



**Facultad de  
Ciencias Sociales y Humanísticas**

**"THE EFFECTS OF TECHNOLOGY-ENHANCED GRAMMAR  
ACTIVITIES ON EFL WRITING ACCURACY IN AN ECUADORIAN  
HIGHER EDUCATION INSTITUTE"**

PROYECTO DE TITULACIÓN

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**María Gabriela Jiménez Carrión**

## **DEDICATION**

I dedicate this work to my beloved family.

**Gabriela Jiménez**

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A handwritten signature in blue ink, appearing to read 'M. Gabriela Jiménez Carrión', is written over a horizontal line.

María Gabriela Jiménez Carrión

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## **ABSTRACT**

The aim of this study was to determine the effects of technology-enhanced grammar activities on the English as a Foreign Language writing accuracy in a Higher Education Institute. Participants were English language learners between 18 and 30 years old and were part of the CEFR A1 level course in the Institution's program. The teacher-researcher designed a mixed-method study to carry out the research. Control and experimental homogeneous and intact groups were set to implement a treatment plan followed over 10 lessons with the same instructor. Data was obtained by means of a pre and posttest, a questionnaire, a survey, and a teacher's reflective diary. Findings showed that students in the experimental group outperformed students in the control group and also reported constructive attitudes towards technology-enhanced activities. These findings suggested that technology-enhanced grammar activities improved students' writing accuracy performance, and positively affected learners' perception of technology implementation. The results of this study have important implications for technology-enhanced activities designers and English language instructors.

*Keywords:* ICT, technology-enhanced activities, grammar activities, writing accuracy.

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## **LIST OF TERMS**

**CALL:** Computer Assisted Language Learning

**CEFR:** Common European Framework of Reference for Foreign Languages

**EFL:** English Language Teaching

**ICT:** Information and Communication Technologies

**MMLS:** Mobile Multimedia Learning System

**CSCLE:** Computer Supported Collaborative Learning Environments

**SNS:** Social Networking Sites

**TEFL:** Teaching English as a foreign language

# 1 CHAPTER 1: Summary of the Proposal

## 1.1 Introduction

In Ecuador, all Higher Education students are required to achieve a particular foreign language level according to the sort of undergraduate degree they want to get. According to the Ecuadorian Council of Higher Education (CES, acronym in Spanish), students must get at least a CEFR A2 foreign language level to graduate from a ‘Instituto Superior Tecnológico’ (higher education institute) (CES, 2019). Despite most of the students at this level have some experience learning a new language from their school or high school instruction; they often struggle with production skills, especially accuracy. It means students have in mind the idea they want to convey, but they have problems with the syntax to construct an understandable message. Consequently, language teachers seek multiple strategies to help students overcome these difficulties related to the grammar conventions needed to produce the language, specifically in writing. This repeated scenario led the researcher to formulate this proposal to know the effects of technology-enhanced grammar activities on students' writing accuracy.

According to Shintani et al. (2014), evidence suggests that accuracy gains in writing tasks result from university students applying their explicit knowledge, which means that they consciously pay attention to form. This claim led to choosing grammar activities with technology integration to foster students' ability to write accurately. Aşık et al. (2020) claim that teachers need to integrate Information and Communication Technologies (ICT) in the language classroom to upgrade the activities and materials provided to students.

## 1.2 Objectives

The objectives set for this study were:

### 1.2.1 *General objective*

- To determine the effects of technology-enhanced grammar activities on EFL writing accuracy in a higher education institute in Loja, Ecuador.

### 1.2.2 *Specific Objectives*

- To determine if technology-enhanced grammar activities make learners improve EFL writing accuracy.
- To determine students' attitudes towards using technology-enhanced grammar activities.

- To identify the challenges learners face when integrating technology-enhanced activities in the EFL class.

### **1.3 Research Questions**

The following research and sub-research questions were proposed at the beginning of the study:

#### ***1.3.1 Research Question***

- How do technology-enhanced grammar activities affect students' English writing accuracy in a higher education institute in Loja, Ecuador?

#### ***1.3.2 Sub-Research Questions***

- Do technology-enhanced grammar activities improve students' English writing accuracy based on a pretest and posttest composition?
- What are students' attitudes towards using technology-enhanced grammar activities in the EFL class?
- What are the challenges students face when integrating technology-enhanced activities in the EFL class?

### **1.4 Hypothesis**

First, a null hypothesis ( $H_0$ ) was set to be tested:

- There is no difference in EFL learners writing accuracy after a treatment based on technology-enhanced grammar activities in the experimental group.

In addition, the following alternative hypothesis ( $H_A$ ) was proposed:

- Technology-enhanced grammar activities will improve EFL learners writing accuracy in the experimental group.

### **1.5 Overview of Enquiry**

Chapter 1 summarizes the research proposal, the objectives, research questions, and the hypothesis of this study.

Chapter 2 contains the details related to the context of the institution where the research study took place.

Chapter 3 presents the relevant concepts, studies, and previous research relevant to this study.

Chapter 4 comprises the methods and instruments used to carry out the research. Also, this part contains a justification of the procedures used in the study.

Chapter 5 presents the data collected in graphs and charts to allow readers to access the results of the investigation easily.

Chapter 6 presents a discussion and interpretation of the results obtained.

Chapter 7 contains the conclusions drawn from the findings' interpretation as well as the limitations and further research suggestions.

## **2 CHAPTER 2: Context of the Study**

### **2.1 Introduction**

This research study was conducted in a public institution with adult language learners in Ecuador. The Institute was recently recognized by the government as a tertiary level institution, and students were able to get a degree with the same level as universities do. The Languages Center that is part of the Institute is in charge of the program that teaches the English language to students until they achieve the level required according to their undergraduate program.

This study focuses on writing because the Languages Center wanted to improve the accuracy of the written language production of students, and this research study was seen as an opportunity to discover if integrating technology in the classroom makes learners improve in this area. Currently, young learners are usually in constant contact with ICT. Thus, technology can be used in education for learning purposes and explore its effects in a particular area.

### **2.2 The Institution, its Students and Instructor**

The Institution where this study took place is located in Loja, and it has around 700 enrolled students in different higher education programs. Before students graduate, they have to comply with a particular foreign language level as a requirement before getting the degree. Thus, it is mandatory for all students to be proficient in English as a Foreign Language because it is the only language course offered in the Languages Center.

The participants for this study were students enrolled in the English Level 1 course of the Languages Center. Most of the students have already had some kind of experience in learning English. However, they take the first course because either they were not successful in English in high school, took the placement test and had to enroll in Level 1, or it has been many years since the last time they studied English. To confirm the participants' level, they took a placement test administered by the teacher-researcher, and results showed that they had an elementary English level or A1.1 according to the CEFR.

The instructor and researcher who carried out this study was an English teacher at the Languages Center in the Institute. The instructor had many years of experience as an English teacher at secondary and tertiary levels. The instructor was concerned about the low achievements of students in terms of writing accuracy, so this study was considered an opportunity to help students in the institution.

### **2.3 The Need for this Research Study**

Information and Communication Technologies (ICT) have gained ground in education; thus, there is a tendency to incorporate technological tools inside the English as a Foreign Language (EFL) classroom (Kuru, 2019; L. Li & Walsh, 2011; Taghizadeh & Hasani Yourdshahi, 2020). ICT seems to have advantages and disadvantages in the language learning field. For example, a review of empirical studies concludes that pronunciation and language production improve thanks to the use of technology (Golonka et al., 2014). On the other hand, there is evidence that specific patterns like interaction do not show a substantial difference between classrooms with technology-enhanced learning and classrooms without it (Li et al., 2019). Therefore, the use of ICT in language learning classrooms still needs further analysis to appraise how levels of technology use affect the teaching and learning environment (Aşık et al., 2020; Kuru, 2019).

Thus, by examining the context of technology-assisted practices in the EFL classroom, this study pretended to explore the effects of technology-enhanced grammar activities on writing accuracy. Writing is a challenging skill for English language learners, and they often struggle to produce accurate texts (Hartshorn et al., 2010). In higher education, writing is a salient ability learners have to develop, and inadequate attention to this skill may inhibit their further language performance in terms of writing.

The findings of this research study will serve the Languages Center of the Institution in the future to design an action plan that helps teachers to integrate technology-assisted practices with language learner purposes.

### **2.4 Conclusion**

The aim of this study was to determine the effects of technology-enhanced grammar activities on EFL writing accuracy. The author was unaware of any previous research done in this area in a similar local context. Thus, it made this study relevant for language learning. Research suggests that language accuracy implies explicit knowledge; so, treatment with the combination of technology-enhanced activities meant a possible strategy to make students increase writing accuracy in the target language.

### **3 CHAPTER 3: Literature Review**

#### **3.1 Introduction**

The purpose of this chapter is to provide a better understanding of current ICT trends applied in the language teaching context. Also, this literature review collects previous research studies related to writing accuracy. The theory behind these two variables supports the choice of the research topic and methods of this study and contextualizes its background.

Information and Communication Technologies are part of our lives, and their development moves faster than education (Kopp, 2015). Research demonstrates that ICT is available primarily for the tertiary level, and it has advantages and disadvantages in language learning. On one hand, technologies create opportunities for learners to connect with the target language; it increases their chances of producing the target language and motivating students. On the other hand, technology can be a distraction or a nonsuitable source of the target language, among other disadvantages (Golonka et al., 2014).

Regarding writing skills, the literature has considered concepts related to accuracy. According to Polio & Shea (2014), accuracy can be defined as "freedom from error" and being able to use the language without errors. Also, in higher education, grammar complexity is key in the accomplishment of writing success (Romano, 2019). Similarly, concepts related to writing accuracy are presented in sections 3.6 and 3.7.

It is worth to mention that learners in this study were in the level A1 (breakthrough) of language proficiency which is considered the 'lowest' level in the Common European Framework of Reference (Council of Europe, 2018). Thus, according to the Council of Europe (2018), at this level of language proficiency, learners are able to:

“Interact in a simple way, ask and answer simple questions about themselves, where they live, people they know, and things they have, initiate and respond to simple statements in areas of immediate need or on very familiar topics, rather than relying purely on a very finite rehearsed, lexically organized repertoire of situation-specific phrases.” (ibid. p. 35)

#### **3.2 Information and Communication Technologies in the Educational Context**

ICT has gained ground in academia since the last few decades, and the recent COVID-19 crisis triggered a shift from traditional instruction to remote learning through virtual environments. The global pandemic showed that online instruction could be considered formal, and it is here to flourish and stay (Mishra et al., 2020). These impressions pushed educators to

explore new ways to integrate technology in the classrooms and not see it as a threat. Consequently, ICT is present in the classrooms in one way or another in current education. Still, in Ecuador technology implementation has not been a total success and many university students have had limited access to the benefits of technology.

In the past few decades, learning technologies have emerged and been studied in the educational context. These technology trends can be extended, connected, or repeated. Since they appeared, they have evolved and influenced current software tools like Google Meet or Flipgrid in the collaborative field; this is an example of an extended wave. Another example is those technologies that appear for synchronous communication like Skype or Facebook Messenger. These tools seem to transform traditional instruction and show connecting with the world in real-time. Other waves are repeated in and out, for instance, web-based Instruction (Bonk & Wiley, 2020).

Further, Chaaban & Ellili-Cherif (2017) explain that integrating technologies in the classroom goes beyond using a computer or internet connection. According to the authors, several factors determine the level of technology integration. First, "traditional" practices like slides or presentations or looking for information on the internet stand for low-level technology integration, while using technology to enhance knowledge represents high-level integration. It means that technology and support should be available, teachers' beliefs should be aligned to the importance of incorporating technology, and teachers should be trained on pedagogies of teaching with technology. Also, the frequency of technology use in the classroom and the level of training of teachers and students in ICT usage define how well technology works to learn.

Multiple studies suggest which technological elements, tools, or innovation should be used for educational purposes. Hamilton (2018) presents, among others, software/websites, noncomputer tools, web 2.0 tools, and teacher collaboration. Some of the listed advantages linked to this approach are high motivation, independence, and authentic interactions. Also, he presents some disadvantages, for instance, the need for constant monitoring, training, risk, and the difference in time students may take to finish a task.

Additionally, educators have to face first and second-order barriers when implementing technology in the classroom (Ertmer, 1999). First-order barriers refer to extrinsic issues or the resources needed, for example, equipment and training, but these barriers are easy to eliminate. On the other hand, second-order barriers are more intrinsic and are related to the educators'

beliefs about how instruction has to look like. Some teachers may not face second-order barriers, but others may find it difficult to include non-conservative practices in the classroom. The author points out that observing classes with technology integration, collaborating, and reflecting on them can help to eliminate second-order barriers (Ertmer, 1999). More recent studies also suggest that potential barriers do not allow ICT in the classroom. For example, teachers do not always have the training to incorporate technology in the classroom, students may battle with tools or the availability of devices to access information, teaching resources are not free or widely available, and teachers may not have the necessary time to plan lessons integrating technology (Cronje, 2016; G. Li et al., 2019b; Mishra et al., 2020). These late mentioned barriers seem more relatable to the situation during the current COVID-19 outbreak.

