been used to increase the students' reading and writing skills (Fauziyah et al., 2022; Priyatna et al., 2023) as it intends to create different types of text genres. Despite having a user-friendly interface and being very intuitive, it would be good to exemplify how to use it to take full advantage of its different functions. Thus, the TPACK framework is beneficial as it states that when teachers are implementing technology in their lessons, they should not only have a good command of the content they are teaching or the pedagogical resources to achieve it but also have enough digital literacy skills so that they can assist the students in performing tasks related to the use of technology (Yuyun, 2018).

With this critical element in mind, the teacher's assistance was fundamental in task development. Canva's user-friendly interface facilitates its interaction. It is as simple as selecting a format for producing the visual resource and choosing between the layouts and what colors or sets are appealing for the visual project. During this stage, the teacher should actively guide the students through the Canva interface and its different resources. The students' perception regarding how easy and intuitive it was to use Canva to foster their writing skills was high, as well as having a range of elements to decorate and organize their presentations. The results can be seen in the following graphics.

Graphic 5

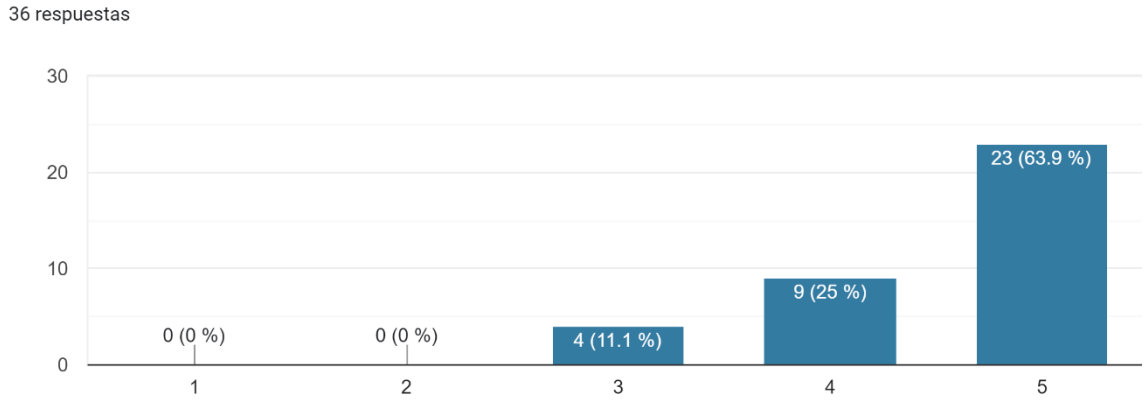
Canva fosters writing skills in an intuitive and easy-to-use manner.



Source. Own elaboration.

Graphic 6

Canva elements to raise the representation of knowledge.



Source. Own elaboration.

Feedback in this activity can be given in two formats: on the spot, while the product is being developed, paying particular attention to writing accuracy, or after its presentation, where the focus can be on the speaking production. A revision phase before delivering the final product

is recommended so that the students can identify their slips or mistakes and apply corrections before presenting.

The idea of using Canva in this treatment was to integrate the use of different productive skills by writing helpful information and then orally explaining it to the class in a presentation to accomplish the representation of knowledge. Thus, students' interaction with one another and language performance were boosted. In this activity, students were asked to research a tourist attraction they had been to or wished to get to know. After giving specific outlines such as location, transportation, activities to be done, budget, and a proposed route or itinerary, students had a range of bullet points to cover and practice their language meaningfully. Students presented their projects in class and received feedback from their peers concerning the presentation's content (representation of knowledge) and their performance by the language teacher.

All in all, the results of Kahoot! and Canva reinforced the idea of the beneficial outcomes that these digital resources produce. Therefore, it could be said that it is highly recommended to include their usage regularly as an effective way of summarizing content for Kahoot! and to nurture students' practice of the language in meaningful contexts for Canva. Students are familiar with both digital resources, so it is recommended that teachers include them in their lessons. Moreover, as Canva offers a wide selection of formats, the outcomes can result in meaningful products that serve the students' interests in real-life situations. As a consequence, Canva is an ET (Empowerment Technology) because, as Kirti et al. (2015) mentioned, by placing learners at the center of the educational process by referring to and working with personal experiences, they are placed in a position that engages and allows them to harvest the maximum potential of technology.

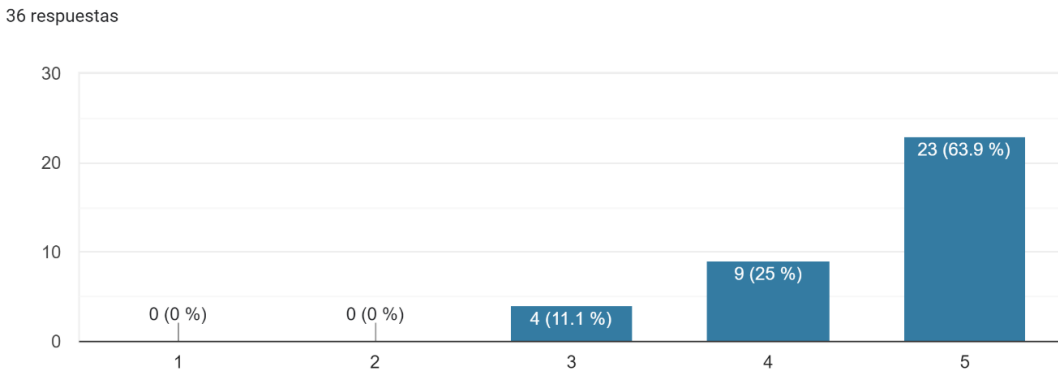
4.4.4 Padlet

This platform was used for two central purposes:

1) To work as a repository where the students could find the links to other digital resources (Wordwall's materials, the Kahoot! activity, the examples of Voki, the link to join Seesaw, the link to join the Nearpod activity, and an example of how to use Coggle).

Graphic 7

Using Padlet as a Repository.



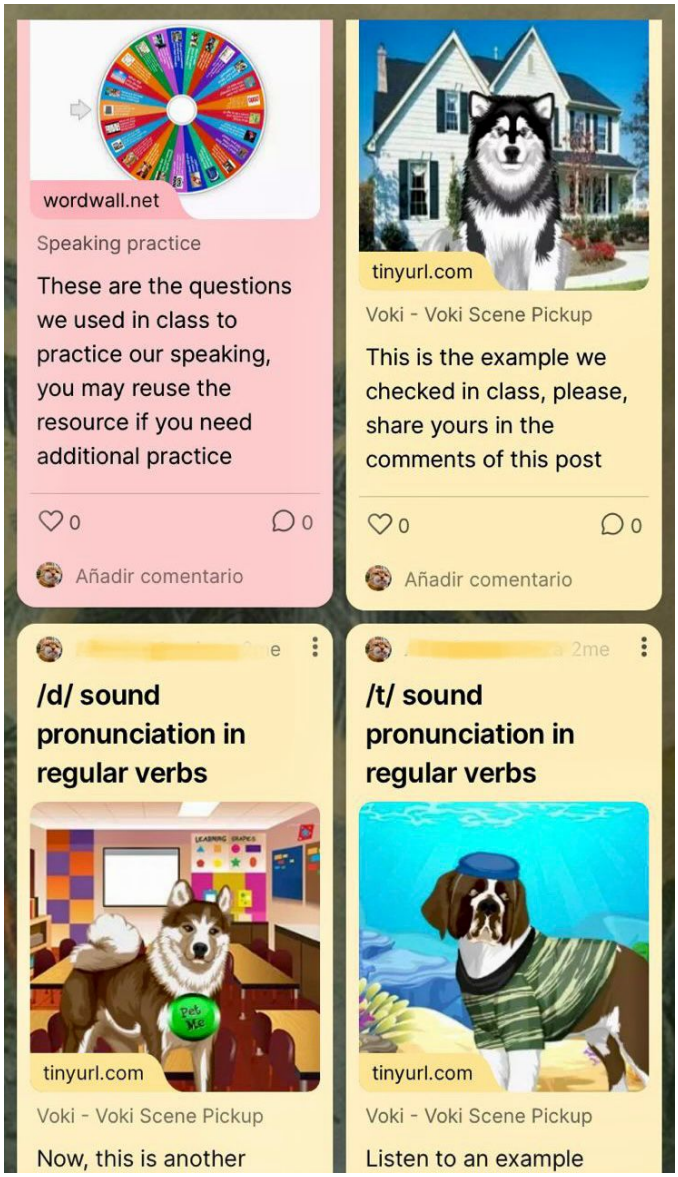
Source. Own elaboration.

A digital repository should follow Transparency, Responsibility, User focus, Sustainability, and Technology (Lin et al., 2020). Among the advantages of accomplishing those standards is that digital repositories promote transparency as the users can access and verify information. In the case of a class, students can see assigned homework, the subject's evaluation criteria, the materials used in and outside class, and a review of the syllabus contents, to name a few examples. This fact was perceived as meaningful in their learning process (88.9%). Besides, Digital repositories can also promote sustainability as there is no need for photocopying materials. For instance, they also encourage the use of technology to foster students' digital

literacy skills; and, finally, if they focus on the users, adaptations or corrections (in terms of valuable links, for example) can be made when reported.

Image 3

Padlet as a repository for the students.

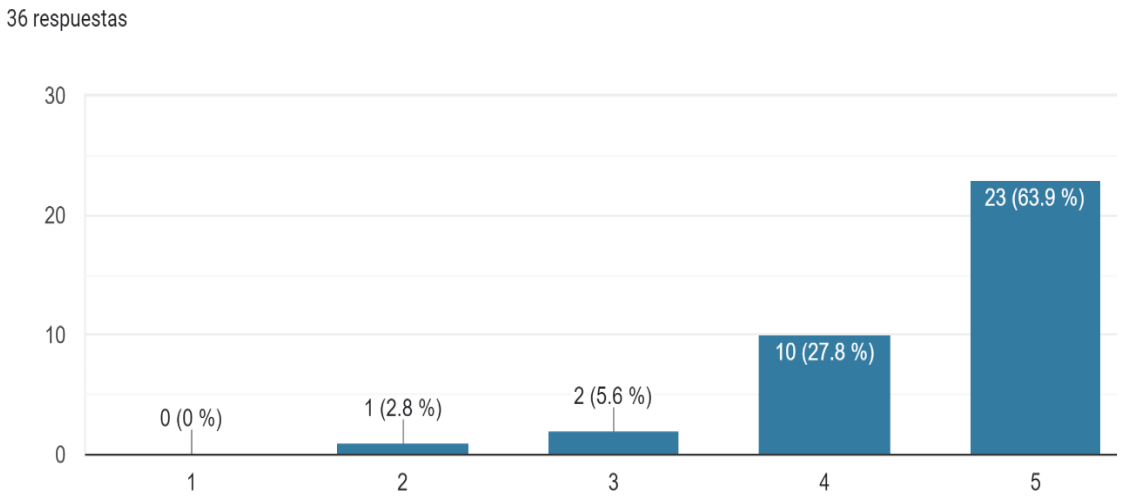


Source. Own elaboration.

2) The second usage for this app was to provide a digital space where students could share their projects created in Canva, Voki, and Coggle and to create a space where students could receive feedback from their classmates and the teacher. The purposes effectively achieved are in the ensuing graphic.

Graphic 8

Collaborating through Padlet.

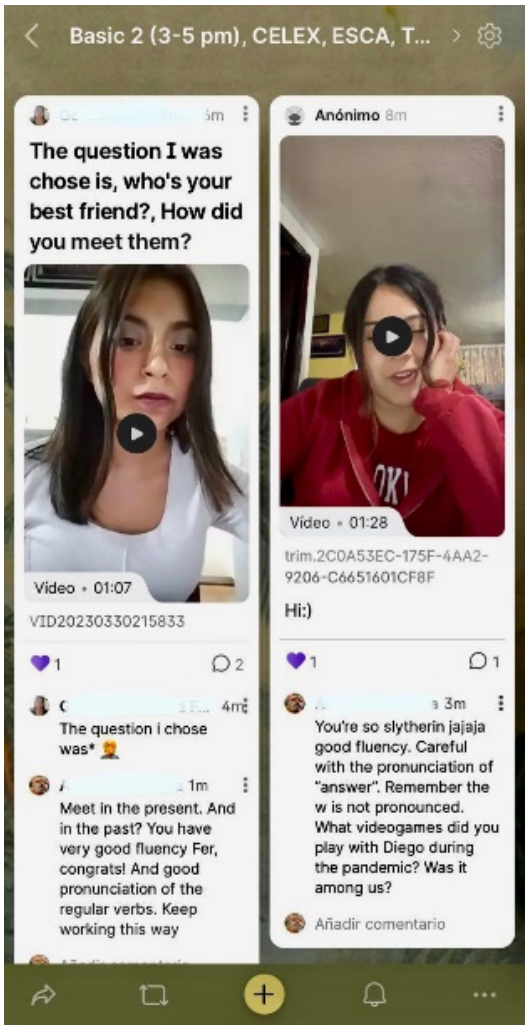


Source. Own elaboration.