In the last year, due to the COVID-19 global pandemic, education at different levels migrated to remote learning environments in most countries worldwide. During the lockdown period, the use of educational technologies rapidly increased and tools like Zoom, Google Meet, Facebook, and YouTube were a must to substitute face-to-face classes (Mishra et al., 2020). This alternative fostered changes in the way technology for educational purposes was seen.

Thus, technology is conceived as a positive aspect that enhances the teaching and learning experience despite the barriers students and teachers face (Hsu, 2016). Technology integration can be successful with appropriate training, equipment, support, and teachers' self-efficacy.

### **3.3 ICT in the Language Learning Context**

Using technology in the language learning classroom is not an easy task (Bonk & Wiley, 2020). Integrating technology in the language classroom goes beyond computers. Aşık et al. (2020) report that integrating technology involves pedagogical issues and technical skills to teach language effectively. According to Golonka et al. (2014), technology integration can result in two different scenarios. First, students' interest increases, and they have more access to the foreign language they are learning. Alternatively, students might not take advantage of technology opportunities, which could result in inaccurate input or frustration. It all depends on how effective is the technology implementation.

Recent studies have reported positive and negative aspects of technology integration in the English language classroom. For instance, the findings of a study carried out in a language institute indicated that the use of Computer Assisted Language Learning (CALL) had a positive

effect on students' autonomy. Researchers concluded that this study agreed with others stating that CALL promotes autonomy and facilitates learning (Farivar & Rahimi, 2015). Another study revealed that using an interactive whiteboard as a technology-enhanced tool encouraged students to self-assess their language performance and preserve their privacy through a voting system. The researcher saw these results as a pedagogical benefit for students that would not be possible without technology (Cutrim, 2008). The latest is an example of a study with the technological equipment or hardware necessary to address the study. These studies suggest that the teacher's choices in terms of pedagogy and methodology play an important role on the impact of technology tools into the classroom

Regarding the negative aspects that technology may have in language classrooms, Li et al. (2019a) reported that teachers who applied educational technology negatively impacted teacher-student interaction in the classroom. This comparative study examined patterns in high and low technology use. It concluded that technology is a tool that has to be combined with an appropriate pedagogy for effective EFL instruction.

In sum, learning does not happen itself, thanks to technology. Technology integration requires the teacher to have the necessary skills and knowledge to integrate technological tools, observe the availability and administrative issues, select the appropriate technological tools, integrate and reflect on the current practice (Kuru, 2019).

### **3.4 Technology-Enhanced Activities for English Language Learning**

The availability of technology has increased in the last few years, and many researchers have conducted inquiries to determine the impact of technology in the EFL classroom. According to Al-Mahrooqi & Troudi (2014), technology fosters a learner-centered environment because motivation increases and more learning opportunities outside the classroom. The most used technologies for language learning are smartphones, mobile phones, and PDAs (Shadiev et al., 2017). This section presents the results of various studies relevant to this thesis project conducted to explore the impressions of technology-assisted activities in the EFL context.

Critical thinking has also been studied concerning technology-assisted practices in English language learning. Thinking can be challenging for teachers and students; thus, researchers have investigated the interaction of students' reasoning and a computer-supported collaborative environment. Higher Education students participated in a study that explored how an application of Digital Mysteries and a tabletop promoted reasoning skills. The technological

features of this research allowed L2 learners to focus on information and develop high levels of thinking skills. On the other hand, researchers found that tracking and assessing students were limitations for participant teachers (Lin et al., 2016).

Web 2.0 technologies have also been explored to determine their effects on language learning. Liu et al. (2016) analyzed the relation of motivation and language learning tasks facilitated by Web 2.0 tools. The participants of this study appeared to disengage due to technology barriers and engage with some support. This pattern also showed that motivation evolved through time and while overcoming challenges. Finally, the study suggested that Web 2.0 tools positively impacted English learning.

Technology can also enhance autonomous language learning. A recent investigation tested how students perform in a learning activity using a traditional approach and a mobile multimedia learning system (MMLS) in two different groups. This MMLS was developed by the researcher to support learning autonomy and was installed in students' tables. Thus, students could plan, monitor, and reflect on their learning, choose important sources, and self-evaluate. Researchers concluded that students who used the MMLS outperformed the group using a traditional approach thanks to its benefits for their learning autonomy (Shadiev et al., 2018).

In 2019 O'Neill & Russell (2019) investigated students' perceptions of using Grammarly as a tool to have immediate feedback. Surprisingly, the results showed that students preferred the feedback they received from the app to the feedback they got at the Academic language Center where the study took place. According to the authors, students preferred Grammarly due to the speed and amount of feedback received, their independence while correcting errors, the immediate benefits to the writing accuracy, and the long-term benefits to the writing skill. However, some concerns arose regarding the truthfulness of the program.

In L2 education, much richer and more diverse literacy is now available (Burnett & Merchant, 2015). YouTube appears to be a language learning site with constant updates and opportunities (Wang & Chen, 2020). A recent study analyzed language learners' perceptions regarding this technology as a self-directed learning approach. Findings indicated that learners watch videos on this platform mostly for learning purposes and others for entertaining reasons. The exciting part of this investigation is that data analysis suggested that participants seemed to be interested in watching videos because of the user-centered nature of YouTube. Despite this, the content in this platform was not necessarily liked by students who were interested in English

for academic purposes (Wang & Chen, 2020). Undoubtedly, the user-nature feature of YouTube engages learners to keep in contact with the language through videos.

According to Shadieff & Yang (2020), some technology-enhanced activities in the language classroom that teachers use to support learning, among others, are:

- Presenting activities on game platforms for students to practice.
- Using corpus as a rich resource of language.
- Computer-supported feedback.
- Language learning using social networking sites (SNS) like Facebook.
- Computer-mediated communication or instant messaging
- Exploring digital resources like web portals.
- Learning new words using an electronic dictionary.

Based on the results of previous research studies in different aspects of English learning, it is seen that technology-enhanced activities can promote language acquisition inside and outside the classroom. Additionally, there are barriers to applying these activities, so teacher control and reflection are needed for successful results.

### **3.5 Teaching Grammar in the English as a Foreign Language Classroom**

Bardovi-Harlig & Dornyei (1998) explains that grammar relates to the accuracy of structure, including morphology and syntax. Romano (2019) summarizes that, in higher education, students' progress and academic writing accomplishment directly relate to grammatical complexity. In this respect, teaching and assessing grammar in the EFL classroom becomes a must to ensure learners' accurate language production. Grammar instruction has evolved in the last years seeking how language learners can be accurate and fluent when using the language (Sato & Oyanedel, 2019). Given the interest of this thesis project in grammar, a quick review of theories regarding teaching grammar methods over the years is presented as follows.

In the late nineteenth century, the Classical Method was widely used to learn foreign languages. It was associated with learning Latin or Greek. The focus of the Classical Method was on memorizing vocabulary and grammar rules. Some of the activities used were translating texts, memorizing lists of vocabulary words, drills, a lot of usage of the grammar tongue, and there was not much attention to oral skills. As there was not much research on the field, this method was adopted for such a long time. On the other hand, it was so popular because teachers

did not require to be specialized in all the skills. Tests were not challenging to create and could be objectively scored (Brown, 2001).

Richards & Rodgers (1986) explained the Direct Method, which became considerably popular at the beginning of the twentieth century. This method advocates the "natural" way in which young children learn the first language; for this reason, teaching included lots of oral interaction without translation. Also, speaking has had special attention since the beginning, as well as pronunciation. Grammar was taught in an inductive way, and vocabulary was taught using realia, gestures, or demonstration.

In the 1950s, Audiolingualism emerged as a reaction to traditional grammar. In this method, language is presented in dialogue form. In terms of grammar, students practice a pattern several times, and after that, rules are presented. According to the audio-lingual method, learning a foreign language is a mechanical process based on dialogues, memorizations, and performing drills that create good habits and minimize the chances of making mistakes (Richards & Rodgers, 1986).

According to Brown (2001), by the decade of the 1970s, many innovative language learning methods emerged under the name of "designer" methods. These included:

- Community Language Learning: the classroom is seen as a group, and teachers and students interact as a supportive community. The teacher is a facilitator, and students are responsible for their learning. The translation is an essential characteristic of CLL because students' needs were first said in the native language, translated to the target language by the teacher, and repeated back by the student. This process takes time until the student reaches independence and self-assurance.
- Suggestopedia: students can process lots of information depending on how it is delivered. Music was vital; researchers claim that playing the appropriate music can lead students to relax and "super learning." Some of the usual teaching practices in this method are readings, dialogues, role-plays, and some memorization techniques.
- The Silent Way: learning occurs when the learner discovers, creates, and solves problems, and the teacher remains silent. Teachers used material like wall charts to introduce vocabulary or grammar paradigms in this method.

- Total Physical Response: students do a lot of listening and acting; there are a lot of commands even in advanced levels. A verbal response is not necessary until learners feel comfortable enough to venture questions. This method seemed practical in lower proficiency levels.
- The Natural Approach: learning occurs in three stages, first, developing listening skills, then, an early production where the focus is on meaning rather than form, and finally, production of more complex language. The Natural Approach does not force students to produce language immediately; their silence is necessary, which results in self-confidence that triggers learners to speak out without being threatened or forced to speak in ways that may embarrass them.

Some more recent approaches have emerged with a focus on communicative competencies. This is the case of Communicative Language Teaching (CLT), where teaching and learning are not restricted to grammar rules, but activities are designed to use language functionally. Task-Based instruction is a manifestation of CLT, and it draws attention to activities or tasks that make learners use the language in a real-world situation (Brown, 2007).

### **3.6 Writing in English as a Foreign Language**

Scholars have not agreed on one model or theory about how L2 writing should be taught, since multiple factors influence the teaching of writing (Long & Doughty, 2009). Researchers believe that writing in a foreign language is a complex process that requires learners to be exposed to writing models and to produce written language to assure success in this skill (Haiyan & Rilong, 2016). Teachers' beliefs play an essential role in writing instruction (Pham & Truong, 2021); thus, some current research studies regarding particular aspects of the writing process and the ways language instructors may intervene are presented below.

With the shift from teacher-centered to learner-centered instruction, Farahian et al. (2021) examined the effects of using a portfolio as a medium to promote critical thinking on EFL writing. This study concluded that portfolio writing had a significant connection with the written product in terms of understanding and reflection but learners' critical reflection. For example, participants in the group under the portfolio technique were able to make connections between their own experiences and the essay topic. On the other hand, researchers recommend not to overestimate the power of portfolios because there is still much to know about how they affect different subscales of reflection (Farahian et al., 2021).

Innovative teaching techniques like applying lexical bundles claim to positively influence the quality of writing assignments. (Birhan, 2021). Similarly, a recent study showed the impact of lexical bundles on learners' writing ability. Findings in this investigation suggest that after two months of intervention that included gap filling, freewriting, and guided writing, writing instruction using lexical bundles seems promising for learners to convey ideas through writing effectively (Birhan, 2021). These results match the conclusion of a previous study that suggests that the instruction with lexical bundles methodology increased students' fluency in terms of writing (Ranjbar et al., 2012).

Current digitalization has pushed modifications in how teachers assess writing; it changed from paper-based to computer-based. According to Guapacha Chamorro (2022), the writing mode may affect the cognitive processes and, consequently, the writing evaluation. A study examined PB and CB writing tests and concluded that two different cognitive processes occur depending on the mode. Macro planning and organization were evident in PB tests and micro-planning in CB tests. Also, the researcher concluded that both types of tests are cognitively valid for writing assessments (Guapacha Chamorro, 2022).

Researchers have focused on written corrective feedback in terms of feedback on writing skills, but there is still inconsistency in the findings concerning WCF effectiveness (Papi et al., 2019). Referring to Truscott (1996), grammar correction in L2 writing is having learners improve their writing accuracy by correcting their grammar mistakes. Recent findings have reported that students' orientation towards teacher feedback in writing is positive, and it can help students improve their writing skills (Xu, 2021). These results are consistent with Lv et al.'s (2021) belief that implementing feedback affects writing performance and carries implications for task design that may result in students' higher writing quality.

### **3.7 Writing Accuracy**

Accuracy is an aspect of form, and writing accuracy can be defined as freedom from error (Foster & Skehan, 1996). Current studies that intend to investigate how to improve EFL writing accuracy aim attention at accuracy-focused interventions where revision and feedback do not seem practical for teachers (Polio & Shea, 2014). Thus, the issue with writing accuracy is that students might pay attention to grammar, so they make fewer mistakes, but at the same time, the complexity decreases (Neumann, 2014). This conclusion endorses difficulties in addressing

writing accuracy in the language classroom. Below, the results of some studies regarding accuracy are presented.

(Rustipa (2017) conducted a study to test whether text analysis teaching strategy influences sentence writing in adult students. The researcher of the experimental research raised students' awareness by reading and rewriting their own work. Text analyses were practical because students learned grammar, so their writing accuracy significantly improved. The study highlights that writing starts with the ability to create accurate sentences, and instructors should include text analyses in their EFL lessons.