In this sense, the objectives of implementing Padlet in class were according to the highlighted strengths of the app proposed by Sadry (2022). Besides, it promoted collaboration as students could share their viewpoints and participate in equal conditions with easily accessed resources and peer-to-peer contact through the teacher's and student's interaction channels. Padlet can be particularly beneficial for assignments and outside-the-class interaction, which places it as a suitable digital resource to perform Flexible Learning as it promotes a learning environment that strongly relies upon the use of technology and allows students to join and participate at their own pace as Cassidy et al. (2016) pointed out.

Image 4

Padlet as a virtual space for students to share and receive feedback.



Source. Own elaboration.

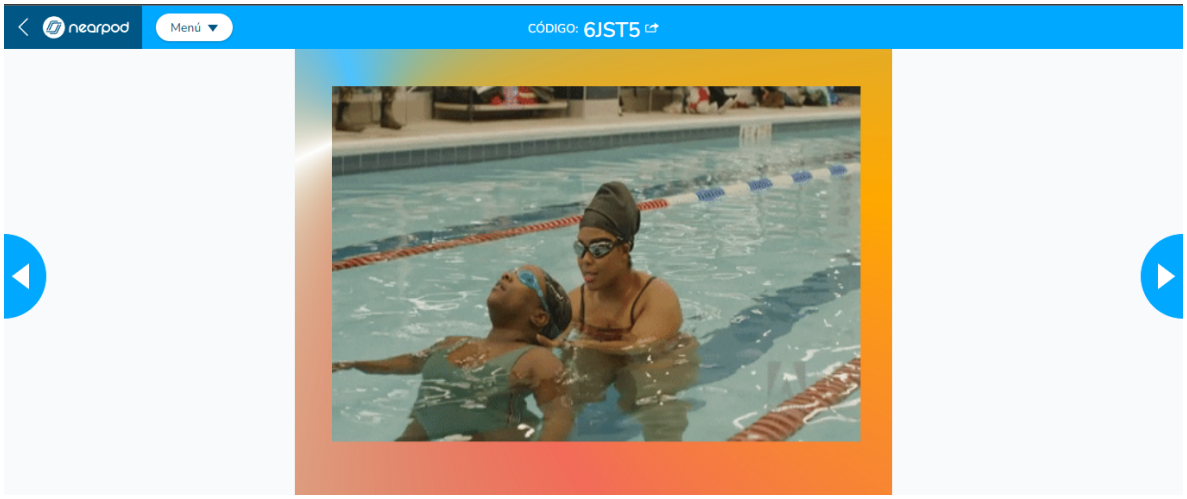
4.4.5 Nearpod

This OER was applied in the computer labs. By holding the class there, students counted on fast, reliable internet connection and quick computers. Therefore, accessing the website and performing the programmed activities were easier. The usage of Nearpod for this techno-pedagogical design considered different platform features to hold a complete session and not only parts of the class. To begin with, new grammar and vocabulary about Present Continuous

were introduced. With the guided question What are they doing? animated images were shown as slideshows, and the content was elicited from the students.

Image 5

Elicitation of grammar and vocabulary through Nearpod.



Source. Own elaboration.

For instance, from the previous images, the pieces of lexis that were elicited included: She's learning to swim, They are swimming, She's teaching her how to swim, and She's doing her work.

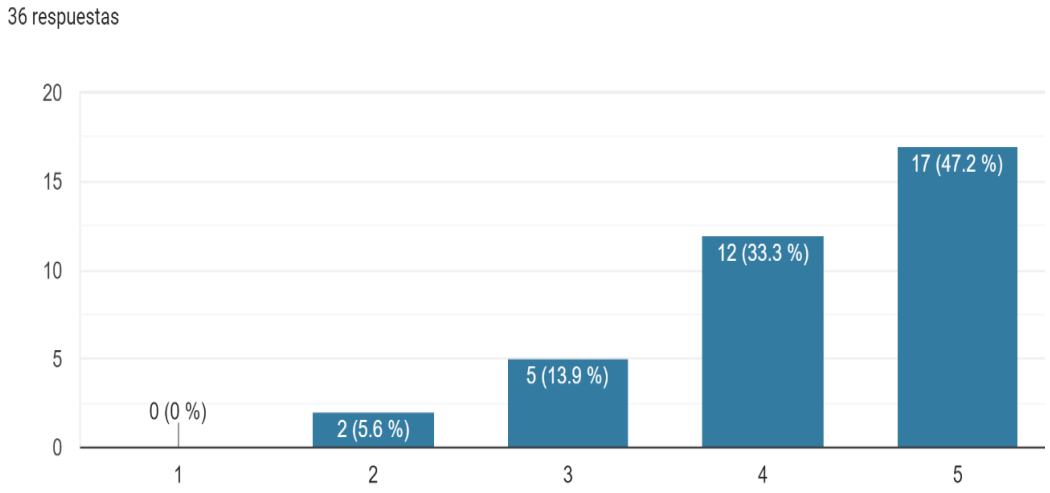
After some examples, the grammar structure of Present Continuous was introduced, emphasizing that its conjugation is given in the verb to be, and its usage is for momentary situations. The slides were shown on students' screens and the board through a projector. This redundancy allowed the students not to lose sight of the content and the teacher to point out to the board for important information or to explain in detail, making annotations with the markers.

Later, they watched an interactive video, performed a fill-in-the-gap activity, and finally, a matching task where they needed to create sentences using the Present Continuous with specific language prompts. The grammar class given throughout the application of Nearpod's

resources was considered mainly positive by the students (80.5%); exemplification was also an essential element, and it can be seen on the next graphic that most of the students liked and learned with these activities.

Graphic 9

Nearpod on grammar development with exemplification.

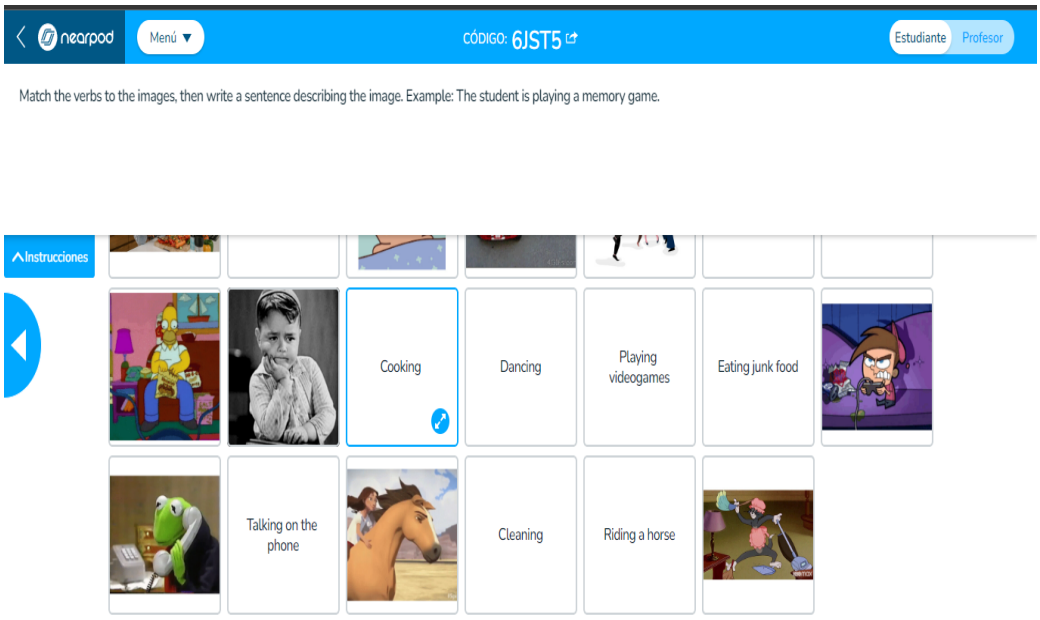


Source. Own elaboration.

The lesson dynamics changed after the first activity of introducing the grammar topic and eliciting vocabulary, as the students were working at their own pace from the interactive video activity to the fill-in-the-gaps and towards the matching exercise. The first activity in which learners interacted by themselves at their own pace was an interactive video where they watched a person calling a friend and telling her about what he was doing. Learners needed to watch the video and answer the guided questions. Later, they completed a fill-in-the-gap activity with a text about a person describing what he was doing and several verb options to fit the missing spaces. Lastly, they found different images that needed to be linked to vocabulary related to verbs, and then, in their notebooks, they were requested to create sentences using those prompts.

Image 6

Matching images with vocabulary as sentence creation prompts.



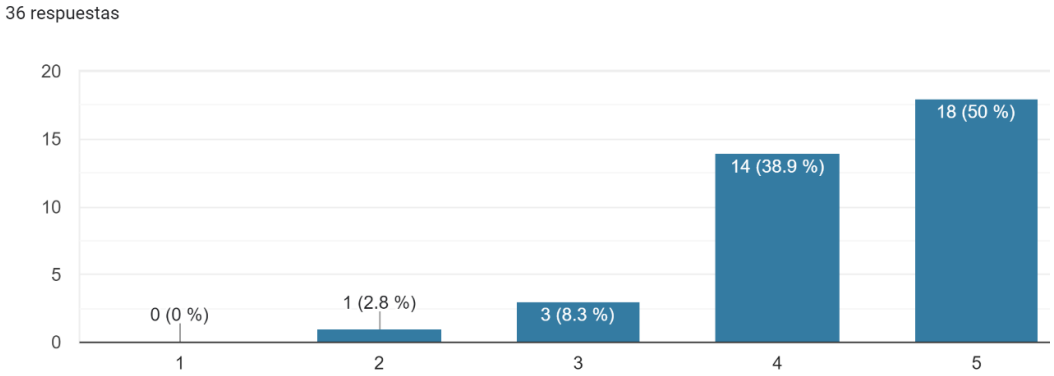
Source. Own elaboration.

This characteristic resembled what Bilki et al. (2023) sustained about virtual learning. When applying it, some learners are empowered as they find it easy to work alone, while others are marginalized and left behind as their progress is slow. Of course, the session with Nearpod was not in a purely virtual or online environment. Hence, monitoring was again an essential strategy for the teacher to assist struggling and supervise strong learners.

Regarding the students' perceptions, images appealed to most of them. The proposed strategy for Nearpod in the techno-pedagogical design was predominantly visual. Most students praised it with a highly positive score, as seen in the following graphics, which refer to using images as a memory booster for vocabulary taught in class (88.9 %) and the effectiveness of transmitting grammar knowledge and practice using interactive videos on the platform (94.4%).

Graphic 10

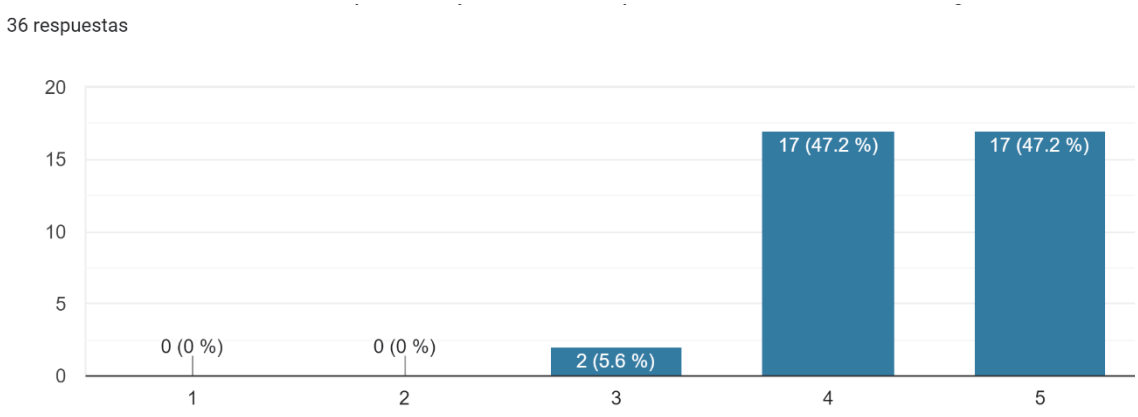
The use of images in Nearpod and its relation to vocabulary learning.



Source. Own elaboration.

Graphic 11

The use of interactive videos to promote grammar with Nearpod.



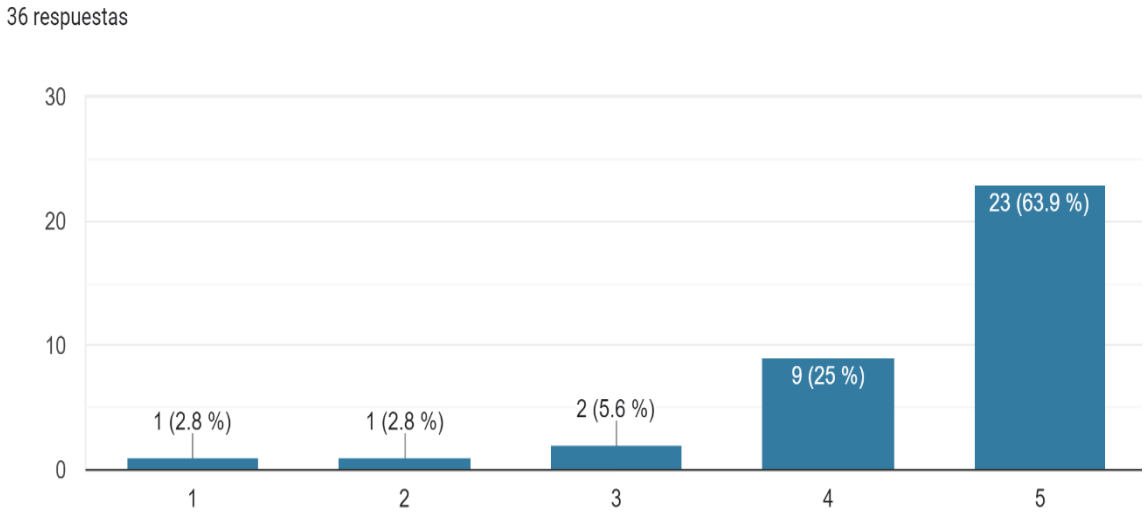
Source. Own elaboration.

That was the first part of the session via Nearpod in the computer labs. The second part of the session is somehow connected to Kahoot! as it also displayed a gamified competition task where students needed to choose a character. Then, within a limited time, they participate in a

multiple-choice exercise to review vocabulary for the class. This type of activity is called Time to climb and is one of the most praised features of Nearpod. As mentioned before, not all the students feel attracted to scores and time constraints to answer this kind of activity, but, in general, they enjoy it (88.9), as shown on the next Likert scale item.

Graphic 12

Game-like elements and their influence on learning according to the students.



Source. Own elaboration.

One of the main concerns regarding using competencies in learning is that it does not suit all learning styles. Despite the data indicating that most participants enjoyed competencies in both Nearpod and Kahoot!, it was also confirmed that an essential percentage of the students felt stressed during the games played on both platforms, as highlighted in the study by Wang and Tahir (2020). The authors stated that using this platform mainly benefited emotional and psychological aspects; nonetheless, it is a natural consequence that competencies boost stress in students.

Image 7

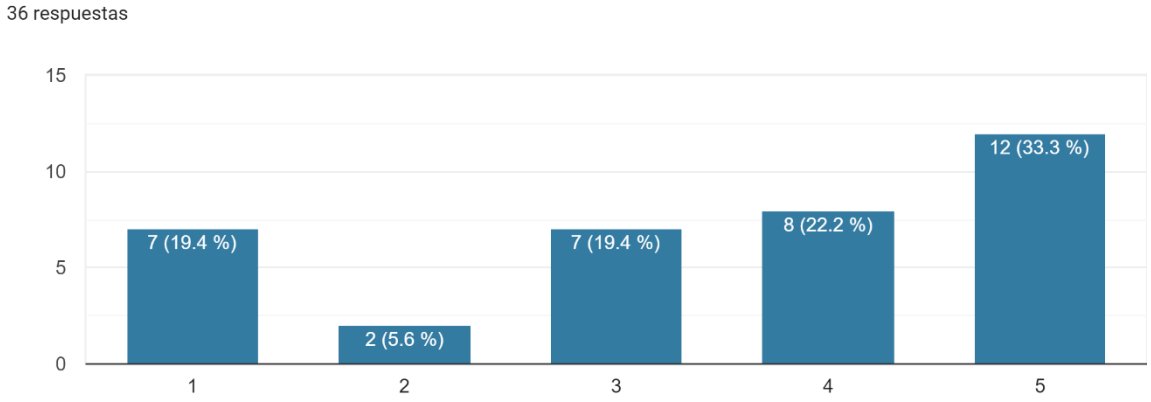
Participants in the computer labs while taking part in the Time to climb activity of Nearpod.

Source. Own elaboration.

As shown in the previous graphics, the results tended to be consistent, but in this case, the students' answers reached all of the questionnaire scales. Nonetheless, 88.9% perceived the app positively for their learning process.

Graphic 13

Competencies in Kahoot! and Nearpod as stress detonators.



Source. Own elaboration.

Hence, further research is necessary to identify students' feelings of stress and even anxiety while participating in gamified, competitive activities on platforms like Nearpod and Kahoot! In this case, a qualitative approach can provide feedback to recognize elements that detonate these negative feelings and possible solutions to reduce them.

In sum, the use of Nearpod and its visual aids was mainly perceived positively by the participants. It takes some preparation time to curate the content to be applied (remember there is a complete guide on how to do it by Anders, 2017) or to design the type of activities to hold an entire session with this platform. Nevertheless, the results can be meaningful for the students with the appropriate equipment and strategies, such as active monitoring and assistance to weak or struggling learners.

4.4.6 Voki

The intention of using Voki in this techno-pedagogical design was to boost students' writing, listening, and pronunciation skills. Nguyen & Nguyen (2021) found this platform helpful to increase the grammar production of learners. Indeed, they concluded that the more in contact the learners were with the app, the better they performed in terms of grammar structures and tense usage.

The approach for the techno-pedagogical activity was to increase learners' awareness of pronunciation regarding the regular past tense verbs. At this point, Yeşilbağ & Korkmaz (2021) also highlighted that students' pronunciation improved when using Voki because it promotes a positive and effective learning environment.

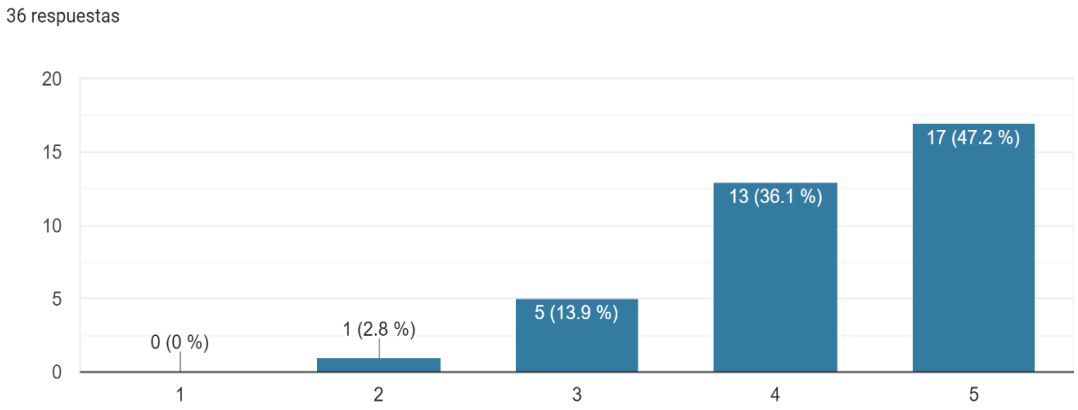
Voki was implemented in the computer labs as with the previous digital resource. The participants visibly enjoyed interacting with Voki, and the environment in the class became fun. The learners were utterly immersed in the platform. The students were surfing the possibilities to

edit their talking avatars and were trying different styles to create them. Not only could the looks be modified, but the voices, too, including a range of accents from British, American, and Australian, to mention a few. In addition, the students laughed when they discovered the voice filters that changed their speeches into alien or robotic tones.

The results of the survey demonstrated that the majority of the students praised this characteristic of Voki.

Graphic 14

Personalization on Voki to encourage participation.

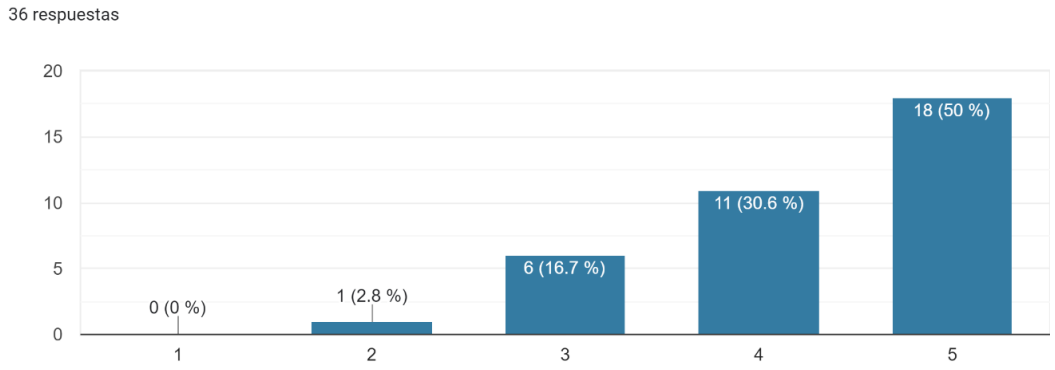


Source. Own elaboration.

As the strategy adopted for the activity involved the reminiscence of past events, students were asked to write about two things: 1) what they had learned until then in the course and 2) about a great memory / a scary / or embarrassing situation they had lived. With these prompts, learners reviewed vocabulary for verbs in the past, and they were asked to listen to their avatars' pronunciation and mimic it, paying attention to the three possibilities for regular verbs in the past. Hence, the results showed that most participants (83.3%) perceived this task as beneficial for their pronunciation.

Graphic 15

Voki's effect on regular past tense verbs pronunciation.

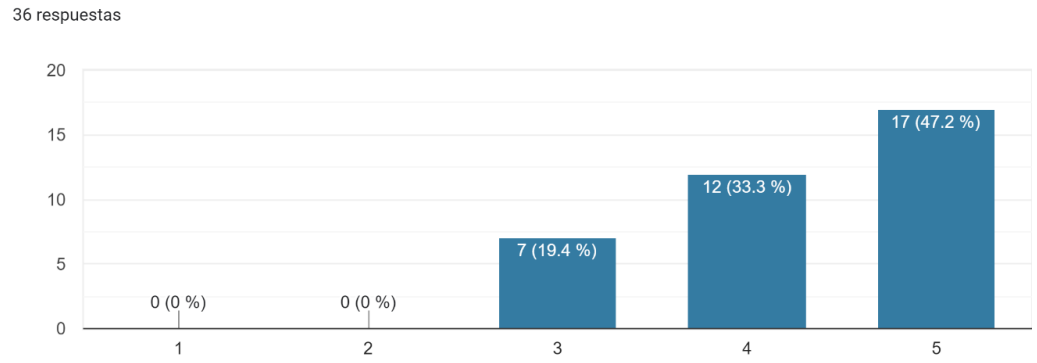


Source. Own elaboration.

By fostering multiple writing, listening, and speaking skills, Voki served as an integral resource whose main benefit is that students find it encouraging from the moment they start interacting with it. A similar result to the previous one was obtained when inquiring about integrating these skills to improve pronunciation.

Graphic 16

The integration of skills (writing and listening) to improve pronunciation using Voki.



Source. Own elaboration.

In this case, 80.5% agree that writing and listening skills worked previously in the app helped them improve their pronunciation. Other advantages of the app are its interface, registration process, and storage. Indeed, students logged in using an email address to create their Voki account, and then they could save up to three different avatars for free. Thus, using a reliable and fast internet connection and ad hoc equipment also facilitated the implementation of the activity. However, a mobile version of Voki may also be helpful in a different context and with room for further research.

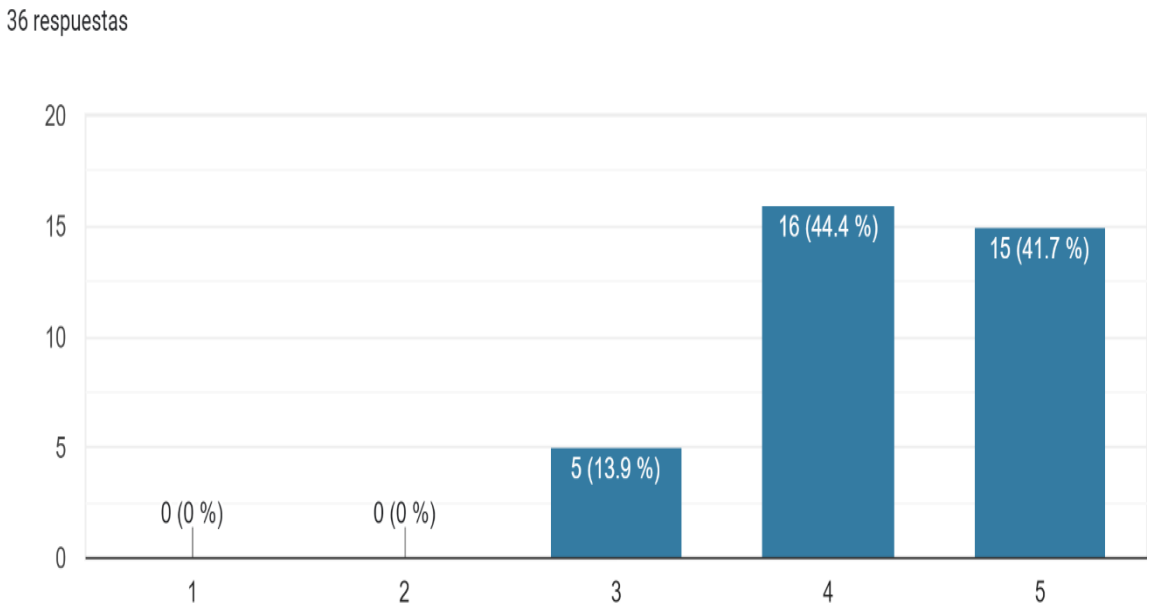
4.4.7 Seesaw

This activity was conceived to be done as an assignment. Other digital resources were available for the participants to be consulted outside the class time as the links were placed in Padlet, which served as a repository. However, this activity was thought to be done asynchronously, creating a space where students could practice their grammar skills and speaking outside the classroom. Moreover, feedback was provided asynchronously, so the platform notified both the teacher when the students uploaded their tasks and the students when they had received feedback.