The role of Information and Communication Technologies on English learners' writing accuracy has been explored in the last few years. As a multimedia learning tool, the impact of YouTube was tested concerning its affordances and how it may affect accuracy. In this study, captions represented an input source that fostered students to catch new target language and, consequently, correct their mistakes, making comparisons between the language they produce and the language they receive (Alobaid, 2021). Alobaid (2021) concluded that YouTube auto-generated captions positively affected English language writing accuracy and recommended its implementation in the language classroom. At the same time, as captions are machine-generated, quality may vary, and it can lead to mis-learn or wrong interpretations due to dialects, pronunciation, and others. For this reason, it is recommended that instructors review captions before they are used in classroom activities.

How feedback is delivered can also influence accuracy. Direct corrective feedback (DCF) and metalinguistic explanations (ME) may impact writing accuracy in different ways (Shintani et al., 2014). According to Shintani et al.'s (2014) study, DCF requires teachers to invest a lot of time but proves to be effective, while ME is more practical and can be used several times if an error reoccurs. Additionally, the findings of this study suggest that feedback is effective in writing accuracy only in new writing tasks or if the composition is rewritten. Finally, the author indicates that teachers should provide feedback focusing on a single structure.

In conclusion, instructors should not underestimate grammatical accuracy in writing and encourage learners to master sentence writing because it will allow them to create longer texts. Grammatical accuracy is linked to the ability to communicate a message and implies macro-level skills (Romano, 2019). Error avoidance may provide better results rather than risk-taking

regarding grammatical ability in writing; this implication for pedagogy needs more profound analysis (Neumann, 2014).

### ***3.7.1 Error Analysis in Writing***

Examining L2 learners' errors has the purpose of indicating instructors what aspects of the target language they have difficulties with (Dulay et al., 1982) and it is imperative to provide this feedback to students because they increase knowledge of the target language (Esmalde, 2020). According to Dulay et al. (1982), errors can be analyzed from the surface strategy perspective which asserts that errors have a logic behind and are not the result of laziness or careless thinking. The surface strategy taxonomy by Dulay et al. (1982), proposes the following classification according to the type of error:

- Omission: dropping a word in a sentence, for example "Is very hard for me to learn English right" (p. 153), in this case there is an omission of surrogate subject.
- Addition: including an item that does not have to appear in a well-formed sentence, for instance "He doesn't eats" (p. 157). The example shows a type double marking addition in present tense.
- Misinformation: using the wrong form of a word or structure. "The dog eated the chicken" (p. 158) is an example of substituting a past tense marker which is a type of misinformation error.
- Misordering: placing a word or group of words incorrectly as "I don't know what is that" (p. 162).

Although the error analysis approach succeeds in raising the consciousness of applied linguistics and making learners' errors a research object, it has weaknesses worth addressing. First, the process and products aspects regarding error analysis; second, the lack of specificity in the definition of error categories and third, the debate of simplistic error classification which makes difficult for researchers to place an error under a unique category (Dulay et al., 1982).

Overall, writing accuracy is the first stepping stone to reach the ability to write long and complex texts. As presented, authors agree that error analysis is a tool for instructors to make decisions that can lead to activities or focused tasks to help learners to improve writing accuracy at sentence level.

## 4 CHAPTER 4: Research Methodology

### 4.1 Research Paradigm

#### 4.1.1 *Methodological Stances*

This study is considered a quasi-experimental design. According to Creswell (2012), quasi-experimental designs are frequently used in the education field. They happen when researchers use intact groups, designate a control and an experimental group and carry out intervention by applying a pretest and posttest. This study meets all these aspects Creswell listed as a quasi-experimental design. The reason why it is not considered an actual experiment is that there was no random assignment because groups were already set by the institution.

Additionally, this research analyzed qualitative and quantitative data to answer the research questions. The qualitative part credited to triangulate and data was available to access for the researcher. This study merited using a mixed method to understand better the problem and link results that added value to the study. Quantitative data provided numbers to assess students' progress and qualitative data was necessary to picture the attitudes learners experienced during the treatment. The mixed method provides alternative perspectives to a research study, for instance, focusing on outcomes supported by additional data with an in-depth understanding of the intervention (Creswell, 2012).

By the time this research study was conceived, the researcher had hypothesized that a treatment based on technology-enhanced activities might influence learners' writing accuracy. This stance relates to the positivist approach that states that knowledge relies on observation, measurement, and prediction and that reality can be proved by using the right tools and methods (Tracy, 2013).

In order to triangulate, the researcher used diverse data sources to ensure the accuracy of the results. For this reason, qualitative data was collected to help the researcher comprehend learners' behavior towards the study variables. The idea of examining the human experience is proposed by constructivism to illuminate or have a deeper understanding of what happens in particular circumstances (Schwandt, 2000). This focus on measuring or counting behavior is also part of the positivism paradigm approach (Tracy, 2013).

All of the stances contributed to the design of the current methodology, which will be presented in detail in the paragraphs below.

#### **4.1.2 *The Researcher's Role***

In this study, the researcher had an active role from the beginning. It started with the design of the investigation and the definition of the aspects to be considered in the process of its implementation. The researcher also designed the instruments but took extra measures to validate them. Two experts participated in revising the pre and posttest instruments to remove biases and subjectivity. The other instruments were adapted from previously validated studies.

The researcher was also the professor of the participants who agreed to be part of the study. This decision was the most practical for the study and the teacher was also qualified to carry out the intervention. The researcher fully understood the study's methodology and purpose, making her the best option to carry out the study. Moreover, the researcher planned the technology-enhanced activities for the treatment plan. (See Appendix A)

To collect the quantitative data, the researcher was accompanied by a colleague who also participated in the grading process with the sole purpose of avoiding making errors that can threaten validity or reliability.

To collect the qualitative data, the researcher was the instrument for collecting data because she carried out the survey at the end of the intervention and wrote the fieldnotes based on the insights and observable aspects in the classroom that had to do with technology-enhanced activities designed for the study. This made the researcher an active participant in seeking answers based on available sources.

#### **4.1.3 *Participants' Role***

The researcher worked with two groups of participants. Each group consisted of participants enrolled in language classes in the Institution and assigned to the researcher by the center administrator. One group was chosen to be the experimental group, whose participants were under a treatment plan. The other was the control group. There were 27 participants in the control group, and the experimental group consisted of 31 participants. Participants were asked to participate in a research study and signed informed consent before the intervention started. There were no dropouts, and all learners actively participated throughout the process.

All the participants had access to the devices, internet connection, and digital tools to develop the technology-enhanced activities planned by the teacher during the intervention. Participants in the treatment group also had the opportunity to attend a three-hour training prior to the start of the intervention to learn how to handle and use digital tools and get to know how

learning apps work. Therefore, once the intervention started, learners were familiar with the researcher's digital tools and desktop and online platforms.

#### **4.1.4 Nature of the Research Design**

Research relies on different research paradigms depending on how knowledge is quested (Park et al., 2020). Based on the nature of the study, the researcher accepted the principles of a pragmatic paradigm. Pragmatism accepts that a single or multiple realities can be inquired and an objective reality is always present (Kaushik & Walsh, 2019). According to Kaushik & Walsh (2019), pragmatism embraces qualitative and quantitative approaches offering a more flexible research context. Pragmatic parading requires to identify a problem and adapt actions to address the problem.

Likewise, this study relies on the quasi-experimental category of research designs. Quasi-experimental designs strive to find what could happen if a group of participants or subjects is under treatment and what if it is not; in the case of educational designs, participants are not often assigned randomly to the control or treatment groups but by chance (Gopalan et al., 2020). At the beginning of the study, the researcher hypothesized that the intervention would affect students writing accuracy; for this reason, it was necessary to design the appropriate instruments to test the researcher's beliefs. Moreover, to ensure validity, there was a need to build knowledge based on multiple sources. Thus, this study included a mixed design method to explain the relations among variables. This concept will be expanded later in the chapter.

## **4.2 Research Tradition**

### **4.2.1 Definition and Rationale**

This study integrates two approaches: qualitative and quantitative. According to Creswell (2012), a mixed method is an excellent design when the researcher has access to qualitative and quantitative data that can better describe a phenomenon. The researcher had access to and applied both data collection methods in this inquiry. First, the quantitative method was used as a primary source to prove the hypothesis set at the beginning of the study concerning the technology-enhanced activities and students' writing accuracy. Secondly, the qualitative method was used to explore students' perspectives towards technology-enhanced activities in the English language classroom to strengthen and support findings.

In conclusion, the rationales for conducting this type of design are because of its outstanding benefits such as triangulation, completeness, development, and illustration of data,

among others (Doyle et al., 2009). These reasons match this study's purpose, drawing on conclusions with additional support that can be generalized.

#### ***4.2.2 Type of Study***

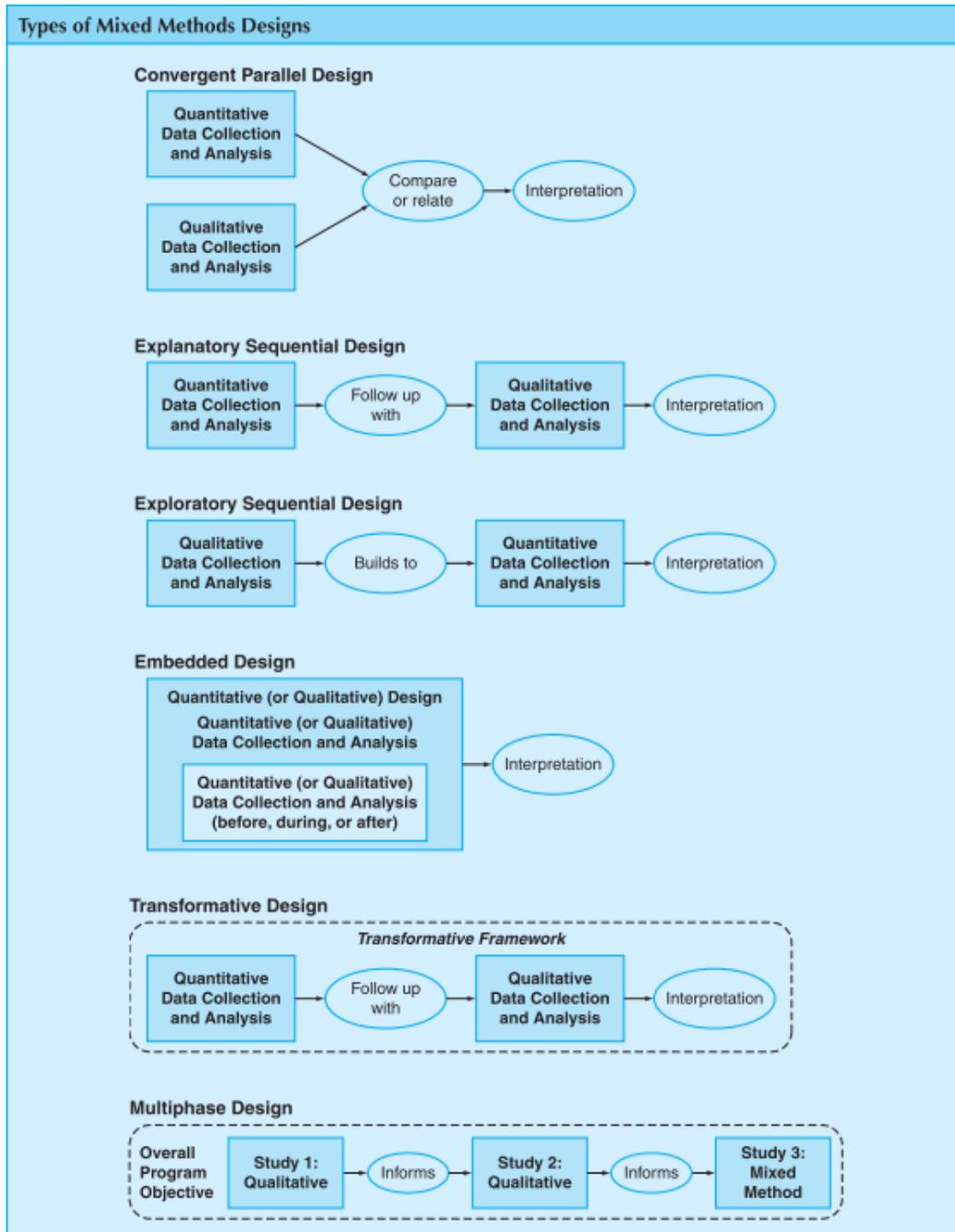
This study can be classified as an embedded design under the category of mixed methods design proposed by Creswell (2012). According to Creswell (2012), the embedded design works by collecting two data sets separately, and they address different research questions in a mixed method design (Refer to Figure 1). This study complies with this description. The quantitative part is quasi-experimental and measures the impact of technology-enhanced activities on students' writing accuracy. The qualitative part provides additional information about the intervention process and students' perspectives.

This study incorporated the quantitative approach to measure the impact of the intervention on students' performance. The researcher collected quantitative data before and after the intervention provided by the control and treatment groups. All the gathered data was analyzed to inform based on findings.

In embedded models, the qualitative component usually intends to explain aspects of the treatment process (Doyle et al., 2009). In this study, the treatment group provided the qualitative data because they were subject to the experimental technology-enhanced activities and were able to make known their attitudes about them. The researcher was also a source of information and reflected on the intervention process. The researcher collected qualitative data during and at the end of the intervention.