Yi & Yunus (2020) highlighted that this platform was convenient for providing the students with feedback, which was one of the reasons behind choosing it to assess the students. The activity consisted of reading a text and finding corrections related to past tense; once the students had applied them, they needed to record themselves reading the text appropriately. The two parts of the task received feedback separately. The first part of the task was intended to reinforce the students' grammar skills. The results were positive regarding the students' perceptions, as seen in the following graphic.

Graphic 17

Regular and irregular past tense verbs and their identification through an error-correction activity in Seesaw.



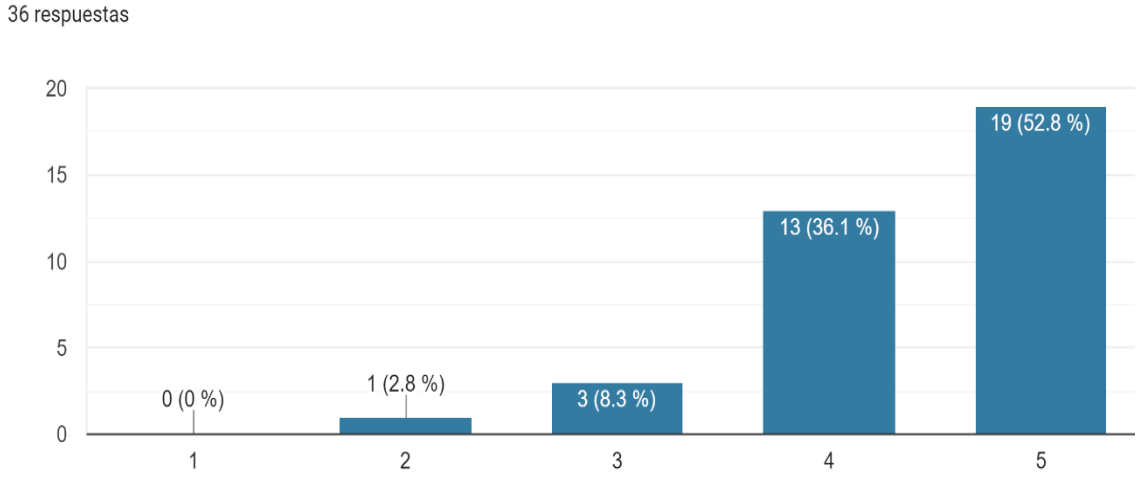
Source. Own elaboration.

The second part of the task focused on pronunciation skills. This feature relates the use of this task with the one of Voki. Both activities complemented each other as they developed the learners' speaking skills concerning accuracy in pronouncing verbs in the past tense.

The use of Seesaw in this techno-pedagogical design was perceived positively by the students (86.1% agreement), especially concerning the possibility the participants had of recording their voices (88.9%) and receiving feedback about their performance (83.3%).

Graphic 18

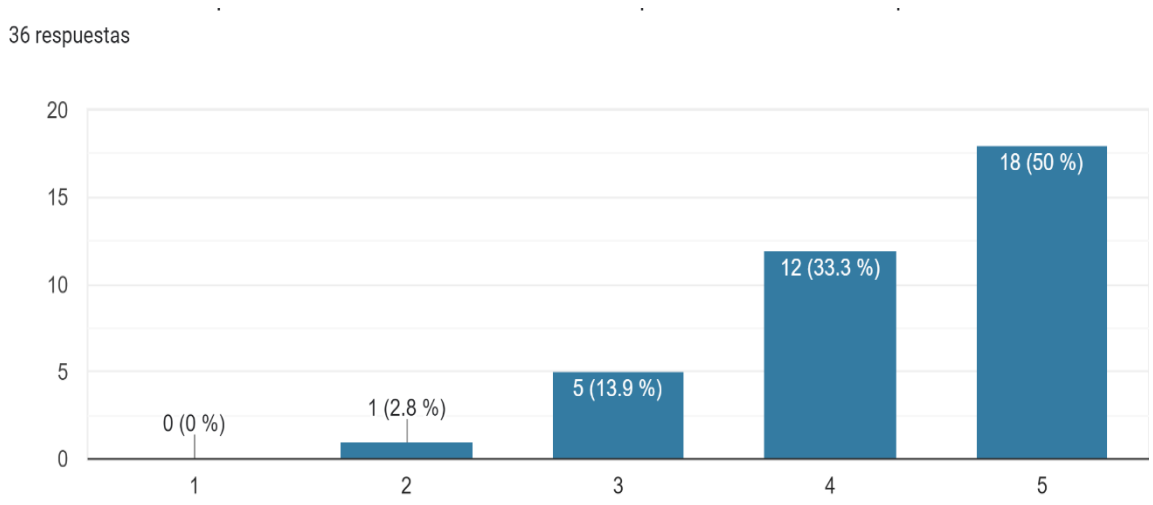
Recording the voice on Seesaw as a pronunciation reinforcement.



Source. Own elaboration.

Graphic 19

Feedback in Seesaw to develop the participants' pronunciation skills.



Source. Own elaboration.

Overall, a negative aspect of the platform is its usability because it seems more appealing for young learners as it allows drawing and coloring to complete tasks. Its library of activities also has material for K-12 lessons. At this point, Chaljub (2019) mentioned that despite many teachers having access to this platform, not all used it or did not know how to exploit it. Nonetheless, this research showed it has the potential to suit the EFL students' needs.

4.4.8 Coggle

The last resource implemented in this techno-pedagogical design complements a particular task of CELEX courses: the reading project. To promote extensive reading, CELEX students are assigned a magazine-like text that increases the amount of written content and the complexity of the vocabulary the more advanced the levels are. National Geographic Learning provides this material, and although reading it is mandatory for CELEX classes, this is assigned as homework, and there is no feedback about it.

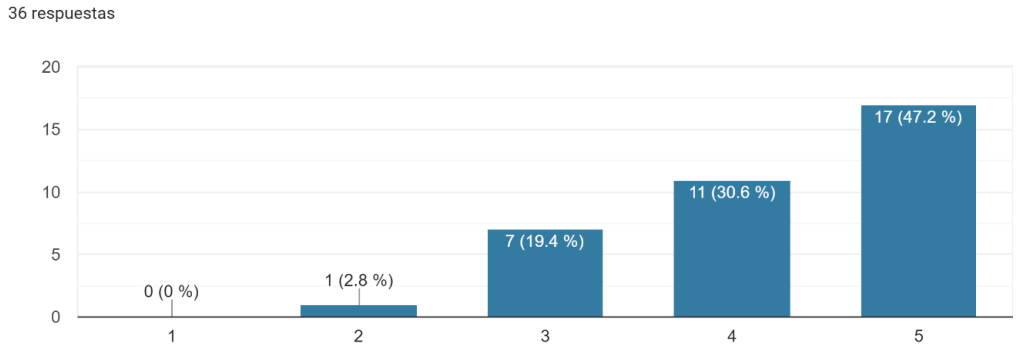
There is a lack of strategies to assess and foster reading skills regarding the guidelines for using it in CELEX. What is typically done is that students are assigned to read it, and there is no assessment from the teachers. However, on the final term exam, they are asked about the content of this reading project.

The intention of using this platform was to provide the participants with in-classroom time to perform the reading project task. This activity took place in the computer labs. Coggle represents ideas through visual aids with the creation of a mind map.

Wang et al. (2018) pointed out that through this kind of conceptualization, students develop their higher-order thinking skills and improve problem-solving performance and subject-matter knowledge. The results, in terms of the participants' perceptions, were, for the most part, optimistic. Students (77.8%) agreed that Coggle helped them with learning representation.

Graphic 20

Learning representation through Coggle.

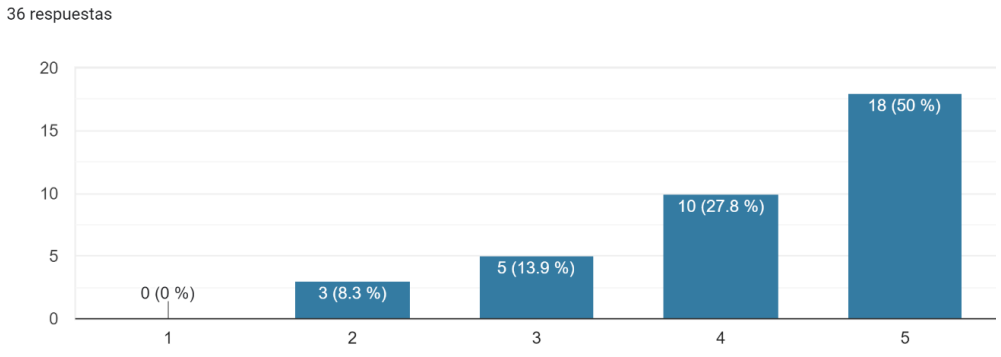


Source. Own elaboration.

Regarding the students' reading and writing skills, as they fostered them while performing the requested task for this activity of the techno-pedagogical design, the students confirmed that with Coggle, they could easily extract the main ideas of the text, at least concerning mainly positive perspective about it.

Graphic 21

Using Coggle to extract the main ideas of a written text.

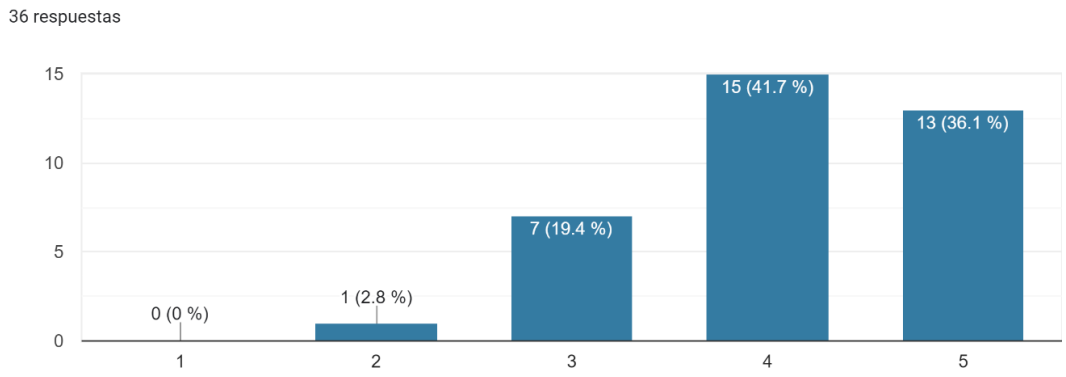


Source. Own elaboration.

The results were still positive because 77.8% confirmed that the purpose of Coggle in this techno-pedagogical design was met.

Graphic 22

Using Coggle to promote writing skills.



Source. Own elaboration.

4.5 Post-Treatment Phase

4.5.1 Post-test Results

Those were the results of implementing the techno-pedagogical design for four weeks in the CELEX course. Concerning the participants' proficiency level, the post-test showed a significant number of students reaching an A2 level in the Experimental Group. In contrast, the Control Group kept the same numbers for both A1 and A2 level students.

For the Control Group, it is relevant to highlight that despite the numbers of students remaining at the same values, some students lowered their level while others increased it; thus, the results were practically the same, statistically speaking. For the Experimental Group, the participants with an A2 level kept it, and 20 students increased their proficiency level. Therefore, this is the first evidence suggesting a crucial difference between the use of digital resources and gamification in contrast with ordinary lessons. In the ensuing chart is the gathered data:

Chart 3

Post-test results.

No. of students	Control Group		Experimental Group	
CEFR Level	Pre-treatment phase	Post-treatment phase	Pre-treatment phase	Post-treatment phase
A1	38	38	34	14
A2	11	11	2	22
Sample size	49		36	

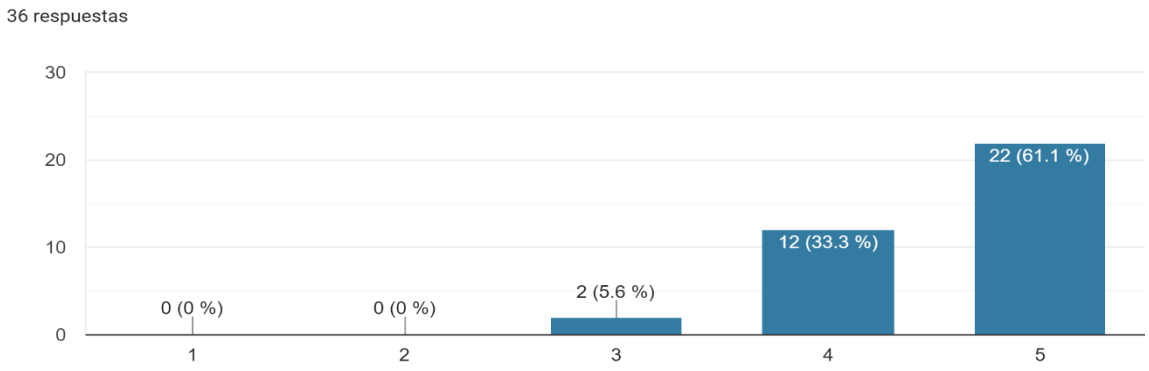
Source. Own elaboration.

4.5.2 Overall Perception Concerning the Impact of Gamification and its Implementation in the Techno-Pedagogical Design for the EFL Course

As shown in the previous treatment phase, the use of digital resources and their implementation strategies were perceived positively by the participants. The following lines provide more evidence about students' perceptions of the applications to gamify their lessons.

Graphic 23

The use of apps to make language learning more effective.

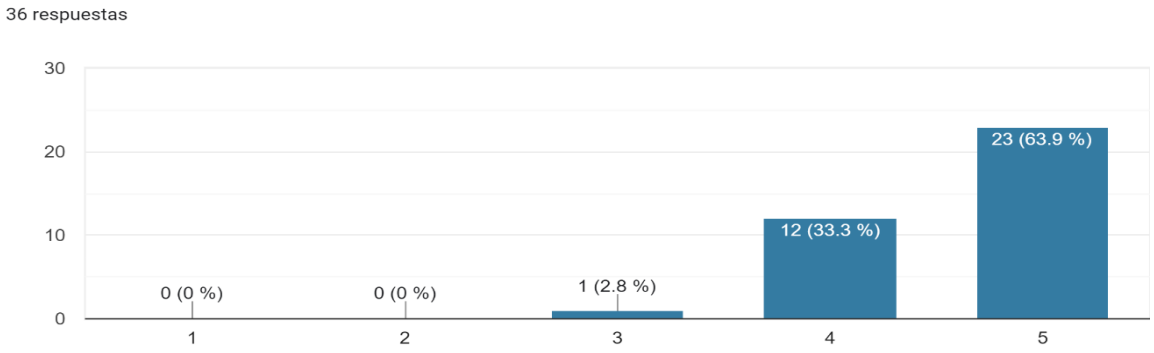


Source. Own elaboration.

This notion is aligned with the number of students that eventually reached an A2 proficiency level in the Experimental Group. Besides, these results match the conclusions of Acosta-Medina et al. (2021), which confirm that gamification promotes students' interests, facilitates the learning process, and contributes to reducing dropouts. The participants agreed they felt motivated due to the activities performed in implementing the techno-pedagogical design (97.2%). They also manifested that EFL learning is promoted through a gamification strategy, as seen in the following graphics.

Graphic 24

The use of apps helped in keeping the participants motivated.

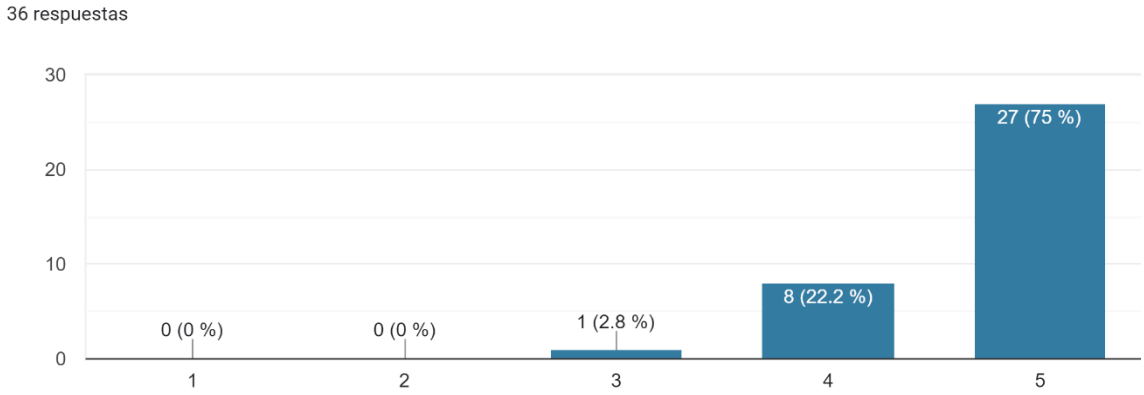


Source. Own elaboration.

Studies based on gamification (Lázaro, 2019; Flores-González and Flores-González, 2022) showed that ludic is an essential element for long-life learning rather than short-term memory because while playing in virtual environments, students work at their own pace and under their learning styles what make the process meaningful. In this case, 97.2% affirmed that the EFL is promoted in this space and with such apps because they can review and reinforce as much as possible to grasp the new information.

Graphic 25

EFL is promoted through the use of games in apps.

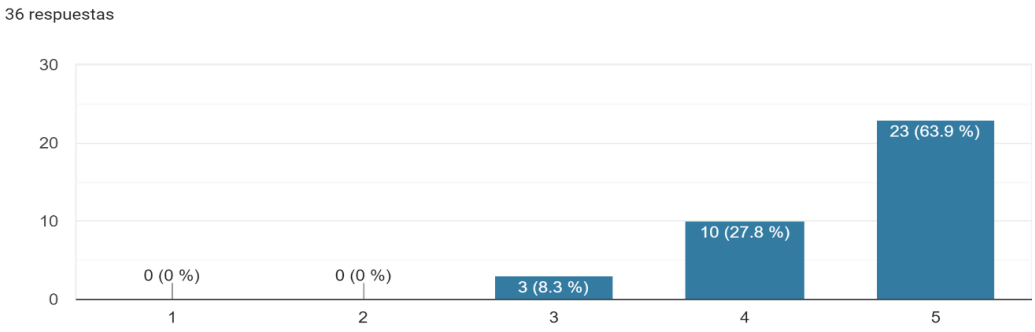


Source. Own elaboration.

Moreover, the participants' perceptions of improving their digital literacy skills were also predominantly seen as beneficial due to implementing this techno-pedagogical strategy in class, which confirms that it can be helpful to build up one of the most critical learners' 21st-century skills (Fandiño, 2013).

Graphic 26

Improving tech-skill through the implementation of the techno-pedagogical design.

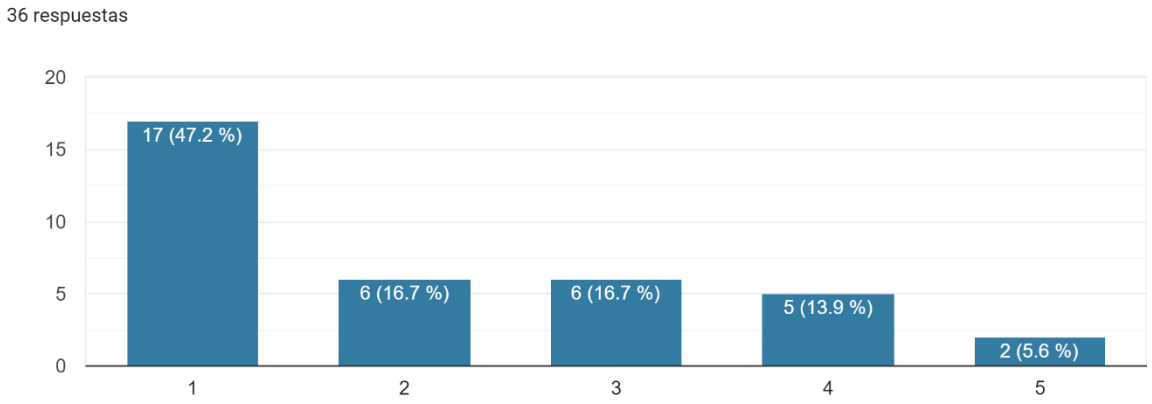


Source. Own elaboration.

When gathering information about students' perceptions in terms of the drawbacks of implementing the techno-pedagogical design, fortunately, the answers showed that despite the socioeconomic status determined such access, most of them did not struggle to use the apps and digital resources, as Gómez-Merino et al. (2017) suggested.

Graphic 27

Participants struggle to access digital resources and apps.



Source. Own elaboration.

Hence, these results are influenced because CELEX students are privileged in many senses; this can be inferred from the context where the research took place: it was done in an urban area, in the capital of the country, at the language center of a top-ranked public university. CDMX has remained in first place regarding households with access to basic services compared with the other states in Mexico (OECD, 2019). If this techno-pedagogical design had some constraints through its application in this particular context, replicating it in educational contexts that share similarities may be possible. It would have to be adapted for different contexts, maybe relying more on the school's available infrastructure than the resources students count on in their houses.

4.6 Conclusions

All in all, these were the general results in the pre-treatment stage, the treatment, and the post-treatment phase, which already points towards a positive outcome concerning the students' performance and perceptions using digital resources and gamification for their EFL classes.

The most remarkable result was a correlation between the statistical data that showed improvement in students' proficiency level and their perception of an increment in their communicative skills.

The next chapter presents the conclusions and the final reflections for further implementation or research. The learners used the different apps and sites to scaffold their EFL skills, and they perceived the implemented strategies as mainly beneficial for their learning processes. However, there is still an enormous gap for further research and implementation despite the limitations that public education in Mexico has. Last but not least, this kind of proposal, which focuses on OERs and gamification strategies, can make a difference in the learning processes of current students.

Chapter 5: Conclusion

5.1 Introduction

This thesis research highlighted the urgent need for updating materials and ways of providing input for EFL students of IPN's CELEX. In general, EFL education and Public Education in this country have faced substantial challenges that are not always fully overcome. The process of gathering data for the educational context where this research took place; the literature review that involved the main topics around the implementation of technology and innovative ways of teaching EFL; the reasons behind choosing a quantitative approach with suitable instruments to measure and impact on students' learning; the implementation of a techno-pedagogical design to foster different communicative skills for the learners; and the collection of the results where all critical stages to portrait a problem, reflect about it and draw a possible solution. The final results are convincing and point out positive outcomes if technology is correctly used in class to promote students' proficiency and motivation levels.

5.2 Summary of Key Findings

The research questions that encouraged this academic work can now be answered. The techno-pedagogical design with gamified digital resources positively influenced the students' language proficiency. Indeed, statistics demonstrated the strong correlation between the use of gamification in the techno-pedagogical design and the participants' proficiency level. Moreover, the implications of applying this techno-pedagogical design in a CELEX course indicate that this is a beneficial strategy to face not only the same level (Básico 2) but also to be taught in the other courses. Besides, their engagement (86.1%) because of their motivational levels was remarkable in this experiment.

If these findings are not new to gamification research, they are innovative in research done in Mexico and at BUAP. The pandemic boosted technology adoption, but now that the health emergency is over, teachers should not return to their previous teaching habits; at least, they can improve them with technology implementation. EFL teachers in Mexico mainly work with young audiences, digital natives, or the so-called screen generation, which Ezza (2012) has already identified as a target that will be looking for digital instruction or digitally competent teachers. It seems to be a natural consequence of adopting technology in modern societies. Besides, the research participants agreed that game elements could contribute to developing their memory skills and reducing their anxiety and boredom while learning.

All in all, if technology takes place in the classroom following specific standards that include content curation, pedagogical and content knowledge, flexible learning, Learning and Knowledge and Empowerment approaches, the outcomes result in better learning for the learners with meaningful content..

Moreover, Wordwall proved to be a practical digital resource to promote students' speaking skills, vocabulary learning, and review; Kahoot worked as a grammar and vocabulary review resource; Canva boosted not only learners' writing but also their speaking when presenting an app and site that is powerful for the learners' real-life communicative contexts; Padlet is a valuable repository that facilitates access to learning materials and assignments; Nearpod can work to teach complete lessons and to provide the students with different kinds of practice to foster their skills, including vocabulary learning, competencies, and interactive videos; Voki is a fun, digital resource that builds up learners' communicative skills in a very interactive way; Seesaw can be used to promote and assess students' speaking skills, without losing attention to grammar development; Coggle is a helpful tool that can help in developing

learners' reading and writing skills, including complex processes such as resuming or promoting critical thinking.

To sum up, plenty of digital resources can be fruitful for public educational contexts as they do not require payment to access their functions or to use them for teaching and learning purposes. It seems a duty to look for new ways of teaching and implement them in the classroom because both students and teachers can benefit in the medium and long term.

5.3 Contributions

It is worth mentioning that, although CELEX should count on its own adequate space to carry out classes in computer labs, they were not enabled by the time this experiment took place. A classroom was assigned in the school blueprints for this purpose, but the room is empty. There are electrical connections but no equipment at all. The coordinator of CELEX helped with the administrative procedures to access the school's computer labs and claimed that this experiment served as evidence to encourage the school administration to equip and effectively run CELEX's own computer labs entirely. This research has already made a social contribution as the language center where it took place is now administratively moving to provide the students with better infrastructure, as stated on the PGII.

The students of CELEX who took part in the experimental group are more competent in their EFL proficiency levels, as shown in Chapter 4. They also stated to have increased their digital literacy skills, which are a core element in the conception of students' 21st-century skills (Fandiño, 2013), due to implementing the techno-pedagogical design.

Finally, the Master's program at BUAP has not yet published a thesis focusing on Gamification strategies. Therefore, academically speaking, this study sets a precedent for further

research at BUAP and presents a techno-pedagogical model to apply gamification in the EFL language teaching field.

5.4 Further Research

Further implementation of this kind of techno-pedagogical design can be beneficial in other educational contexts. This research study could be replicated in other public universities in Mexico or other language centers with similar infrastructure or target populations.