**Figure 1**

*Types of Mixed Methods Design*



*Note:* Creswell (2012)

### **4.2.3 Reliability**

The reliability of a study is related to the consistency of a measure (Bryman, 2012), and is also influenced by how close it is to an experimental design (Gopalan et al., 2020). In the case of this study, participants were not assigned randomly to groups because the control and treatment groups were intact groups. No random assignment does not allow a study to be a true experiment (Creswell, 2012). This issue represents a thread to reliability in the quantitative part of this study, but others aspects like extraneous variables were controlled to increase reliability.

Another factor that contributed to increase reliability is that groups were homogenous in terms of personal characteristics like racial group, language course participants were enrolled in, and age means. However, in the control group, there were more female participants than men in relation to the experimental group, where the number of male and female participants was similar.

### **4.2.4 Validity**

According to Bryman (2012), validity refers to the issue of whether an indicator really measures a concept. To increase credibility, the researcher used the concept of triangulation, which means that a study seeks corroboration by using different data sources (Doyle et al., 2009). Findings and judgments in this study arose from data collected by tests, a questionnaire, a reflective diary, and an open-ended survey.

To address threads to validity, the researcher validated instruments to ensure they really measure what they purport. Two experts revised the pre and post-test, two similar versions modified to prevent students from remembering the response. A fellow instructor also reviewed the adaptation and translation of the questionnaire to ensure accurate transcription. The literature review supported the other two instruments, the reflective diary, and the open-ended survey.

Validity also has to do with the evidence and theory that supports the interpretation of results (Oluwatayo, 2012). In the case of this study, the researcher did a literature review to warrant a correct interpretation of the findings.

### **4.2.5 Ethical Considerations**

As this study combines qualitative and quantitative research, ethical considerations respond to both types of inquiry. Firstly, regarding quantitative issues, the researcher was granted a written permission of the Principal of the Institute where the investigation was carried out. The

anonymity of the participants was protected. Regarding qualitative issues, at the beginning of the survey, learners were informed about the purpose of the study, and their identities were kept confidential. Additionally, the study participants signed an informed consent suggested by the MATEFL thesis handbook, which was translated into the students' mother tongue to ensure they fully understood the text. Finally, when the intervention finished, students from the control group accessed the same number of classes with technology-enhanced activities so that they could experience this type of lesson. These lessons had the purpose of maximize the implementation of ICT in the class and not to deprive a group of participants of a treatment.

As suggested by Creswell (2012), the material used from other authors was given credit and they are all cited in the reference section.

### **4.3 Method**

#### ***4.3.1 Definition and characteristics***

The teacher-researcher used a mixed method because it serves the purpose of this study and represents an opportunity to have a complete understanding of a phenomenon (Doyle et al., 2009). When working with a mixed-method design, the researcher collects both qualitative and quantitative either at the beginning, sequentially, or iteratively (Onwuegbuzie & Leech, 2006). In this research, the qualitative data was collected before and after the intervention, and the quantitative data was collected after the intervention.

#### ***4.3.2 Methods of Data Collection***

After the researcher was granted approval by the Principal of the Institute to carry out the study (See Appendix B) and by the Vice-principal to use the students' scores of the official placement test of the Institute for English language (See Appendix C), the researcher randomly defined the groups as control and experimental. The placement test served the purpose of determining students' language proficiency in order to make an efficient grouping (Green & Weir, 2004). The placement test is mandatory for all the students who enroll in the Languages Center of the Institute and they are assigned to the level according to the results of the placement test.

Participants from both control and experimental groups took the pretest before the intervention. Then, the researcher carried out the treatment plan that included technology-enhanced grammar activities. After the intervention, students from both groups took the posttest, and the researcher compared the results between the experimental and control group in regard to

writing accuracy. To get reliable results, the pre and posttest were similarly designed, and two experts revised the instrument (See Appendix D). This instrument served the purpose of answering the sub-research question about whether technology-enhanced activities affect students' writing accuracy. Furthermore, writing accuracy was scored based on errors on participants' written composition using the surface strategy taxonomy for error analysis (Dulay et al., 1982) which was presented in the literature review.

In order to analyze the data gathered from the pre and posttest, the researcher used two qualifiable methods. First, frequency count, percentage and rank of errors that measures occurrence and types (Esmalde, 2020). Secondly, number of error-free clauses. A clause is an independent or dependent finite clause or nonfinite clause (Foster & Skehan, 1996). So, respondents wrote a short paragraph and the researcher counted the number of clauses, error-free clauses and tabulated the frequency and type of errors participants made. This methodology called surface taxonomy has been used in previous studies attempting to measure errors in written language as presented in the literature review (Esmalde, 2020).

To address the sub-research question about participants' attitudes, students from the treatment group responded to a questionnaire at the end of the intervention to collect data about their attitudes towards implementing technology-enhanced activities. After an extensive reading of the literature about students' attitudes towards ICT, a questionnaire was adapted from Mahmoudi et al. (2012). In addition, students from the treatment group answered an online survey in relation to their attitudes towards technology-enhanced grammar activities in terms of benefits/positive aspects and challenges/negative aspects. Responses from the open-ended survey provided a complete picture of students' perspectives and answered the third sub-research question.

Finally, to record observable attitudes towards technology integration in the class, the researcher wrote a reflective diary to record their everyday experiences and students' noticeable aspects concerning technology.

This data set undertakes the main research question about how technology-enhanced activities affect students' writing accuracy.

As the English classes were taking place in a remote learning environment, data was collected by technology throughout the Virtual Learning Environment, a platform that students have access to.

### **4.3.3 Data Collection Instruments**

**4.3.3.1 Pretest and posttest.** According to Creswell (2012), a pretest measures an attribute before treatment, and a posttest measures the attribute after the treatment.

Pretest writing was administered to all participants of the study to determine homogeneity in terms of their writing accuracy and that the control and treatment groups didn't have significant differences. After the treatment that took place during a month or 10 class hours, participants took the posttest. The students were required to write a short paragraph with a minimum of 100 words within 30 minutes (See Appendix D). To grade the pre and posttest, the researcher was assisted by two academic staff to avoid bias. The researcher analyzed the mistakes participants made in the pretest, which became the grammar lessons' focus. There were five major errors: subject-verb agreement, verb-noun agreement, word order, prepositional phrases, and mechanics (punctuation, capitalization, spelling). Then the intervention took place; it is worth mentioning that the intervention was not based on correcting students' errors, but providing an instruction that focus on grammatical form using technology-enhanced activities. The posttest allowed the researcher to measure the efficiency of the treatment plan in improving writing accuracy.

**4.3.3.2 Questionnaire.** Questionnaires are useful for gathering information and quantifying responses, and providing reliable results (Munn & Drever, 1990). In this study, the researcher used a questionnaire adapted from Mahmoudi et al. (2012), including a five-point Likert scale ranging from "strongly disagree" to "strongly agree." A Likert scale is a psychometric scale to gather information such as attitudes, opinions, or feelings in categories (Beglar & Nemoto, 2014). According to the same author, Likert scale questionnaires have some advantages like high reliability, the validity of interpretations is made through means, and the data provided by the questionnaire can be compared, contrasted, and combines with other types of qualitative instruments (Beglar & Nemoto, 2014).

The researcher applied the questionnaire after the intervention to participants of the experimental group to explore the attitudes they experienced during the treatment regarding technology-enhanced activities and writing accuracy. The questionnaire included questions that addressed the second specific objective of the study and the second sub-research question. The five-point Likert scale for items required participants to agree or disagree with the statements,

and the entitled categories were: strongly disagree, disagree, neutral, agree, and strongly agree (See Appendix E).

The questionnaire was translated to Spanish to avoid participants' lack of understanding due to language barriers. This was carried out by the researcher, and a fellow EFL instructor revised and validated the translated version of the questionnaire.

**4.3.3.3 Open-ended survey.** The researcher used a separate survey as an instrument to identify learners' insights towards the technology-enhanced activities implemented in the classroom, like benefits/positives aspects and challenges/negative aspects. This survey was web-based; thus, participants responded to it through the online platform Google Forms (See Appendix F). This survey was taken by participants in the experimental group after the intervention and addressed the third sub-research question of the investigation.

According to Roberts & Allen (2015), online surveys are helpful when conducting educational research; they are efficient, offer anonymity, and decrease dual-role concerns that often worry researchers. In this study, answering the online survey was truly voluntary for participants.

**4.3.3.4 Reflective diary.** Reflective practices in the educational context are widely used, and the teacher puts thoughts, ideas, feelings, and reflections based on what is happening in the classroom (Göker, 2016). Furthermore, writing a reflective diary raises consciousness of the key issues in the classroom and links theory with practice (Donyaie & Afshar, 2019).

The reflective diary was used as a secondary instrument which the researcher used to take notes daily during the intervention. These notes included observable students' attitudes, struggles, and accomplishments, teachers' reflections on technology implementation in the language class and other entries that provided the researcher with a comprehensible picture of the treatment process.

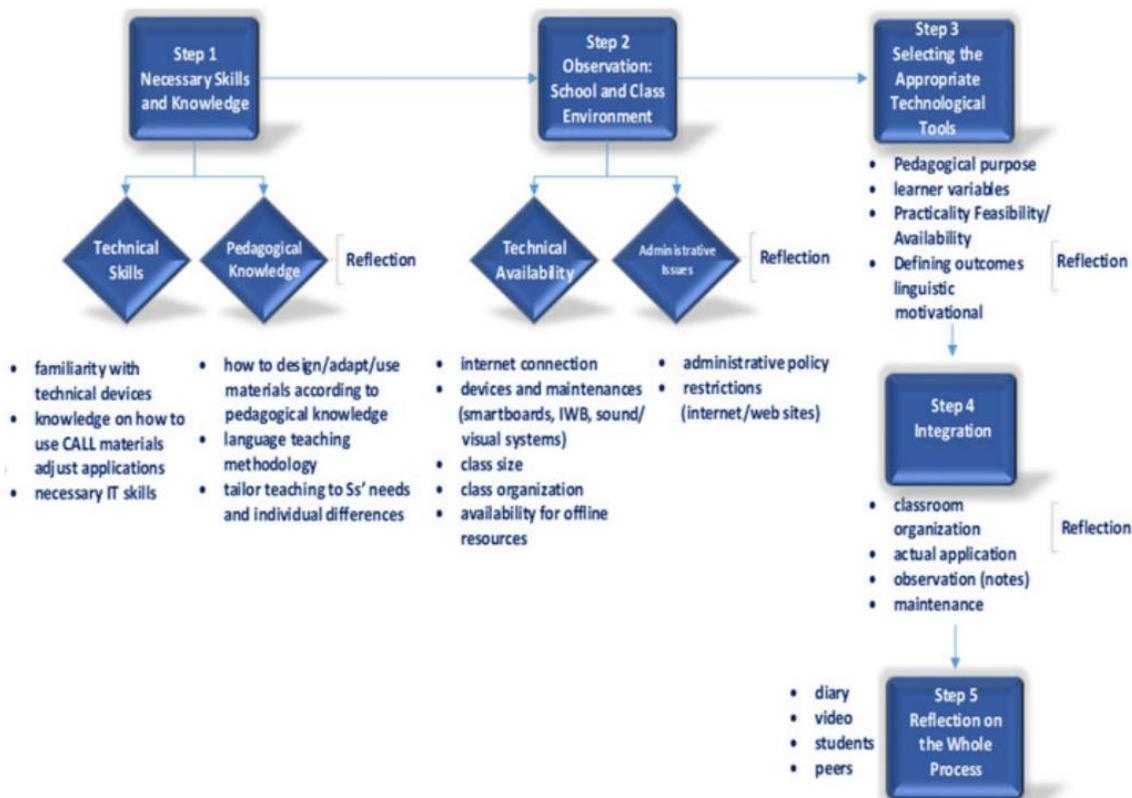
#### **4.3.4 Treatment**

The intervention for the treatment group consisted of a plan of ten lessons that included learning activities enhanced by technology. The design of the intervention was guided by Kuru's (2019) model for integrating technology into L2 classrooms (See Figure 2). This model required the teacher to have the necessary skills and knowledge to integrate technological tools, observe the availability and administrative issues, select the appropriate technological tools, and integrate

and reflect on the actual practice (Kuru, 2019). Thus, following these steps and considering the learning outcomes the technology-enhanced lesson plan was designed for this study's purposes.

**Figure 2**

*Kuru's model for integrating technology into L2 classroom*



Note: (Kuru, 2019)

The treatment group experienced technology-enhanced grammar activities, and the control group had teacher-driven instruction both in a virtual environment. Internet connection and personal computers were not considered in this study due to their broad acceptance in Higher Education as well as technologies that have been available for many years, like audio and videotapes and slide presentations (Golonka et al., 2014).

#### 4.3.5 Participants

This research study took place in a higher education institute in Loja, Ecuador. Participants were students legally enrolled in a public institute and took the English course Level 1, which corresponds to the A1 level according to the Common European Framework of

Reference. The researcher selected two intact groups and randomly assigned them to experimental and control groups. The control group consisted of 27 participants (19 male and 8 female), and the experimental group had 31 participants (14 male and 16 female). All the students in the groups agreed to participate in the study and signed an informed consent. In the middle of the intervention, there were three dropouts, two from the control group and one from the experimental group.

Groups were defined as homogenous because their English language proficiency and writing abilities were similar at the beginning of the study. At the beginning of the study, students were at the start point of leaning how to write in English. According to Creswell (2012), homogeneous groups are similar in personal characteristics or attributes like gender, racial group or abilities. This topic is further explained in the background of the participants.

By the time of the intervention, students were just starting to write short simple paragraphs as they were in the beginner level. This is worth to mention as this study goes around the writing skill.

#### ***4.3.6 Sampling and background of the participants***

This quasi-experimental study used a convenience sample, meaning they were willing and available at the time (Creswell, 2012). Besides, the researcher used intact groups, implying that participants were not randomly assigned to the groups but already set. These features of between-group designs put this sampling under the quasi-experimental design type (Creswell, 2012) (See Figure 3). On the other hand, these presented characteristics may not make the sample representative, but it is valuable to carry out the study and answer the research questions.

The control and experimental group participants were students at the Languages Center where the study occurred. They were taking the English level 1 course corresponding to the A1 level of the CEFR. Participants were majoring in a technical career at the Institute too. The ages of the participants were between 18 and 30 years. The mean of participants age was 20.13. All participants shared Spanish as their first language.

Regarding their personal characteristics, students identify themselves as part of ‘mestizo’ racial group. In the control group, participants were mostly female and participants in the experimental group were mostly male. Table 1 presents information about the participants.

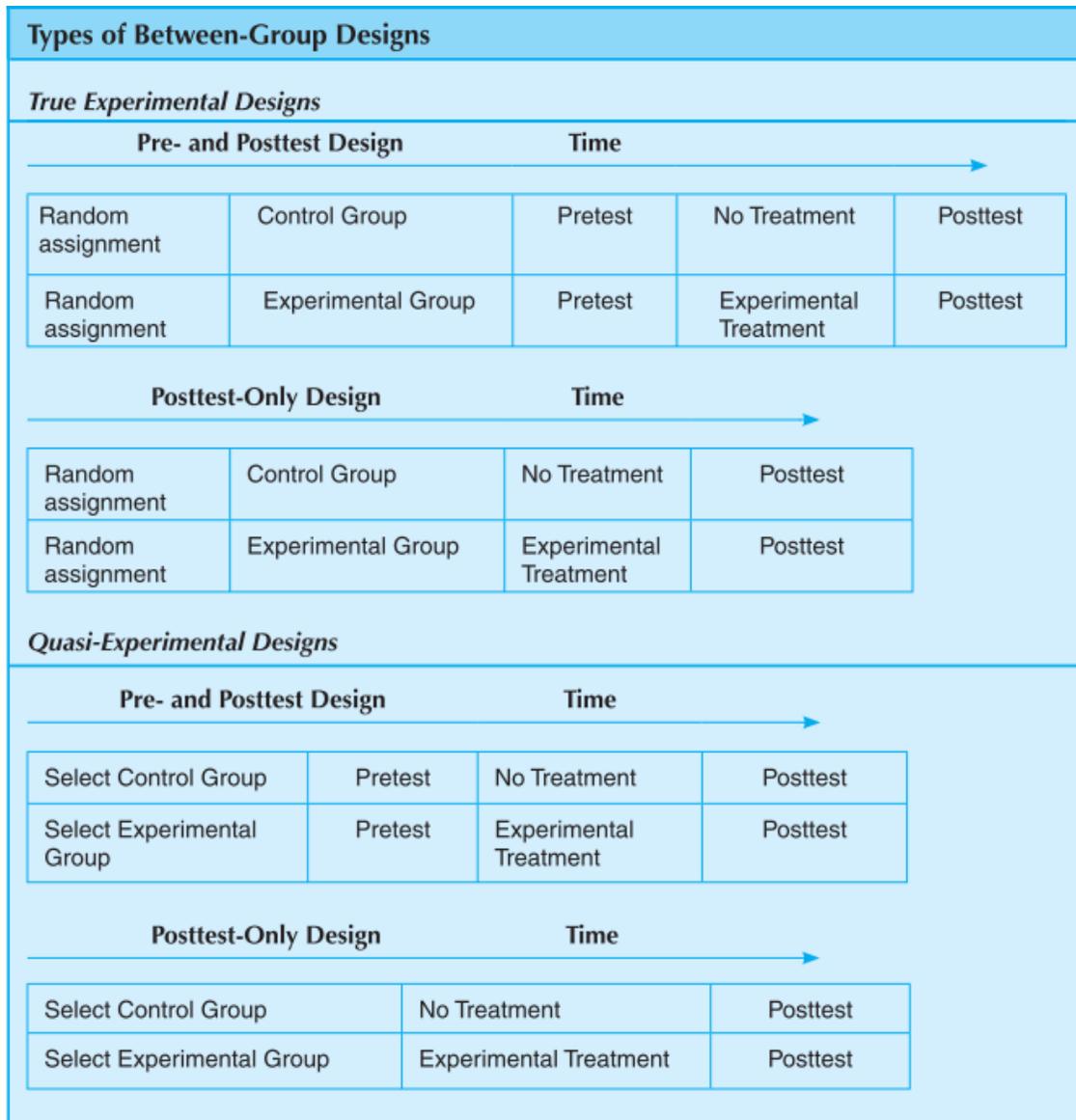
#### **Table 1**

##### *Background of the participants*

Group	Age mean	Gender	
		Female	Male
Control group	20.44	19	8
Experimental group	19.87	14	16

**Figure 3**

*Types of Between-Groups Designs*



Note: (Creswell, 2012)

## 5 CHAPTER 5: Presentation of Findings

### 5.1 Introduction

This study sought to answer four research questions regarding the effect of technology-enhanced grammar activities on learners' written accuracy and their attitudes and challenges towards technology integration. The analyses of collected data through the pre and posttest, questionnaire, survey, and reflective diary aimed to respond to the research questions. Datasets were tabulated and processed into Microsoft Excel sheets for statistical analyses.

### 5.2 Presentation of Each Individual Finding

#### 5.2.1 Findings from the Pre and Posttest

Participants were required to write a short paragraph, and data were tabulated based on the frequency (F) of errors they made per written clause according to the surface strategy taxonomy which classifies errors into omission, addition, misinformation, and misordering (Dulay et al., 1982). It is essential to indicate that a clause may have one or more types of errors. Tables 2 and 3 contain the pretest results for the control and experimental groups.

**Table 2**

*Results of the pretest in the control group*

Code	Number of clauses	Number of error-free clauses	F omission	F addition	F misinformation	F misordering
CG01	5	3	2	1	2	1
CG02	5	1	3	0	1	1
CG03	4	0	2	0	3	0
CG04	2	0	2	0	2	0
CG05	4	1	0	0	1	0
CG06	4	2	1	0	2	0
CG07	5	2	1	1	2	0
CG08	3	1	1	0	2	0
CG09	1	0	0	0	1	1
CG10	5	1	2	1	3	0

CG11	2	0	1	1	1	0
CG12	7	2	3	1	4	2
CG13	3	2	0	0	1	0
CG14	6	2	3	1	2	2
CG15	0	0	0	0	0	0
CG16	2	2	0	0	0	0
CG17	4	2	2	0	1	0
CG18	5	1	2	1	3	1
CG19	3	1	1	1	1	1
CG20	7	4	1	0	2	1
CG21	6	4	1	1	1	0
CG22	4	3	0	0	1	0
CG23	5	1	<u>2</u>	1	2	1
CG24	4	1	0	0	2	1
CG25	3	0	0	0	1	1
TOTAL	99,00	36,00	30,00	10,00	41,00	13,00

**Table 3**

*Results of the pretest in the experimental group*

Code	Number of clauses	Number of error-free clauses	F omission	F addition	F misinformation	F misordering
TG01	0	0	0	0	0	0
TG02	2	0	1	0	1	0
TG03	6	1	2	1	3	0
TG04	4	0	2	0	4	0
TG05	3	0	1	0	3	0
TG06	5	2	2	1	2	1
TG07	2	1	1	0	1	0
TG08	1	1	0	0	0	0
TG09	6	3	2	0	2	1
TG10	4	2	1	1	1	0
TG11	3	3	0	0	0	0
TG12	2	1	0	0	1	0
TG13	2	0	2	0	2	0
TG14	2	0	1	0	2	1
TG15	4	2	1	1	2	0
TG16	3	1	1	0	2	0
TG17	6	2	1	1	2	1
TG18	1	1	0	0	0	0

TG19	0	0	0	0	0	0
TG20	5	2	2	0	2	0
TG21	3	1	1	0	1	1
TG22	2	0	0	0	2	0
TG23	0	0	0	0	0	0
TG24	4	2	1	0	1	0
TG25	2	2	0	0	0	0
TG26	3	3	0	0	0	0
TG27	5	1	2	1	2	1
TG28	3	0	1	1	2	0
TG29	3	1	1	1	1	1
TG30	3	1	2	0	2	1
<b>TOTAL</b>	<b>89,00</b>	<b>33,00</b>	<b>28,00</b>	<b>8,00</b>	<b>41,00</b>	<b>8,00</b>

After participants took the pretest, students in the experimental group experienced an intervention with technology-enhanced grammar activities. The teacher-researcher carried out a treatment of ten synchronous lessons during a month. Each lesson lasted 60 minutes. Once the intervention concluded, participants from the control and experimental groups took the posttest. Results from the posttest are shown in Tables 4 and 5.

**Table 4**

*Results of the posttest in the control group*

Code	Number of clauses	Number of error-free clauses	F omission	F addition	F misinformation	F misordering
CG01	7	3	2	0	2	0
CG02	6	2	1	1	2	0
CG03	6	3	0	0	3	0
CG04	6	4	1	0	1	0
CG05	8	6	1	0	2	0
CG06	5	2	2	0	2	1
CG07	4	2	1	1	0	1
CG08	4	2	2	0	2	0
CG09	3	0	2	1	1	0
CG10	4	2	1	0	1	0
CG11	4	2	0	1	2	1
CG12	6	2	0	1	2	1
CG13	3	1	2	1	2	0
CG14	9	5	0	1	3	0

CG15	4	2	1	1	1	0
CG16	3	1	0	1	2	0
CG17	5	2	1	0	2	1
CG18	5	2	0	0	3	1
CG19	2	0	2	0	2	0
CG20	6	4	1	0	2	1
CG21	8	6	0	0	2	0
CG22	5	3	1	0	1	0
CG23	5	3	2	0	1	0
CG24	3	3	0	0	0	0
CG25	5	2	2	0	2	0
TOTAL	126,00	64,00	25,00	9,00	43,00	7,00

**Table 5**

*Results of the posttest in the experimental group*

Code	Number of clauses	Number of error-free clauses	F omission	F addition	F misinformation	F misordering
TG01	3	2	0	0	1	0
TG02	8	6	1	0	1	0
TG03	7	6	1	0	0	0
TG04	4	3	1	0	1	0
TG05	9	5	2	1	1	0
TG06	4	1	0	0	1	0
TG07	5	4	1	0	0	0
TG08	5	5	0	0	0	0
TG09	10	3	2	1	4	2
TG10	5	4	1	0	0	0
TG11	6	6	0	0	0	0
TG12	7	5	1	0	1	0
TG13	0	0	0	0	0	0
TG14	5	4	0	0	0	1
TG15	6	4	1	1	0	1
TG16	4	0	3	1	1	1
TG17	8	7	0	0	1	0
TG18	5	2	1	0	2	0
TG19	4	3	0	0	1	0
TG20	7	6	1	1	1	0
TG21	5	4	0	0	1	0
TG22	4	3	1	0	1	0

TG23	3	2	1	0	0	0
TG24	5	5	0	0	0	0
TG25	7	6	0	1	1	1
TG26	3	2	0	0	0	1
TG27	5	3	1	0	2	0
TG28	9	5	1	0	3	0
TG29	4	4	0	0	0	0
TG30	6	5	0	0	1	0
<b>TOTAL</b>	<b>163,00</b>	<b>115,00</b>	<b>20,00</b>	<b>6,00</b>	<b>25,00</b>	<b>7,00</b>

The pre and posttest kept a record of participants' performance before and after the treatment plan. Tables 6 and 7 compare the frequency and percentage of error occurrence and the rank as an additional datum.

**Table 6**

*Frequency, percentage, and rank of error types in the control group*

Error types	Pretest			Posttest		
	Frequency	Percentage	Rank	Frequency	Percentage	Rank
Omission	30	31,91	2	25	29,76	2
Addition	10	10,64	4	9	10,71	3
Misinformation	41	43,62	1	43	51,19	1
Misordering	13	13,83	3	7	8,33	4
<b>TOTAL</b>	<b>94</b>	<b>100</b>		<b>84</b>	<b>100</b>	

**Table 7**

*Frequency, percentage, and rank of error types in the experimental group*

Error types	Pretest			Posttest		
	Frequency	Percentage	Rank	Frequency	Percentage	Rank
Omission	28	32,94	2	20	34,48	2
Addition	8	9,41	3	6	10,34	4
Misinformation	41	48,24	1	25	43,10	1
Misordering	8	9,41	3	7	12,07	3
<b>TOTAL</b>	<b>85</b>	<b>100</b>		<b>58</b>	<b>100</b>	

Table 8 contains a comparison of the percentages of error-free clauses in the pre and posttest from the control and treatment groups.