Finally, a cardinal element to highlight is that by the end of the study, the students were asked if they would like to use some of the apps implemented in the techno-pedagogical design for other subjects that are not EFL. Surprisingly, they came up with multiple possibilities to enrich their university lessons, which are the background for future research.

The participants mentioned that the considered resources could be fundamental not only for language learning in general but for the school subjects to prepare presentations, to understand theory presentation better, and to learn by creating mind-maps, creating competencies, and encouraging participation and engagement. Based on these, possible future research is Implementing apps for communication competencies, Using digital resources to apply theory into practice, Using technology to teach research, or Incorporating interactive apps to learn meaningfully.

These suggestions showed that students perceived their learning as more meaningful in different senses. It would be incredible to exploit these resources in other educational contexts and find out which apps and sites suit other school subjects better.

Another possibility could be to focus on using different apps to promote one skill in particular. Furthermore, the techno-pedagogical design implemented during this research has a holistic approach to skills since its main intention was to develop learners' communicative skills

by fostering different aspects such as vocabulary, pronunciation, listening, speaking, reading, and writing. Some courses at other universities focus mainly on promoting reading skills, as the students must demonstrate a minimum reading comprehension level in a foreign language.

As noticed, there is still a lot of work to be done in this country because promoting effective education will be a never-ending task. As our habits and societies keep evolving, so should our teaching methods. This thesis research shows positive results and room for further research regarding using digital resources and gamification in education.

References

Acosta-Medina, J. K., Torres-Barreto, M. L., & Cárdenas-Parga, A. F. (2021). Students' preference for the use of gamification in virtual learning environments. *Australasian Journal of Educational Technology*, *37*(4), 145-158. https://doi.org/10.14742/ajet.6512

Aguilar-Peña, J., D., Rus-Casas, C., Eliche-Quesada, D., Muñoz-Rodríguez, F., J., & Dolores La Rubia, M. (2022). Content Curation in E-Learning: A case study with Spanish Engineering Students. *Applied Sciences*, *12*, Article 3188. https://doi.org/10.3390/app12063188

Aguilera, D., & Perales-Palacio, F., J. (2020). What Effects Do Didactic Interventions Have on Students' Attitudes Towards Science? A Meta-Analysis. *Research in Science Education*, *50*, 573-597. https://doi.org/10.1007/s11165-018-9702-2

Akpan, C., & Etor, C. (2013). University lecturers' perception of entrepreneurship education as an empowerment strategy for graduates' self-employment in South-South Nigeria. *International Journal of Asian Social Science*, *3*(5), 1180-1195.

Alastal, M., Aladini, A., Jalambo, M., Alattal, H. (2022). The Impact of Using the Padlet Application on Improving 7th Graders' English Speaking and Deductive Thinking Skills. *European Journal of English Language Teaching*, *7*(2), 153-169.

Alvarado-Martínez, E. (2020). La formación tecno-pedagógica de los profesores universitarios de lengua extranjera. *Revista Lengua y Cultura*, *1*(2), 58-63.

Amin, M., Sinha, B., & Dey, P., P. (2021). Online versus Onsite Teaching Performance Analysis of an Introductory Electrical Circuit Class. *Asian Journal of Education and e-Learning*, *9*(4), 72-83.

Anders, P. (2017). *Content Curation for Learning. The Complete Guide from Anders Pink*. Retrieved from: https://anderspink.com/documents/content-curation-book.pdf

Anggeraini, Y. (2018). Interactive Teaching: Activities and the Use of Technology in EFL classroom. *Language Circle: Journal of Language and Literature*, *13*(1). https://doi.org/10.15294/lc.v13i1.11131

Araya Ríos, J., & Espinoza Campos, J., L. (2015). The Role of Facebook in Foreign Language Learning. *Revista de Lenguas Modernas*, *23*, 253-262.

Arcentales-Fajardo, M., C., García-Herrera, D., G., Cárdenas-Cordero N., M., & Erazo-Álvarez, J., C. (2020). Canva como estrategia didáctica en la enseñanza de Lengua y Literatura. *Revista Interdisciplinaria de Humanidades, Educación, Ciencia y Tecnología*, *6*(3), 115-138.

Arias Rodríguez, G., L. (2020). Some Teachers and Stundents' Perceptions about Pedagogical Strategies in the English Classes. *Lingüística y Literatura*, *78*, 139-162.

Arulchelvan, P., Veramuthu, P., Singh, P., K., P., & Yunus, M., M. (2019). iGen Digital Learners: Let's Collaborate via Coggle. *Creative Education*, *10*, 178-189.

Asih, H., K., Degeng, P., D., D., & Hamamah, H. (2022) Exploring EFL Students' Perspectives Towards Google Docs in Writing. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, *10*(1), 984-100.

Balan, J. (2011): English Global Dominance and the Other Languages of Higher Education & Research. Published Article in Columbia Global Centre. Columbia University. 2014.

Barham, K., A. (2017, March 29-30). *The Use of Electronic Dictionary in the Language Classroom: The Views of Language Learners*. [Paper presentation]. The Second

International Conference for Learning and Teaching in the Digital World \ Smart Learning, Nablus, Palestine.

Basurto-Santos, N. M., & Gregory Weathers, J. R. (2016). EFL in Public Schools in Mexico: Dancing Around the Ring? *How*, *23*(1), 68-84. http://dx.doi.org/10.19183/how.23.1.297

Battel Lowman, E. (2021). Roundtable. Teaching in the Age of COVID-19. *Journal of American Studies*, *55*(1), 212-241.

Becerra, N., Biasini, R., Magedera-Hofhansl, H., & Reimão, A. (2019). New Trends in Language Teaching and Learning at University: An Introduction. In N. Becerra, R. Biasini, H. Magedera-Hofhansl & A. Reimão (Eds.), *Innovative Language Teaching and Learning at University: A Look at New Trends* (pp. 1-5). Research-Publishing.net. https://doi.org/10.14705/rpnet.2019.32.896

Belda-Medina, J. (2021). Promoting inclusiveness, creativity and critical thinking through digital storytelling among EFL teacher candidates. *International Journal of Inclusive Education, 26*(2), 109-123, DOI: 10.1080/13603116.2021.2011440

Bellés-Calvera, L., & Bellés-Fortuño, B. (2018). Teaching English pronunciation with OERs: The case of Voki. *Sintagma*, *30*, 57-80.

Benítez-Saza, C., R., Bustos, E., & Arévalo, E. (2018). The Society of Information and Communication in Education: Speeches Configuring the Teacher for Virtual Education: Subjective and Subjectivity. *Revista Científica*, *2*(32), 183-192.

Bilki, Z., Satar, M., & Sak, M. (2023). Critical digital literacy in virtual exchange for ELT teacher education: An interpretivist methodology. *ReCALL*, *35*(1), 58-73. https://doi.org/10.1017/S095834402200009X

Briceño, C., E. (2022). La gamificación educativa como estrategia para la enseñanza de lenguas extranjeras. *Revista de Investigación en Ciencias Sociales y Humanidades*, *9*(11), 11-22.

Campoy Cubillo, M., C., & Ruiz Garrido M., F. (2010). Special Issue: Multimodality in ELT. *Language Value*, *2*(1), i-iv.

Cansigno-Gutiérrez, Y. (2020). El rol del docente actual frente a la masiva utilización de las TIC. *Revista Lengua y Cultura*, *1*(2), 53-57.

Cañete, M. (2015). El rol del docente frente a las TIC. *Escritos en la Facultad*, *109*, 37-38.

Cardoso Campos, A., Carvalho de Rezende, D., Silveira Bacelar, A., & Cappelle, M., C., A. (2021). IPhone consumption and class identity: a study with low-income individuals. *Marketing and Tourism Review*, *6*(2), Article 8. https://doi.org/10.29149/mtr.v6i2.6558

Carstens, K., J., Mallon, J., M., Bataineh, M., & Al-Bataineh, A. (2021). Effects of Technology on Student Learning. *TOJET: The Turkish Online Journal of Educational Technology*, *20*(1), 105-113.

Cassidy, A., Fu, G., Valley, W., Lomas, C., Jovel, E., & Riseman, A. (2016). Flexible Learning Strategies in First through Fourth-year Courses. *Collected Essays on Learning and Teaching*, *9*, 83-93.

Castro-Zamudio, S., Viguera, E., Cortés-Ramos, A., Castilla-Mesa, M., T., Valbuena-Díaz, D., & Moreno-Madrid, I. (2022). Satisfaction, Assessment and Adaptation to a Virtual Environment of the University Mentoring Programme GuíaMe-AC-UMA for Gifted High School Students. *Sustainability*, *14*(9), Article 5465. https://doi.org/10.3390/su14095465

Céspedes, E., A. (2023). *La Gamificación Como Herramienta de Motivación Aplicada al Aprendizaje del Idioma Inglés, Una Mirada Desde Plataformas Digitales* [Doctoral Dissertation, Humboldt International University]. Retrived from:

https://www.researchgate.net/publication/367045604_Tesis_Doctoral_La_Gamificacion_Aplicada_al_Aprendizaje_del_Idioma_Ingles_una_mirada_desde_plataformas_digitales

Chaljub, J. (2019). La plataforma digital Seesaw: su integración en una clase dinámica. *Pixel-Bit: Revista de Medios y Educación¸ 54*, 107-123.https://doi.org/10.12795/pixelbit.2019.i54.06

Christensen, D., H. (2012). *Increasing Student Voice and Empowerment through Technology: The Perceptions of Communication Apprehensive Latter-Day Saint (Lds) Seminary Students* [Doctoral Dissertation, Utah State University]. Retrieved from: https://doi.org/10.26076/933b-5349

College of DuPage. (2020). *An Introduction to Hybrid Teaching: Learning Technologies*. Retrieved from: https://www.codlearningtech.org/PDF/hybridteachingworkbook.pdf

Council of Europe. (2020). *Common European Framework of Reference for Languages: Learning, teaching, assessment – Companion volume*. Council of Europe Publishing.

Creighton, T., B. (2018). Digital Natives, Digital Immigrants, Digital Learners: An International Empirical Integrative Review of the Literature. *ICPEL: Education Leadership Review*, *19*(1), 132-140.

Creswell, J., W., & Creswell, J., D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications.

Davies, P. (2020). What do we know, not know, and need to know about ELT in Mexico*?* *Revista Lengua y Cultura*, *1*(2), 7-12.

Day, J. & Verbiest, C. (2021). Lights, Camera, Action? A Reflection of Utilizing Web Cameras during Synchronous Learning in Teacher Education. *Teacher Educators' Journal*, *14*, 3-21.

Debbag, M., Cukurbasi, B., & Fidan, M. (2020). Use of Digital Mind Maps in Technology Education: A Pilot Study with Pre-Service Science Teachers. *Informatics in Education*, *20*(1), 47–68.

Díaz Larenas, C., Díaz Vargas, C., & Sanhueza Campos, C. (2019). Introduction. In C. Díaz Larenas, C. Díaz Vargas, & C. Sanhueza Campos (Eds.), *Innovations in EFL Teaching, Learning, and Assessment: on the Threshold of the University of Concepción's Centennial*. (pp. 11-14). Editorial Universidad de Concepción.

Díaz-Guecha, L., Y., & Márquez-Delgado, R., A. (2020). Tecnologías del Aprendizaje y el Conocimiento como estrategias en la formación de los docentes de la Escuela Normal Superior de Cúcuta, Colombia. *Ánfora*, *27*(48), 17-30.

Dicke, T., Elling, J., Schmeck, A., & Leutner, D. (2015). Reducing Reality Shock: The Effects of Classroom Management Skills Training on Beginning Teachers. *Teaching and Teacher Education*, *48*(3), 1-12.

Dincer, A., & Yeşilyurt, S. (2020). The Future of World Englishes. In S. Çelik & E. Solak (Eds.), *World Englishes and Culture in English as a Foreign Language Education* (245-261). Vizetek.

Dong, C., & Mertala, P. (2019). It is a tool, but not a 'must': early childhood preservice teachers' perceptions of ICT and its affordances. *Early Years: An International Research Journal*, *41*(5), 540-555.

Ehlers, U.-D. (2011). Extending the Territory: From Open Educational Resources to Open Educational Practices. *Journal of Open, Flexible and Distance Learning*, *15*(2), 1-10. Retrieved from: https://www.jofdl.nz/index.php/JOFDL/article/view/64

Ekinci, M. (2020). Kahoot For Good: Firing Competitive Learning for EFL Learners. *International Journal of Language's Education and Teaching*, *8*(4), 305-318.

Ezza, S. Y. (2012, November). *EFL Teacher's Role in ICT - Oriented Classroom: The Case of Majma'ah University* [Paper presentation]. IMAM University Symposium on English Language Teaching in KSA: Realities and Challenges, Riyadh, Saudi Arabia. Retrieved from: https://www.researchgate.net/publication/312800729_EFL_Teacher's_Role_in_ICT-oriented_Classroom_The_Case_of_Majma'ah_University/citations

Fandiño, Y. J. (2013). 21st Century Skills and the English Foreign Language Classroom: A Call for More Awareness in Colombia. *Gist Education and Learning Research Journal*, *7*, 190-208.