**Table 8**

*Number of clauses vs. error-free clauses*

	Pretest / Control Group	Pretest / Treatment Group	Posttest / Control Group	Posttest / Treatment Group
Number of clauses	99	89	126	163
Error-free clauses	36	36	64	115
Percentage of error-free clauses	36,36	40,45	50,79	70,55

Similarly, Figure 4 summarizes the results of participants' writing accuracy performance by measuring the error-free clauses from the pre and posttest.

**Figure 4**

*Participants writing accuracy performance based on error-free clauses*



Table 9 shows the mean and standard deviation of the pre and posttest and significance test required for the statistical analyses. The mean or arithmetic average is the balance point of all the score and the standard deviation represents the distribution of scores around the mean (Gravetter & Wallnau, 2013). Data shows that there is variability of scores in relation to the means.

Additionally, scores of students of the treatment group were used to perform the significance level ( $\alpha = 0.05$ ), results show that  $\alpha$  was  $>$  that p-value (see Table 9).

**Table 9***Mean and standard deviation of the pre and posttest and p-value*

	Pretest		Posttest		<i>p-value</i>
	Mean	Standard deviation	Mean	Standard deviation	
Control Group	1,44	1,19	2,56	1,53	
Treatment Group	1,10	0,99	3,83	1,82	0,000000010

Finally, the researcher performed a t-test with scores of participants in the treatment group on Microsoft Excel to obtain further results to be analyzed (see Table 10).

**Table 10***t-test results*

	Pre test	Post-test
Mean	1,1	3,833333333
Variance	0,989655172	3,316091954
Degrees of freedom	29	
t Stat	-7,910685645	
P(T<=t) two-tail	0,00000001	
t critical (two-tail)	2,045229642	

### 5.2.2 Findings from the Questionnaire

To collect data about students' perceptions of the use of technology-enhanced activities in the English class from the treatment group, students filled out a questionnaire through Google Forms. The questionnaire had 18 items and they were adapted from Mahmoudi et al.'s (2012) questionnaire. Participants from the experimental group had to rate the items on a 5-point Likert scale from strongly agree, agree, neutral, disagree, and strongly disagree. Table 10 contains the results of the questionnaire.

**Table 11***Results of the questionnaire*

Item	Rating scale				
	Strongly agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
1. I like to use technology-enhanced activities to learn English language grammar.	12	12	3	0	3
2. Technology-enhanced activities are useful for learning English language grammar.	15	9	2	1	3
3. It is interesting to use technology-enhanced activities to learn English language grammar.	17	8	2	0	3
4. The use of technology-enhanced activities to learn English language grammar is fun.	15	8	3	0	4
5. It is effective to use technology-enhanced activities to learn English language grammar.	13	10	3	1	3
6. The provided technology-enhanced activities are suitable for my level.	14	10	3	0	3
7. I like using technology-enhanced activities in learning English language grammar because of the variety of provided exercises.	13	12	1	1	3
8. I like using technology-enhanced activities in learning English language grammar because of the huge amount of grammar exercises.	14	7	6	0	3
9. I like the use of technology-enhanced activities in learning English language grammar because of the speed of in getting feedback for the exercises.	15	9	3	0	3
10. I like the use of technology-enhanced activities in learning	17	7	3	0	3

English language grammar because of the feature of tools, such as color, graphics, animation, and layout.					
11. I hope the English teacher will provide more technology-enhanced activities to learn English language grammar.	15	8	4	0	3
12. The use of technology-enhanced activities helps me to make fewer grammar mistakes in writing.	13	9	4	1	3
13. The use of technology-enhanced activities helps me to improve the quality of my writing skills.	12	10	3	1	4
14. I do not like to use technology-enhanced activities in learning English.	3	0	3	6	18
15. The use of technology-enhanced activities in learning language grammar is boring.	3	1	3	8	15
16. The use of technology-enhanced activities in learning language grammar is a waste of time.	3	0	3	2	22
17. The use of technology-enhanced activities in learning language grammar is difficult.	4	0	9	3	14
18. The use of technology-enhanced activities in learning language grammar does not help me to improve the quality of my writing skills.	5	1	5	6	13

Likewise, Figure 5 shows the participants' responses to the questionnaire about technology-enhanced activities.

### **Figure 5**

*Results of the questionnaire about technology-enhanced activities*

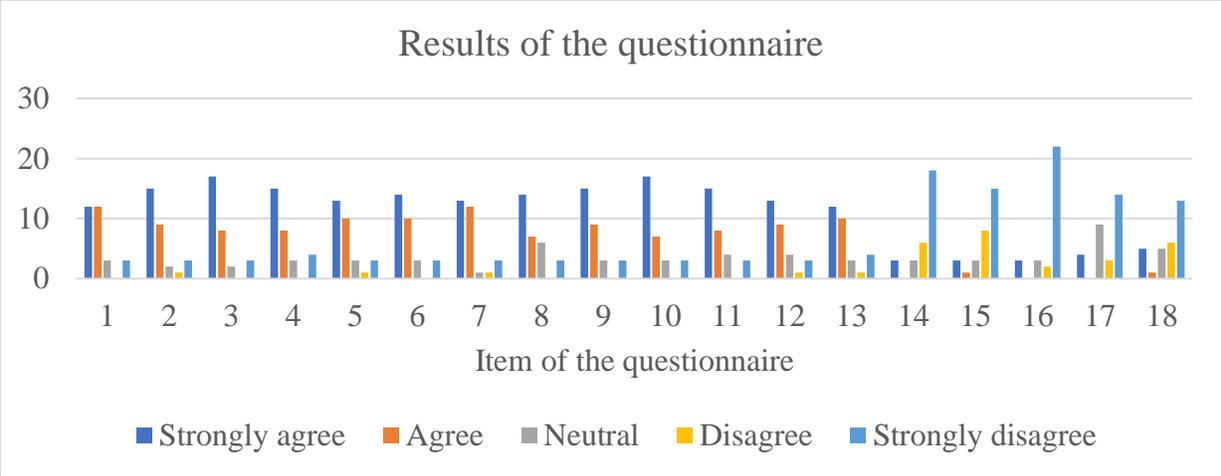
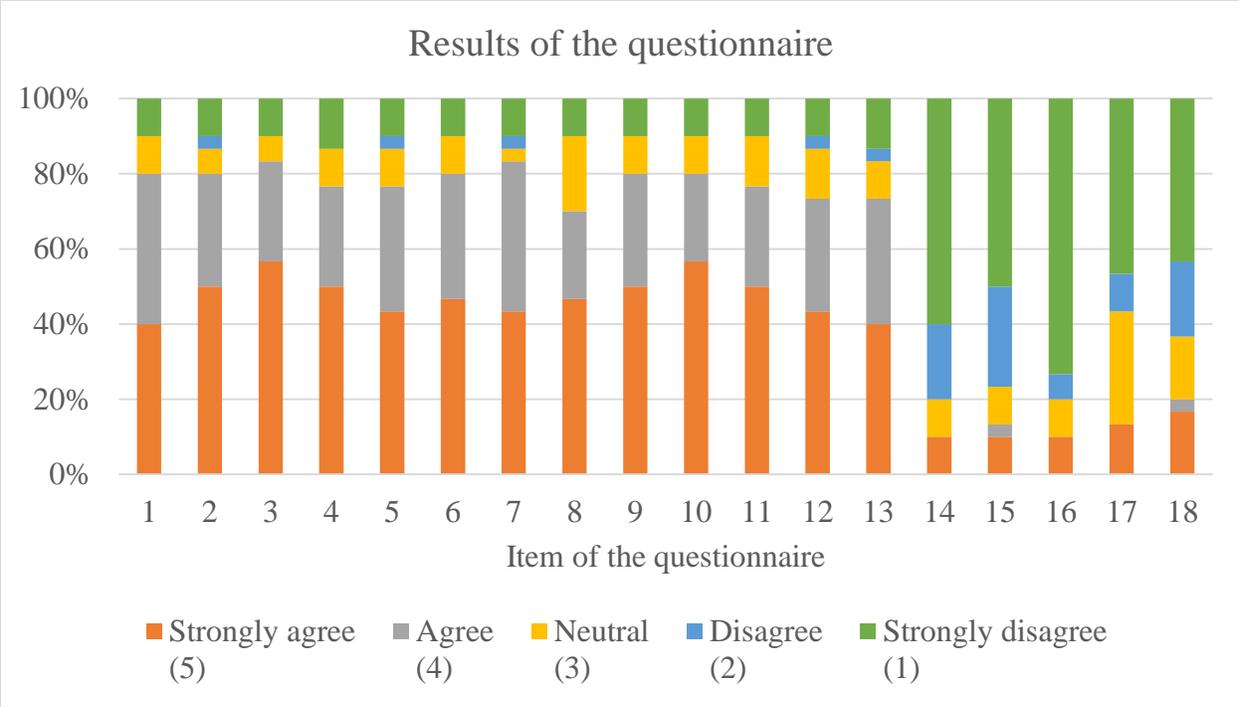


Figure 6 presents the results of the questionnaire based on the percentage. The percentage was calculated over a total of participants in the treatment group (n=30).

**Figure 6**  
*Results of the questionnaire about technology-enhanced activities*



**5.2.3 Findings from the Survey and Reflective Diary**

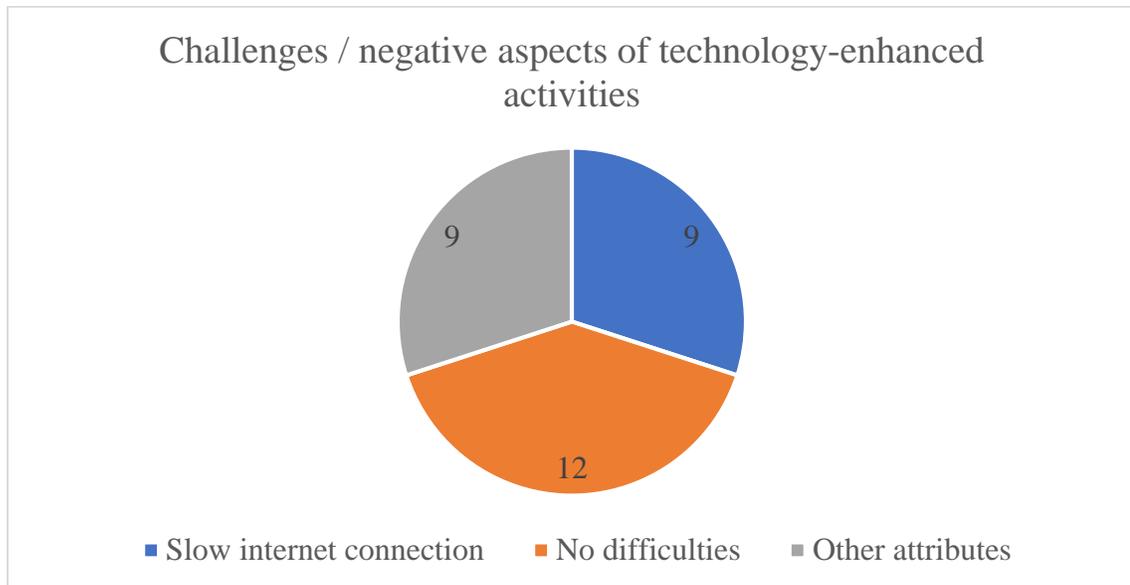
Regarding the third sub-research question about the challenges students face when integrating technology in the classroom, the survey revealed some authentic information. Data from the open-ended questions in the survey (See Appendix G) helped the researcher to paint a better picture of technology implementation in the English language class. The online survey was applied to the participants in the experimental group after the intervention. Likewise, using a reflective diary, the teacher-researcher kept track of students' and teachers' perceptions of technology-enhanced activities implementation during the whole process.

Figure 7 contains the patterns that emerged from the question, "What are the benefits/positive aspects of technology-enhanced activities?". To identify the patterns, the researcher read participants answers several times without preconceptions and classified repeated attributes in the responses. A significant number of participants asserted that they did not find any challenges or negative aspects of technology implementation. According to some participants' answers, the slow internet connection they had available in their homes was the most significant difficulty at the moment of using technology-enhanced activities. A participant commented, "*the difficulty I had was that a webpage did not load in an activity due to the internet connection in my house*". These types of comments reveal that participants had problems solving technology-enhanced activities because of nonsuitable internet access in their houses

which represents a challenge for technology implementation. In addition, these students' attitudes matched the teacher-researcher reflective diary reflection "*Students look interested in the presented activity, however, and a few students have problems connecting to the activity because they report problems with their internet connection. This makes students discourage*".

**Figure 7**

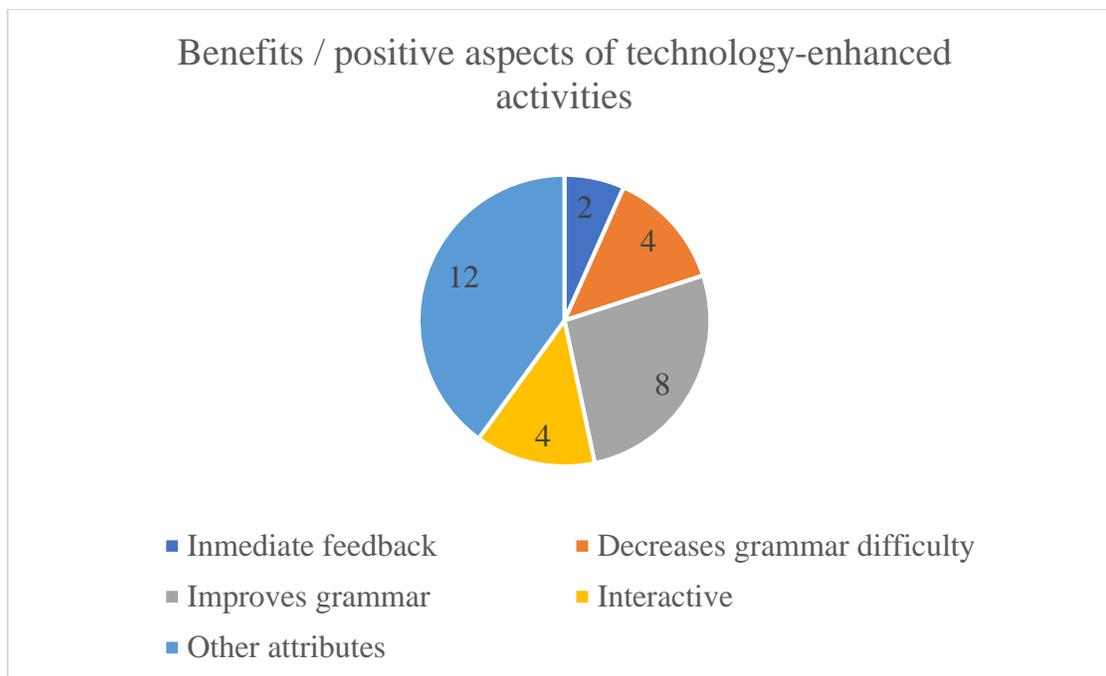
*Challenges/negative aspects of technology-enhanced activities implementation*



Moreover, to contrast this information and provide more robust inferences, the researcher asked a second question to participants that revealed other perspectives towards technology-enhanced activities. Participants' answers unveiled attributes like technology-enhanced activities that helped them improve their grammar, decreased grammar difficulty, and interactive activities. A participant wrote, "*they [technology-enhanced activities] helped me to memorize the grammar structures to make sentences.*" This participant's answer is consistent with the teacher-researcher's perspective written in the reflective diary "*Students enjoy the activity and comment that now they remember the grammar rule for third person verbs. A student says 'I think I won't forget the 's' at the end of the verbs'*".

**Figure 8**

*Benefits/positive aspects of technology-enhanced activities implementation*



Results from the survey indicate that participants' most prominent challenge with technology-enhanced activities implementation is the slow internet connection some of them count on at home. Data collected from this survey also suggests that their attitudes towards technology-enhanced activities implementation are positive and even highlight some positive aspects of their language learning process.

Finally, during the study, the teacher-researcher observed that students' grammar improved, and they made fewer mistakes when writing sentences. This was noted when the technology-enhanced activities were applied in the class, and students were able to complete activities faster or get more points in the activities due to the improvements in the answers students provided. *'I'm on the podium. I'm excited'* This directed quote from the reflective diary expresses a participant's reaction when they saw their score ranked as one of the highest in a technology-enhanced activity. This was also accompanied by the note, *'The student feels he is improving his grammar skills. He is motivated'* This behavior was widely noticed during the classes when participants tried any technology-enhanced activity to practice grammar.

## 6 CHAPTER 6: Discussion

### 6.1 Introduction

This mixed-method study reports on the practice of implementing technology-enhanced grammar activities to measure the impact on writing accuracy and students' perspectives. Recent studies have reported that technology implementation positively impacts specific areas of English language learning. This particular study explicitly focused on the effects of technology-enhanced activities on writing accuracy. This decision was boosted because the teacher-researcher perceived that some learners at the beginner level had severe difficulties with writing accuracy.

The research process is summarized as follows. The researcher used two intact groups to conduct the study in a higher education institute; participants were taking the English Level 1, corresponding to the A1 level of proficiency according to the CEFR. Afterward, students were asked to participate in a research study and signed informed consent forms. The researcher randomly assigned the control and treatment groups and took the pretest to assess their current writing accuracy performance. Then, the intervention was carried out, and the teacher-researcher kept notes of some of the students' attitudes and perceptions throughout the process. After the intervention, both groups took the posttest, and the experimental group responded to a questionnaire and a survey. This section discusses the findings presented in Chapter 5.

### 6.2 Discussion of Findings and Relation to the Questions

#### 6.2.1 *Sub-Research Question 1*

Do technology-enhanced grammar activities improve students' English writing accuracy based on a pretest and posttest composition?

The data analysis shows that there is a difference between the means of the pre and posttest of the control and treatment groups. Besides, the t-test analysis between the tests of the experimental group, which the  $p$  value was lower than 0.05, confirms that scores are statistically significant to state there is evidence to reject the null hypothesis. This comparison accounts for a significant improvement in students' English writing accuracy. Consequently, the researcher has evidence to support the alternative hypothesis that stated that technology-enhanced grammar activities would improve EFL learners writing accuracy.

### **6.2.2 Sub-Research Question 2**

What are students' attitudes towards using technology-enhanced grammar activities in the EFL class?

The results gathered by the online questionnaire proved that the vast majority of participants (70% of participants or higher) agreed or strongly agreed with the items that mentioned that technology-enhanced activities were useful to improve their writing accuracy (items 2, 5, 12, 13). Findings also suggest that students liked using technology-enhanced grammar activities thanks to their benefits in learning language grammar (items 1, 3, 4, 7, 8, 9, 10). Also, 57% of participants disagreed or strongly disagreed with items that mentioned that technology-enhanced grammar activities are not helpful or boring (items 14, 15, 16, 17). These findings determine that participants' attitudes toward using technology-enhanced activities in EFL classes are positive, suggesting that students like these activities and feel they are helping to improve writing accuracy performance.

### **6.2.3 Sub-Research Question 3**

What are the challenges students face when integrating technology-enhanced activities in the EFL class?

This question sought to identify students' viewpoints regarding the challenges they faced when the teacher-researcher implemented technology-enhanced activities in the class. 12 out of 30 answered that they had no challenges or difficulties with technology-enhanced activities implementation. Nine students mentioned that they had problems with their internet connection which was claimed to be slow, and it made it challenging for students to access on time to some activities. As additional information, students responded to the benefits or positive aspects they perceived during the treatment concerning technology-enhanced activities. Students mentioned some attributes like getting immediate feedback, activities helped them to improve their grammar accuracy and decreased difficulty, and activities being interactive. All of these students' standpoints are supported by the teacher's notes in the reflective diary.

These findings indicate that participants found more positive than negative aspects concerning technology-enhanced activities implementation. The challenge that stands out is a poor connection to the internet.

#### **6.2.4 Research Question 1**

How do technology-enhanced grammar activities affect students' English writing accuracy in a higher education institute in Loja, Ecuador?

This research question aimed to unveil the effects of technology-enhanced activities on writing accuracy. Answers to the three sub-research questions demonstrate that technology-enhanced activities have a positive impact on students writing accuracy performance and perceptions. Participants improved their scores when assessing writing accuracy and indicated that technology-enhanced grammar activities helped them learn and perform better at writing accuracy. This statement is also supported by participants' and the teacher-researcher's viewpoints, who claimed that technology implementation in the EFL classroom is engaging and efficacious. The attributes emerging from the survey proved that technology-enhanced activities affected their writing accuracy because they acceded to immediate feedback, grammar seemed less complicated, and the activities were fun and interactive. Some students reported that the slow internet connection they had available represented a difficulty for these types of activities.

Information from the teacher's perspective in the reflective diary also indicated that grammar improvement was evident because students reacted in a motivating way, and the scores they got in technology-enhanced activities were better, or they completed activities faster. This improvement in students' grammar activities led to improvements in writing accuracy when creating short paragraphs.

Another relevant aspect regarding how technology-enhanced activities affected writing accuracy is that students felt motivated to participate more by asking for clarification about grammar. Technology allows students to know their scores and answers right after they finish an exercise, or at least, faster than in teacher-driven instruction, so when reviewing their attempts, they were able to ask for clarification when they doubted any example. This aspect enhanced participation and collaboration.

Additional data gathered through the application of the pre and post-test indicates that students in the experimental group were able to increase the number of error-free clauses they wrote in the paragraph after the intervention. This parameter increased from 40,45% to 70,55%. Even though students in the control group also achieved a higher percentage of error-free clauses after the teacher-driven instruction, students in the experimental group using technology-enhanced activities demonstrated better performance.

An actual example of how students writing accuracy improved is shown as follows. Participant TG04 wrote a text in the pretest where no sentence was error-free. The participant wrote:

‘I get up morning. My mother buy lunch I am go a school. I am study  
I am like in the clas’

In this example, the participant made errors of omission, misinformation, and misordering. The same participant TG04 wrote in the post-test:

‘Juan is my best friend. Juan goes to school every day. He eats in the school at 12. He studys in the night’

It is possible to notice that there are error-free sentences, and only the last sentence has errors of omission and (studies) and misinformation (at night). This example exemplified how students performed better at writing accuracy after the intervention. Indeed, sentences were not more complex or elaborated, but the number of errors they made significantly decreased according to the posttest results.

Likewise, the comparison of the frequency of errors students in the experimental group made (omission, addition, misinformation, misordering) decreased after the intervention. Numbers indicate that F lowered from 85 to 58. These numbers illustrate that the implementation of technology-enhanced activities affected students writing accuracy. Effects proved beneficial for learners because they could improve their writing skills in terms of accuracy. This finding was in line with the teacher-researcher’s and students’ perceptions of improving grammar skills. They both perceived that grammar rules were easier to remember and follow when they practiced using technology-enhanced activities. The teacher-researcher noticed positive attitudes when students were working in-class activities with technology because they got higher scores or were ranked higher in technology-enhanced activities due to making fewer mistakes. The teacher often noticed these types of perceptions during the study.

Students’ improvement was allocated to the implementation of technology-enhanced grammar activities, however it is worth to mention that this the use of technology carried along side benefist for participants as they mentioned in the survey, for instance: feedback was immediate, repetition of exercises was enabled and the interface was appealing for students as users. These findings are in line with the results of other research studies that report that technology could positively affect language learning in areas like learning vocabulary, teacher-

student interaction, and class engagement, among others (G. Li et al., 2019a; Mahmoudi et al., 2012; Shadiev et al., 2018).

## **7 CHAPTER 7: Conclusions**

### **7.1 Summary of Findings**

The mixed-method study aimed to determine how technology-enhanced grammar activities affect students' writing accuracy in public Higher Education Institute EFL learners. Previous studies support the possibility of implementing technology in EFL classrooms; thus, the teacher-researcher identified an area to explore its effects in an action research study.

Findings lead to believe that the effects of technology-enhanced activities are beneficial for EFL learners because students in the experimental group outperformed students in the study's control group in terms of writing accuracy. Impact on students' performance advocated a higher number of error-free clauses and less frequency of errors like omissions, additions, misinformation, and disordering. Furthermore, students from the experimental group accounted for a positive experience during the treatment that was interactive and helpful for them. In conclusion, technology-enhanced activities can positively affect students writing accuracy performance and perceptions.

### **7.2 Limitations of the Study**

Taking into account the small number of students who participated in this study, these findings cannot be generalized beyond the background of this population, despite the p-value which was obtained from the pre-test and post-test results of the experimental group. Additionally, the researcher worked with intact groups, which was a factor that did not make the study a pure experiment. The random assignment would have made a difference too. The fact that the researcher was also the teacher of students in control and experimental groups may also have affected the results, despite the fact that she was assisted by fellow instructors and experts.

Also, some participants of this research study reported that they had problems with their internet connection which did not let them comply 100% with the technology-enhanced activities planned; for this reason, their scores may not accurately reflect their actual performance in writing accuracy.

Although the findings of the study cannot be statistically generalized, this study can contribute to some extent to people in the field with the data and experience gained. Educators and administrators can also consider this research study when debating IST in the EFL classroom.

### **7.3 Further Research**

Future research studies may address the mentioned limitations so that results can be generalizable; for instance, further research may include larger populations, true experiments, and technology primary barriers should be considered to avoid participants missing lessons or activities that can motivate results variations.

Additionally, this study can be conducted with participants of other language proficiency levels like intermediate or advanced to confirm if technology-enhanced activities positively affect writing accuracy too.