Fauziyah, N., L., Widodo, J., P., & Yappi, S., N. (2022). The Use of 'Canva for Education' and the Students' Perceptions of Its Effectiveness in the Writing Procedure Text. *Budapest International Research and Critics Institute-Journal*, *5*(1), 6368-6377.

Fernández, F. (2022). Nearpod: mucho más que una presentación interactiva. *INTEF: Observatorio de Tecnología Educativa*, *80*.

Fiallos, A., Fiallos, C., & Figueroa, S. (2022, July 28-30). *TikTok and Education: Discovering Knowledge through Learning Videos* [Paper Presentation]. 2021 Eight International Conference on eDemocracy & eGovernment (ICEDEG), Quito, Ecuador.

Fitri, A., & Rifa'at, A., A. (2022). The Use of ICT in ELT: How Teacher Should Be Empowered. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, *9*(2), 798-813.

Fitria, T., N. (2022). Using Canva as Media for English Language Teaching (ELT): Developing Creativity for Informatics Students'. *ELT Echo: The Journal of English Language Teaching in Foreign Language Context*, *7*(1), 58-68.

Flores-González, E. & Flores-González, N. (2022). Gamification as a strategy for learning concepts meaningfully. *Journal of Critical Pedagogy*, *6*(15), 31-39.

Flores-González, E., & Flores-González, N. (2020). Learning strategies mediated by technology: students' perception. *Journal of Teaching and Educational Research*, *6*(18), 18-28.

Flores-González, N. (2020). LKTs as a means of learning English for specific purposes in a virtual modality. *Journal of Information Technologies and Communications*, *4*(13), 23-32.

Flores-González, N., Flores-González, E., Castelán-Flores, V., & Zamora-Hernández, M. (2022). A didactic tool for updating the teaching-learning process of English as a foreign language. *Journal of Information Technologies and Communications*, *6*(16), 20-28.

Francis, J. (2017). *The Effects of Technology on Student Motivation and Engagement in Classroom-Based Learning* [Doctoral Dissertation, University of New England]. Retrieved from: https://dune.une.edu/cgi/viewcontent.cgi?article=1120&context=theses

Frímannsdóttir, I., B. (2015). Are the concepts "onsite study" and "distance study" outdated? *Education Reform Journal*, *1*(1), 1-18.

Gallegos de Dios, O., A. (2021). El futuro de la educación presencial en escuelas secundarias en México. *Sincronía*, *79*, 569-578.

Gil Rendon, L., A., Briseño Rangel, D., Ordoñez Zúñiga, H., R., Altamirano Benito, A., Ramírez Andrés, S. A., García Moscosa, E, Delgadillo Aguilar, M., G., Zúñiga Suárez, A., Cabrera Solís M., Muñoz Peregrina, E., A., Márquez Gutiérrez, M., Y., Díaz Almaraz, J.,

O., Cazorla Brun, I., V., Pérez Eguiza, E., J., Ordóñez López, C., P., Rodíguez Guerrero I., Salazar Mendiola, R., Vidal Sayón, F., Salvador Moreno, A., Godínez Godínez, A., et al. (2019). *Programa General Institucional de Inglés: Fundamentos*. Secretaría Académica. Dirección de Formación en Lenguas Extranjeras.

Gómez-Merino, F., C., Trejo-Téllez, L., I., Méndez-Cadena, M., E., & Hernández-Cázares, A., S. (2017). Education, Science and Technology in Mexico: Challenges for Innovation. *International Education Studies*, *10*(5), 115-128.

Haddon, L., & Silverstone, R. (2000). Information and Communication Technologies and Everyday Life: Individual and Social Dimensions. In K. Ducatel, J. Webster & W. Herrmann (Eds.) *The Information Society in Europe: Work and Life in an Age of Globalization* (pp. 233-257). Rowman and Littlefield Inc.

Hakami, M. (2020). Using Nearpod as a Tool to Promote Active Learning in Higher Education in a BYOD Learning Environment. *Journal of Education and Learning*, *9*(1), 119-126.

Halim, N., A & Shapii, A. (2023). Padlet as a Tool in Learning L2 Grammar. *Language, Education and Culture Research*, *3*(1), 40-50.

Han, T., & Aybirdi, N. (2016). 21st Century Skills for EFL Learners. In I. Yaman, E. Ekmekçi & M. Şenel (Eds.), *Current ELT Trends* (pp. 42-57). Nüans Publishing.

Herrero, C. (2019). Escritura digital: estrategias de enseñanza-aprendizaje en entornos digitales. En Ministerio de Educación y Formación Profesional, Lectoescritura digital, pp. 123-132.

Hidayaty, A., Qurbaniah, M., & Setiadi, A., E. (2022). The Influence of Word Wall on Students' Interest and Learning Outcomes. *Jurnal Penelitian Ilmu Pendidikan*, *15*(2), 211-223.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The Difference Between Emergency Remote Teaching and Online Learning. *Educase Review*. Retrieved from: https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Hoskins, B., & Fredriksson, U. (2008). *Learning to Learn: What is it and can it be measured?*. JRC Publications. Retrieved from: https://publications.jrc.ec.europa.eu/repository/handle/JRC46532

Huges, J., Dumet, P., & Stephenson, H. (2020). *Life* (2nd ed). National Geographic Learning. Cengage Learning.

Hung, J., H., R., & Ding, A. (2020). English Language Learning: Empowering ELLs through technology integration. In A. Ottenbreit-Leftwich & R. Kimmons (Eds.), *The K-12 Educational Technology Handbook* (pp.111-121). EdTech Books. Retrieved from: https://edtechbooks.org/k12handbook

Hurley, T., A., & Hallmark, J., R. (2020). Inclusive Access and Open Educational Resource Programs: A System Perspective. In T. A. Hurtley (Ed.), *Inclusive Access and Open Educational Resources E-text Programs in Higher Education* (pp. 3-14). Springer.

Ilahi, L., W., Komara, C., & Ismail, Y. (2022, December 22-23). *EFL Students' Perception of Wordwall.Net Used as Media for Learning English Grammar* [Paper presentation]. UHAMKA International Conference on ELT and CALL(UICELL), Jakarta, Indonesia. Retrieved from: https://journal.uhamka.ac.id/index.php/uicell/article/view/11032/3509

INEGI, (2021). Encuesta para la Medición del Impacto de COVID-19 en la Educación (ECOVID-ED). Presentación de resultados. (2da edición).

Instituto Politécnico Nacional. (2019). *Evaluación curricular del Programa General de Inglés Institucional del Instituto Politécnico Nacional* [Research Report]. Dirección de Formación en Lenguas Extranjeras. Retrieved from: https://www.ipn.mx/assets/files/dfle/docs/Evaluacion_curricular.pdf

Jagoda, P. (2020). *Experimental Games: Critique, Play, and Design in the Age of Gamification*. The University of Chicago Press.

Justo Garza, S. (2021). El regreso: una experiencia colectiva para crear nuevas maneras de hacer escuela. *Educación en movimiento*, *1*, 3-6.

Kiddle, T., Farrell, C., Glew-O'Leary, J., & Mavridi, S. (2020). *A survey of instances of, and attitudes to, Hybrid Learning in Language Teaching Organisations around the world as a response to the Covid-19 pandemic* [Research Report]. Retrieved from: https://www.eaquals.org/wp-content/uploads/2020-Vision_-Hybrid-Learning-survey-final_111220.pdf

Kirti, D., Dipak, D., & Abhishek, D. (2015). A scale on Digital Empowerment of Digital Natives. *International Journal of Extensive Education,* (11), 34-39.

Kopershoek, H., Harms, T., De Boer, H., Van Kuijk, M., & Doolaard, S. (2016). A Meta-Analysis of the Effects of Classroom Management Strategies and Classroom Management Programs on Students'Academic, Behavioral, Emotional, and Motivational Outcomes. *Review of Educational Research*, *86*(3), 643-680.

Laal,M. & Laal, M. (2012). Collaborative Learning: what is it?. *Procedia: Social and Behavioral Sciences*, *31*, 491-495.

Lagat, K. T., & Concepcion, G. L. (2022). Students' Social Interaction, Collaborative Learning, and Perceived Learning in an Online Learning Environment. *International Journal of Social Science Research and Review*, *5*(1), 24-33.

Laplagne Sarmiento, M., C. (2020, November*). Emerging Trends in Education and LKT facing society and practice subjects' changes* [Conference Paper]. Emerging Trends in Education and LKT facing society and practice subjects' changes, Spain. Retrieved from: https://www.researchgate.net/profile/Cris-Laplagne/publication/346423238_Emerging_Trends_in_Education_and_LKT_facing_society_and_practice_subjects'_changes/links/5fc0fb68a6fdcc6cc6731b7e/Emerging-Trends-in-Education-and-LKT-facing-society-and-practice-subjects-changes

Lázaro, I. G. (2019). Escape Room como propuesta de gamificación en educación. Revista Educativa Hekademos, 27, 71-79.

Lee, J., J., & Hammer, J. (2011). Gamification in Education: What, How, Why Bother*?*. *Academic Exchange Quarterly*, 15(2).

Lestari, P., & Sihombing, L., H. (2022). Exploring a Digital Tool "Nearpod" to Improve Students' Skill in Writing. *Jurnal Edupedia*, *6*(2), 73-79.

Licorish, S., A., Owen, H., E., Daniel B., & George, J., L. (2018). Students' perception of Kahoot!'s influence on teaching and learning. *Research and Practice in Technology Enhanced Learning*, *13*(9). https://doi.org/10.1186/s41039-018-0078-8

Lim, F., V., & Tan-Chia, L. (2022*). Designing Learning for Multimodal Literacy: Teaching Viewing and Representing*. Routledge.

Lin, D., Crabtree, J., Dilo, I., Downs, R., R., Edmunds, R., Giaretta, D., De Giusti, M., L'Hours, H., Hugo, W., Jenkyns, R., Khodiyar V., Martone M., E., Mokrane, M., Navale, V.,

Petters, J., Sierman, B., Sokolova, D., V., Stockhouse, M., & Westbrook, J. (2020). The TRUST Principles for digital repositories. *Scientific Data*, *7*(144). https://doi.org/10.1038/s41597-020-0486-7

Llerena Medina, E., G., & Rodríguez Hurtado, C., P. (2017). Kahoot! A Digital Tool for Learning Vocabulary in a Language Classroom. *Revista Publicando*, *12*(1), 441-449.

López Martínez, E., García Mejía, I., A., & Gómez Zermeño, M., G. (2016). The Integration of Open Education Resources to the Mathematics Curriculum: Experiences of Students and Teachers of Secondary Education in Mexico. *Pedagogika*, *122*(2), 94-109.

Lozano, R. (2011). De las TIC a las TAC: tecnologías del aprendizaje y del conocimiento. *Anuario ThinkEPI*, *5*, 45-47.

Lunenberg, M., Dengerink, J., & Korthagen, F. (2014). *The Professional Teacher Educator: Roles, Behaviour, and Professional Development of Teacher Educators*. Sense Publishers.

Maharani, N., S. (2022). The Utilization of Google Classroom in Learning English. *Dialectical Literature and Educational Journal* (*DLEJ*), *7*(1), 1-10.

Malik, V., & Hooda, M. (2022). ICT In Teacher Education: An Exemplar Shift in Teacher's Role. In N. Rathee & Hooda, M. (Eds.), *Paradigm Shift and Evolving Teacher Education* (pp.36-46). Eureka Publications.

Masuhara, H. (2019). Paradox 2018: diversification of learners, contexts, and modes of delivery necessitates application of universal learning principles. In N. Becerra, R. Biasini, H. Magedera-Hofhansl & A. Reimão (Eds.), *Innovative language teaching and learning at university: a look at new trends* (pp. 9-17). Research-publishing.net. https://doi.org/10.14705/rpnet.2019.32.897

Mazelin, N., Maniam, M., Jeyaraja, S., S., B., Ng, M., M., Xiaoqui, Z., & Jingjing, Z. (2022). Using Wordwall to Improve Students' Engagement in ESL Classroom. *International Journal of Asian Social Science*, *12*(8), 273-280.

Mercado Varela, M., A., Fernández Morales, K., Lavigne G., & Ramírez Montoya, M., S. (2018). Enseñanza y difusión sobre el uso de recursos educativos abiertos con MOOC: un estudio de caso. *Revista de Investigación Educativa*, *26*, 3-19.

Mohr, K., A., J., & Mohr, E., S. (2017). Understanding Generation Z Students to Promote a Contemporary Learning Environment. *Journal on Empowering Teaching Excellence*, *1*(1), Article 9. https://doi.org/10.15142/T3M05T

Momani, A., M. (2020). The Unified Theory of Acceptance and Use of Technology: A New Approach in Technology Acceptance. *International Journal of Sociotechnology and Knowledge Development*, *12*(3), 79-98.

Momma, H. (2012). From Philology to English Studies. *Language and Culture in the Nineteenth Century*. Cambridge University Press.

Mortera, F., J. (2010). Implementación de Recursos Educativos Abiertos (REA) a través del portal TEMOA (Knowledge Hub) del Tecnológico de Monterrey, México. *Formación Universitaria*, *3*(5), 9-20.

Nguyen Thi Kieu, D., & Nguyen, V. L. (2021). Effects of Voki-supported self-practice on high school students' English speaking performance. *Can Tho University Journal of Science*, *13*(3), 39-47. https://doi.org/10.22144/ctu.jen.2021.039

Nur, M., R., O., & Riadil, I., G. (2019). Seesaw Media. Digital Natives' Preference in 4.0 Speaking Learning Class. In Universitas Muhammadiyah Semarang (ed.), *3rd English*

Language and Literature International Conference (pp. 202-208). https://jurnal.unimus.ac.id/index.php/ELLIC/article/view/4718

O'Byrne, W. I., & Pytash, K. E. (2015). Hybrid and Blended Learning. *Journal of Adolescent & Adult Literacy*, 59(2), 137–140.

OECD. (2019). An overview of the education system in Mexico. In OECD (Ed.), *Strong Foundations for Quality and Equity in Mexican Schools* (chapter 1). https://www.oecd-ilibrary.org/sites/c0daae73-en/index.html?itemId=/content/component/c0daae73-en

Ordoñez Palacios, L., G., & Medina Chicaiza, R., P. (2022). Wordwall: una experiencia de aprendizaje para el estudiante de Educación básica. *Revista de Investigación*, *108*(46), 227-246.

Orpinas, P. (2010). Social Competence. In I. B. Weigner & W. E. Craighead (Eds.), *The Corsini Encyclopedia of Psychology* (4th ed.) (pp. 1623-1625). Wiley. DOI: 10.1002/9780470479216

Papaleontiou-Louca, E. (2003). The Concept and Instruction of Metacognition. *Teacher Development*, *7*(1), 9-30.

Parra Cera, V., Simancas Gamarra, R., & Granados Ospina, A. (2019). Uso de REA como estrategia para aprender inglés desde los estilos de aprendizaje. *Ingeniería, Desarrollo e Innovación*, *2*(1), 84-102.

Patricio, R., Carrizo Moreira, A., & Zurlo, F. (2022). Gamification in Innovation Teams. *International Journal of Innovation Studies*, *6*, 156-168.

Perifanou, M., & Economides, A., A. (2022). Discoverability of OER: The Case of Language OER. In Ó. Mealha, M. Dascalu, & T. Di Mascio (Eds.), *Ludic, Co-design and Tools Supporting Smart Learning Ecosystems and Smart Education. Proceedings of the 6th*

International Conference on Smart Learning Ecosystems and Regional Development (pp. 55-66). Springer.

Perkins, D., D. (2010). Empowerment. In R. A. Couto (Ed.*), Political and Civil Leadership: A Reference Handbook* (pp. 207-2018). Thousand Oaks.

Perlaza Torres, L. D., Macías Molina, A., & Romero Martínez, G. (2021). Learning and Knowledge Technologies in the Content Language Integrated Learning for the Development of Intercultural Communicative Competence. *Revista Boletín Redipe*, *10*(11), 562-577.

Plailek, T., Essien, A. M., & Sawangdee, Y. (2022). Enhancement of Undergraduate Students' Competency in Creating English Learning Innovation through Hybrid Learning with Peer Coaching. *Journal of Educational Issues, 8*(1), 250. https://doi.org/10.5296/jei.v8i1.19600

Pratolo, B., W., & Solikhati, H., A. (2021). Investigating Teachers' Attitude Toward Digital Literacy in EFL classroom. *Journal of Education and Learning* (*EduLearn*), *15*(1), 97-103.

Priyatna, I., P., D., Suwastini, N., K., A., & Dantes, G., R. (2023). College Students' Perception of Using Canva in English Writing Class. *Indonesian Journal of Educational Research and Review*, *6*(1), 9-17. https://doi.org/10.23887/ijerr.v6i1.57231

Pujola, J., T. (2021). Gamification: motivating language learning with gameful elements. In T. Beaven & F. Rosell-Aguilar (Eds.), *Innovative Language Pedagogy Report* (pp. 109-114). Research-Publishing.net. https://files.eric.ed.gov/fulltext/ED612143.pdf

Puspita, N., & Hasyim, U., A., A. (2022). E-Portfolio for Online Assessment: Padlet Implementation. *Jurnal Al – Qiyam*, *3*(2), 109-115.

Quilter-Pinner, H. & Ambrose, A. (2020). The 'new normal': The future of education after Covid–19, IPPR. http://www.ippr.org/research/publications/the-new-normal

Ramírez-Romero, J. L., & Vargas-Gil, E. (2019). Mexico's Politics, Policies and Practices for Bilingual Education and English as a Foreign Language in Primary Public Schools. In B. G. G. Johannessen (Ed.), *Bilingualism and Bilingual Education: Politics, Policies and Practices in a Globalized Society* (pp. 9-37). Springer. https://doi.org/10.1007/978-3-030-05496-0_2

Rasinger, S., M. (2010). Quantitative Methods: Concepts, Frameworks, and Issues. In L. Litosseliti (Ed.), *Research Methods in Linguistics* (pp. 49-67). Continuum.

Ratheeswari, K. (2018). Information Communication Technology in Education. *Journal of Applied and Advanced Research*, *3* (suppl. 1). pp. S45-S47. https://dx.doi.org/10.21839/jaar.2018.v3S1.169

Recio Mayorga, J., Gutiérrez-Esteban, P., & Suárez-Guerrero, C. (2021). Recursos educativos abiertos en comunidades virtuales docentes. *Apertura*, *13*(1), 101-117.

Reimers, F. M. (2022). Learning from a Pandemic. The Impact of COVID-19 on Education Around the World. In F. M. Reimers (Ed.), *Primary and Secondary Education during COVID-19: Disruptions to Educational Opportunity During a Pandemic*. Springer.

Reyes-Cabrera, W. (2022). Gamificación y aprendizaje colaborativo en línea: un análisis de estrategias en una universidad mexicana. *Alteridad: Revista de Educación*, *17*(1), 24-35. https://doi.org/10.17163/alt.v17n1.2022.02

Riegel, C., & Mete, R. (2017). Educational Technologies for K-12 Learners: What Digital Natives and Digital Immigrants Can Teach One Another. *Educational Planning*, *24*, 49-58.

Rodríguez, B. (2022). Los Recursos Educativos Abiertos (REA) y el aprendizaje de la matemática. *TESLA: Revista Científica*, *2*(1), 140-158.

Rogers, J., & Révész, A. (2019). Experimental and Quasi-Experimental Designs. In J. McKinley, & H. Rose (Eds.), *The Routledge Handbook of Research Methods in Applied Linguistics* (pp. 133-143). Routledge.

Saavedra Jaramillo de Sedamano, M., J., Saavedra Jaramillo C., C., Medina Sotelo, C., Sedamano Ballesteros, M., A., & Saavedra Jaramillo, D., I. (2022). Aulas híbridas: la nueva normalidad de la educación superior a partir del Covid-19. *Revista de Investigación Apuntes Universitarios*, *12*(2), 162-178.

Sadry, Z. (2022). The Use of Padlet as an Educational Technology Tool in EFL Classrooms [Master's Thesis, Balkh University].

Sailer, M., & Homner, L. (2020). The Gamification of Learning: a Meta-analysis. *Educational Psychology Review*, *32*, 77–112.

Sakkir, G., Dollah, S., & Ahmad, J. (2021). Characteristics of a Good EFL Teacher: Indonesian EFL Students Perspectives. *Jurnal Nalar Pendidikan*, *9*(1), 52-59.

Sánchez, E., Young, S., & Jouneau-Sion, C. (2016). Classcraft: from Gamification to Ludicization of Classroom Management. *Education and Information Technologies*, *22*(2), 1725-1745.

Sarýçoban, A. (2013). Prospective and Regular ELT Teachers' Digital Empowerment and Self-Efficacy. *Porta Linguarum*, *20*, 77-87.

Scott, D., Posner, C. M., Martin, C., & Guzman, E. (2018). *The Education System in Mexico*. UCL Press. https://doi.org/10.14324/111.9781787350724

Shafique, S., Bhatti, A., Bhatti, N. (2022). ELT Teachers' Perceptions for Challenges and Advantages of Virtual Teaching: A comparison between the Outset of COVID-19 & Post-COVID 19. *Journal of Xi'an Shiyou University, Natural Sciences Edition, 65* (9), 55-70

Shaquour, A., Salha, S., & Khlaif, Z. (2021). Students' Characteristics Influence Readiness to Use Mobile Technology in Higher Education. *Education in the Knowledge Society*, *22*, Article e23915. https://doi.org/10.14201/eks.23915

Solano, L., Cabrera, P., Ulehlova, E., & Espinoza, V. (2017). Exploring the Use of Educational Technology in EFL Teaching: A Case Study of Primary Education in The South Region of Ecuador. *Teaching English with Technology*, *17*(2), 77-86.

Thurston, T. (2018). Design Case: Implementing Gamification with ARCS to Engage Digital Natives. *Journal on Empowering Teacher Excellence*, *2*(1), Article 5. https://doi.org/10.26077/vsk5-5613

Traboco, L., Pandian, H., Nikiphorou, E., & Gupta, L. (2022). Designing Infographics: Visual Representations for Enhancing Education, Communication, and Scientific Research. *Journal of Korean Medical Science*, *37*(27), Article e214. https://doi.org/10.3346/jkms.2022.37.e214

Tsybulsky, D. (2020). Digital curation for promoting personalized learning: A study of secondary-school science students' learning experiences. *Journal of Research on Technology in Education*, *52*(3), 429–440.

Uimonen, P. (2016). Visual Identity in Facebook. *Visual Studies*, *28*(2), 122-135.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *Management Information Systems Quarterly*, *27*(3), 425–478.

Wang, A., I., & Tahir, R. (2020). The effect of Using Kahoot! for learning — A literature review. *Computers and Education*, *149*, Article 103818. https://doi.org/101016/j.compedu.2020103818

Wang, M., Wu, B., Kirschner, P., A., & Spector, J., M. (2018) Using Cognitive Mapping to Foster Deeper Learning with Complex Problems in a Computer-Based Environment. *Computers in Human Behavior*, *87*, 450-458.

Wedell, M., & Grassick, L. (2019). Innovation in Language Teaching and Learning. In Carol A. Chapelle (Ed.), *The Concise Encyclopedia of Applied Linguistics* (pp. 576-580). Wiley-Blackwell.

Weller, M., De los Arcos, B., Farrow, R., Pitt, R., & McAndrew, P. (2016). Identifying Categories of Open Educational Resource Users. In P. Blessinger & T.J. Bliss (Eds.), *Open Education: International Perspectives in Higher Education* (pp.73-91). Open Book Publishers.

Wijayanti, E. (2022). Teaching English by Using Canva: Students' and Lecturers' Voice. *ENGLISH FRANCA: Academic Journal of English Language and Education*, *6*(2), 411-428.

Wolff, C., E., Van den Bogert, N., Jarodzka, H., & Boshuizen, H., P., A. (2015). Keeping an Eye on Learning: Differences Between Expert and Novice Teachers' Representation of Classroom Management Events. *Journal of Teacher Education*, *66*(1), 68-85.

Yeşilbağ, S., & Korkmaz, Ö. (2021). The effect of Voki application on students' academic achievements and attitudes towards English course. *Education and Information Technologies*, *26*, 465–487. https://doi.org/10.1007/s10639-020-10264-7

Yi Rou, L., & Yunus, M., M. (2020). The Use of Seesaw in Increasing Pupils' Reading Interest. *Universal Journal of Educational Research*, *8*(6), 2391-2396.

Yu, H., Shi, G., Li, J., & Yang, J. (2022). Analyzing the Differences of Interaction and Engagement in a Smart Classroom and a Traditional Classroom. *Sustainability*, *14*, 8184. https://doi.org/10.3390/su14138184

Yuan, L. (2022). Enhancing Chinese EFL Students' Grit: The Impact of Teacher Stroke and Teacher-Student Rapport. *Frontiers in Psychology*. https://doi.org/10.3389/fpsyg.2021.823280

Yunus, M., M., Nordin, N., Salehi, H., Sun, C., S., & Embi, M., A. (2013). Pros and Cons of Using ICT in Teaching ESL Reading and Writing. *International Education Studies*, *6*(7), 119-130.

Yuyun, I. (2018). Curriculum and Technology Design: A Course to Explore Technology Applications in EFL Curriculum Design. *Journal of ELT Research*, *3*(1), 78-86.

Zamora-Antuñano, M. A., Rodríguez-Reséndiz, J., Cruz-Pérez, M. A., Rodríguez Reséndiz, H., Paredes-García, W. J., & Gaytán Díaz, J. A. (2021). Teachers' Perception in Selecting Virtual Learning Platforms: A Case of Mexican Higher Education during the COVID-19 Crisis. *Sustainability*, *14*(1), Article 195. https://doi.org/10.3390/su14010195

Zeng, S., & Zhan, J. (2020). Digital Curation of Online Resources among English Learners at Chinese Universities. *Beijing International Review of Education*, *2*, 403-419.

Zimmermann, P., A., Stallings, L., Pierce, R., L., & Largent, D. (2018). Classroom Interaction Redefined: Multidisciplinary Perspectives on Moving Beyond Traditional Classroom Spaces to Promote Students' Engagement. *Journal of Learning Spaces*, *7*(1), 45-61.