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## APPENDICES

### APPENDIX A. Treatment plan

#### Schedule for the Application of Instruments

Class hour (60 minutes)	Treatment group	Control group
Lesson 1	Diagnostic test	Diagnostic test
Lesson 2	Pre-test	Pre-test
Lesson 3	Treatment	
Lesson 4	Treatment	
Lesson 5		
Lesson 6		
Lesson 7	Treatment	
Lesson 8	Treatment	
Lesson 9		
Lesson 10		
Lesson 11	Treatment	
Lesson 12	Treatment	
Lesson 13		
Lesson 14		
Lesson 15	Treatment	
Lesson 16	Treatment	
Lesson 17		
Lesson 18		
Lesson 19	Treatment	
Lesson 20	Treatment	
Lesson 21		
Lesson 22		
Lesson 23	Post-test	Post-test
Lesson 24	Questionnaire/Survey	Technology-enhanced activities as the treatment group
Lesson 25		
Lesson 26		
Lesson 27		
Lesson 28		
Lesson 29		
Lesson 30		

## Treatment Plan

### Technology-enhanced lessons

This plan was designed considering the model suggested by Kuru (2019) for integrating technology into L2 classroom.

Lesson / topic	Learning outcomes in terms of grammar competence <small>By the end of the lesson, students will be able to...</small>	Language skills / areas	Technology tool
3 / Simple present: sentences	...recognize the grammatical foundations for simple present tense in affirmative and negative sentences.	Grammar	Kahoot <a href="https://kahoot.com/">https://kahoot.com/</a>
4 / Simple present: adverbs of frequency	...locate the word order of adverbs of frequency in simple present sentences.	Grammar	Wordwall <a href="https://wordwall.net/">https://wordwall.net/</a>
6 / Writing about habits and routines	...employ simple present grammar conventions to write about habits and routines.	Writing / grammar	Write&Improve <a href="https://writeandimprove.com/">https://writeandimprove.com/</a>
8 / Simple present: questions and answers	...recognize the grammatical foundations for simple present tense in questions and answers.	Grammar	Write&Improve <a href="https://writeandimprove.com/">https://writeandimprove.com/</a>
11 / Writing an interview	...employ simple present grammar conventions to write informative questions and answers about habits and routines.	Writing / grammar	Pixton <a href="https://app-es.pixton.com/">https://app-es.pixton.com/</a>
12 / Simple present: overall review	...demonstrate accurate use of simple present grammar conventions.	Grammar	Kahoot <a href="https://kahoot.com/">https://kahoot.com/</a>
15 / Simple present: overall review	...demonstrate accurate use of simple present grammar conventions.	Grammar	Quizziz <a href="https://quizziz.com/admin">https://quizziz.com/admin</a>
16 / Simple present: overall review	...demonstrate accurate use of simple present grammar conventions.	Grammar	Pixton <a href="https://app-es.pixton.com/">https://app-es.pixton.com/</a>
19 / Prepositions of place	... produce accurate statement using prepositions of place.	Grammar	Kahoot <a href="https://kahoot.com/">https://kahoot.com/</a>
20 / Locating places in a map	...employ there is and there are and prepositions of place grammar foundations to write about places in a map.	Writing / grammar	Write&Improve <a href="https://writeandimprove.com/">https://writeandimprove.com/</a>

## **APPENDIX B. Request to conduct the study**

Mgr. [REDACTED]

**RECTOR DEL [REDACTED]**

De mis consideraciones,

Reciba un cordial saludo y deseos de éxito en las funciones que acertadamente desempeña.

Como es de su conocimiento, me encuentro cursando la Maestría en Enseñanza de Inglés como Lengua Extranjera en la Escuela Superior Politécnica del Litoral y como proyecto de titulación es requerimiento la ejecución de una tesis.

Es así que, por medio del presente, solicito su autorización para desarrollar una intervención académica con los estudiantes a mi cargo del Nivel de Inglés A1, del ciclo en curso PA 2021-I. Dichos estudiantes serán parte del estudio denominado “THE EFFECTS OF TECHNOLOGY-ENHANCED GRAMMAR ACTIVITIES ON EFL WRITING ACCURACY IN AN ECUADORIAN HIGHER EDUCATION INSTITUTE” que ha sido ya aprobado por el comité de posgrados.

Sin otro particular y esperando una respuesta favorable, me suscribo.

Atentamente,

María Gabriela Jiménez

C.I.: 1105403701

## **APPENDIX C. Request to use placement test scores**

Mgr. [REDACTED]

**VICERRECTOR DEL** [REDACTED]

De mis consideraciones,

Reciba un cordial saludo y deseos de éxito en las funciones que acertadamente desempeña.

Como es de su conocimiento, me encuentro cursando la Maestría en Enseñanza de Inglés como Lengua Extranjera en la Escuela Superior Politécnica del Litoral y como proyecto de titulación es requerimiento la ejecución de una tesis.

Es así que, por medio del presente, solicito su autorización para acceder y hacer uso de los resultados de la prueba de ubicación de los estudiantes a mi cargo del Nivel de Inglés A1, del ciclo en curso PA 2021-I. Dichos estudiantes serán parte del estudio denominado “THE EFFECTS OF TECHNOLOGY-ENHANCED GRAMMAR ACTIVITIES ON EFL WRITING ACCURACY IN AN ECUADORIAN HIGHER EDUCATION INSTITUTE” que ha sido ya aprobado por el comité de posgrados.

Sin otro particular y esperando una respuesta favorable, me suscribo.

Atentamente,

María Gabriela Jiménez

C.I.: 1105403701

## APPENDIX D. Pre and posttest

### Pre-Test

<b>Students' language level according to the CEFR:</b>	A1 (Beginners)
--	----------------

Think about your family's daily routine. Write a short paragraph about what your relatives and you do in a typical day. Double check grammar conventions to ensure the highest score. (100 words)

Include: *affirmative and negative sentences, adverbs of frequency.*

<hr/>
---

## Post-Test

<b>Students' language level according to the CEFR:</b>	A1 (Beginners)
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Think about your friends' typical routine. Write a short paragraph about what you and your friends do on a daily basis. Double check grammar conventions to ensure the highest score. (100 words)

Include: *affirmative and negative sentences, adverbs of frequency.*

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Test designed by:

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María Gabriela Jiménez  
**Researcher**

Test revised by:

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Mg. Jordy Cristian Granda  
**Expert**

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Mg. Ana Gabriela González  
**Expert**

## APPENDIX E. Questionnaire

### Questionnaire

No.	Statement	SD	D	N	A	SA
1	I like to use the educational websites to learn English language vocabulary.					
2	The educational websites are useful for learning English language vocabulary.					
3	It is interesting to use educational websites to learn English language vocabulary.					
4	The use of educational websites to learn English language vocabulary is fun.					
5	It is effective to use the educational websites to learn English language vocabulary.					
6	The provided educational websites are suitable for my level.					
7	I like the use of educational websites in learning English language vocabulary because of the varieties of provided exercises.					
8	I like the use of educational websites in learning English language vocabulary because of the huge amount of vocabulary exercises.					
9	I like the use of websites in learning English language vocabulary because of the speed of in getting feedback for the exercises.					
10	I like the use of websites in learning English language vocabulary because of the feature of websites, such as color, graphic, animation and layout.					
11	I hope the English teacher will provide more educational websites to learn English language vocabulary.					
12	I am able to gain more knowledge about the lesson taught in English.					
13	The use of educational websites enables me to understand the English lesson better.					
14	I do not like to use educational websites in learning English.					
15	The use of educational websites in learning language vocabulary is boring.					
16	The use of educational websites in learning language vocabulary is a waste of time.					
17	The use of educational websites in learning language vocabulary is difficult.					
18	The use of educational websites in learning language vocabulary does not help me to understand better on the topic taught.					

Mahmoudi et al. (2012).

## Questionnaire

No.	Statement	SD	D	N	A	SA
1	I like to use technology-enhanced activities to learn English language grammar.					
2	Technology-enhanced activities are useful for learning English language grammar.					
3	It is interesting to use technology-enhanced activities to learn English language grammar.					
4	The use of technology-enhanced activities to learn English language grammar is fun.					
5	It is effective to use technology-enhanced activities to learn English language grammar.					
6	The provided technology-enhanced activities are suitable for my level.					
7	I like using technology-enhanced activities in learning English language grammar because of the variety of provided exercises.					
8	I like using technology-enhanced activities in learning English language grammar because of the huge amount of grammar exercises.					
9	I like the use of technology-enhanced activities in learning English language grammar because of the speed of in getting feedback for the exercises.					
10	I like the use of technology-enhanced activities in learning English language grammar because of the feature of tools, such as color, graphics, animation, and layout.					
11	I hope the English teacher will provide more technology-enhanced activities to learn English language grammar.					
12	The use of technology-enhanced activities helps me to make fewer grammar mistakes in writing.					
13	The use of technology-enhanced activities helps me to improve the quality of my writing skills.					
14	I do not like to use technology-enhanced activities in learning English.					
15	The use of technology-enhanced activities in learning language grammar is boring.					
16	The use of technology-enhanced activities in learning language grammar is a waste of time.					
17	The use of technology-enhanced activities in learning language grammar is difficult.					
18	The use of technology-enhanced activities in learning language grammar does not help me to improve the quality of my writing skills.					

Adapted from Mahmoudi et al. (2012).

### Questionnaire (traducido)

No.	Statement	SD	D	N	A	SA
1	Me gusta usar actividades potenciadas por la tecnología para aprender gramática del idioma inglés. I like to use technology-enhanced activities to learn English language grammar.					
2	Las actividades potenciadas por la tecnología son útiles para el aprendizaje de gramática del idioma inglés. Technology-enhanced activities are useful for learning English language grammar.					
3	Es interesante utilizar actividades potenciadas por la tecnología para aprender gramática del idioma inglés. It is interesting to use technology-enhanced activities to learn English language grammar.					
4	El uso de actividades potenciadas por la tecnología para aprender gramática del idioma inglés es divertido. The use of technology-enhanced activities to learn English language grammar is fun.					
5	Es efectivo usar actividades potenciadas por la tecnología para aprender gramática del idioma inglés. It is effective to use technology-enhanced activities to learn English language grammar.					
6	Las propuestas actividades potenciadas por la tecnología son adecuadas para mi nivel. The provided technology-enhanced activities are suitable for my level.					
7	Me gusta utilizar actividades potenciadas por la tecnología por la variedad de ejercicios disponibles. I like using technology-enhanced activities in learning English language grammar because of the variety of provided exercises.					
8	Me gusta utilizar actividades potenciadas por la tecnología en el aprendizaje de gramática del idioma inglés por la gran cantidad de ejercicios de gramática. I like using technology-enhanced activities in learning English language grammar because of the huge amount of grammar exercises.					
9	Me gusta usar actividades potenciadas por la tecnología en el aprendizaje de gramática del idioma inglés por la rapidez en la que recibo retroalimentación de los ejercicios. I like the use of technology-enhanced activities in learning English language grammar because of the speed of in getting feedback for the exercises.					
10	Me gusta usar actividades potenciadas por la tecnología en el aprendizaje de gramática del idioma inglés por las					

	<p>características de las herramientas como el color, gráficos, animaciones y diseño.</p> <p>I like the use of technology-enhanced activities in learning English language grammar because of the feature of tools, such as color, graphics, animation, and layout.</p>					
11	<p>Espero que la docente de inglés provea más actividades potenciadas por la tecnología para aprender gramática del idioma inglés.</p> <p>I hope the English teacher will provide more technology-enhanced activities to learn English language grammar.</p>					
12	<p>El uso de actividades potenciadas por la tecnología me ayuda a cometer menos errores en la escritura.</p> <p>The use of technology-enhanced activities helps me to make fewer grammar mistakes in writing.</p>					
13	<p>El uso de actividades potenciadas por la tecnología me ayuda a mejorar la calidad de mis habilidades de escritura.</p> <p>The use of technology-enhanced activities helps me to improve the quality of my writing skills.</p>					
14	<p>No me gusta usar actividades potenciadas por la tecnología en el aprendizaje del inglés.</p> <p>I do not like to use technology-enhanced activities in learning English.</p>					
15	<p>El uso de actividades potenciadas por la tecnología en el aprendizaje de gramática del idioma es aburrido.</p> <p>The use of technology-enhanced activities in learning language grammar is boring.</p>					
16	<p>El uso de actividades potenciadas por la tecnología en el aprendizaje de gramática del idioma es una pérdida de tiempo.</p> <p>The use of technology-enhanced activities in learning language grammar is a waste of time.</p>					
17	<p>El uso de actividades potenciadas por la tecnología en el aprendizaje de gramática del idioma es difícil.</p> <p>The use of technology-enhanced activities in learning language grammar is difficult.</p>					
18	<p>El uso de actividades potenciadas por la tecnología en el aprendizaje de gramática del idioma no me ayuda a mejorar la calidad de mis habilidades de escritura.</p> <p>The use of technology-enhanced activities in learning language grammar does not help me to improve the quality of my writing skills.</p>					

Adapted from Mahmoudi et al. (2012).

## APPENDIX F. Web based survey

Encuesta   Se han guardado todos los cambios en Drive

Preguntas Respuestas **20** Configuración

### Encuesta

Estimados estudiantes,

Solicito su colaboración para responder la siguiente encuesta acerca de su percepción de las actividades potenciadas por la tecnología aplicadas en las clases de inglés del curso actual.

Gracias por su colaboración.

¿Cuáles son los beneficios/aspectos positivos de las actividades potenciadas por la tecnología? \*

Texto de respuesta corta

¿Cuáles son las dificultades/aspectos negativos de las actividades potenciadas por la tecnología? \*

Texto de respuesta corta

Enviar 

